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Presentazione aziendale

La **MT Motori Elettrici** è una azienda che ha fatto del dinamismo e della flessibilità le sue principali linee guida, proponendosi nel mercato dei motori con un proprio know-how per fornire alle varie esigenze applicative soluzioni efficaci e tecnologicamente avanzate.

La **MT Motori Elettrici** dispone di un'ampia gamma di motori trifase e monofase, con e senza freno, e di motorulli.

Può inoltre fornire in tempi brevi motori già assemblati a riduttori scelti secondo le specifiche tecniche del cliente.

Nata nel 1994 **MT Motori Elettrici** ha visto crescere il proprio fatturato da 1 Ml di Euro fino a gli oltre 12Ml attuali, superando i 3 Ml di motori venduti nel mondo.

Nell'ottica di un costante miglioramento della capacità produttiva, della qualità e del servizio al cliente, **MT Motori Elettrici** investe costantemente in nuovi impianti, ricerca e sviluppo e strutture: attualmente la sede produttiva ed amministrativa si sviluppa su di una superficie pari a 30000 mq di cui 6000 mq coperti.

La flessibilità e la capacità di adattarsi alle richieste della propria clientela risiede anche nei quasi 50 dipendenti presenti in **MT Motori Elettrici**.

Aspetto vincente che contraddistingue la **MT Motori Elettrici** è il **MADE IN ITALY**: tutti i prodotti delle gamme **MT Motori Elettrici** sono completamente progettati, realizzati ed assemblati in Italia.

La progettazione è affidata a personale qualificato presente in **MT Motori Elettrici**, la produzione avviene all'interno dei propri stabilimenti o avvalendosi di artigiani selezionati presenti nel territorio, l'assemblaggio è completamente eseguito da personale qualificato **MT Motori**.

Corporate presentation

***MT Motori Elettrici** is a company that has made dynamism and flexibility its main guidelines, presenting itself on the motor market with its own know-how to provide effective and technologically advanced solutions for various application needs.*

***MT Motori Elettrici** has a wide range of three-phase and single-phase motors with and without brakes and motorised rollers.*

It can also quickly supply motors already assembled to reduction units in accordance with the customer's technical specifications.

*Founded in 1994, **MT Motori Elettrici** has seen its turnover grow from 1 million Euros up to the current over 12 millions, exceeding the 3 million motors sold in the world.*

*With a view to constantly improving productive capability, quality and customer service, **MT Motori Elettrici** constantly invests in new plants, research and development and structures: the production and administrative offices are currently spread over an area of 30000 square metres of which 6000 square metres are indoors.*

*The flexibility and ability to adapt to the demands of our customers also resides in the almost 50 employees present in **MT Motori Elettrici**.*

*The winning aspect that distinguishes **MT Motori Elettrici** is the **MADE IN ITALY**: all of the **MT Motori Elettrici** range of products are completely designed, manufactured and assembled in Italy.*

*The design is entrusted to qualified personnel present in **MT Motori Elettrici**. Production takes place within its own plants or with the help of artisans selected in the territory; the assembly is also carried out by the **MT** personnel.*

Unternehmenspräsentation

MT Elektromotoren ist ein Unternehmen, das Tatkraft und Flexibilität zu seinen Hauptleitlinien gemacht hat und sich auf dem Motorenmarkt mit einem eigenen Know-how präsentiert, um effiziente und technologisch fortgeschrittene Lösungen für die verschiedenen Anwendungsanforderungen zu bieten.

MT Elektromotoren verfügt über eine breite Palette von Drehstrommotoren und Einphasenwechselstrommotoren mit und ohne Bremse, sowie von Antriebsrollen.

Weiterhin kann es kurzfristig bereits mit Getrieben zusammengebaute Motoren liefern, die nach den technischen Spezifikationen des Kunden gewählt wurden.

MT Elektromotoren wurde 1994 gegründet. Sein Umsatz ist von 1 Mio. Euro aktuell auf 12 Mio. Euro gewachsen und weltweit wurden mehr als 3 Mio. Motoren verkauft.

Mit Blick auf eine konstante Verbesserung der Produktionskapazität, der Qualität und der Kundendienstleistungen investiert **MT** Elektromotoren stets in neue Anlagen, in die Forschung und Entwicklung und in neue Strukturen: Derzeit erstreckt sich die Produktions- und Verwaltungsstätte auf einer Fläche von 30000 qm, von denen 6000 überdacht sind. Die ca. 50 Mitarbeiter **MT** Elektromotoren sind flexibel und fähig, sich den Anforderungen der Kunden anzupassen.

Ein erfolgreicher **MT** Elektromotoren kennzeichnender Aspekt, ist das **MADE IN ITALY**: Alle Produkte der Baureihen von **MT** Elektromotoren werden vollständig in Italien entwickelt, hergestellt und zusammengebaut.

Die Planung obliegt qualifiziertem Personal von **MT** Elektromotoren, die Produktion erfolgt in den eigenen Werken oder mit Hilfe von ausgesuchten regionalen Handwerkern, der Zusammenbau erfolgt vollständig durch das Personal von **MT**.

Generalità

I motori elettrici **MT** descritti in questo catalogo, sono progettati e realizzati secondo le principali direttive internazionali del settore.

Tutte le forme costruttive e le loro dimensioni, fanno riferimento alla IEC34-7 (EN60034-7) e alla IEC72-1, altre esecuzioni e dimensioni speciali a richiesta.

I motori sono costruiti per un servizio S1 standard, altre esecuzioni a richiesta.

I motori **MT** seguono la Direttiva Comunitaria 2014/30/UE per la compatibilità elettromagnetica.

Le prestazioni riportate nel presente catalogo sono valide per le seguenti condizioni ambientali di lavoro:

- altitudine inferiore ai 1000 m
- temperatura ambiente compresa tra -15°C e +40°C
- umidità relativa non oltre il 60%

Generality

*The **MT** electric motors described in this catalogue are designed and built according to the main international directives in the sector.*

All mounting types and their dimensions refer to IEC34-7 (EN60034-7) and to IEC72-1, other special executions and dimensions on request.

The motors are built for an S1 standard service, other executions on request.

*The **MT** motors follow the EU Directive 2014/30/EU for electromagnetic compatibility.*

The services shown in this catalogue are valid for the following environmental working conditions:

- altitude below 1000 m
- ambient temperature between -15°C and +40°C
- relative humidity not exceeding 60%

Allgemeines

Die in diesem Katalog beschriebenen **MT**-Elektromotoren werden gemäß den wichtigsten internationalen Richtlinien des Sektors entwickelt und hergestellt.

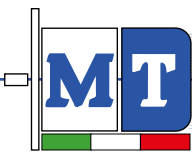
Alle Bauformen und deren Abmessungen beziehen sich auf die Norm IEC34-7 (EN60034-7) und die Norm IEC72-1, weitere Sonderausführungen und -Abmessungen auf Anfrage.

Die Motoren werden für die Betriebsart S1 standardgemäß hergestellt, weitere Ausführungen auf Anfrage.

Die **MT** Motoren entsprechen der Gemeinschaftsrichtlinie 2014/30/EU über die elektromagnetische Verträglichkeit.

Die im vorliegenden Katalog aufgeführten Leistungen sind für die folgenden Arbeitsumweltbedingungen gültig:

- Meereshöhe unter 1000 m
- Umgebungstemperatur zwischen -15°C und +40°C
- relative Feuchtigkeit nicht über 60%



Certificazioni MT

Al fine di assicurare una sempre più elevata qualità ai propri prodotti, la MT investe nel continuo sviluppo delle proprie procedure interne, delle proprie attrezzature e nella continua formazione delle proprie risorse umane.

La MT si impegna ad ottenere periodicamente le migliori certificazioni del settore; Sistema Qualità ISO 9001:2015, Certificazione UL-CSA per USA e CANADA, Certificazioni ATEX per zone a rischio di esplosione 2-22 e 1-21 (sicurezza aumentata).

Le certificazioni sono disponibili sul sito www.electricmotorsmt.com alla sezione Download > Certificazioni.

MT Certification

In order to ensure an increasingly high quality of its products, MT invests in the continuous development of its internal procedures, its equipment and the continuous training of its human resources.

MT undertakes to periodically obtain the best sector certifications; ISO 9001:2015 Quality System, UL-CSA Certification for USA and CANADA, ATEX Certifications for areas at risk of explosion 2-22 and 1-21 (increased safety).

The certifications are available on www.electricmotorsmt.com in the Download > Certificates section.

MT Zertifikation

Um eine immer höhere Qualität seiner Produkte zu gewährleisten, investiert MT in die fortlaufende Entwicklung seiner internen Verfahren, seiner Ausrüstungen und die Weiterbildung seines Personals.

MT verpflichtet sich dazu, regelmäßig die besten Zertifizierungen des Sektors zu erhalten; Qualitätssystem ISO 9001:2015, UL/CSA-Zertifizierung für USA und KANADA, ATEX-Zertifizierungen für explosionsfähige Bereiche 2-22 und 1-21 (erhöhte Sicherheit).

Die Zertifizierungen sind auf der Webseite www.electricmotorsmt.com im Bereich Download > Zertifizierungen verfügbar.



Certificazioni ATEX

ATEX Certification

ATEX Zertifikation

MT dispone di due certificazioni ATEX (ATmosphere EXplosives) secondo la normativa 2014/34/UE.

MT has two ATEX certifications (ATmosphere EXplosives) according to the 2014/34/EU regulation.

MT verfügt über zwei ATEX-Zertifizierungen (ATmosphere EXplosives) gemäß den Bestimmungen 2014/34/EU.

I motori elettrici di MT possono pertanto essere installati in:

Therefore, the MT electric motors can be installed in:

Deshalb können die Elektromotoren von MT in den folgenden Bereichen eingesetzt werden:



ambienti potenzialmente a rischio di esplosione.

Certificazione ATEX zone 2/22, categorie 3G/3D.

I motori elettrici certificati per la zona 2/22, categoria 3G/3D possono essere installati in ambienti in cui l'atmosfera esplosiva è presente solo occasionalmente e per brevi periodi di tempo.

Il livello di protezione è normale ed è ottenuto per mezzo della protezione **Ex nA** (relativa ai gas, protezione antiscintilla) e **Ex tc** (relativa alle polveri; la custodia utilizzata impedisce l'ingresso delle polveri).

Se il motore è pilotato tramite inverter, è consigliabile l'utilizzo di una protezione termica (standard PTO, a richiesta PTC).



potentially explosive environments. ATEX Zone 2/22 Category 3G/3D Certificate.

The electric motors certified for zone 2/22, category 3G/3D can be installed in environments where the explosive atmosphere is present only occasionally and for short periods of time.

The protection level is normal and obtained by means of the Ex nA protection (relative to gases, spark-proof protection) and Ex tc protection (relative to dust; the used casing prevents the entry of dust).

When the motor is driven by inverter, it is recommended the use of a thermal protection (PTO, PTC on demand).



explosionsgefährdete Bereiche.

ATEX-Zertifizierung Zone 2/22, Kategorie 3G/3D.

Die für die Zone 2/22, Kategorie 3G/3D zertifizierten Elektromotoren können in Bereichen installiert werden, in denen die explosionsfähige Atmosphäre nur gelegentlich und für kurze Dauer vorliegt.

Der Schutzgrad ist normal und wird durch die Zündschutzart **Ex nA** (in Bezug auf Gase und Funken) und **Ex tc** (in Bezug auf Stäube; das verwendete Gehäuse verhindert das Eindringen von Stäuben) erzielt.

Wenn der Motor durch einen Inverter gesteuert ist, ist es ratsam die Verwendung von einem Wärmeschutz (PTO, PTC auf Antrag).



ambienti in cui l'atmosfera esplosiva è probabilmente presente durante il funzionamento normale.

Certificazione ATEX zone 1/21, categorie 2G/2D.

I motori elettrici certificati per la zona 1/21, categoria 2G/2D possono essere installati in ambienti in cui l'atmosfera esplosiva è probabilmente presente durante il funzionamento normale; il livello di protezione è elevato ed è ottenuto per mezzo della protezione **Ex e** (sicurezza aumentata, relativa ai gas, nessuna scintilla è possibile per via del rigore nella progettazione e della scelta dei materiali utilizzati) e **Ex tb** (relativa alle polveri; la custodia utilizzata impedisce l'ingresso delle polveri).

I motori elettrici destinati a essere utilizzati in zone 1-21 sono forniti con livello di protezione IP65 e tre protezioni termiche. (standard PTO, a richiesta PTC).



environments in which the explosive atmosphere is probably present during normal operation.

ATEX Zone 1/21 Category 2G/2D Certificate.

The electric motors certified for zone 1/21, category 2G/2D can be installed in environments where the explosive atmosphere is probably present during normal operation.

The level of protection is high and obtained by means of the Ex e protection (increased safety, relative to gases, no spark is possible due to the design and choice of materials used) and Ex tb protection (relative to dust; the used casing prevents the entry of dust).

The electric motors intended for use in zones 1-21 are supplied with IP65 protection level and three thermal protections. (PTO, PTC on demand).



bereichen, in denen die explosionsfähige Atmosphäre wahrscheinlich während des Normalbetriebs vorliegt.

ATEX-Zertifizierung Zone 1/21, Kategorie 2G/2D.

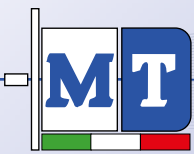
Die für die Zone 1/21, Kategorie 2G/2D zertifizierten Elektromotoren können in Bereichen installiert werden, in denen die explosionsfähige Atmosphäre wahrscheinlich während des Normalbetriebs vorliegt; der Schutzgrad ist hoch und wird durch die Zündschutzart **Ex e** (erhöhte Sicherheit in Bezug auf Gase, keine Möglichkeit von Funkenbildung aufgrund der Striktheit, mit der die verwendeten Materialien entwickelt und gewählt wurden) und **Ex tb** (in Bezug auf Stäube; das verwendete Gehäuse verhindert das Eindringen von Stäuben) erzielt.

Die für die Verwendung in den Zonen 1-21 bestimmten Elektromotoren werden mit einem Schutzgrad IP65 und drei Wärmeschützen geliefert. (PTO, PTC auf Antrag).

Le certificazioni sono disponibili sul sito www.electricmotorsmt.com alla sezione Download > Certificazioni.

The certifications are available on www.electricmotorsmt.com in the Download > Certificates section.

Die Zertifizierungen sind auf der Webseite www.electricmotorsmt.com im Bereich Download > Zertifizierungen verfügbar.



TN

standard
standard
standard



Ex **Ex**
2/22 1/21



Grandezze / Sizes / Größen: 55 ÷ 200
Potenze / Powers / Leistungen: 0.05 ÷ 37 kW
Poli / Poles / Pole: 2, 4, 6, 8

MN

monofase
single-phase
einphasig



Ex
2/22

Grandezze / Sizes / Größen: 56 ÷ 100
Potenze / Powers / Leistungen: 0.09 ÷ 2.2 kW
Poli / Poles / Pole: 2, 4, 6

XN

monofase alta coppia di spunto
single-phase high starting torque
einphasig mit hohem Anlaufdrehmoment



Ex
2/22

Grandezze / Sizes / Größen: 56 ÷ 100
Potenze / Powers / Leistungen: 0.09 ÷ 2.2 kW
Poli / Poles / Pole: 2, 4, 6

DN

doppia velocità
double speed
doppelgeschwindigkeit



Ex **Ex**
2/22 1/21



Grandezze / Sizes / Größen: 63 ÷ 180
Potenze / Powers / Leistungen: 0.18/0.12 ÷ 22/18.5 kW
Poli / Poles / Pole: 2/4, 4/6, 4/8, 2/6, 2/8, 6/8

Standard
Standard
Standardgemäß

P. 37

TF

autofrenante
brake motor
Bremsmotor



Ex
2/22



Grandezze / Sizes / Größen: 56 ÷ 200
Potenze / Powers / Leistungen: 0.09 ÷ 37 kW
Poli / Poles / Pole: 2, 4, 6, 8

Autofrenanti
Brake motors
Bremsmotoren

P. 63

MF

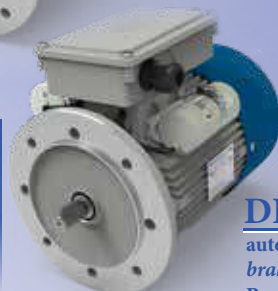
monofase autofrenante
single-phase brake motor
Einphasen-Bremsmotor



Grandezze / Sizes / Größen: 56 ÷ 100
Potenze / Powers / Leistungen: 0.09 ÷ 2.2 kW
Poli / Poles / Pole: 2, 4, 6

XF

monofase autofrenante ad alta coppia di spunto
single-phase brake motor with high starting torque
Einphasen-Bremsmotor mit hohem Anlaufdrehmoment



Grandezze / Sizes / Größen: 56 ÷ 100
Potenze / Powers / Leistungen: 0.09 ÷ 2.2 kW
Poli / Poles / Pole: 2, 4, 6

DF

autofrenante doppia velocità
brake motor double speed
Bremsmotor mit doppelter
Geschwindigkeit



Ex
2/22



Grandezze / Sizes / Größen:
63 ÷ 180
Potenze / Powers / Leistungen:
0.18/0.12 ÷ 22/18.5 kW
Poli / Poles / Pole:
2/4, 4/6, 4/8, 2/6, 2/8, 6/8

Fig.1





Grandezze / Sizes / Größen: 63 ÷ 160
 Potenze / Powers / Leistungen: 0.18 ÷ 18.5 kW
 Poli / Poles / Pole: 2, 4, 6, 8

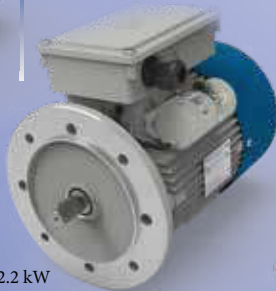


TFS

autofrenante di stazionamento
standing brake motor
 Bremsmotor mit Feststellbremse



Grandezze / Sizes / Größen: 63 ÷ 100
 Potenze / Powers / Leistungen: 0.18 ÷ 2.2 kW
 Poli / Poles / Pole: 2, 4, 6



MFS

monofase autofrenante di stazionamento
single-phase stationary brake motor
 einphasen-Bremsmotor mit Feststellbremse



Grandezze / Sizes / Größen: 63 ÷ 100
 Potenze / Powers / Leistungen: 0.18 ÷ 2.2 kW
 Poli / Poles / Pole: 2, 4, 6

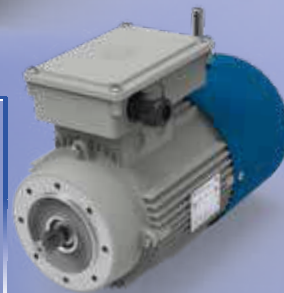


XFS

monofase autofrenante di stazionamento
 ad alta coppia di spunto
*single-phase stationary brake motor
 with high starting torque*
 Einphasen-Bremsmotor mit Feststellbremse
 mit hohem Anlaufdrehmoment



Grandezze / Sizes / Größen:
 63 ÷ 180
 Potenze / Powers / Leistungen:
 0.18/0.12 ÷ 22/18.5 kW
 Poli / Poles / Pole:
 2/4, 4/6, 4/8, 2/6, 2/8, 6/8



DFS

autofrenante di stazionamento doppia velocità
stationary brake motor double speed
 Bremsmotor mit Feststellbremse mit doppelter Ge-
 schwindigkeit

P. 111

TFP

autofrenante potenziato
High braking torque motor
 leistungsgesteigerter Brems-
 motor



2/22



Grandezze / Sizes / Größen: 63 ÷ 200
 Potenze / Powers / Leistungen: 0.18 ÷ 37 kW
 Poli / Poles / Pole: 2, 4, 6, 8

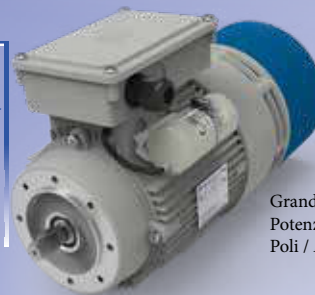


MFP

monofase autofrenante potenziato
single-phase high braking torque motor
 leistungsgesteigerter Einphasen-Brems-
 motor



Grandezze / Sizes / Größen: 63 ÷ 100
 Potenze / Powers / Leistungen: 0.18 ÷ 2.2 kW
 Poli / Poles / Pole: 2, 4, 6



DFP

autofrenante potenziato a doppia velocità
double speed high braking torque motor
 leistungsgesteigerter Einphasen-Bremsmotor
 mit doppelter Geschwindigkeit



2/22



Grandezze / Sizes / Größen:
 63 ÷ 180
 Potenze / Powers / Leistungen:
 0.18/0.12 ÷ 22/18.5 kW
 Poli / Poles / Pole:
 2/4, 4/6, 4/8, 2/6, 2/8, 6/8



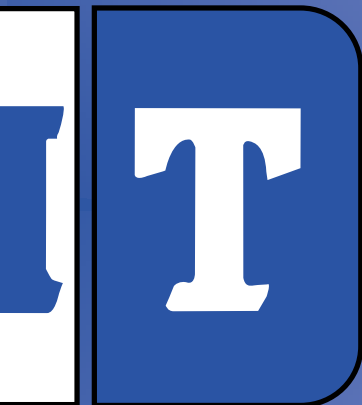
XFP

monofase autofrenante potenziato ad alta coppia di spunto
single-phase high braking torque motor with high starting torque
 leistungsgesteigerter Einphasen-Bremsmotor mit hohem
 Anlaufdrehmoment



Grandezze / Sizes / Größen: 63 ÷ 100
 Potenze / Powers / Leistungen: 0.18 ÷ 2.2 kW
 Poli / Poles / Pole: 2, 4, 6

Fig.1



Autofrenanti di stazionamento
Stationary Brake motors
 Bremsmotoren mit Feststellbremse

Autofrenanti potenziati
High braking torque motor
 Leistungsgesteigerte Bremsmotoren

Caratteristiche tecniche

Tutti i motori della gamma MT sono realizzati con i materiali più idonei garantendo un elevato standard qualitativo.

Le caratteristiche dimensionali e costruttive dei motori MT sono conformi alle normative vigenti IEC, UNEL e CEI.

Technical Features

All the MT range motors are made with the most suitable materials, ensuring a high quality standard. The dimensional and construction characteristics of the MT motors comply with the current IEC, UNEL and CEI Standards.

Technische Merkmale

Alle Motoren der MT Baureihe werden mit den geeignetsten Materialien hergestellt und gewährleisten einen hohen Qualitätsstandard. Die dimensional und baulichen Merkmale der MT Motoren entsprechen den geltenden IEC-, UNEL- und CEI-Bestimmungen.

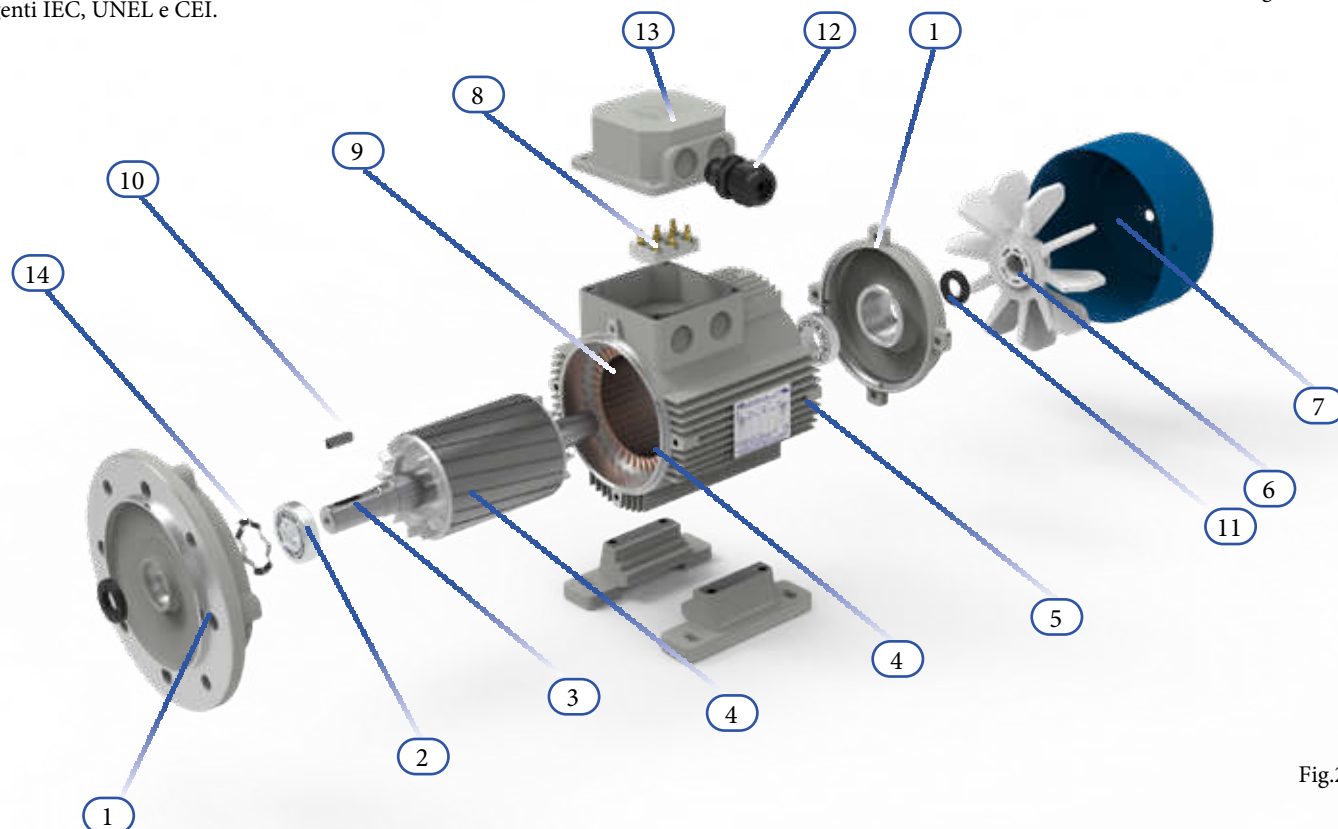


Fig.2

1 Scudi e flange:

in alluminio pressofuso secondo CEI-IEC 72-1, verniciati. A richiesta è possibile fornire flange in ghisa (dalla taglia 132 in su) e speciali a disegno.

2 Cuscinetti:

radiali a sfere con doppia schermatura 2Z, minima coppia di rotolamento e massima silenziosità. A richiesta è possibile fornire cuscinetti con schermatura a tenuta stagna (DDU/2RS), gioco maggiorato C3, grasso per alte temperature, cuscinetti sensorizzati, cuscinetti doppio giro di sfera, cuscinetti unidirezionali.

3 Alberi:

in acciaio C40/45 rettificati; a richiesta in acciaio Inox (AISI 304/316). Oltre alle dimensioni unificate CEI-IEC 72-1, è possibile fornire alberi a disegno.

4 Rotore e statore:

realizzati con lamierino magnetico a basse perdite. Rotore a gabbia di scioiattolo in pressofusione di alluminio o silumin.

1 Shields and flanges:

in painted die cast aluminium according to CEI-IEC 72-1. On request, it is possible to provide cast iron (from size 132 upwards) and special design flanges.

2 Bearings:

ball radial with double ZZ shielding, minimum rolling torque and maximum silence. On request, it is possible to provide bearings with watertight shielding (DDU), increased clearance C3, high-temperature grease, sensorised bearings, double ball bearings, unidirectional bearings.

3 Shafts:

in ground C40/45 steel; on request, in STAINLESS steel (AISI 304/316). In addition to the CEI-IEC 72-1 unified dimensions, it is possible to supply shafts according to the drawing.

4 Rotor and stator:

made with low leakage magnetic plate. Squirrel-cage rotor in die cast aluminium or silumin.

1 Schilder und Flansche:

aus Druckgussaluminium gemäß CEI-IEC 72-1, lackiert. Flansche aus Gusseisen (ab der Größe 132 aufwärts) und Sonderflansche nach Zeichnung können auf Anfrage geliefert werden.

2 Lager:

radiale Kugellager zweifach gekapselt (ZZ), minimales Wälzmoment und maximale Geräuschlosigkeit. Auf Anfrage können abgedichtete gekapselte Lager (DDU), erhöhtes Lagerspiel C 3, Hochtemperaturfett, Lager mit Sensoren, Doppelkugellager, unidirektionale Lager geliefert werden.

3 Wellen:

aus Stahl C40/45, geschliffen; aus EDELSTAHL (AISI 304/316) auf Anfrage. Neben den Wellen mit genormten Abmessungen CEI-IEC 72-1 können auch Wellen nach Zeichnung geliefert werden.

4 Rotor und Stator:

mit verlustarmem Blech hergestellt. Rotor mit Kurzschlusskäfig aus Druckgussaluminium oder Silumin.

Caratteristiche tecniche

Technical Features

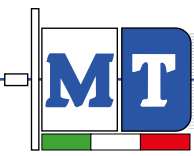
Technische Merkmale

- | | | |
|---|---|--|
| <p>5 Carcassa: in alluminio pressofuso, dotata di alette per favorire la dissipazione termica, verniciata in modo tale da garantire una lunga durata nel tempo e una protezione contro gli ambienti aggressivi.</p> <p>6 Ventilazione: esterna in materiale plastico termoresistente, con ventola radiale bidirezionale accoppiata all'albero motore. A richiesta altri tipi di ventilazione.</p> <p>7 Copriventola: in lamiera verniciata blu RAL 5010. A richiesta copriventola zincati o verniciati con altre colorazioni.</p> <p>8 Morsettiera: in materiale plastico termoresistente, con sei perni in ottone. A richiesta è possibile fornire morsettiere resinare e su misura o motori elettrici con interruttori, invertitori, cavi speciali e a disegno specifico del cliente.</p> <p>9 Avvolgimenti: in filo di rame doppio smalto con doppia impregnazione sotto vuoto, adatti a uso sotto inverter. Classe F. A richiesta classe H e avvolgimenti speciali per l'utilizzo del motore in ambienti umidi e corrosivi.</p> <p>10 Chiavette: in acciaio C45 secondo DIN 6885 - UNI 6604 (ex ISO 773). A richiesta chiavette su misura.</p> <p>11 Tenute albero: tenute albero in NBR. A richiesta tenute in VITON, doppio labbro o su specifiche cliente.</p> <p>12 Pressacavo: in fibra di poliammide rinforzato, protezione IP68. A richiesta in ottone nichelato.</p> <p>13 Coprimorsettiera: in alluminio pressofuso. Corpo unico nella versione IP55 e doppio corpo con coperchio nella versione IP65/IP66 e nei motori autofrenanti. In materiale plastico ABS con portacondensatore per i motori monofase.</p> <p>14 Molla precarico: In acciaio armonico idonea al recupero dei giochi assiali.</p> | <p>5 Casing: <i>in die cast aluminium, fitted with fins to favour heat dissipation, painted so as to ensure long life and protection against aggressive environments.</i></p> <p>6 Ventilation: <i>external in heat-resistant plastic, with bidirectional radial fan coupled to the crankshaft. Other types of ventilation on request.</i></p> <p>7 Fan cover: <i>in blue RAL 5010 painted sheet metal. Galvanised fan covers or painted with other colours on request.</i></p> <p>8 Terminal board: <i>in heat-resistant plastic, with six brass pins. On request, it is possible to supply resin terminal boards and custom-made or electric motors with switches, inverters, special and customer-designed cables.</i></p> <p>9 Windings: <i>in double enamelled copper wire with double vacuum impregnation, suitable for use under inverter. Class F. On request, class H and special windings for using the motor in damp and corrosive environments.</i></p> <p>10 Keys: <i>in C45 steel according to DIN 6885 - UNI 6604 (former ISO 773). Customised keys on request.</i></p> <p>11 Shaft seals: <i>shaft seals in NBR. On request, VITON seals, double lips or on customer specifications.</i></p> <p>12 Cable gland: <i>in reinforced polyamide fibre, IP68 protection. On request, nickel-plated brass.</i></p> <p>13 Terminal board cover: <i>in die cast aluminium. Single body in IP55 version and double body with cover in IP65/IP66 version and in brake motors. In ABS plastic material with capacitor holder for single-phase motors.</i></p> <p>14 Pre load spring: <i>in harmonic steel, suitable for axial clearance recovery.</i></p> | <p>5 Gehäuse: aus Aluminiumdruckguss mit Rippen zur Verbesserung der Wärmeableitung; die Lackierung gewährleistet eine lange Lebensdauer und einen Schutz gegen aggressive Umgebungsbedingungen.</p> <p>6 Lüfter: extern aus wärmebeständigem Kunststoffmaterial mit bidirektionalem mit der Motorwelle gekoppeltem Radiallüfter. Weitere Lüftertypen auf Anfrage.</p> <p>7 Lüfterhaube: aus lackiertem Blech in Blau RAL 5010. Verzinkte oder lackierte Lüfterhauben mit anderen Farben auf Anfrage.</p> <p>8 Klemmenbrett: aus wärmebeständigem Kunststoffmaterial mit sechs Bolzen aus Messing. Harzbeschichtete, individuell zugeschnittene Klemmenbretter oder Elektromotoren mit Schaltern, Invertern, speziellen Kabeln und nach spezifischer Zeichnung des Kunden können auf Anfrage geliefert werden.</p> <p>9 Wicklungen: aus Kupferdraht mit doppelter Lackisolierung und doppelter Vakuumimpregnierung für die Verwendung unter dem Inverter geeignet. Klasse F. Klasse H und Sonderwicklungen für die Verwendung des Motors in feuchten und korrosiven Umgebungen auf Anfrage.</p> <p>10 Keile: aus Stahl C45 gemäß DIN 6885 - UNI 6604 (ex ISO 773). Individuell zugeschnittene Keile auf Anfrage.</p> <p>11 Wellendichtungen: Wellendichtungen aus NBR. Wellendichtungen aus VITON, mit doppelter Dichtlippe oder nach Kundenspezifikationen auf Anfrage.</p> <p>12 Kabelverschraubung: aus verstärkter Polyamidfaser, Schutzgrad IP68. Aus vernickeltem Messing auf Anfrage.</p> <p>13 Klemmenbrettdeckung: aus Druckgussaluminium. Einzelgehäuse bei der Ausführung IP55 und Doppelgehäuse mit Deckel bei der Ausführung IP65/IP66 und den Bremsmotoren. Aus Kunststoff ABS mit Kondensatorhalterung für die Einphasenmotoren.</p> <p>14 Vorspannfedern: aus harmonischem Stahl für die Rückgewinnung der Axialspiele geeignet.</p> |
|---|---|--|

Su tutti i componenti pressofusi in alluminio dei motori MT, viene eseguito un trattamento epossidico protettivo.

A protective epoxy treatment is performed on all die cast aluminium components of the MT motors.

An allen Druckgussbauteilen der MT Motoren erfolgt eine Epoxidharz-Schutzbehandlung.



Forme costruttive e tipi di installazione

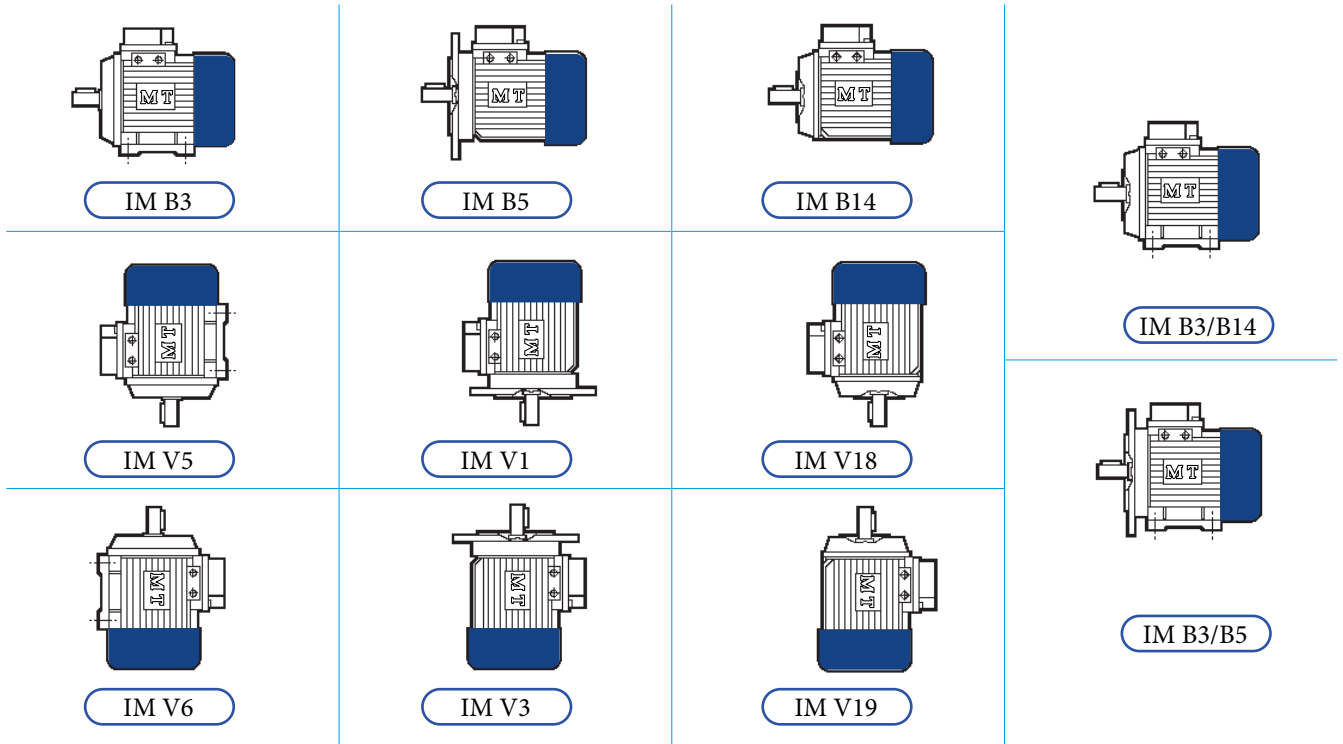
Mounting type and installation types

Bauformen und Installationsarten

Tutti i motori della gamma MT sono previsti nelle forme costruttive seguenti e conformi a gli standard IEC60034-7:

All of the MT range motors are provided in the following mounting type and comply with IEC60034-7 Standards:

Alle Motoren der MT Baureihe sind in den folgenden Bauformen vorgesehen, die den Normen IEC60034-7 entsprechen:

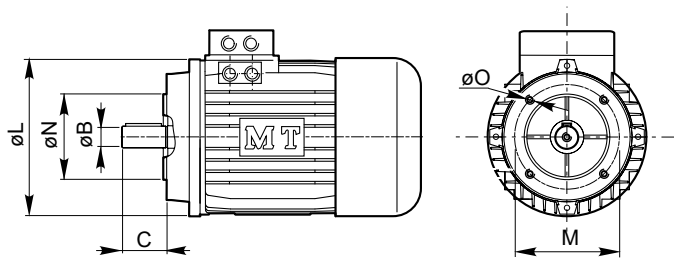


IM:International Mounting

Fig.3

Forma costruttiva B14 / Mounting type B14 / Bauform B14

Tab.1



| Taglia Size Größe | Standard B14 | | | | | | Ridotta B14R Reduced B14R Lieferbare B14R | | | | Maggiorata B14M Oversize B14M Überdimensionierter B14M | | | |
|-------------------------|-------------------------------------|-----|-----|-----|------------------------------------|-----|---|---------|-------|------------|--|---------|--------|-------------|
| | Flangia / Flange / Flansche [mm] | | | | Albero / Shaft / Wellen [mm] | | Flangia / Flange / Flansche [mm] | | | | Flangia / Flange / Flansche [mm] | | | |
| | L | M | N | O | B | C | L | M | N | | L | M | N | |
| 55 | 80 | 65 | 50 | M5 | 9 | 20 | - | - | - | | - | - | - | |
| 56 | 80 | 65 | 50 | M5 | 9 | 20 | - | - | - | | 90 | 75 | 60 | (63B14) |
| 63 | 90 | 75 | 60 | M5 | 11 | 23 | 80 | 65 | 50 | (56B14) | 105/120 | 85/100 | 70/80 | (71/80B14) |
| 71 | 105 | 85 | 70 | M6 | 14 | 30 | 90 | 75 | 60 | (63B14) | 120/140 | 100/115 | 80/95 | (80/90B14) |
| 80 | 120 | 100 | 80 | M6 | 19 | 40 | 105 | 85 | 70 | (71B14) | 140/160 | 115/130 | 95/110 | (90/100B14) |
| 90 | 140 | 115 | 95 | M8 | 24 | 50 | 120 | 100 | 80 | (80B14) | 160 | 130 | 110 | (100B14) |
| 100 | 160 | 130 | 110 | M8 | 28 | 60 | 120/140 | 100/115 | 80/95 | (80/90B14) | 200 | 165 | 130 | (132B14) |
| 112 | 160 | 130 | 110 | M8 | 28 | 60 | 140 | 115 | 95 | (90B14) | 200 | 165 | 130 | (132B14) |
| 132 | 200 | 165 | 130 | M10 | 38 | 80 | - | - | - | | - | - | - | |
| 160 | 250 | 215 | 180 | M12 | 42 | 110 | - | - | - | | - | - | - | |
| 180 | 290 | 215 | 180 | M12 | 48 | 110 | - | - | - | | - | - | - | |
| 200 | - | - | - | - | 55 | 110 | - | - | - | | - | - | - | |

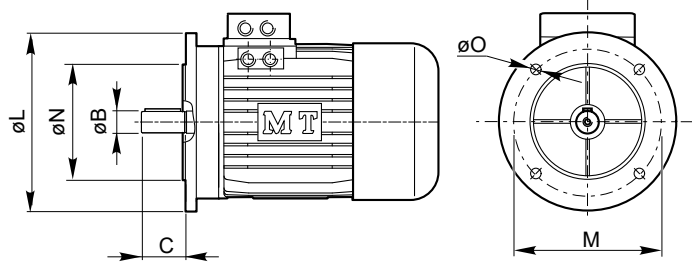
Forme costruttive e tipi di installazione

Mounting type and installation types

Bauformen und Installationsarten

Forma costruttiva B5 / Mounting type B5 / Bauform B5

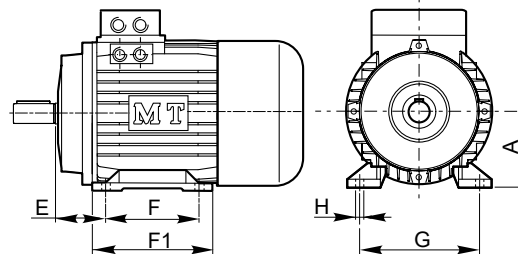
Tab.2



| Taglia Size Größe | Standard B5 | | | | | | Ridotta B5R Reduced B5R Lieferbare B5R | | | |
|-------------------------|-------------------------------------|-----|-----|----|---------------------------------|-----|--|-----|-----|---------|
| | Flangia / Flange / Flansche [mm] | | | | Albero / Shaft / Wellen [mm] | | Flangia / Flange / Flansche [mm] | | | |
| | L | M | N | O | B | C | L | M | N | |
| 56 | 120 | 100 | 80 | 7 | 9 | 20 | - | - | - | |
| 63 | 140 | 115 | 95 | 9 | 11 | 23 | - | - | - | |
| 71 | 160 | 130 | 110 | 9 | 14 | 30 | 140 | 115 | 95 | (63B5) |
| 80 | 200 | 165 | 130 | 11 | 19 | 40 | 160 | 130 | 110 | (71B5) |
| 90 | 200 | 165 | 130 | 11 | 24 | 50 | 160 | 130 | 110 | (71B5) |
| 100 | 250 | 215 | 180 | 14 | 28 | 60 | 200 | 165 | 130 | (90B5) |
| 112 | 250 | 215 | 180 | 14 | 28 | 60 | 200 | 165 | 130 | (90B5) |
| 132 | 300 | 265 | 230 | 14 | 38 | 80 | 250 | 215 | 180 | (112B5) |
| 160 | 350 | 300 | 250 | 19 | 42 | 110 | - | - | - | |
| 180 | 350 | 300 | 250 | 19 | 48 | 110 | - | - | - | |
| 200 | 400 | 350 | 300 | 19 | 55 | 110 | - | - | - | |

Forma costruttiva B3 / Mounting type B3 / Bauform B3

Tab.3



| Taglia Size Größe | Standard B3 | | | | | |
|-------------------------|----------------------------|-----|-----|-----|-----|-----|
| | Piede / Foot / Fuß [mm] | | | | | |
| | A | E | F | F1 | G | H |
| 55 | - | - | - | - | - | - |
| 56 | 56 | 36 | 71 | 90 | 90 | 6 |
| 63 | 63 | 40 | 80 | 105 | 100 | 7 |
| 71 | 71 | 45 | 90 | 108 | 112 | 7 |
| 80 | 80 | 50 | 100 | 125 | 125 | 9.5 |
| 90S | 90 | 56 | 100 | 130 | 140 | 9.5 |
| 90L | 90 | 56 | 125 | 155 | 140 | 9.5 |
| 100 | 100 | 63 | 140 | 175 | 160 | 12 |
| 112 | 112 | 70 | 140 | 180 | 190 | 12 |
| 132S | 132 | 89 | 140 | 180 | 216 | 12 |
| 132M | 132 | 89 | 178 | 218 | 216 | 12 |
| 160M | 160 | 108 | 210 | 260 | 254 | 15 |
| 160L | 160 | 108 | 254 | 304 | 254 | 15 |
| 180M | 180 | 121 | 241 | 315 | 279 | 13 |
| 180L | 180 | 121 | 279 | 353 | 279 | 13 |
| 200 | 200 | 133 | 305 | 400 | 318 | 19 |

Forme costruttive e tipi di installazione

Nelle forme ridotte o maggiorate, è possibile fornire a richiesta flange ed alberi a disegno specifico.

Nella forma costruttiva B3 con piede, la scatola morsettiera può essere orientata secondo tre diverse posizioni.

Il posizionamento standard prevede la morsettiera sulla parte superiore diametralmente opposta alla posizione dei piedi (Pos.1); a richiesta la morsettiera può essere posizionata alla SX rispetto ai piedi (Pos.2) o a DX (Pos.3).

Mounting type and installation

In the reduced or oversize shapes, on demand it is possible to provide specifically designed flanges and shafts.

In mounting type B3 with foot, the terminal board box can be oriented according to three different positions.

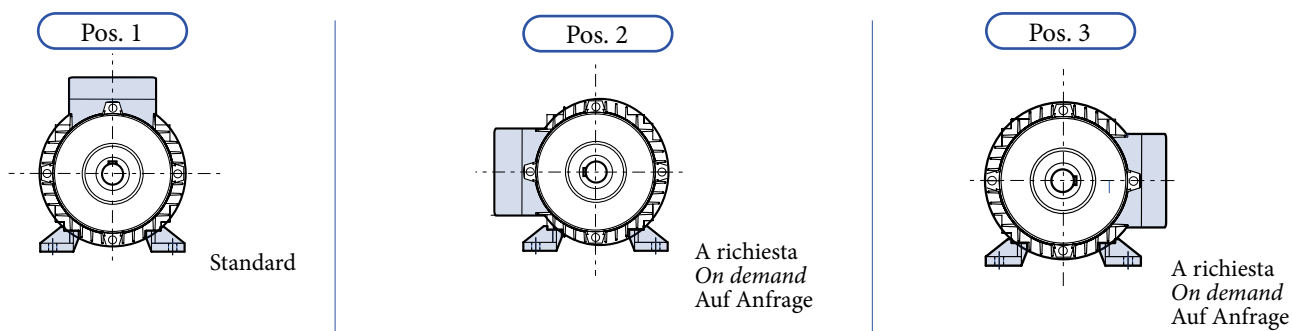
Standard positioning foresees the terminal board positioned on the upper part diametrically opposite the feet position (Pos.1); on demand, the terminal board can be positioned to the left with respect to the feet (Pos.2) or to the right (Pos.3).

Bauformen die art und weise der aufstellung

Bei reduzierten oder überdimensionierten Formen können auf Anfrage Flansche und Wellen nach spezifischer Zeichnung geliefert werden.

Bei der Bauform B3 mit Fuß kann der Klemmenkasten nach drei verschiedenen Positionen ausgerichtet werden.

Bei der Standardpositionierung ist das Klemmenbrett am oberen Teil diametral entgegengesetzt zur Position der Füße (Pos.1) angeordnet; auf Anfrage kann das Klemmenbrett an der linken Seite (Pos.2) oder an der rechten Seite (Pos.3) der Füße positioniert werden. ^{Fig.4}

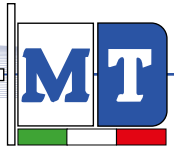


Simbologia

Symbology

Zeichen

| Simbolo Symbol Symbol | Unità di misura Unit of Measure Maßeinheit | Descrizione | Description | Beschreibung | Tab.4 |
|-----------------------------|--|---|---|--------------------------------|-------|
| P_n | [kW] / [HP] | Potenza nominale | Nominal power | Nennleistung | |
| P_{max} | [kW] / [HP] | Potenza massima | Maximum power | Maximale Leistung | |
| n_n | [rpm] | Velocità di rotazione nominale | Nominal rotation speed | Neindrehgeschwindigkeit | |
| n_s | [rpm] | Velocità di rotazione campo statorico | Stator field rotation speed | Drehgeschwindigkeit Statorfeld | |
| η | [%] | Rendimento | Efficiency | Wirkungsgrad | |
| M_n | [Nm] | Coppia nominale | Nominal torque | Neindrehmoment | |
| M_{sp} | [Nm] | Coppia di spunto | Starting torque | Anlaufdrehmoment | |
| M_{max} | [Nm] | Coppia massima | Maximum torque | Maximales Drehmoment | |
| M_f | [Nm] | Coppia frenante | Braking torque | Bremsdrehmoment | |
| P_f | [W] | Potenza frenante | Braking power | Bremsleistung | |
| $\cos \varphi$ | - | Fattore di potenza | Power factor | Leistungsfaktor | |
| I_n | [A] | Corrente nominale | Nominal current | Nennstrom | |
| I_{sp} | [A] | Corrente di spunto | Starting current | Einschaltstrom | |
| f | [Hz] | Frequenza | Frequency | Frequenz | |
| V | [V] | Tensione alimentazione | Power supply voltage | Versorgungsspannung | |
| J | [Kgm ²] | Momento d'inerzia assiale | Moment of axial inertia | Axiales Trägheitsmoment | |
| Θ | [°C] | Temperatura | Temperature | Temperatur | |
| np | - | Numero di poli | Number of poles | Anzahl der Pole | |
| t_{fa} | [ms] | Tempo apertura freno | Brake opening time | Bremsöffnungszeit | |
| t_{fc} | [ms] | Tempo chiusura freno | Brake closing time | Bremschließzeit | |
| T_f | [mm] | Traferro freno | Brake air gap | Bremsstrecke | |
| g_{rmin} | [mm] | Spessore minimo guarnizione d'attrito freno | Minimum thickness brake friction gasket | Mindeststärke Reibbelag Bremse | |
| | - | Condensatore di marcia | Run capacitor | Betriebskondensator | |
| Y | - | Collegamento motore a stella | Star motor connection | Anschluss Sternmotor | |
| Δ | - | Collegamento motore a triangolo | Delta motor connection | Anschluss Dreieckmotor | |
| | - | ATEX | ATEX | ATEX | |
| | [kg] | Peso | Weight | Gewicht | |
| | - | UL - CSA | UL - CSA | UL - CSA | |



Designazione motore

Motor Designation

Motorbezeichnung

In base alle caratteristiche elettriche e costruttive del motore, si va a comporre una stringa identificativa che definisce univocamente il motore elettrico MT.

Tale stringa di designazione risulta quindi importante poichè veicola tutte le caratteristiche del prodotto (designazione parlante).

Essa risulta essere composta come segue:

Based on the electrical and construction characteristics of the motor, an identification string is created that uniquely defines the MT electric motor.

Therefore, this designation string is important as it conveys all the product features (speaking designation).

It appears to consist of:

Aufgrund der elektrischen und baulichen Merkmale des Motors wird zur eindeutigen Bezeichnung des MT Motors eine Identifikationszeichenfolge erstellt.

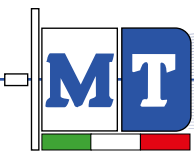
Diese bezeichnende Zeichenfolge ist deshalb wichtig, weil sie alle typischen Merkmale des Produkts übermittelt (sprechende Bezeichnung).

Sie ist wie folgt zusammengesetzt:

| Tipo motore Motor Type Motortyp | Taglia Size Größe | N. poli N. poles Polzahl | Potenza Power Leistung P _n [kW] | Forma costruttiva Mounting type Bauform | Tensione Voltage Spannung V [V] | Frequenza Frequency Frequenz f [Hz] | Protezione Protection Schutz | Isolamento Insulation Isolierung | Eff. energetica Energy eff. Energieeffizienz | Opzioni Options Optionen |
|---------------------------------------|-------------------------|--------------------------------|--|---|---|---|------------------------------------|--|--|---|
| TN | 80 | 4 | 0.75 | B14 | 230/400 | 50 | IP55 | Cl. F | IE3 | ... |
| | | | | B3 | | | | | | |
| TN, MN, XN, DN | | | | B5 | | | | | IE1 | |
| | | | | B14 | | | | | IE2 | |
| TF, MF, XF, DF | | | | B34 | | | | | IE3 | |
| | | | | B35 | | | | | | |
| TFP, MFP, XFP, DFP | | | | | | | | Cl. F | | |
| | | | | | | | | Cl. H | | |
| | | | | | | | | | | |
| TFS, MFS, XFS, DFS | | | | | | | | IP54 | | |
| | | | | | | | | IP55 | | |
| | | | | | | | | IP56 | | |
| | | | | | | | | IP65 | | |
| | | | | | | | | IP66 | | |
| | | | | | | | | 50 | | |
| | | | | | | | | 60 | | |
| | | | | | 230/400 | | | | | trifase, singola velocità 0.05 ÷ 5.5 kW three phase, single speed 0.05 ÷ 5.5 kW drehstrom, Einzel-Geschwindigkeit 0.05 ÷ 5.5 kW |
| | | | | | 400/690 | | | | | |
| | | | | | .. | | | | | trifase, singola velocità 7.5 ÷ 37 kW three phase, single speed 7.5 ÷ 37 kW drehstrom, Einzel-Geschwindigkeit 7.5 ÷ 37 kW |
| | | | | | .. | | | | | |
| | | | | | 400 | | | | | trifase, doppia velocità three phase, double speed drehstrom, doppelte Geschwindigkeit |
| | | | | | .. | | | | | |
| | | | | | .. | | | | | |
| | | | | | 230 | | | | | monofase single phase einphasen |
| | | | | | .. | | | | | .. altre tensioni a richiesta .. other supply voltages on demand .. weitere Spannungen auf Anfrage |
| | | | 0.05 ÷ 37.0 | | | | | | | |
| | | | 2, 4, 6, 8 | | | | | | | |
| | | | 2/4, 2/6, 2/8, 4/6, 4/8, 6/8 | | | | | | | |
| | 55 ÷ 200 | | | | | | | | | |

Tab.5

Standard



Targhetta motore

Motor plate

Motortypenschild

Fig.5

| | | | | | | | |
|--|--|----------------------------------|--|---------------|--|-----------|--|
| | | MT Motori Elettrici ITALY | | E247356 | | | |
| Via Bologna 175, San Giovanni in Persiceto (BO) | | | | | | | |
| Tipo | | 1 2 | | Nr. | | 3 | |
| Prot.IP | | 4 | | Serv. | | 5 | |
| | | 6 | | Cos.ϕ | | 7 | |
| V | | Δ/Y | | H.z. | | HP | |
| 8 | | 9 | | 10 | | 11 | |
| | | | | | | | |
| 14 | | | | 15 | | 16 | |
| 18 | | 19 | | 20 | | 21 | |
| | | | | 21 | | 22 | |
| | | II 3G Ex nA IIC | | T4/T3 | | Gc | |
| | | II 3D Ex tc IIIC | | T135°C/T200°C | | Dc | |
| | | Cert. N. TÜV IT 13 ATEX 042 X | | | | | |
| AVVERTIMENTO - NON APRIRE SE SOTTO TENSIONE | | | | | | | |
| ITALIAN ORIGIN AND PRODUCTION (BOLOGNA) | | | | | | | |

Marcatura UL-CSA
UL-CSA Mark
UL-CSA kennzeichnung

Marcatura ATEX
ATEX Mark
ATEX-Kennzeichnung

Marcatura CE
CE Mark
CE-Kennzeichnung

Tab.5

| | | | | | |
|----|------------------------------|----|-----------------------------|----|-------------------------------|
| 1 | Tipo motore | 1 | Motor type | 1 | Motortyp |
| 2 | Opzioni motore | 2 | Motor options | 2 | Optionen Motor |
| 3 | Nr. di serie motore | 3 | Motor serial number | 3 | Seriennummer Motor |
| 4 | Grado di protezione | 4 | Protection degree | 4 | Schutzgrad |
| 5 | Tipo di servizio | 5 | Type of service | 5 | Betriebsart |
| 6 | Fattore di potenza | 6 | Power factor | 6 | Leistungsfaktor |
| 7 | Classe di isolamento | 7 | Insulation class | 7 | Isolationsklasse |
| 8 | Tensione d'alimentazione [V] | 8 | Power supply voltage [V] | 8 | Versorgungsspannung [V] |
| 9 | Frequenza [Hz] | 9 | Frequency [Hz] | 9 | Frequenz [Hz] |
| 10 | Potenza [HP] | 10 | Power [HP] | 10 | Leistung [HP] |
| 11 | Potenza [kW] | 11 | Power [kW] | 11 | Leistung [kW] |
| 12 | Velocità di rotazione [rpm] | 12 | Rotation speed [rpm] | 12 | Drehgeschwindigkeit [rpm] |
| 13 | Corrente motore [A] | 13 | Motor current [A] | 13 | Motorstrom [A] |
| 14 | Classe energetica | 14 | Energy class | 14 | Energieklasse |
| 15 | Efficienza al 100% di carico | 15 | 100% Load efficiency | 15 | Leistungsstärke bei 100% Last |
| 16 | Efficienza al 75% di carico | 16 | 75% Load efficiency | 16 | Leistungsstärke bei 75% Last |
| 17 | Efficienza al 55% di carico | 17 | 55% Load efficiency | 17 | Leistungsstärke bei 55% Last |
| 18 | Tipo freno | 18 | Brake type | 18 | Bremstyp |
| 19 | Frequenza alim. freno [Hz] | 19 | Brake supply frequency [Hz] | 19 | Frequenz Bremsversorgung [Hz] |
| 20 | Coppia frenante max. [Nm] | 20 | Max. braking torque [Nm] | 20 | Max. Bremsdrehmoment [Nm] |
| 21 | Opzioni freno | 21 | Brake options | 21 | Optionen Bremse |
| 22 | Corrente freno [A] | 22 | Brake current [A] | 22 | Bremstrom [A] |


Targhetta motore
Motor plate
Motortypenschild

Di seguito, vengono elencate le sigle per le possibili opzioni di configurazione MOTORE e FRENO:

Below is a list of the codes for the possible MOTOR and BRAKE configuration options:

Nachfolgend werden die Kurzzeichen für die möglichen Konfigurationsoptionen MOTOR und BREMSE aufgelistet:

OPZIONI MOTORE / MOTOR OPTIONS / OPTIONEN MOTOR

Tab.6

| Sigla / Code / Code | Descrizione | Description | Beschreibung |
|---------------------|-------------------------------------|-------------------------------|---|
| T | Termica singola (PTO) | Single thermal (PTO) | Einzelwärmeschutz (PTO) |
| 2T | Termica doppia (PTO) | Double thermal (PTO) | Doppelwärmeschutz (PTO) |
| 3T | Termica tripla (PTO) | Triple thermal (PTO) | Dreifacher Wärmeschutz (PTO) |
| TH | Termistore singolo (PTC) | Single thermistor (PTC) | Einzelheißleiter (PTC) |
| 2TH | Termistore doppio (PTC) | Double thermistor (PTC) | Doppelheißleiter (PTC) |
| 3TH | Termistore triplo (PTC) | Triple thermistor (PTC) | Dreifacher Heißleiter (PTC) |
| S | Servoventola monofase | Single-phase servo-fan | Einphasiger Servo-Lüfter |
| ST | Servoventola trifase | Three-phase servo-fan | Drehstrom-Servo-Lüfter |
| E | Encoder | Encoder | Encoder |
| CU | Cuscinetto unidirezionale | Unidirectional bearing | Unidirektionales Lager |
| CS | Cuscinetto sensorizzato | Sensorised bearing | Lager mit Sensoren |
| CR | Cuscinetto rinforzato | Reinforced bearing | Verstärktes Lager |
| 2CR | Due cuscinetti rinforzati | Two reinforced bearings | Zwei verstärkte Lager |
| ZZ3 | Cuscinetti ZZ C3 | Bearings ZZ C3 | ZZ-Lager C3 |
| RS3 | Cuscinetti 2RS C3 | Bearings 2RS C3 | Lager 2RS C3 |
| V | Volano | Flywheel | Schwungrad |
| TR | Avvolgimento tropicalizzato | Tropicalised winding | Tropenfeste Wicklung |
| SIM | Avvolgimento simmetrico/equilibrato | Symmetrical/balanced winding | Symmetrische Wicklung |
| VT | Ventilatore | Fan | Lüfter |
| SC | Scaldiglia | Heater | Stillstandsheizung |
| D | Deflussato | Defluxed | Entregt |
| AP | Avviamento progressivo | Soft start-up | Sanftstart |
| 14R A.. | B14 ridotta + diametro albero | B14 reduced + shaft diameter | B14 reduziert + Wellendurchmesser |
| B5R A.. | B5 ridotta + diametro albero | B5 reduced + shaft diameter | B5 reduziert + Wellendurchmesser |
| 14M A.. | B14 maggiorata + diametro albero | B14 oversize + shaft diameter | B14 überdimensioniert + Wellendurchmesser |
| B5M A.. | B5 maggiorata + diametro albero | B5 oversize + shaft diameter | B5 überdimensioniert + Wellendurchmesser |
| BS | Albero bisporgente | Double ended shaft | Beidseitige Welle |
| BSP | Albero speciale bisporgente | Special double ended shaft | Spezielle Beidseitige Welle |
| ASP | Albero speciale | Special shaft | SpezialWelle |
| INT | Interruttore | Switch | Schalter |

OPZIONI FRENO / BRAKE OPTIONS / OPTIONEN BREMSE

Tab.7

| Sigla / Code / Code | Descrizione | Description | Beschreibung |
|---------------------|--|--|---|
| BR | Freno | Brake | Bremse |
| CC | Freno in corrente continua | DC brake | Gleichstrombremse |
| CA | Freno in corrente alternata | AC brake | Wechselstrombremse |
| NM | Coppia frenante massima | Maximum braking torque | Max. Bremsdrehmoment |
| DF | Doppio freno | Double brake | Doppelbremse |
| FA | Ferodo antistick | Antistick lining | Anti-Stick-Bremsbelag |
| RFR | Raddrizzatore frenata rapida | Fast braking rectifier | Gleichrichter Schnellbremsung |
| DD | Doppio disco | Double disc | Doppelscheibe |
| BRX | Freno completamente INOX | STAINLESS STEEL brake | Bremse vollständig aus EDELSTAHL |
| AX | Anello INOX | STAINLESS STEEL ring | Ring EDELSTAHL |
| L | Leva di sblocco in direzione morsettiera fronte albero | Release lever towards terminal board, in front of shaft | Entriegelungshebel in Richtung Klemmenbrett vor der Welle |
| LO | Leva di sblocco a sinistra fronte albero | Release lever to left, front of shaft | Entriegelungshebel links vor der Welle |
| LE | Leva di sblocco a destra fronte albero | Release lever to right, front of shaft | Entriegelungshebel rechts vor der Welle |
| LS | Leva di sblocco lato opposto morsettiera fronte albero | Release lever opposite side to terminal board, in front of shaft | Entriegelungshebel an der Gegenseite Klemmenbrett vor der Welle |
| VG | Ventola in ghisa (volano) | Cast iron fan (flywheel) | Lüfter aus Gusseisen (Schwungrad) |

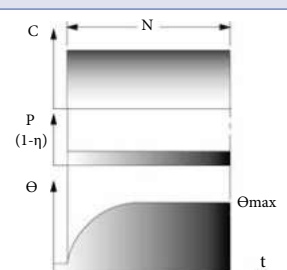
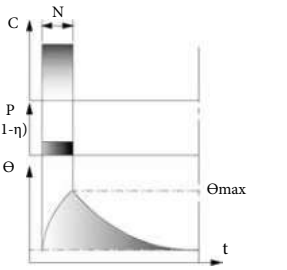
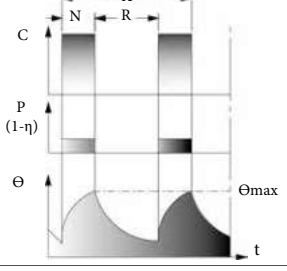
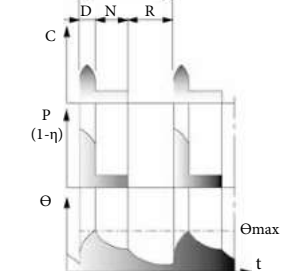
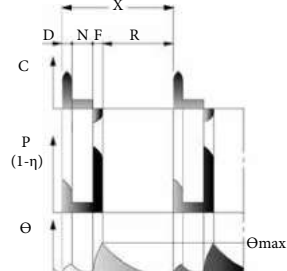
Tipo di servizio

(IT)

I dati dei motori elettrici indicati in questo catalogo sono riferiti al servizio continuo S1, secondo quanto stabilito dalla CEI EN 60034-1.

Altre tipologie di servizio devono essere indicate in fase d'ordine.

Di seguito elenchiamo le tipologie di servizio descritte dalla normativa di riferimento; ogni servizio viene indicato dalla lettera "S" seguita da un numero da 1 a 10.

| | | Tipo servizio | Descrizione servizio | Tab.8 |
|----|---|--|---|-------|
| S1 |  | Servizio continuo. Sigla S1 | Funzionamento a carico costante di durata sufficiente per permettere alla macchina il raggiungimento dell'equilibrio termico. | |
| S2 |  | Servizio di durata limitata. Sigla S2+tempo N [minimo] (es. S2 60) | Funzionamento a carico costante per un periodo di tempo determinato, inferiore a quello richiesto per raggiungere l'equilibrio termico, seguito da un periodo di riposo di durata sufficiente a ristabilire l'uguaglianza fra le temperature della macchina e quella del fluido di raffreddamento, con tolleranza di 2°C. | |
| S3 |  | Servizio intermittente periodico. Sigla S3+rapp. d'intermitenza $N/(N+R)*100$ [%] | Sequenza di cicli di funzionamento identici, ciascuno comprendente un periodo di funzionamento a carico costante ed uno di riposo. In questo servizio il ciclo è tale che la corrente di avviamento non influenza la sovratemperatura in maniera significativa (*). | |
| S4 |  | Servizio intermittente periodico con avviamento. Sigla S4+rapp.d'intermitenza $(D+N)/(D+N+R)*100$ [%] | Sequenza di cicli di funzionamento identici, ciascuno comprendente un tempo non trascurabile di avviamento, un periodo di funzionamento a carico costante ed un tempo di riposo (*). | |
| S5 |  | Servizio intermittente periodico con frenatura elettrica. Sigla S5+rapp.d'intermitenza $(D+N+F)/(D+N+F+R)*100$ [%] | Sequenza di cicli di funzionamento identici, ciascuno comprendente un tempo non trascurabile di avviamento, un periodo di funzionamento a carico costante, una fase di frenatura elettrica rapida ed un tempo di riposo (*). | |

(*): il servizio periodico implica che l'equilibrio termico non sia raggiunto durante il periodo di carico.

Tipo di servizio

(IT)

| | | | |
|------------|--|---|--|
| S6 | | <p>Servizio ininterrotto periodico con carico intermittente.</p> <p>Sigla S6+rapp. d'intermitenza</p> <p>$N/(N+V)*100$ [%]</p> | <p>Sequenza di cicli di funzionamento identici, ciascuno comprendente un periodo di funzionamento a carico costante ed un tempo di funzionamento a vuoto. Non esiste alcun periodo di riposo (*).</p> |
| S7 | | <p>Servizio ininterrotto periodico con frenatura elettrica.</p> <p>Sigla S7+rapp. d'intermitenza</p> <p>$(D+N+F)/X*100 = 100$ [%]</p> | <p>Sequenza di cicli di funzionamento identici, ciascuno comprendente un tempo di avviamento un periodo di funzionamento a carico costante ed un tempo di frenatura elettrica. Non esiste alcun periodo di riposo (*).</p> |
| S8 | | <p>Servizio ininterrotto periodico con variazioni correlate di carico e velocità.</p> <p>Sigla S8+rapp. d'intermitenza tutti i cicli</p> <p>$(D+N1)/X*100$ [%] $(F1+N2)/X*100$ [%] $(F2+N3)/X*100$ [%]</p> | <p>Sequenza di cicli di funzionamento identici, ciascuno comprendente una fase di funzionamento a carico costante corrispondente ad una prestabilita velocità di rotazione, seguito da uno o più periodi di funzionamento con altri carichi costanti corrispondenti a diverse velocità di rotazione (realizzato per esempio mediante cambio del numero dei poli nel caso dei motori ad induzione). Non esiste alcun periodo di riposo (*).</p> |
| S9 | | <p>Servizio con variazioni non periodiche di carico e di velocità.</p> | <p>Servizio in cui normalmente il carico e la velocità variano in modo non periodico nel campo del funzionamento ammissibile. Questo servizio comprende sovraccarichi frequentemente applicati che possono essere largamente superiori ai valori di pieno carico.</p> |
| S10 | | <p>Servizio con carichi distinti costanti.</p> | <p>Servizio che consiste in un numero specifico di valori distinti di carico (o carico equivalente), mantenendo ogni valore per un periodo sufficiente per consentire alla macchina di raggiungere l'equilibrio termico. Il carico minimo durante il ciclo di servizio può avere valore zero (a vuoto o in stato di riposo) (*).</p> |

(*): il servizio periodico implica che l'equilibrio termico non sia raggiunto durante il periodo di carico.

| | | | | |
|---|--------------------------------------|--|------------------------|--------------------------------------|
| $N, N1, N2, N3...$ = Tempo di azionamento a carico costante | F = Tempo di frenatura elettrica | S = Tempo di funzionamento in sovraccarico | t = Tempo | n = Velocità di rotazione |
| R = Tempo di riposo | $F1, F2, ...$ = Tempo di frenatura | L = Tempo di funzionamento con carichi variabili | Θ = Temperatura | Θ_{max} = Temperatura massima |
| D = Tempo di avviamento o di accelerazione | V = Tempo di funzionamento a vuoto | C = Carico | $P = 1-\eta$ = Perdite | C_p = Pieno carico |

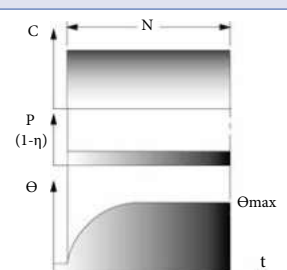
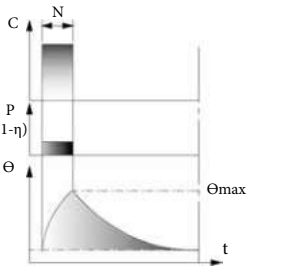
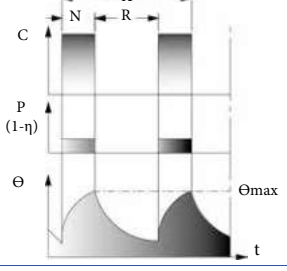
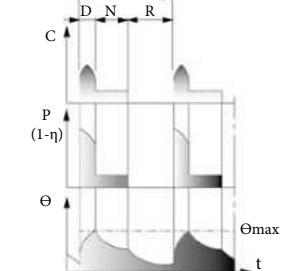
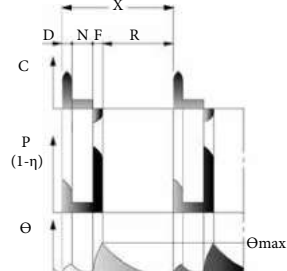
Duty Service

(EN)

The data of the electric motors indicated in this catalogue refer to continuous duty S1, according to IEC EN 60034-1.

Other types of duty must be indicated in the order phase.

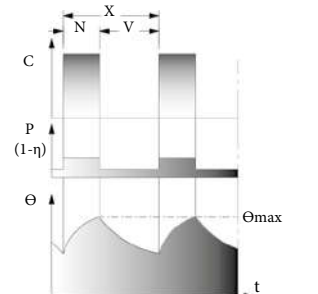
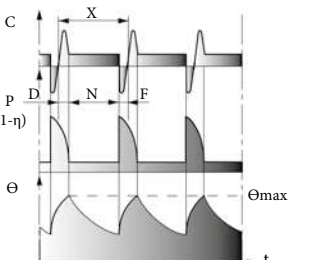
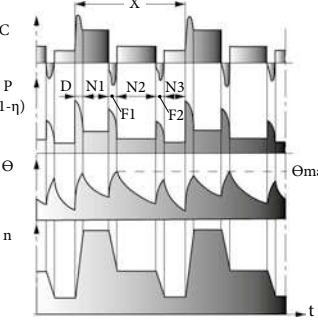
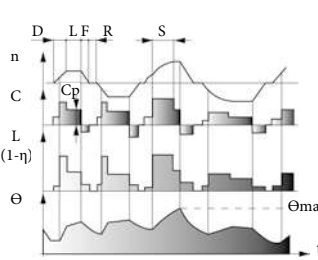
Below is a list of the types of duties described by the reference legislation; each duty is indicated by the letter "S" followed by a number from 1 to 10.

| | | Duty type | Duty description | Tab.9 |
|----|---|---|--|-------|
| S1 |  | Continuous duty. Code S1 | Constant load operation lasting long enough to allow the machine to reach thermal balance. | |
| S2 |  | Limited duration duty. Code S2+time N [minimum] (e.g. S2 60) | Constant load operation for a certain period of time, less than that required to reach thermal balance, followed by a rest period long enough to restore equality between the machine temperatures and the cooling fluid temperatures, with a 2°C tolerance. | |
| S3 |  | Periodic intermittent duty. Code S3+intermittence ratio $N/(N+R)*100$ [%] | Sequence of identical operating cycles, each including a period of operation at constant load and one at rest. In this duty the cycle is such that the starting current does not significantly influence the overtemperature (*). | |
| S4 |  | Periodic intermittent duty with start-up. Code S4+intermittence ratio $(D+N)/(D+N+R)*100$ [%] | Sequence of identical operating cycles, each including a non-negligible start-up time, a period of operation at constant load and a rest time (*). | |
| S5 |  | Periodic intermittent duty with electric braking. Code S5+intermittence ratio $(D+N+F)/(D+N+F+R)*100$ [%] | Sequence of identical operating cycles, each including a non-negligible start-up time, a period of operation at constant load, a rapid electrical braking phase and a rest time (*). | |

(*): periodic duty implies that the thermal balance is not reached during the loading period.

Duty Service

(EN)

| | | | |
|-------------------|---|--|--|
| <p>S6</p> |  | <p>Periodic uninterrupted duty with intermittent load.</p> <p>Code S6+intermittence ratio</p> <p>$N/(N+V)*100$ [%]</p> | <p>Sequence of identical operating cycles, each including a period of operation at constant load and an idle operation time. There is no rest period (*).</p> |
| <p>S7</p> |  | <p>Periodic uninterrupted duty with electric braking.</p> <p>Code S7+intermittence ratio</p> <p>$(D+N+F)/X*100 = 100$ [%]</p> | <p>Sequence of identical operating cycles, each including a start-up time, a period of operation at constant load and an electrical braking time. There is no rest period (*).</p> |
| <p>S8</p> |  | <p>Periodic uninterrupted duty with load and speed-related changes.</p> <p>Code S8+intermittence ratio all cycles</p> <p>$(D+N1)/X*100$ [%] $(F1+N2)/X*100$ [%] $(F2+N3)/X*100$ [%]</p> | <p>Sequence of identical operating cycles, each including a period of operation at constant load corresponding to a preset rotation speed, followed by one or more operating periods with other constant loads corresponding to different rotation speeds (realised, for example, by changing the number of poles in case of induction motors). There is no rest period (*).</p> |
| <p>S9</p> |  | <p>Duty with non-periodic load and speed changes.</p> | <p>Duty where normally the load and speed vary in a non-periodic manner in the admissible operating range. This duty includes frequently applied overloads which can be must higher than the full load values.</p> |
| <p>S10</p> | <p>-</p> | <p>Duty with constant separate loads.</p> | <p>Duty consisting of a specific number of separate load values (or equivalent load), maintaining each value long enough to allow the machine to reach thermal balance. During the duty cycle, the minimum load can have a zero value (empty or idle) (*).</p> |

(*): periodic duty implies that the thermal balance is not reached during the loading period.

| | | | | |
|--|-------------------------------|--|------------------------|--------------------------------------|
| $N, N1, N2, N3... =$ Drive time with constant load | $F =$ Electrical braking time | $S =$ Operating time in overload | $t =$ Time | $n =$ Rotation speed |
| $R =$ Rest time | $F1, F2, ... =$ Braking time | $L =$ Operating time with variable loads | $\Theta =$ Temperature | $\Theta_{max} =$ Maximum temperature |
| $D =$ Start-up or acceleration time | $V =$ No-load operating time | $C =$ Load | $P = 1-\eta =$ Losses | $C_p =$ Full load |

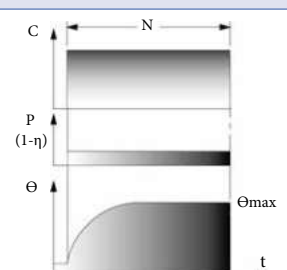
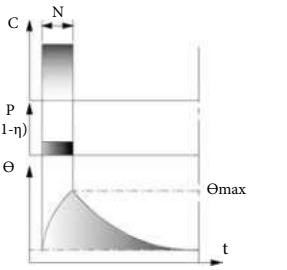
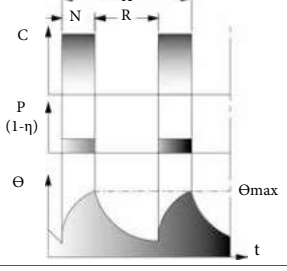
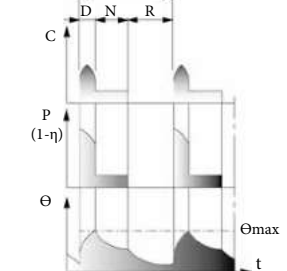
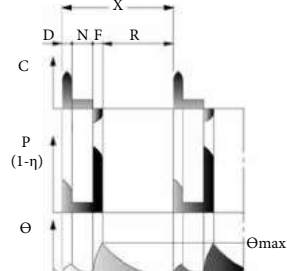
Betriebsart

(DE)

Die Daten der in diesem Katalog angezeigten Elektromotoren beziehen sich, gemäß der Norm IEC EN 60034-1, auf den Dauerbetrieb S1.

Weitere Dienstleistungsarten müssen in der Bestellphase angegeben werden.

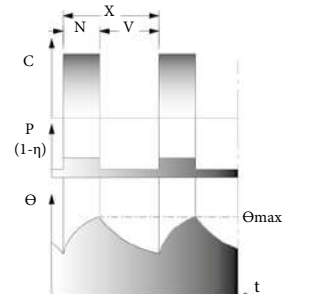
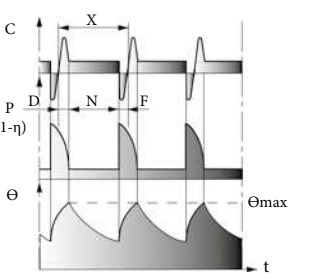
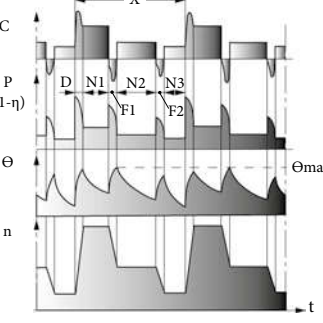
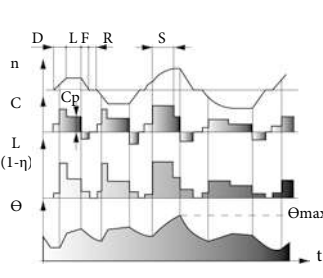
Nachfolgend werden die von den Bezugsnormen beschriebenen Betriebsarten aufgelistet; jeder Betrieb wird durch den Buchstaben „S“ und eine Zahl von 1 bis 10 angezeigt.

| | | Betriebsart | Betriebsbeschreibung | Tab.10 |
|----|---|---|---|--------|
| S1 |  | Dauerbetrieb. Kurzzeichen S1 | Dauerbetrieb mit konstanter Belastung, die solange ansteht, bis die Maschine den thermischen Beharrungszustand erreichen kann. | |
| S2 |  | Kurzzeitbetrieb. Kurzzeichen S2+Zeit N [min] (z.B. S2 60) | Betrieb mit konstanter Belastung, dessen Dauer nicht ausreicht, den thermischen Beharrungszustand zu erreichen und einer nachfolgenden Zeit im Stillstand mit stromlosen Wicklungen von solcher Dauer, dass die wieder abgesunkenen Maschinentemperaturen nur noch weniger als 2K von der Temperatur des Kühlmittels abweichen. | |
| S3 |  | Aussetzbetrieb. Kurzzeichen S3+relative Einschaltdauer $N/(N+R)*100$ [%] | Folge identischer Spiele, von denen jedes eine Betriebszeit mit konstanter Belastung und einen Stillstand mit stromlosen Wicklungen umfasst. Wobei der Anlaufstrom die Übertemperatur nicht merklich beeinflusst (*). | |
| S4 |  | Periodischer Aussetzbetrieb mit Anlauf. Kurzzeichen S4+relative Einschaltdauer $(D+N)/(D+N+R)*100$ [%] | Folge identischer Spiele, von denen jedes eine merkliche Anlaufzeit, eine Betriebszeit mit konstanter Belastung und eine Stillstandszeit mit stromlosen Wicklungen umfasst (*). | |
| S5 |  | Periodischer Aussetzbetrieb mit elektrischer Bremsung. Kurzzeichen S5+relative Einschaltdauer $(D+N+F)/(D+N+F+R)*100$ [%] | Folge identischer Spiele, von denen jedes eine merkliche Anlaufzeit, eine Betriebszeit mit konstanter Belastung, eine Zeit mit schneller, elektrischer Bremsung und eine Stillstandszeit mit stromlosen Wicklungen umfasst (*). | |

(*): Die periodische Betriebsart impliziert, dass der thermische Beharrungszustand nicht während der Belastungszeit erreicht wird.

Betriebsart

(DE)

| | | | |
|------------|---|---|---|
| S6 |  | <p>Ununterbrochener periodischer Betrieb mit Aussetzbelastung.</p> <p>Kurzzeichen S6+relative Einschaltdauer</p> <p>$N/(N+V)*100$ [%]</p> | <p>Folge identischer Spiele, von denen jedes eine Betriebszeit mit konstanter Belastung und eine Leerlaufzeit umfasst. Es tritt keine Stillstandszeit mit stromlosen Wicklungen auf (*).</p> |
| S7 |  | <p>Ununterbrochener periodischer Betrieb mit elektrischer Bremsung.</p> <p>Kurzzeichen S7+relative Einschaltdauer</p> <p>$(D+N+F)/X*100 = 100$ [%]</p> | <p>Folge identischer Spiele, von denen jedes eine Anlaufzeit, eine Betriebszeit mit konstanter Belastung und eine Zeit mit elektrischer Bremsung umfasst. Es tritt keine Stillstandszeit mit stromlosen Wicklungen auf (*).</p> |
| S8 |  | <p>Ununterbrochener periodischer Betrieb mit Last-/Drehzahländerungen.</p> <p>Kurzzeichen S8+relative Einschaltdauer alle Spiele</p> <p>$(D+N1)/X*100$ [%] $(F1+N2)/X*100$ [%] $(F2+N3)/X*100$ [%]</p> | <p>Folge identischer Spiele, von denen jedes eine Betriebszeit mit konstanter Belastung und bestimmter Drehzahl und anschließend eine oder mehrere Betriebszeiten mit anderen konstanten Belastungen entsprechend den unterschiedlichen Drehzahlen umfasst. (Dies wird beispielsweise durch Polumschaltung von Induktionsmotoren erreicht). Es tritt keine Stillstandszeit mit stromlosen Wicklungen auf (*).</p> |
| S9 |  | <p>Betrieb mit nicht periodischen Last-/Drehzahländerungen.</p> | <p>Betrieb, bei dem sich Belastung und Drehzahl innerhalb des zulässigen Betriebsbereiches nicht periodisch ändern. Bei diesem Betrieb treten häufig Überlastungen auf, die weit über Volllast liegen dürfen.</p> |
| S10 | <p>-</p> | <p>Betrieb mit einzelnen konstanten Belastungen.</p> | <p>Betrieb, der eine spezifische Anzahl bestimmter Belastungswerte enthält (oder gleichwertige Belastung), wobei jeder Wert für eine ausreichende Zeit beibehalten wird, um der Maschine zu ermöglichen, die thermische Beharrungszustand zu erreichen. Die Mindestbelastung während des Betriebszyklus darf den Wert Null aufweisen (leer oder im Ruhezustand) (*).</p> |

(*): Die periodische Betriebsart impliziert, dass der thermische Beharrungszustand nicht während der Belastungszeit erreicht wird.

| | | | | |
|--|--------------------------------------|--|-------------------------|-----------------------------------|
| $N, N1, N2, N3...$ = Anlaufzeit mit konstanter Belastung | F = Zeit der elektrischen Bremsung | S = Betriebszeit mit Überlast | t = Zeit | n = Drehgeschwindigkeit |
| R = Stillstandszeit | $F1, F2, ...$ = Bremszeit | L = Betriebszeit mit variablen Belastungen | Θ = Temperatur | Θ_{max} = Höchsttemperatur |
| D = Anlauf- oder Beschleunigungszeit | V = Leerlaufzeit | C = Last | $P = 1-\eta$ = Verluste | C_p = Volllast |



Efficienza energetica

Energy Efficiency

Energieeffizienz

Il regolamento UE 4/2014 della Commissione Europea stabilisce le modalità di applicazione della direttiva 2005/32/CE del Parlamento europeo in merito alle specifiche per la progettazione eco-compatibile dei motori elettrici.

I motori oggetto della normativa sull'efficienza energetica sono:

- motori elettrici a induzione a gabbia;
- monovelocità e trifase;
- con una frequenza di 50 Hz o 50-60Hz,
- che abbiano 2, 4 o 6 poli;
- alimentati con una tensione nominale massima di 1000 V;
- con una potenza nominale compresa tra 0,75 kW e 375 kW;
- funzionamento in servizio continuo.

Il regolamento non si applica ai:

- motori progettati per funzionare interamente immersi in un liquido;
- motori completamente integrati in un prodotto per i quali non sia possibile testare le prestazioni autonomamente dal prodotto stesso;
- motori progettati per funzionare esclusivamente a più di 4000 metri sul livello del mare;
- motori per applicazioni in ambienti a temperatura dell'aria superiore ai 60 °C;
- motori autofrenanti;
- motori ATEX.

Con le normative in questione vengono istituite le seguenti classi di efficienza:

IE1: Rendimento standard / *Standard Efficiency* / Standard-Wirkungsgrad

IE2: Rendimento alto / *High Efficiency* / Hoher-Wirkungsgrad

IE3: Rendimento premium / *Premium Efficiency* / Premium-Wirkungsgrad

The EU 4/2014 European Commission Regulation establishes the methods of application of Directive 2005/32/EC of the European Parliament regarding the specifications for the eco-compatible design of electric motors.

The motors covered by the energy efficient regulation are:

- *electric cage induction motors;*
- *single-speed and three-phase;*
- *with a frequency of 50 Hz or 50-60Hz,*
- *having 2, 4 or 6 poles;*
- *powered with a maximum nominal voltage of 1000 V;*
- *having a nominal power between 0.75 kW and 375 kW;*
- *Continuous duty operation.*

The regulation does not apply to:

- *motors designed to operate fully immersed in a liquid;*
- *motors fully integrated in a product for which it is not possible to test the performance independently from the product itself;*
- *motors designed to operate exclusively at more than 4000 metres above sea level;*
- *motors for applications in ambients with air temperature above 60°C;*
- *brake motors;*
- *ATEX motors.*

The following efficiency classes are established with the regulations in question:

Die EU-Verordnung Nr.4/2014 der Europäischen Kommission legt die Anwendungsmodalitäten der Richtlinie 2005/32/CE des Europäischen Parlaments in Bezug auf die Anforderungen an die umweltgerechte Gestaltung von Elektromotoren fest. Gegenstand der Energieeffizienznormen sind die folgenden Motoren:

- Käfigläufer-Induktionselektromotoren;
- Eintourige Motoren und Drehstrommotoren;
- mit einer Frequenz von 50 Hz oder 50-60Hz,
- mit 2, 4 oder 6 Polen;
- mit einer maximalen Nennspannung von 1000 V versorgt;
- mit einer Nennleistung zwischen 0,75 kW und 375 kW;
- Dauerbetrieb.

Die Verordnung gilt nicht für:

- Motoren, die dafür bestimmt sind, vollständig in eine Flüssigkeit eingetaucht betrieben zu werden;
- vollständig in ein Produkt eingebaute Motoren, deren Energieeffizienz nicht unabhängig von diesem Produkt erfasst werden kann;
- Motoren, die ausschließlich für einen Betrieb in einer Höhe von mehr als 4 000 Metern über dem Meeresspiegel bestimmt sind;
- Motoren für Anwendungen bei Umgebungstemperaturen über 60 °C;
- Bremsmotoren;
- ATEX-Motoren.

Mithilfe der betreffenden Normen werden die folgenden Wirkungsgradklassen bestimmt:

Tab.11

| P _n [kW] | Classi di rendimento (efficienza nominale) / Yield Class (Nominal Efficiency) / Wirkungsgradklassen (Nennwirkungsgrad) 50Hz | | | | | | | | |
|------------------------|---|------|------|----------------------------------|------|------|----------------------------------|------|------|
| | η IE1 [%] | | | η IE2 [%] | | | η IE3 [%] | | |
| | Nr. poli / No. poles / Anz. Pole | | | Nr. poli / No. poles / Anz. Pole | | | Nr. poli / No. poles / Anz. Pole | | |
| | 2 | 4 | 6 | 2 | 4 | 6 | 2 | 4 | 6 |
| 0.75 | 72.1 | 72.1 | 70.0 | 77.4 | 79.6 | 75.9 | 80.7 | 82.5 | 78.9 |
| 1.1 | 75.0 | 75.0 | 72.9 | 79.6 | 81.4 | 78.1 | 82.7 | 84.1 | 81.0 |
| 1.5 | 77.2 | 77.2 | 75.2 | 81.3 | 82.8 | 79.8 | 84.2 | 85.3 | 82.5 |
| 2.2 | 79.7 | 79.7 | 77.7 | 83.2 | 84.3 | 81.8 | 85.9 | 86.7 | 84.3 |
| 3.0 | 81.5 | 81.5 | 79.7 | 84.6 | 85.5 | 83.3 | 87.1 | 87.7 | 85.6 |
| 4.0 | 83.1 | 83.1 | 81.4 | 85.8 | 86.6 | 84.6 | 88.1 | 88.6 | 86.8 |
| 5.5 | 84.7 | 84.7 | 83.1 | 87.0 | 87.7 | 86.0 | 89.2 | 89.6 | 88.0 |
| 7.5 | 86.0 | 86.0 | 84.7 | 88.1 | 88.7 | 87.2 | 90.1 | 90.4 | 89.1 |
| 11.0 | 87.6 | 87.6 | 86.4 | 89.4 | 89.8 | 88.7 | 91.2 | 91.4 | 90.3 |
| 15.0 | 88.7 | 88.7 | 87.7 | 90.3 | 90.6 | 89.7 | 91.9 | 92.1 | 91.2 |
| 18.5 | 89.3 | 89.3 | 88.6 | 90.9 | 91.2 | 90.4 | 92.4 | 92.6 | 91.7 |
| 22.0 | 89.9 | 89.9 | 89.2 | 91.3 | 91.6 | 90.9 | 92.7 | 93.0 | 92.2 |
| 30.0 | 90.7 | 90.7 | 90.2 | 92.0 | 92.3 | 91.7 | 93.3 | 93.6 | 92.9 |
| 37.0 | 91.2 | 91.2 | 90.8 | 92.5 | 92.7 | 92.2 | 93.7 | 93.9 | 93.3 |

Variazioni caratteristiche nominali **Nominal characteristic variations** **Charakteristische Nennschwankungen**

Di seguito vengono riportati i coefficienti moltiplicativi necessari a definire le caratteristiche di funzionamento del motore elettrico alimentato con tensione/frequenza differenti da quelli nominali di avvolgimento e/o in condizioni ambientali differenti dalle standard:

Below are the multiplicative coefficients required to define the operating features of the electric motor supplied with voltage/frequency different from the nominal winding and/or environmental conditions different from the standard:

Nachfolgend werden die multiplikativen Faktoren, die für die Bestimmung der Betriebsmerkmale des Elektromotors erforderlich sind, der mit einer anderen Spannung / Frequenz als der Nennwickelspannung / -Versorgung und/oder unter anderen Umgebungsbedingungen als den standardmäßigen versorgt wird:

Tab.12

| Standard Standard Standard | Tensione alternativa ammissibile <i>Alternative acceptable voltage</i> Zulässige alternative Spannung | | Frequenza alternativa ammissibile <i>Alternative acceptable frequency</i> Zulässige alternative Frequenz | | Coefficienti moltiplicativi di correzione <i>Multiplicative correction factors</i> Multiplikative Korrekturfaktoren | | | |
|----------------------------------|---|------|--|-------|---|---------|--|--|
| | [V] | [Hz] | P_n | n_n | I | M_n | | |
| 400V 50Hz | 380 | 50 | 1 | 1 | 0.9 ÷ 1.1 | 1 | | |
| | 420 | | 1 | 1 | 0.9 ÷ 1.1 | 1 | | |
| | 380 | 60 | 1 | 1.2 | 0.9 ÷ 1.1 | 0.83 | | |
| | 400 | | 1 | 1.2 | 0.9 ÷ 1.1 | 0.83 | | |
| | 460 | | 1.1 ÷ 1.2 | 1.2 | 0.9 ÷ 1.1 | 0.9 ÷ 1 | | |
| | 480 | | 1.2 | 1.2 | 1 | 1 | | |

| Temperatura ambiente / <i>Ambient temperature</i> / Umgebungstemperatur [°C] | | | | | |
|--|-------|------|------|------|------|
| | < 40° | 45° | 50° | 55° | 60° |
| P_n | 1.00 | 0.95 | 0.90 | 0.85 | 0.80 |

| Altitudine / <i>Altitude</i> / Höhe [m] | | | | | | |
|---|----------|------|------|------|------|------|
| | 0 ÷ 1000 | 1500 | 2000 | 2500 | 3000 | 3500 |
| P_n | 1.00 | 0.97 | 0.93 | 0.89 | 0.85 | 0.8 |

Classi di isolamento F/H **F/H Insulation classes** **Isolationsklassen F/H**

I motori MT sono progettati affinché gli avvolgimenti interni soddisfino i requisiti della classe F secondo la normativa IEC 60085. A richiesta è possibile fornire motori con avvolgimenti in classe H.

The MT motors are designed so that the internal windings meet the class F requirements according to IEC 60085. On request, it is possible to provide motors with class H windings.

Die MT-Motoren wurden so entwickelt, dass die Innenwicklungen die Anforderungen der Klasse F gemäß der Norm IEC 60085 erfüllen. Auf Anfrage können Motoren mit Wicklungen der Klasse H geliefert werden.

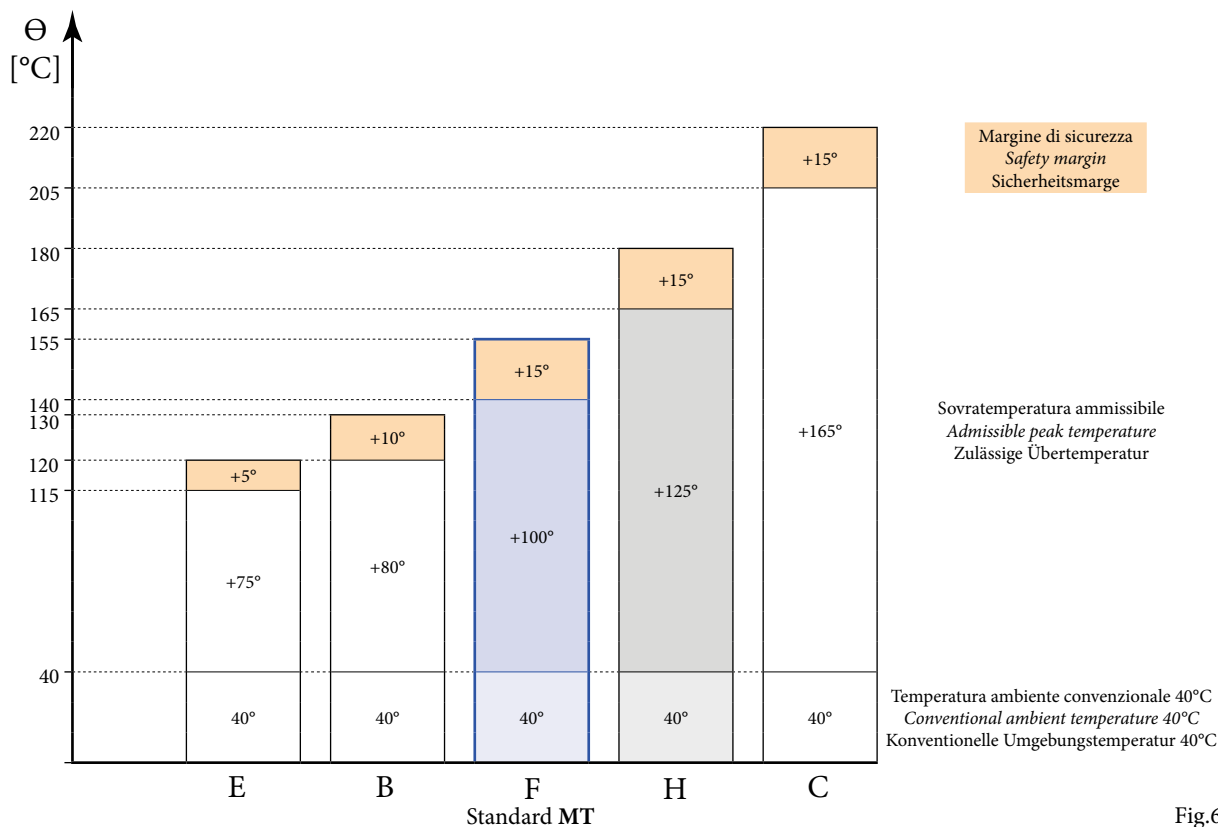


Fig.6



Protezione IP

I motori **MT** proposti nel presente catalogo sono progettati ed assemblati nel rispetto della IEC60529 (EN 60529) per quel che concerne il grado di protezione contro contatti accidentali ed eventuale entrata di corpi estranei solidi e/o liquidi.

La codifica prevede la dicitura IP (International Protection) con aggiunti due numeri che identificano rispettivamente il grado di protezione all'ingresso di particelle solide ed il grado di protezione all'ingresso di particelle liquide.

IP protection

The MT motors proposed in this catalogue are designed and assembled according to IEC60529 (EN 60529) for what concerns the protection degree against accidental contact and possible entry of solid and/or liquid foreign bodies.

The coding includes the wording IP (International Protection) with the addition of two number that identify, respectively, the degree of protection for the entry of solid particles and the degree of protection for the entry of liquid particles.

IP-Schutz

Die im vorliegenden Katalog aufgeführten **MT** Motoren wurden unter Beachtung der Norm IEC60529 (EN 60529) in Bezug auf den Schutzgrad bei versehentlichen Kontakten und einem eventuellen Eindringen von festen und/oder flüssigen Fremdkörpern entwickelt und zusammengebaut.

Die Codierung besteht aus dem Kurzzeichen IP (International Protection) mit zwei zusätzlichen Zahlen, die jeweils den Schutzgrad bei Eintritt von festen Partikeln und den Schutzgrad bei Eindringen von Flüssigkeiten anzeigen.

IP 54

International Protection

Protezione contro i corpi solidi
Protection against foreign bodies
Schutz vor Festkörpern

Protezione contro i liquidi
Protection against water
Schutz vor Flüssigkeiten

I motori elettrici **MT**, sono realizzati standard con grado di protezione IP55; i motori autofrenanti **MT** sono realizzati standard con grado di protezione IP54. Nella tabella seguente maggiori indicazioni:






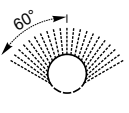
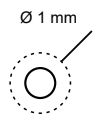

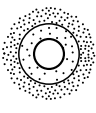
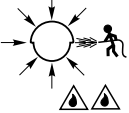
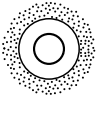
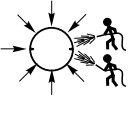


The MT electric motors are standard made with IP55 protection degree; the MT brake motors are standard made with IP54 protection degree. More information in the table below:

Die **MT** Elektromotoren werden standardmäßig mit dem Schutzgrad IP55 hergestellt; Die **MT** Bremsmotoren werden standardmäßig mit dem Schutzgrad IP54 hergestellt. Für detailliertere Informationen siehe die folgende Tabelle:

| Tipo motore Motor type Motortyp | Taglia Size Größe | Standard Standard Standard | a richiesta on demand auf anfrage |
|---------------------------------------|-------------------------|----------------------------------|---|
| TN - DN | 55 | IP54 | -- |
| | 56 ÷ 200 | IP55 | IP56 IP65 IP66 |
| MN - XN | 56 ÷ 100 | IP55 | - |
| TF - DF | 56 ÷ 200 | IP54 | IP55 |
| MF - XF | 56 ÷ 100 | IP54 | - |
| TFP - DFP | 63 ÷ 200 | IP54 | IP55 |
| MFP - XFP | 63 ÷ 100 | IP54 | - |
| TFS - DFS | 63 ÷ 200 | IP54 | - |
| MFS - XFS | 63 ÷ 100 | IP54 | - |

Tab.13

Protezione IP
IP protection
IP-Schutz

| Protezione contro i corpi solidi <i>Protection against foreign bodies</i> Schutz vor Festkörpern | | | Protezione contro i liquidi <i>Protection against water</i> Schutz vor Flüssigkeiten | | |
|--|---|---|--|---|--|
| IP | Prove Proof Prüfungen | Definizione / Description / Definition | IP | Prove Proof Prüfungen | Definizione / Description / Definition |
| 0 | | Non protetto <i>No protection</i> Kein Schutz | 0 | | Non protetto <i>No protection</i> Kein Schutz |
| 1 |  | Protetto contro i corpi solidi superiori a 50 mm (esempio: contatti involontari della mano) <i>Protection against solid foreign bodies of thickness greater than 50 mm (ex. involuntary contacts of the hand)</i> Geschützt gegen Festkörper über 50 mm (Beispiel: versehentliche Handkontakte) | 1 |  | Protetto contro la caduta verticale di gocce d'acqua (condensa) <i>Protection against vertical drops of water (condensation)</i> Geschützt gegen senkrecht fallende Wassertropfen (Kondenswasser) |
| 2 |  | Protetto contro i corpi solidi superiori a 12 mm (esempio: dita della mano) <i>Protection against solid foreign bodies of thickness greater than 12 mm (ex. fingers of the hand)</i> Geschützt gegen Festkörper über 12 mm (Beispiel: Finger) | 2 |  | Protetto contro le cadute d'acqua a pioggia fino a 15° dalla verticale <i>Protection against sprinkle water until 15° from the vertical</i> Geschützt gegen Wasser, das in einem beliebigen Winkel bis 15° zur Senkrechten fällt |
| 3 |  | Protetto contro i corpi solidi superiori a 2.5 mm (esempio: fili, utensili) <i>Protection against solid foreign bodies of thickness greater than 2.5 mm (ex. wires, tools)</i> Geschützt gegen Festkörper über 2.5 mm (Beispiel: Werkzeuge, Drähte) | 3 |  | Protetto contro le cadute d'acqua a pioggia fino a 60° dalla verticale <i>Protection against sprinkle water until 60° from the vertical</i> Geschützt gegen Wasser, das in einem beliebigen Winkel bis 60° fällt |
| 4 |  | Protetto contro i corpi solidi superiori a 1 mm (esempio: fili sottili, utensili fini) <i>Protection against solid foreign bodies of thickness greater than 1 mm (ex. thin wire, fine tools)</i> Geschützt gegen Festkörper über 1 mm (Beispiel: dünne Werkzeuge, dünne Drähte) | 4 |  | Protetto contro i getti d'acqua provenienti da tutte le direzioni <i>Protection against jets of water from any direction</i> Geschützt gegen Spritzwasser aus allen Richtungen |
| 5 |  | Protetto contro le polveri (nessun deposito nocivo) <i>Protection against ingress of dust (no harmful deposit)</i> Geschützt gegen Staub (keine schädliche Ablagerung) | 5 |  | Protetto contro i getti d'acqua con lancia da tutte le direzioni <i>Protection against water projected by a nozzle from any direction</i> Geschützt gegen Wasserstrahlen aus einer Düse aus allen Richtungen |
| 6 |  | Totalmente protetto contro le polveri <i>Complete protection against ingress of dust</i> Vollständig geschützt gegen Eindringen von Staub | 6 |  | Protetto contro le proiezioni d'acqua simili a onde marine <i>Protection against water projections similar to sea waves</i> Geschützt gegen Wasserschlag, wie Meereswellen |
| | | | 7 |  | Protetto contro gli effetti dell'immersione <i>Protection against the effects of immersion</i> Geschützt gegen Wirkungen beim Eintauchen |
| | | | 8 |  | Protetto contro immersione/sommersione prolungata <i>Protection against prolonged immersion/submersion</i> Geschützt gegen längeres Eintauchen/Untertauchen |

Tab.14



Raffreddamento motore

I motori **MT** proposti nel presente catalogo sono forniti con ventola di raffreddamento radiale bidirezionale accoppiata all'albero (IC411 o TEFC).

È possibile sostituire la ventola standard in materiale plastico con una ventola metallica. A richiesta motori chiusi senza ventilazione (IC410 o TENV) o con ventilazione forzata, monofase o trifase (IC416).

Tutti i motori seguono la normativa IEC60034-6; la normativa prevede una codifica composta dalla sigla IC (International Cooling) seguita da tre cifre indicanti la tipologia di raffreddamento adottata:

Motor cooling

*The **MT** motors proposed in this catalogue are supplied with bidirectional radial cooling fan coupled to the shaft (IC411 or TEFC).*

The standard plastic fan can be replaced with a metal fan. On request closed motors without ventilation (IC410 or TENV) or with forced ventilation, single-phase or three-phase (IC416).

All motors follow IEC60034-6; the legislation provides for a codification composed of the code IC (International Cooling) followed by three digits indicating the type of cooling adopted:

Motorkühlung

Die im vorliegenden Katalog aufgeführten **MT** Motoren sind mit einem radialen bidirektionalen Kühllüfter ausgestattet, der mit der Welle gekoppelt ist (IC411 oder TEFC).

Der Standardlüfter aus Kunststoff kann gegen einen Lüfter aus Metall getauscht werden. Geschlossene Motoren ohne Lüfter (IC410 oder TENV) oder mit Zwangslüftung, Einphasen-Wechselstrommotoren oder Drehstrommotoren (IC416), auf Anfrage.

Alle Motoren entsprechen der Norm IEC60034-6;

Die Norm sieht eine Codierung vor, die aus dem Kurzzeichen IC (International Cooling) und drei Zahlen besteht, die die verwendete Kühlart anzeigen:

IC 411

International Cooling

Disposizione del circuito
Circuit Arrangement
Anordnung des Kreislaufs

Metodo circolazione del fluido di raffreddamento secondario
Method of fluid circulation for the secondary cooling fluid
Zirkulationsmethode der sekundären Kühlflüssigkeit

Metodo circolazione del fluido di raffreddamento primario
Method of fluid circulation for the primary cooling fluid
Zirkulationsmethode der primären Kühlflüssigkeit

Tutti i motori **MT** in esecuzione standard prevedono un sistema di raffreddamento IC411 (motore autoventilato con ventola calettata sull'albero); tale soluzione prevede l'impiego standard del motore con livello di servizio S1.

Nel caso di assenza totale di raffreddamento, configurazione IC410, è possibile utilizzare i motori standard solo in caso di servizi di durata limitata o estremamente periodici.

Di seguito le principali configurazioni di raffreddamento dei motori elettrici **MT**:

*All **MT** motors in standard execution have an IC411 cooling system (self-ventilated motor with fan fitted on the shaft); this solution provides for the standard use of the motor with duty level S1.*

In the case of total absence of cooling, IC410 configuration, it is possible to use the standard motors only in case of limited duration or extremely periodic duties.

*Below the main cooling configurations of the **MT** electric motors:*

Alle **MT** Motoren sind in der Standardausführung mit einem Kühlsystem IC411 ausgestattet (eigenbelüfteter Motor mit einem an der Welle verzahnten Lüfter); diese Lösung sieht die Standardverwendung des Motors mit Betriebsart S1 vor.

Ohne jede Kühlung - Konfiguration IC410 - können die Standardmotoren nur bei Betriebsarten mit begrenzter Dauer oder extrem periodischen Betriebsarten verwendet werden.

Nachfolgend die wichtigsten Kühlkonfigurationen der **MT** Elektromotoren:

Raffreddamento motore

Motor cooling

Motorkühlung

Tab.15

La configurazione IC410 prevede un motore senza ventilazione e completamente chiuso; la dissipazione del calore avviene per irradiazione naturale.

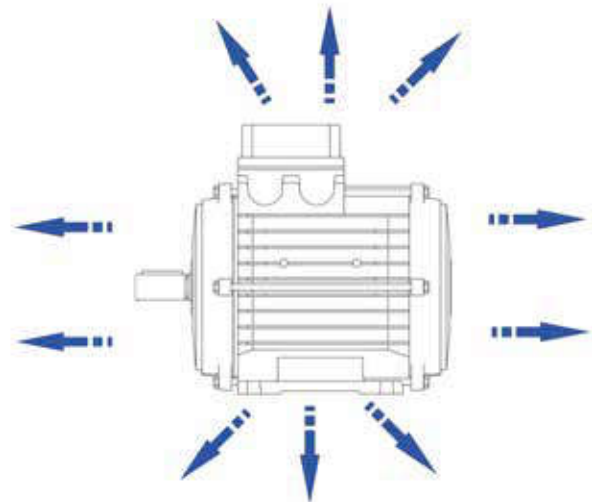
Con tale configurazione di raffreddamento, il suo utilizzo standard è in S2 10 min o S3 10%. E' possibile realizzare motori IC410 con servizio in S1 riducendone la potenza di circa 1/3 a parità di grandezza di un medesimo motore autoventilato IC411 in S1.

The IC410 configuration includes a motor without ventilation and completely closed; the heat is dissipated by natural radiation.

With this cooling configuration, its standard use is S2 10 min or S3 10%. It is possible to create IC410 motors with S1 duty, reducing their power by about 1/3 for the same size of the same IC411 self-ventilated motor in S1.

Die Konfiguration IC410 sieht einen Motor ohne Lüfter und vollständig geschlossen vor; die Wärmeableitung erfolgt durch natürliche Strahlung.

Mit dieser Kühlkonfiguration ist seine standardmäßige Verwendung mit Betriebsart S2 10 Min oder mit Betriebsart S3 10%. Es ist möglich, IC410 Motoren mit Betriebsart S1 durch Reduzierung der Leistung um ca. 1/3 bei gleicher Größe eines eigenbelüfteten IC411 Motors mit Betriebsart S1 herzustellen.



IC 410

La configurazione IC411 (standard MT) prevede un motore autoventilato con ventola calettata sull'albero motore stesso.

Il suo impiego standard è con servizio S1.

Occorre prestare attenzione affinché la griglia di passaggio del coprivotola sia sempre libera e non intasata da polvere e/o corpi estranei che impedirebbero un buon flusso dell'aria.

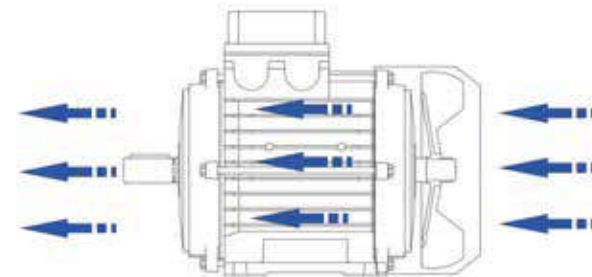
The IC411 configuration (standard MT) includes a self-ventilated motor with fan fitted on the crankshaft itself.

Its standard use is with S1 duty. Care must be taken to ensure that the fan cover passage grid is always free and not clogged with dust and/or foreign bodies that would prevent good air flow.

Die Konfiguration IC411 (MT Standard) sieht einen eigenbelüfteten Motor mit einem an der Motorwelle verzahnten Lüfter vor.

Seine standardmäßige Verwendung erfolgt mit Betriebsart S1.

Darauf achten, dass das Gitter der Lüfterhaube immer frei und nicht durch Staub und/oder Fremdkörper verstopft ist, die einen einwandfreien Luftstrom verhindern würden.



IC 411

La configurazione IC416 prevede un motore servoventilato con la ventola azionata da un motore indipendente.

La servoventilazione può essere alimentata da una propria tensione o dalla medesima tensione d'alimentazione del motore principale. Questa soluzione permette un raffreddamento con portata d'aria indipendente dal regime di rotazione del motore principale.

Soluzione consigliata per motori pilotati da inverter.

The IC416 configuration includes a servo-ventilated motor with fan driven by an independent motor.

The forced cooling can be fed by its own voltage or by the same power supply voltage of the main motor.

This solution allows cooling with air flow independent of the rotation speed of the main motor.

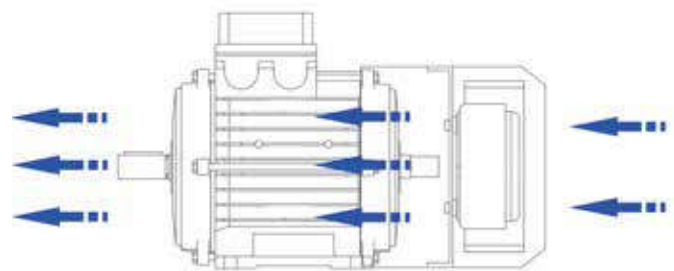
Solution recommended for inverter-driven motors.

Die Konfiguration IC416 sieht einen Motor mit Servo-Lüfter vor, wobei letzterer von einem unabhängigen Motor angetrieben wird.

Der Servo-Lüfter kann mit eigener Spannung oder mit der Versorgungsspannung des Hauptmotors versorgt werden.

Diese Lösung ermöglicht eine Kühlung mit einer Luftdurchflussmenge, die von der Drehzahl des Hauptmotors unabhängig ist.

Diese Lösung wird für über inverter gesteuerte Motoren empfohlen.



IC 416



Inverter

I motori MT del tipo TN, TE, TFP, TFS (trifase a singola polarità) possono essere pilotati tramite inverter.

Inverter

The MT motors of the TN, TE, TFP, TFS (single-phase with single polarity) type can be driven by inverter.

Inverter

Die MT Motoren des Typs TN, TE, TFP, TFS (Drehstrommotoren mit Einzelpolarität) können über Inverter gesteuert werden.

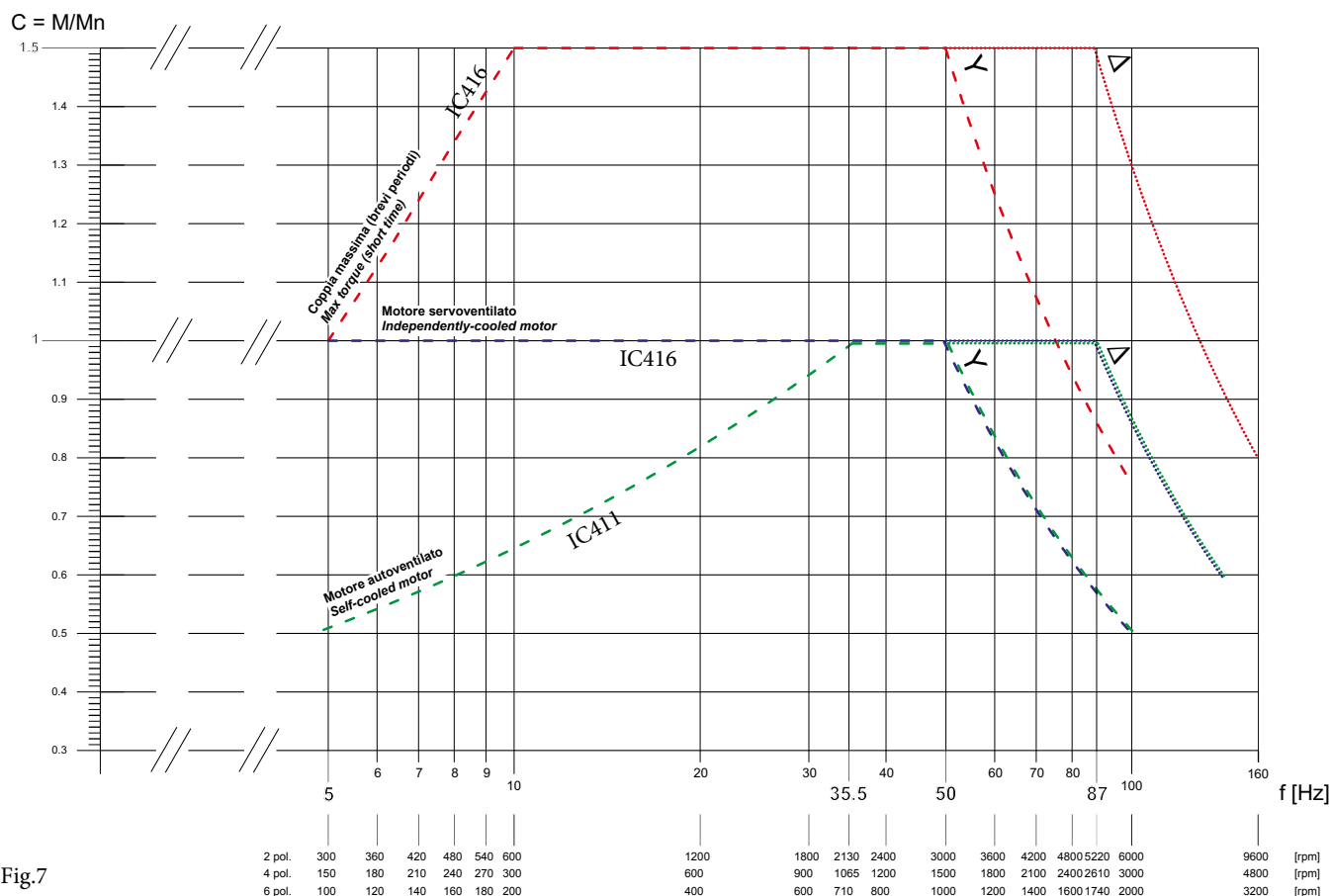


Fig.7

In un motore trifase il rotore è mantenuto in rotazione dal campo magnetico statorico prodotto dalle correnti circolanti negli avvolgimenti dello statore; più il campo magnetico statorico ruota velocemente e più veloce sarà la rotazione del rotore.

La velocità del campo magnetico rotante statorico è data dalla:

In a three-phase motor the rotor is kept rotating by the stator magnetic field produced by the currents circulating in the stator windings; the faster the stator magnetic field rotates, the faster will the rotor rotation be.

The stator rotating magnetic field speed is given by:

In einem Drehstrommotor wird der Rotor im Drehradius des Magnetfelds des Stators gehalten, das von den in den Wicklungen des Stators zirkulierenden Strömen erzeugt wird; je schneller sich das Magnetfeld des Stators dreht, desto schneller dreht sich der Rotor.

Die Geschwindigkeit des Magnetfelds ergibt sich aus:

$$n_s = \frac{120 \cdot f}{np}$$

n_s = velocità di rotazione campo magnetico statorico
stator magnetic field rotation speed

Drehgeschwindigkeit des Magnetfelds des Stators

f = frequenza

frequency

Frequenz

np = nr. di poli

nr. of poles

Anz. Pole

Il nr. di poli "np" è una caratteristica costruttiva del motore non modificabile, l'unica variabile su cui si può agire al fine di modificare la velocità di rotazione è la frequenza "f".

L'inverter è un dispositivo che alimenta il motore con corrente alternata a frequenza variabile secondo le esigenze dell'utente.

The no. of poles "np" is a constructive characteristic of the non-modifiable motor, the only variable on which one can act in order to modify the rotation speed is the frequency "f".

The inverter is a device that powers the motor with variable frequency alternating current according to the user's needs.

Die Anzahl der Pole „np“ ist ein Konstruktionsmerkmal des Motors, das nicht geändert werden kann, die einzige Variable zur Änderung der Drehzahl ist die Frequenz „f“.

Der Inverter ist ein Gerät, das den Motor mit Wechselstrom mit einer nach Bedarf des Kunden änderbaren Frequenz versorgt.

Inverter

Senza addentrarsi in trattative analitiche, al fine di mantenere accettabili le prestazioni meccaniche del motore risulta necessario mantenere il rapporto tensione/frequenza V/f il più costante possibile. Con riferimento al grafico precedente, consideriamo un motore elettrico trifase 230/400V - 50Hz pilotato da inverter V400/50 Hz:

- collegamento ad Y, $P \approx P_n$, $I \approx I_n$

$f = 5 \div 35$ Hz

- i motori autoventilati IC411, risultano poco raffreddati e quindi occorre calarne la coppia (zona a coppia calante per problematiche di temperatura)
- i motori servoventilati IC416 possono continuare in piena coppia anche a basse frequenze/velocità di rotazione e lavorare a coppia costante $M \approx M_n \approx \text{cost.}$

$f = 35 \div 50$ Hz

- motori funzionanti a coppia costante $M \approx M_n \approx \text{cost}$

$f > 50$ Hz

- sino ad $f \leq 50$ Hz l'inverter mantiene costante V/f ottenendo un funzionamento a coppia costante ($M = M_n$ a meno di problematiche di raffreddamento). All'aumentare della frequenza $f > 50$ Hz, il rapporto V/f va calando (la tensione V resta costante e la frequenza f continua a crescere) ottenendo un funzionamento a potenza costante $P \approx P_n \approx \text{cost.}$ (la coppia cala all'aumentare della frequenza/velocità a parità di corrente assorbita).

I motori con avvolgimento a V400/690-50Hz hanno solo questo funzionamento e devono essere collegati a Δ .

- collegamento ad Δ , $P_{\max} = 1.73 * P_n$,
 $I = 1.73 * I_{n400V} \approx I_{n230V}$

$f = 5 \div 35$ Hz

- i motori autoventilati IC411, risultano poco raffreddati e quindi occorre calarne la coppia (zona a coppia calante per problematiche di temperatura)
- i motori servoventilati IC416 possono continuare in piena coppia anche a basse frequenze/velocità di rotazione e lavorare a coppia costante $M \approx M_n \approx \text{cost.}$

$f = 35 \div 87$ Hz (87 Hz = $1.73 * 50$ Hz)

- motori funzionanti a coppia costante $M \approx M_n \approx \text{cost}$

$f > 87$ Hz

- il motore funziona a $P \approx 1.73 * P_n \approx \text{cost.}$ con rapporto V/f progressivamente ridotto rispetto a quello nominale (V resta invariato, f aumenta) con conseguente calo di M a parità di corrente assorbita.

Inverter

Without entering into analytical negotiations, in order to maintain the mechanical performance of the motor acceptable, it is necessary to keep the V/f voltage/frequency ratio as constant as possible. With reference to the previous graph, consider a 230/400V - 50Hz three-phase electric motor driven by V400/50 Hz inverter:

- connection to Y, $P \approx P_n$, $I \approx I_n$

$f = 5 \div 35$ Hz

- *the IC411 self-ventilated motors are not very cool and so it is necessary to decrease their torque (zone with decreasing torque for temperature issues)*
- *the IC416 servo-ventilated motors can continue at full torque even at low rotation speed/frequencies and work at constant torque $M \approx M_n \approx \text{cost.}$*

$f = 35 \div 50$ Hz

- *motors working at constant torque $M \approx M_n \approx \text{cost}$*

$f > 50$ Hz

- *up to $f \leq 50$ Hz the inverter maintains V/f constant obtaining a constant torque operation ($M = M_n$ except for cooling issues). As the frequency $f > 50$ Hz increases, the V/f ratio decreases (the V voltage remains constant and the f frequency continues to increase) obtaining a constant power operation $P \approx P_n \approx \text{cost.}$ (the torque decreases as the frequency/speed increases for the same absorbed current).*

The motors with winding at V400/690-50Hz only have this operation and must be connected to Δ .

- connection to Δ , $P_{\max} = 1.73 * P_n$,
 $I = 1.73 * I_{n400V} \approx I_{n230V}$

$f = 5 \div 35$ Hz

- *the IC411 self-ventilated motors are not very cool and so it is necessary to decrease their torque (zone with decreasing torque for temperature issues)*
- *the IC416 servo-ventilated motors can continue at full torque even at low rotation speed/frequencies and work at constant torque $M \approx M_n \approx \text{cost.}$*

$f = 35 \div 87$ Hz (87 Hz = $1.73 * 50$ Hz)

- *motors working at constant torque $M \approx M_n \approx \text{cost}$*

$f > 87$ Hz

- *the motor works at $P \approx 1.73 * P_n \approx \text{cost.}$ with V/f ratio progressively reduced compared to the nominal one (V remains unchanged, f increases) with consequent decrease of M for the same absorbed current.*

Inverter

Ohne analytische Vertiefungen muss das Verhältnis Spannung / Frequenz V/f so konstant wie möglich gehalten werden, damit die mechanischen Leistungen des Motors akzeptabel bleiben. Unter Bezugnahme auf das vorherige Diagramm betrachten wir einen Drehstrom-Elektromotor 230/400V - 50Hz, der über einen Inverter V400/50 Hz gesteuert wird:

- Anschluss an Y, $P \approx P_n$, $I \approx I_n$

$f = 5 \div 35$ Hz

- die Motoren mit Eigenlüftung IC411 sind schwach gekühlt, deshalb muss ihr Drehmoment reduziert werden (Bereich mit abnehmendem Drehmoment aufgrund von Temperaturproblemen)
- die Motoren mit Servo-Lüfter IC416 können auch bei niedrigen Frequenzen / Drehzahlen mit vollem Drehmoment weiterlaufen und mit konstantem Drehmoment arbeiten $M \approx M_n \approx \text{konst.}$

$f = 35 \div 50$ Hz

- Motoren mit konstantem Drehmoment $M \approx M_n \approx \text{konst}$

$f > 50$ Hz

- bis $f \leq 50$ Hz hält der Inverter das Verhältnis V/f konstant und erzielt einen Betrieb mit konstantem Drehmoment ($M = M_n$ mit Ausnahme von Kühlproblemen). Durch die Erhöhung der Frequenz $f > 50$ Hz verringert sich das Verhältnis V/f (die Spannung V bleibt konstant und die Frequenz f nimmt weiter zu) und es wird ein Betrieb mit konstanter Leistung erzielt $P \approx P_n \approx \text{konst.}$ (das Drehmoment wird durch die Erhöhung der Frequenz / Drehzahl bei gleicher Stromaufnahme reduziert).

Die Motoren mit Wicklung V400/690-50Hz verfügen nur über diesen Betrieb und müssen an Δ angeschlossen werden.

- Anschluss an Δ , $P_{\max} = 1.73 * P_n$,
 $I = 1.73 * I_{n400V} \approx I_{n230V}$

$f = 5 \div 35$ Hz

- die Motoren mit Eigenlüftung IC411 sind schwach gekühlt, deshalb muss ihr Drehmoment reduziert werden (Bereich mit abnehmendem Drehmoment aufgrund von Temperaturproblemen)
- die Motoren mit Servo-Lüfter IC416 können auch bei niedrigen Frequenzen / Drehzahlen mit vollem Drehmoment weiterlaufen und mit konstantem Drehmoment arbeiten $M \approx M_n \approx \text{konst.}$

$f = 35 \div 87$ Hz (87 Hz = $1.73 * 50$ Hz)

- Motoren mit konstantem Drehmoment $M \approx M_n \approx \text{konst}$

$f > 87$ Hz

- der Motor läuft bei $P \approx 1.73 * P_n \approx \text{konst.}$ mit einem gegenüber dem Nennverhältnis fortlaufend reduzierten V/f -Verhältnis (V bleibt unverändert, f nimmt zu), daraus ergibt sich bei gleicher Stromaufnahme eine Reduzierung von M .

Inverter

L'applicazione con inverter prevede l'utilizzo di un protettore termico. Nel caso di utilizzo con frequenze inferiori a 40Hz prevedere un sistema di ventilazione assistita. In caso di motore autofrenante pilotato da inverter, è necessario prevedere l'alimentazione separata del freno.

Inverter

The inverter application involves the use of a thermal protector. In case of use with frequencies lower than 40Hz, provide an assisted ventilation system. In case of inverter-driven brake motor, it is necessary to provide a separate brake power supply.

Inverter

Die Inverteranwendung erfordert die Verwendung eines thermischen Schutzes vor. Bei der Verwendung von Frequenzen unter 40Hz muss ein unterstütztes Lüftungssystem eingeplant werden. Bei über Inverter gesteuerten Bremsmotoren muss eine von der Bremse getrennte Versorgung eingeplant werden.

Carichi radiali e assiali

I cuscinetti dei motori MT sono radiali con doppia schermatura ZZ e autolubrificati a vita, per cui non è necessaria una lubrificazione aggiuntiva.

A richiesta è possibile fornire

- cuscinetti con schermatura a tenuta stagna DDU;
- gioco maggiorato C3;
- grasso per alte temperature;
- cuscinetti sensorizzati;
- cuscinetti doppio giro di sfera;
- cuscinetti unidirezionali.

La durata dei cuscinetti dipende inoltre dai carichi assiali e radiali applicati all'albero.

Radial and axial loads

The MT motor bearings are radial with double ZZ shielding and self-lubricated for life, therefore, no additional lubrication is required.

On demand, it is possible to supply

- bearings with DDU watertight shield;
- increased clearance C3;
- high-temperature grease;
- sensorised bearings;
- double ball bearings;
- unidirectional bearings.

Bearing life-span also depends on the axial and radial loads applied to the shaft.

Radial- und Axiallasten

Die Lager der MT Motoren sind Radiallager, zweifach gekapselt (ZZ) und lebensdauer geschmiert, deshalb ist keine zusätzliche Schmierung nötig.

Auf Anfrage sind lieferbar

- gekapselte abgedichtete Lager (DDU);
- erhöhtes Spiel C3;
- Hochtemperaturfett;
- Lager mit Sensoren;
- Doppelkugellager;
- unidirektionale Lager.

Weiterhin hängt die Lebensdauer der Lager von den an der Welle angewandten Axial- und Radiallasten ab.

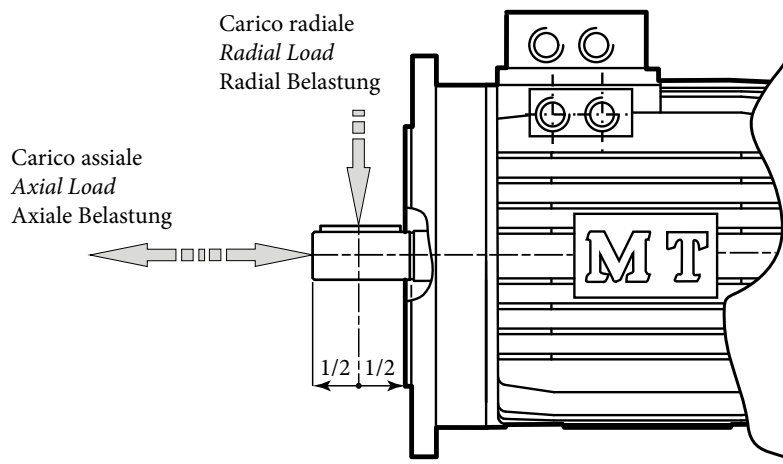


Fig.8

Nella pagina seguente vengono indicati i carichi radiali ed assiali massimi per ogni taglia di motore MT.

Tali valori vanno ridotti del 6% nel caso i motori siano alimentati a 60Hz

The following page indicates the maximum radial and axial loads for each MT motor size.

These values must be reduced by 6% if the motors are powered at 60Hz

Auf der folgenden Seite werden die maximalen Axial- und Radiallasten für jede MT Motorengröße angezeigt.

Werden die Motoren mit 60Hz versorgt, werden diese Werte um 6% reduziert.

| Carichi radiali e assiali | <i>Radial and axial loads</i> | Radial- und Axiallasten | |
|---------------------------|-------------------------------|-------------------------|--|
|---------------------------|-------------------------------|-------------------------|--|

Tab.16

| Taglia Size Größe | n_n | Carico radiale massimo <i>Maximum Radial Load</i> Maximale Radiallast | Carico assiale massimo <i>Maximum Axial Load</i> Maximale Axiallast |
|-------------------------|-------|---|---|
| | [rpm] | [N] | [N] |
| 55 | 750 | - | - |
| | 1000 | 350 | 170 |
| | 1500 | 310 | 140 |
| | 3000 | 240 | 100 |
| 56 | 750 | 380 | 190 |
| | 1000 | 350 | 170 |
| | 1500 | 310 | 140 |
| | 3000 | 240 | 100 |
| 63 | 750 | 400 | 220 |
| | 1000 | 370 | 200 |
| | 1500 | 360 | 160 |
| | 3000 | 300 | 120 |
| 71 | 750 | 600 | 330 |
| | 1000 | 550 | 310 |
| | 1500 | 530 | 250 |
| | 3000 | 470 | 190 |
| 80 | 750 | 800 | 450 |
| | 1000 | 750 | 400 |
| | 1500 | 700 | 330 |
| | 3000 | 600 | 250 |
| 90 | 750 | 1000 | 600 |
| | 1000 | 950 | 560 |
| | 1500 | 850 | 450 |
| | 3000 | 650 | 330 |
| 100 | 750 | 1510 | 850 |
| | 1000 | 1400 | 800 |
| | 1500 | 1200 | 630 |
| | 3000 | 1000 | 470 |
| 112 | 750 | 2000 | 1100 |
| | 1000 | 1900 | 1000 |
| | 1500 | 1600 | 800 |
| | 3000 | 1300 | 600 |
| 132 | 750 | 3100 | 1800 |
| | 1000 | 3000 | 1600 |
| | 1500 | 2500 | 1300 |
| | 3000 | 2000 | 1000 |
| 160 | 750 | 4000 | 2300 |
| | 1000 | 3700 | 2000 |
| | 1500 | 3100 | 1700 |
| | 3000 | 2500 | 1200 |
| 180 | 750 | 5000 | 2600 |
| | 1000 | 4500 | 2300 |
| | 1500 | 4000 | 2000 |
| | 3000 | 3000 | 1500 |
| 200 | 750 | 6700 | 3500 |
| | 1000 | 6000 | 3100 |
| | 1500 | 5300 | 2500 |
| | 3000 | 4200 | 1900 |



Livelli sonori

I motori MT rispettano la normativa EN60034-9 che fornisce le indicazioni ed i limiti di legge per quanto concerne i livelli sonori massimi.

Di seguito riportiamo i valori massimi ammissibili di emissioni sonore in funzione della potenza del motore elettrico considerato.

Sound levels

The MT motors comply with EN60034-9 which provides the indications and legal limits for maximum sound levels.

Below are the maximum admissible values for sound emissions depending on the power of the considered electric motor.

Schallpegel

Die MT Motoren entsprechen der Norm EN60034-9 über die Anweisungen und die gesetzlichen Einschränkungen in Bezug auf die maximalen Schallpegel.

Nachfolgend werden die maximal zulässigen Schallemissionswerte abhängig von der Leistung des betreffenden Elektromotors aufgeführt.

| Potenza nominale Nominal Power Nennleistung | Emissioni sonore / Sound emissions / Schallemissionen [LWA db] | | | | | | | | | | | | Tab.17 |
|---|---|-------|----|---|-------|----|---|-------|----|---|-------|----|--------|
| | 2 Poli/Poles/Polzahl a vuoto/no load/ohne last | | * | 4 Poli/Poles/Polzahl a vuoto/no load/ohne last | | * | 6 Poli/Poles/Polzahl a vuoto/no load/ohne last | | * | 8 Poli/Poles/Polzahl a vuoto/no load/ohne last | | * | |
| | 50 Hz | 60 Hz | | 50 Hz | 60 Hz | | 50 Hz | 60 Hz | | 50 Hz | 60 Hz | | |
| P_n [kW] | | | | | | | | | | | | | |
| 1÷2.2 | 81 | 85 | +2 | 71 | 71 | +5 | 71 | 71 | +7 | 71 | 71 | +8 | |
| 2.2÷5.5 | 86 | 88 | +2 | 76 | 76 | +5 | 76 | 76 | +7 | 76 | 76 | +8 | |
| 5.5÷11 | 91 | 91 | +2 | 81 | 81 | +5 | 80 | 80 | +7 | 80 | 80 | +8 | |
| 11÷22 | 94 | 94 | +2 | 88 | 88 | +4 | 84 | 84 | +6 | 84 | 84 | +7 | |
| 22÷37 | 96 | 100 | +2 | 91 | 91 | +4 | 87 | 87 | +6 | 87 | 87 | +7 | |

I valori sopra indicati si riferiscono ai valori sonori limite con motore elettrico funzionante a vuoto.

Nelle colonne * vengono indicati i valori massimi di aumento per la condizione di carico nominale che occorre sommare ai valori a vuoto.

Tali valori di emissioni acustiche sono valutati per motori asincroni trifase con rotore a gabbia, autoventilati IC411, IP55 ad una singola velocità.

The above values refer to limit sound values with electric motor running with no load.















The columns indicate the maximum increase values for the nominal load condition which must be added to the no load values.

These sound emission values are evaluated for three-phase asynchronous motors with cage rotor, IC411 self-ventilated, IP55 at a single speed.

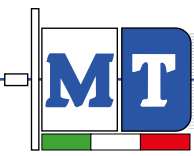
Die oben aufgeführten Werte beziehen sich auf die Schallgrenzwerte mit Elektromotor im Leerlauf.

In den Spalten werden die maximalen Steigerungswerte für den Nennlastzustand angegeben, die zu den Leerlaufwerten addiert werden müssen.

Diese Schallemissionswerte werden für eintourige Drehstrom-Asynchronmotoren mit Käfigläufer-Rotor und Eigenlüftung IC411, Schutzgrad IP55 berechnet.

| Motori standard | Standard motors | Standardmotoren | | | | |
|--|--|--|--|--|--|---|
| Tipo Type Typ | Descrizione Description Beschreibung | Potenza nominale Nominal Power Nennleistung P_n [kW] | Taglia Size Größe | Poli Poles Pole np | ATEX | UL-CSA |
| TN  | Motori asincroni trifase <i>Three-phase asynchronous motors</i> Drehstrom-Asynchronmotoren | 0.05 ÷ 37 | 55 56 63 71 80 90 100 112 132 160 180 200 | 2 4 6 8 |  2/22  1/21 |  |
| MN  | Motori monofase <i>Single-phase motors</i> Einphasen-Wechselstrommotoren | 0.09 ÷ 2.2 | 56 63 71 80 90 100 | 2 4 6 | *  2/22 |  |
| XN  | Motori monofase ad alta coppia di spunto <i>Single-phase motors with high starting torque</i> Einphasen-Wechselstrommotoren mit hohem Anlaufdrehmoment | 0.09 ÷ 2.2 | 56 63 71 80 90 100 | 2 4 6 | *  2/22 |  |
| DN  | Motori trifase a doppia polarità <i>Three-phase motors with single polarity</i> Drehstrommotoren mit doppelter Polarität | 0.18/0.12 ÷ 22/18.5 | 63 71 80 90 100 112 132 160 180 | 2/4 2/6 2/8 4/6 4/8 6/8 |  2/22  1/21 |  |

* con scatola morsettiera in alluminio / with aluminiumterminal terminal box / mit Klemmenkasten aus Aluminium



Motori standard

La presente sezione tratta i motori MT nelle loro versioni standard:

- TN Motori asincroni trifase;
- MN Motori monofase;
- XN Motori monofase ad elevata coppia di spunto;
- DN Motori trifase a doppia polarità.

I motori TN asincroni trifase normalizzati sono idonei per uso generico in applicazioni industriali.

Sono motori autoventilati (IC411) idonei per un servizio continuo di tipo S1.

COLLEGAMENTI:

Prima di collegare il motore all'applicazione è necessario controllarne i collegamenti ed il senso di rotazione; lo standard MT è con rotazione antioraria fronte albero (↺).

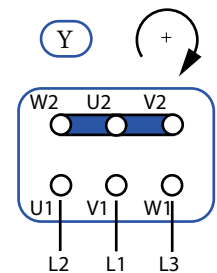
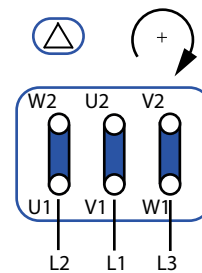
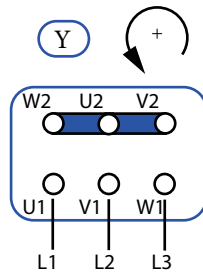
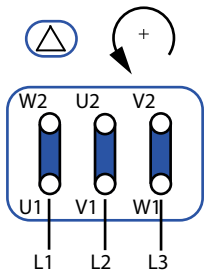


Fig.9

I motori MN, sono motori monofase con condensatore di marcia C collocato all'interno della scatola morsetti ed in serie all'avvolgimento elettrico. Le dimensioni sono le stesse della serie TN fatta eccezione le dimensioni della morsetti realizzata in materiale plastico antiurto.

Dai motori monofase standard MN, derivano i motori monofase ad elevata coppia di spunto XN, dotati di condensatore di spunto C_{sp} collegato in parallelo al condensatore di avviamento C. Ad avviamento avvenuto il C_{sp} viene disinserito da un apposito relè elettronico.

Standard motors

This section covers the MT motors in their standard versions:

- TN Three-phase asynchronous motors;
- MN Single-phase motors;
- XN Single-phase motors with high starting torque;
- DN Three-phase motors with single polarity.

The normalised three-phase asynchronous TN motors are suitable for generic use in industrial applications.

They are self-ventilated motor (IC411) suitable for S1 type continuous duty.

CONNECTIONS:

Before connecting the motor to the application, it is necessary to check the connections and rotation direction; the standard MT has anti-clockwise rotation in front of the shaft (↺).

Standardmotoren

Der vorliegende Abschnitt behandelt die MT Motoren in ihren Standardausführungen:

- TN Drehstrom-Asynchronmotoren;
- MN Einphasen-Wechselstrommotoren;
- XN Einphasen-Wechselstrommotoren mit hohem Anlaufdrehmoment;
- DN Drehstrommotoren mit doppelter Polarität.

Die normalisierten Drehstrom-Asynchronmotoren TN sind für die allgemeine Verwendung in Industrieanwendungen geeignet.

Es sind Motoren mit Eigenlüftung (IC411), für einen Dauerbetrieb der Betriebsart S1 geeignet.

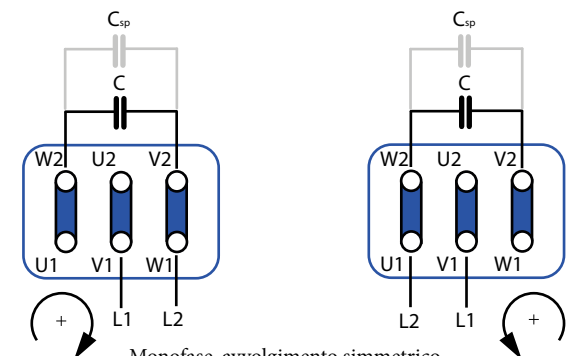
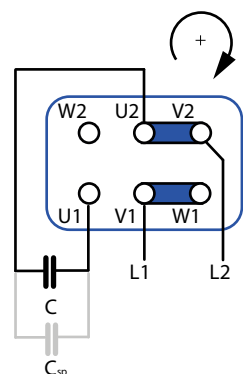
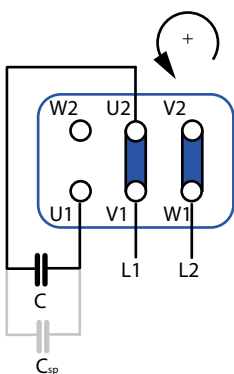
ANSCHLÜSSE:

Vor dem Anschluss des Motors an die Anwendung müssen die Kupplungen und der Drehsinn überprüft werden; der MT Standard ist Linkslauf vor der Welle (↺).

The MN motors are single-phase with C running capacitor placed inside the terminal board box and in series with the electric winding. The dimensions are the same as those of the TN series, except for the dimensions of the terminal board made of impact-resistant plastic.

From the MN standard single-phase motors derive the single-phase motors with high starting torque XN, equipped with a C_{sp} starting capacitor connected in parallel to the C starting capacitor. Once started, the C_{sp} is disconnected by special electronic relay.

Die MN Motoren sind Einphasen-Wechselstrommotoren mit Betriebskondensator C, der im Klemmenkasten angebracht und mit der elektrischen Wicklung in Reihe geschaltet ist. Die gleichen Abmessungen wie die TN-Baureihe mit Ausnahme der Abmessung des in stoßfestem Kunststoffmaterial ausgeführten Klemmenbretts. Von den Standard-Einphasen-Wechselstrommotoren MN wurden die Einphasen-Wechselstrommotoren mit hohem Anlaufdrehmoment XN entwickelt, mit einem Anlaufkondensator C_{sp} , der parallel zum Anlaufkondensator C angeschlossen ist. Nach erfolgtem Anlauf wird der C_{sp} über ein entsprechendes elektronisches Relais ausgeschaltet.



Monofase, avvolgimento simmetrico
Single Phase, symmetrical winding
Einphasig, symmetrische Wicklung

Fig.10

Motori standard

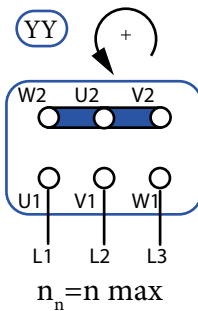
Standard motors

Standardmotoren

I motori DN, sono motori trifase a doppia polarità. Permettono l'utilizzo su due differenti velocità in funzione dei collegamenti applicati.

I motori DN a doppia velocità possono essere realizzati:

- con singolo avvolgimento trifase in configurazione DAHLANDER Δ/YY (avvolgimento unico) abbiamo motori dotati di coppie polari tra loro doppie (2/4 e 4/8);

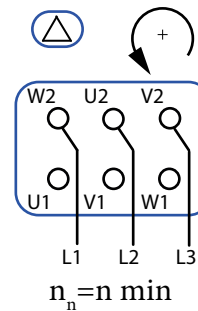


The DN motor are three-phase motors with single polarity.

They allow using two different speeds depending on the connections applied.

The double speed DN motors can be made:

- with single three-phase winding with DAHLANDER Δ/YY configuration (single winding) we have motors equipped with double polar couples (2/4 and 4/8);



Die DN Motoren sind Drehstrommotoren mit doppelter Polarität.

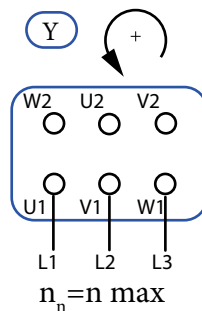
Sie ermöglichen die Verwendung mit zwei verschiedenen Geschwindigkeiten, je nach angebrachten Kupplungen.

Die DN-Motoren mit doppelter Geschwindigkeit können wie folgt hergestellt werden:

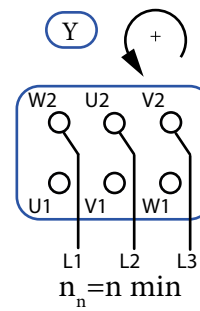
- mit einer einzelnen dreiphasigen Wicklung mit Konfiguration DAHLANDER Δ/YY (Einzelwicklung), wir haben Motoren mit doppelten Polpaaren (2/4 und 4/8);

Fig.11

- con doppio avvolgimento trifase interno per i motori con coppie polari 2/6, 2/8, 4/6 e 6/8;



- with double three-phase internal winding for motors with polar couples 2/6, 2/8, 4/6 and 6/8;



- mit dreiphasiger interner Doppelwicklung für die Motoren mit Polpaaren 2/6, 2/8, 4/6 und 6/8;

Fig.12

I motori MT a doppia polarità possono essere forniti con le seguenti coppie polari:

The double polarity MT motors can be supplied with the following polar couples:

Die MT Motoren mit doppelter Geschwindigkeit können mit den folgenden Polpaaren geliefert werden:

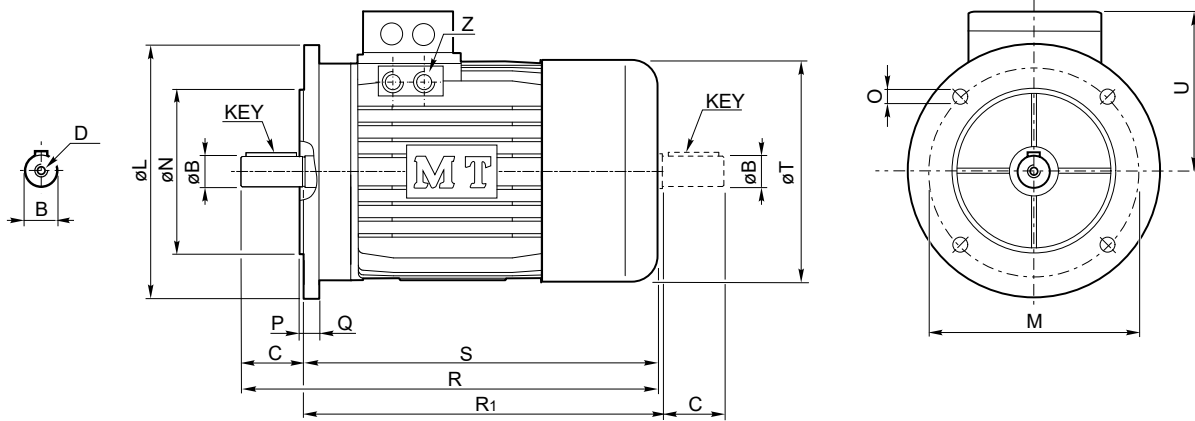
| Coppie polari Polar couples Polpaare | Velocità di rotazione Rotation speed Drehgeschwindigkeit [rpm] |
|--|---|
| 2/4 | 3000/1500 |
| 2/6 | 3000/1000 |
| 2/8 | 3000/750 |
| 4/6 | 1500/1000 |
| 4/8 | 1500/750 |
| 6/8 | 1000/750 |

Tab.18

Su richiesta è possibile fornire anche motori a tripla velocità. Contattare Ufficio Tecnico MT.

On request it is possible to supply triple speed motors. Contact the MT technical office.

Auf Wunsch ist es möglich, Dreifachmotoren zu liefern. Wenden Sie sich an das technische Büro von MT.


Fig.13

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-------|------|-------|-------|-------|-----------|-----|-----|-----|----|-----|----|-----|
| | B | C | D | R | R1 | T | U | | Z | Key | L | M | N | O | P | Q | S |
| | | | | | | | TN-DN | MN-XN | | | | | | | | | |
| 56 | ø9 j6 | 20 | M4 | 190 | 171 | ø110 | 96 | 122 | M16 | 3x3x15 | 120 | 100 | 80 | 7 | 3 | 8 | 170 |
| 63 | ø11 j6 | 23 | M4 | 218 | 193.5 | ø123 | 102 | 128 | M16 | 4x4x15 | 140 | 115 | 95 | 9 | 3 | 9 | 195 |
| 71 | ø14 j6 | 30 | M5 | 245 | 218 | ø138 | 112 | 138 | M20 | 5x5x25 | 160 | 130 | 110 | 9 | 3.5 | 9 | 215 |
| 80 | ø19 j6 | 40 | M6 | 272 | 237 | ø156 | 127 | 154 | M20 | 6x6x30 | 200 | 165 | 130 | 12 | 3.5 | 10 | 232 |
| 90S | ø24 j6 | 50 | M8 | 305 | 256 | ø176 | 131 | 158 | M20 | 8x7x40 | 200 | 165 | 130 | 12 | 3.5 | 10 | 255 |
| 90L | ø24 j6 | 50 | M8 | 330 | 281 | ø176 | 131 | 158 | M20 | 8x7x40 | 200 | 165 | 130 | 12 | 3.5 | 10 | 280 |
| 100 | ø28 j6 | 60 | M10 | 368 | 309 | ø194 | 142 | 172 | M20 | 8x7x50 | 250 | 215 | 180 | 14 | 4 | 14 | 308 |
| 112 | ø28 j6 | 60 | M10 | 390 | 331 | ø216 | 154 | - | M20 | 8x7x50 | 250 | 215 | 180 | 14 | 4 | 14 | 330 |
| 132S | ø38 k6 | 80 | M12 | 455 | 378 | ø257 | 177 | - | M25 | 10x8x70 | 300 | 265 | 230 | 14 | 4 | 19 | 375 |
| 132M | ø38 k6 | 80 | M12 | 495 | 416 | ø257 | 177 | - | M25 | 10x8x70 | 300 | 265 | 230 | 14 | 4 | 19 | 415 |
| 160M | ø42 k6 | 110 | M16 | 600 | 510 | ø310 | 220 | - | 2xM32 | 12x8x90 | 350 | 300 | 250 | 19 | 5 | 16 | 490 |
| 160L | ø42 k6 | 110 | M16 | 640 | 554 | ø310 | 220 | - | 2xM32 | 12x8x90 | 350 | 300 | 250 | 19 | 5 | 16 | 530 |
| 180 | ø48 k6 | 110 | M16 | 705 | 603 | ø360 | 263 | - | 2xM32 | 14x9x100 | 350 | 300 | 250 | 19 | 5 | 18 | 595 |
| 200 | ø55 k6 | 110 | M20 | 740 | 651 | ø400 | 263 | - | 2xM32 | 16x10x100 | 400 | 350 | 300 | 19 | 5 | 19 | 630 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

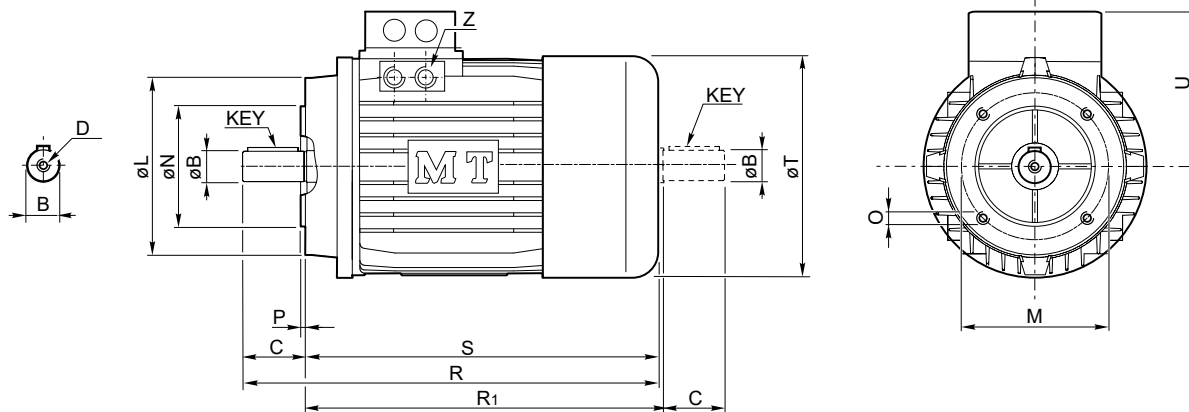


Fig.14

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen | | | | | | | | | | | | | | | |
|-------------------------|---------------------------------------|-----|-----|-----|-------|------------|-------|-------|-------|----------|-----|-----|-----|-----|-----|-----|
| | [mm] | | | | | | | | | | | | | | | |
| | B | C | D | R | R1 | T | U | | Z | Key | L | M | N | O | P | S |
| | | | | | | | TN-DN | MN-XN | | | | | | | | |
| 55 | $\phi 9 j6$ | 20 | M4 | 165 | - | $\phi 103$ | 76 | 81 | M16 | 3x3x15 | 80 | 65 | 50 | M5 | 2.5 | 145 |
| 56 | $\phi 9 j6$ | 20 | M4 | 190 | 171 | $\phi 110$ | 96 | 122 | M16 | 3x3x15 | 80 | 65 | 50 | M5 | 2.5 | 170 |
| 63 | $\phi 11 j6$ | 23 | M5 | 218 | 193,5 | $\phi 123$ | 102 | 128 | M16 | 4x4x15 | 90 | 75 | 60 | M5 | 2.5 | 195 |
| 71 | $\phi 14 j6$ | 30 | M6 | 245 | 218 | $\phi 138$ | 112 | 138 | M20 | 5x5x25 | 105 | 85 | 70 | M6 | 2.5 | 215 |
| 80 | $\phi 19 j6$ | 40 | M8 | 272 | 237 | $\phi 156$ | 127 | 154 | M20 | 6x6x30 | 120 | 100 | 80 | M6 | 3 | 232 |
| 90S | $\phi 24 j6$ | 50 | M8 | 305 | 256 | $\phi 176$ | 131 | 158 | M20 | 8x7x40 | 140 | 115 | 95 | M8 | 3 | 255 |
| 90L | $\phi 24 j6$ | 50 | M10 | 330 | 281 | $\phi 176$ | 131 | 158 | M20 | 8x7x40 | 140 | 115 | 95 | M8 | 3 | 280 |
| 100 | $\phi 28 j6$ | 60 | M10 | 368 | 309 | $\phi 194$ | 142 | 172 | M20 | 8x7x50 | 160 | 130 | 110 | M8 | 3.5 | 308 |
| 112 | $\phi 28 j6$ | 60 | M12 | 390 | 331 | $\phi 216$ | 154 | - | M20 | 8x7x50 | 160 | 130 | 110 | M8 | 3.5 | 330 |
| 132S | $\phi 38 k6$ | 80 | M12 | 455 | 378 | $\phi 257$ | 177 | - | M25 | 10x8x70 | 200 | 165 | 130 | M10 | 4 | 375 |
| 132M | $\phi 38 k6$ | 80 | M16 | 495 | 416 | $\phi 257$ | 177 | - | M25 | 10x8x70 | 200 | 165 | 130 | M10 | 4 | 415 |
| 160M | $\phi 42 k6$ | 110 | M16 | 600 | 510 | $\phi 310$ | 220 | - | 2xM32 | 12x8x90 | 250 | 215 | 180 | M12 | 4 | 490 |
| 160L | $\phi 42 k6$ | 110 | M16 | 640 | 554 | $\phi 310$ | 220 | - | 2xM32 | 12x8x90 | 250 | 215 | 180 | M12 | 4 | 530 |
| 180 | $\phi 48 k6$ | 110 | M16 | 705 | 603 | $\phi 360$ | 263 | - | 2xM32 | 14x9x100 | 290 | 215 | 180 | M12 | 4 | 595 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

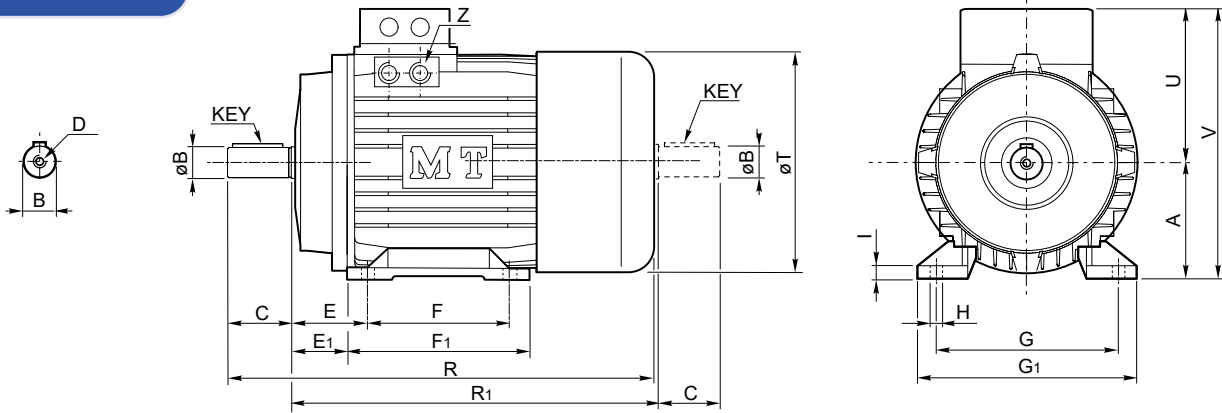
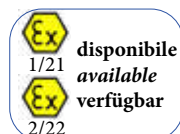
TN-MN-XN-DN
B3



Fig.15

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-------|------|-------|-------|-------|-----------|-----|-----|----|-----|-----|-----|-----|----------|----|-------|-------|
| | B | C | D | R | R1 | T | U | | Z | Key | A | E | E1 | F | F1 | G | G1 | H | I | V | |
| | | | | | | | TN-DN | MN-XN | | | | | | | | | | | | TN-DN | MN-XN |
| 55 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 56 | ø9 j6 | 20 | M4 | 190 | 171 | ø110 | 96 | 122 | M16 | 3X3X15 | 56 | 36 | 26 | 71 | 90 | 90 | 108 | 6x11 | 9 | 152 | 178 |
| 63 | ø11 j6 | 23 | M4 | 218 | 193,5 | ø123 | 102 | 128 | M16 | 4X4X15 | 63 | 42 | 28 | 80 | 105 | 100 | 120 | 7x12 | 10 | 165 | 191 |
| 71 | ø14 j6 | 30 | M5 | 245 | 218 | ø138 | 112 | 138 | M20 | 5X5X20 | 71 | 45 | 36 | 90 | 108 | 112 | 136 | 7x12 | 11 | 183 | 209 |
| 80 | ø19 j6 | 40 | M6 | 272 | 237 | ø156 | 127 | 154 | M20 | 6X6X30 | 80 | 50 | 38 | 100 | 125 | 125 | 154 | 9.5x16.5 | 13 | 207 | 234 |
| 90S | ø24 j6 | 50 | M8 | 305 | 256 | ø176 | 131 | 158 | M20 | 8X7X40 | 90 | 56 | 41 | 100 | 130 | 140 | 174 | 10x17.5 | 14 | 221 | 248 |
| 90L | ø24 j6 | 50 | M8 | 330 | 281 | ø176 | 131 | 158 | M20 | 8X7X40 | 90 | 56 | 41 | 125 | 155 | 140 | 174 | 10x17.5 | 14 | 221 | 248 |
| 100 | ø28 j6 | 60 | M10 | 368 | 309 | ø194 | 142 | 172 | M20 | 8X7X50 | 100 | 63 | 46 | 140 | 175 | 160 | 192 | 12x22 | 14 | 242 | 272 |
| 112 | ø28 j6 | 60 | M10 | 390 | 331 | ø216 | 154 | - | M20 | 8X7X50 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 266 | - |
| 132S | ø38 k6 | 80 | M12 | 455 | 378 | ø257 | 177 | - | M25 | 10X8X70 | 132 | 89 | 60 | 140 | 180 | 216 | 256 | 12.5x28 | 16 | 309 | - |
| 132M | ø38 k6 | 80 | M12 | 495 | 416 | ø257 | 177 | - | M25 | 10X8X70 | 132 | 89 | 60 | 178 | 218 | 216 | 256 | 12.5x28 | 16 | 309 | - |
| 160M | ø42 k6 | 110 | M16 | 600 | 510 | ø310 | 240 | - | 2xM32 | 10X8X70 | 160 | 108 | 83 | 210 | 260 | 254 | 310 | 14.5x30 | 23 | 400 | - |
| 160L | ø42 k6 | 110 | M16 | 640 | 554 | ø310 | 240 | - | 2xM32 | 12X8X100 | 160 | 108 | 72 | 254 | 320 | 254 | 310 | 14.5x30 | 23 | 400 | - |
| 180M | ø48 k6 | 110 | M16 | 705 | 603 | ø360 | 263 | - | 2xM32 | 12X8X100 | 180 | 121 | 80 | 241 | 315 | 279 | 355 | 13x38 | 25 | 443 | - |
| 180L | ø48 k6 | 110 | M16 | 705 | 603 | ø360 | 263 | - | 2xM32 | 14X8X100 | 180 | 121 | 80 | 279 | 353 | 279 | 355 | 13x38 | 25 | 443 | - |
| 200 | ø55 k6 | 110 | M20 | 740 | 651 | ø400 | 263 | - | 2xM32 | 16X10X100 | 200 | 133 | 91 | 305 | 400 | 318 | 395 | 18x38 | 25 | 463 | - |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Motori standard
Standard motors
Standardmotoren
TN

50 Hz
2 poli
2 poles
2 polig

Dati tecnici / Technical Data / Technische Daten

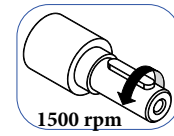
| Taglia Size Größe | P_n | | n [rpm] | η [%] | $\cos \varphi$ - | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |  |
|-------------------------|-------|------|------------|---------------|---------------------|--------------|-------------------|---------------|-------------------|--------------------|--------------------------|---|
| | [kW] | [HP] | | | | | | | | | | |
| 55A | 0.05 | 0.07 | 2750 | 52 | 0.71 | 0.30 | 2.8 | 0.18 | 2 | 2.2 | 0.00010 | 2 |
| 56A | 0.09 | 0.12 | 2700 | 52 | 0.76 | 0.45 | 3 | 0.32 | 2 | 2.2 | 0.00010 | 2.9 |
| 56B | 0.13 | 0.18 | 2730 | 52 | 0.73 | 0.50 | 3.2 | 0.46 | 2 | 2.3 | 0.00010 | 2.9 |
| 56C | 0.18 | 0.25 | 2700 | 53 | 0.82 | 0.60 | 2.9 | 0.63 | 2.5 | 2.5 | 0.00012 | 3 |
| 63A | 0.18 | 0.25 | 2720 | 53.2 | 0.69 | 0.60 | 2.5 | 0.63 | 2 | 2 | 0.00016 | 3.7 |
| 63B | 0.25 | 0.33 | 2710 | 58 | 0.82 | 0.80 | 3 | 0.88 | 2 | 2 | 0.00016 | 3.7 |
| 63C | 0.37 | 0.50 | 2770 | 68 | 0.78 | 1 | 3.5 | 1.3 | 2.1 | 2.2 | 0.00029 | 4.7 |
| 71A | 0.37 | 0.50 | 2800 | 68 | 0.73 | 1.1 | 3.5 | 1.3 | 2.5 | 2.7 | 0.00029 | 5.5 |
| 71B | 0.55 | 0.75 | 2800 | 72 | 0.74 | 1.4 | 4.5 | 1.8 | 2.3 | 2.6 | 0.00047 | 6.5 |
| 71C | 0.75 | 1 | 2820 | 72 | 0.74 | 2 | 4.5 | 2.5 | 2.3 | 2.6 | 0.00057 | 7.2 |
| 80A | 0.75 | 1 | 2830 | 72.1 | 0.83 | 1.8 | 5 | 2.5 | 2.3 | 2.6 | 0.00085 | 8.7 |
| 80B | 1.1 | 1.5 | 2830 | 75 | 0.84 | 2.5 | 5 | 3.7 | 2.3 | 2.6 | 0.00105 | 10.8 |
| 90S | 1.5 | 2 | 2820 | 77.2 | 0.86 | 3.6 | 5.8 | 5.1 | 2.6 | 2.7 | 0.00145 | 12.9 |
| 90L | 2.2 | 3 | 2840 | 79.7 | 0.86 | 4.7 | 5.5 | 7.4 | 2.9 | 3 | 0.00191 | 14.8 |
| 100A | 3 | 4 | 2890 | 81.5 | 0.85 | 6 | 5.8 | 9.9 | 2.4 | 3 | 0.00299 | 22 |
| 100B | 4 | 5.5 | 2880 | 81.5 | 0.85 | 8.1 | 6.2 | 13.2 | 2.5 | 3.2 | 0.00407 | 27 |
| 112A | 4 | 5.5 | 2900 | 83.1 | 0.88 | 8 | 6.6 | 13.2 | 2.1 | 2.6 | 0.00520 | 29 |
| 112B | 5.5 | 7.5 | 2900 | 85.7 | 0.86 | 12.3 | 6.6 | 18 | 2 | 2.8 | 0.00700 | 32 |
| 112C | 7.5 | 10 | 2860 | 86 | 0.82 | 16 | 6.5 | 24.8 | 2.7 | 3.2 | 0.00730 | 34 |
| 132SA | 5.5 | 7.5 | 2910 | 84.7 | 0.83 | 11.6 | 6.5 | 18 | 3.3 | 3.1 | 0.01080 | 44 |
| 132SB | 7.5 | 10 | 2910 | 86 | 0.84 | 15 | 7 | 24.6 | 3.5 | 3.3 | 0.01300 | 50 |
| 132MC | 9.2 | 12.5 | 2910 | 86 | 0.87 | 18.5 | 7.1 | 30.2 | 3.6 | 3.8 | 0.01639 | 59 |
| 132MD | 11 | 15 | 2910 | 86 | 0.87 | 21 | 7.6 | 36 | 3.4 | 3.8 | 0.01873 | 65 |
| 160MA | 11 | 15 | 2930 | 89.4 | 0.85 | 22.9 | 8.6 | 35.8 | 3.5 | 3.8 | 0.03198 | 80 |
| 160MB | 15 | 20 | 2930 | 90.3 | 0.85 | 29.5 | 8.3 | 48.9 | 3.6 | 3.9 | 0.04221 | 91 |
| 160L | 18.5 | 25 | 2935 | 90.9 | 0.85 | 34.7 | 8.3 | 60.2 | 3.9 | 3.7 | 0.04860 | 100 |
| 180M | 22 | 30 | 2930 | 91.3 | 0.86 | 40 | 7 | 71.7 | 2.9 | 2.2 | 0.07790 | 125 |
| 200LA | 30 | 40 | 2940 | 92 | 0.90 | 52 | 6.6 | 97.5 | 3 | 2.2 | 0.10520 | 156 |
| 200LB | 37 | 50 | 2940 | 92.5 | 0.89 | 68.6 | 7 | 120 | 3 | 2.4 | 0.12080 | 205 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
TN

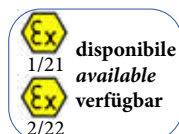
disponibile
available
verfügbar


4 poli
4 poles
50 Hz
4 polig


| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 55A | 0.05 | 0.07 | 1330 | 35 | 0.65 | 0.35 | 1.8 | 0.4 | 1.7 | 1.3 | 0.00010 | 2 |
| 56B | 0.09 | 0.12 | 1340 | 56 | 0.65 | 0.43 | 2.5 | 0.6 | 2.6 | 2.6 | 0.00018 | 2.9 |
| 63A | 0.13 | 0.18 | 1360 | 60 | 0.68 | 0.60 | 2.4 | 0.9 | 2 | 2.2 | 0.00025 | 3.7 |
| 63B | 0.18 | 0.25 | 1380 | 62 | 0.69 | 0.70 | 2.5 | 1.3 | 2.2 | 2.3 | 0.00029 | 4.5 |
| 71A | 0.25 | 0.33 | 1400 | 70 | 0.70 | 0.85 | 3 | 1.7 | 2.3 | 2.3 | 0.00074 | 5.4 |
| 71B | 0.37 | 0.50 | 1400 | 70 | 0.71 | 1.1 | 3.7 | 2.5 | 2.8 | 2.8 | 0.00096 | 6.4 |
| 71C | 0.55 | 0.75 | 1400 | 72 | 0.75 | 1.45 | 3.9 | 3.8 | 2.5 | 2.5 | 0.00117 | 7 |
| 80A | 0.55 | 0.75 | 1400 | 72 | 0.78 | 1.6 | 4 | 3.8 | 2.4 | 2.5 | 0.00191 | 8.5 |
| 80B | 0.75 | 1 | 1400 | 72.1 | 0.78 | 2.1 | 4 | 5.1 | 2.4 | 2.5 | 0.00254 | 10.5 |
| 80C | 0.95 | 1.3 | 1420 | 72.1 | 0.75 | 2.5 | 4 | 6.4 | 2.3 | 2.6 | 0.00285 | 11.5 |
| 90S | 1.1 | 1.5 | 1380 | 75 | 0.84 | 2.6 | 4.3 | 7.6 | 2.2 | 2.2 | 0.00242 | 12.5 |
| 90L | 1.5 | 2 | 1410 | 77.2 | 0.84 | 3.6 | 4.7 | 10.1 | 2.7 | 2.9 | 0.00321 | 14 |
| 90LB | 1.8 | 2.5 | 1400 | 77.2 | 0.84 | 4.4 | 4.7 | 12.2 | 2.7 | 2.9 | 0.00400 | 16 |
| 90LC | 2.2 | 3 | 1400 | 83 | 0.82 | 4.8 | 5.6 | 14.9 | 2.9 | 2.8 | 0.00450 | 17.5 |
| 100A | 2.2 | 3 | 1440 | 79.7 | 0.84 | 5 | 4.8 | 14.5 | 2.2 | 2.5 | 0.00520 | 20 |
| 100B | 3 | 4 | 1450 | 81.5 | 0.84 | 6.7 | 5 | 19.7 | 2.3 | 2.6 | 0.00668 | 24 |
| 100C | 4 | 5.5 | 1410 | 81.5 | 0.82 | 8 | 4.7 | 27 | 2.4 | 2.7 | 0.00706 | 26 |
| 112A | 4 | 5.5 | 1420 | 83.1 | 0.88 | 8.4 | 5 | 27 | 2.2 | 2.3 | 0.01052 | 29 |
| 112B | 5.5 | 7.5 | 1420 | 83.1 | 0.90 | 13 | 6 | 37 | 1.9 | 2 | 0.01320 | 32 |
| 132SA | 5.5 | 7.5 | 1440 | 84.7 | 0.81 | 13 | 6.2 | 36.5 | 2.1 | 2.5 | 0.02068 | 43 |
| 132MB | 7.5 | 10 | 1440 | 86 | 0.81 | 17.5 | 6.3 | 49.7 | 2.5 | 2.7 | 0.02688 | 54 |
| 132MC | 9.2 | 12.5 | 1450 | 86 | 0.83 | 18.5 | 7 | 60.6 | 2.4 | 2.6 | 0.03059 | 58 |
| 132MD | 11 | 15 | 1450 | 86 | 0.83 | 22 | 8 | 72.4 | 2.3 | 2.4 | 0.03632 | 69 |
| 160M | 11 | 15 | 1450 | 89.8 | 0.79 | 22 | 7.3 | 72.5 | 3.5 | 3.7 | 0.06430 | 80 |
| 160L | 15 | 20 | 1460 | 90.6 | 0.79 | 31 | 7 | 98.1 | 3.6 | 3.1 | 0.08380 | 98 |
| 180M | 18.5 | 25 | 1460 | 91.2 | 0.82 | 37 | 6 | 121 | 2.5 | 2.6 | 0.01310 | 126 |
| 180L | 22 | 30 | 1470 | 91.6 | 0.82 | 43 | 6.8 | 143 | 2.5 | 3 | 0.01410 | 136 |
| 200L | 30 | 40 | 1465 | 92.3 | 0.82 | 63 | 6 | 196 | 2.5 | 2.9 | 0.01510 | 182 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
TN

50 Hz
6 poli
6 poles
6 polig
TN - MN - XN - DN
Dati tecnici / Technical Data / Technische Daten

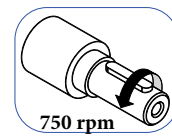
| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | kg |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | | | |
| 56A | 0.06 | 0.08 | 840 | 48 | 0.59 | 0.40 | 2 | 0.7 | 1.8 | 2 | 0.00018 | 3 |
| 63A | 0.09 | 0.12 | 920 | 54 | 0.60 | 0.71 | 2 | 1 | 1.8 | 2 | 0.00034 | 4 |
| 63B | 0.12 | 0.16 | 900 | 56 | 0.60 | 0.76 | 2 | 1.3 | 1.8 | 2 | 0.00060 | 4.6 |
| 71A | 0.18 | 0.25 | 880 | 56 | 0.62 | 0.80 | 2.5 | 1.9 | 1.8 | 2 | 0.00074 | 5.5 |
| 71B | 0.25 | 0.33 | 900 | 60 | 0.65 | 1.2 | 2.9 | 2.6 | 1.9 | 2.2 | 0.00096 | 6.5 |
| 80A | 0.37 | 0.50 | 920 | 65 | 0.66 | 1.5 | 3.2 | 3.8 | 1.9 | 2.2 | 0.00191 | 8.5 |
| 80B | 0.55 | 0.75 | 920 | 69 | 0.70 | 1.7 | 3.5 | 5.7 | 2 | 2.3 | 0.00264 | 10.5 |
| 90S | 0.75 | 1 | 920 | 70 | 0.73 | 2.4 | 3.5 | 7.7 | 1.8 | 2 | 0.00242 | 12.5 |
| 90L | 1.1 | 1.5 | 920 | 72.9 | 0.71 | 3.4 | 3.5 | 11.4 | 1.8 | 2 | 0.00398 | 14 |
| 100A | 1.5 | 2 | 940 | 75.2 | 0.75 | 4 | 4 | 15.2 | 1.8 | 2 | 0.00519 | 24 |
| 112A | 2.2 | 3 | 950 | 77.7 | 0.75 | 5.4 | 6 | 22 | 2.3 | 2.2 | 0.00720 | 34 |
| 132SA | 3 | 4 | 950 | 79.7 | 0.76 | 7.1 | 5.4 | 30.1 | 2.1 | 2.1 | 0.01940 | 44 |
| 132MB | 4 | 5.5 | 950 | 81.4 | 0.78 | 9.1 | 5.3 | 40.2 | 2.4 | 2.4 | 0.02688 | 55 |
| 132MC | 5.5 | 7.5 | 965 | 83.1 | 0.82 | 13.3 | 5.3 | 54.4 | 2.6 | 2.6 | 0.03430 | 60 |
| 160M | 7.5 | 10 | 950 | 87.2 | 0.82 | 17.1 | 5 | 75.4 | 2 | 2.3 | 0.08300 | 75 |
| 160L | 11 | 15 | 960 | 88.7 | 0.82 | 24.5 | 5.5 | 109 | 2.3 | 2.5 | 0.12500 | 100 |
| 180L | 15 | 20 | 960 | 89.7 | 0.82 | 30 | 5.2 | 149 | 2.3 | 2.2 | 0.20000 | 147 |
| 200LA | 18.5 | 25 | 950 | 90.4 | 0.84 | 37.5 | 5.2 | 186 | 2.1 | 2.3 | 0.25000 | 177 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN

 disponibile
available
verfügbar


8 poli

8 poles

8 polig

50 Hz



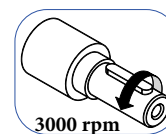
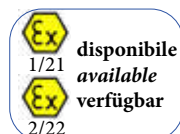
| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 63A | 0.07 | 0.1 | 640 | 42 | 0.52 | 0.70 | 1.3 | 1 | 1.8 | 2 | 0.00029 | 4.5 |
| 71A | 0.12 | 0.16 | 670 | 46 | 0.60 | 0.80 | 2 | 1.7 | 1.8 | 2 | 0.00096 | 6.5 |
| 80A | 0.18 | 0.25 | 690 | 50 | 0.60 | 0.90 | 2.5 | 2.5 | 1.8 | 2 | 0.00191 | 8.4 |
| 80B | 0.25 | 0.33 | 700 | 50 | 0.60 | 1.3 | 2.5 | 3.4 | 1.8 | 2 | 0.00254 | 10.4 |
| 90S | 0.37 | 0.50 | 700 | 58 | 0.60 | 1.6 | 3 | 5 | 2 | 2.2 | 0.00242 | 12.3 |
| 90L | 0.55 | 0.75 | 680 | 62 | 0.61 | 2.3 | 3.2 | 7.7 | 2 | 2.2 | 0.00320 | 13.8 |
| 100A | 0.75 | 1 | 700 | 70 | 0.64 | 2.6 | 3.5 | 10.2 | 2 | 2.4 | 0.00519 | 23 |
| 100B | 1.1 | 1.5 | 700 | 72 | 0.64 | 3.6 | 3.5 | 15 | 2 | 2.4 | 0.00668 | 30 |
| 112A | 1.5 | 2 | 700 | 74 | 0.66 | 5.2 | 4 | 20.5 | 2.1 | 2.4 | 0.01220 | 33 |
| 132SA | 2.2 | 3 | 700 | 75 | 0.65 | 7 | 4.1 | 30 | 2.2 | 2.4 | 0.01940 | 44 |
| 132MB | 3 | 4 | 700 | 77 | 0.65 | 9 | 4.3 | 41 | 2.2 | 2.4 | 0.03430 | 55 |
| 160MA | 4 | 5.5 | 710 | 80 | 0.70 | 10.8 | 4.5 | 53.8 | 1.8 | 2 | 0.06250 | 60 |
| 160MB | 5.5 | 7.5 | 720 | 84 | 0.74 | 12.6 | 5 | 73 | 1.8 | 2 | 0.08500 | 75 |
| 160L | 7.5 | 10 | 720 | 85 | 0.75 | 16.8 | 5 | 99.5 | 1.8 | 2 | 0.12590 | 100 |
| 180LB | 11 | 15 | 725 | 86.7 | 0.75 | 30 | 4.5 | 145 | 2 | 2.2 | 0.20200 | 147 |
| 200LB | 15 | 20 | 725 | 87.1 | 0.75 | 34 | 5 | 197.6 | 2.1 | 2.3 | 0.25000 | 177 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE2



2 poli

2 poles

50 Hz

2 polig



TN - MN - XN - DN

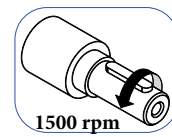
| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|---------------------|------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 80A | 0.75 | 1 | 2820 | 77.4 | 0.80 | 1.7 | 4.8 | 2.5 | 2.8 | 2.9 | 0.00085 | 8.7 |
| 80B | 1.1 | 1.5 | 2850 | 79.6 | 0.84 | 2.1 | 6.3 | 3.7 | 3.1 | 3.2 | 0.00105 | 10.8 |
| 90S | 1.5 | 2 | 2820 | 81.3 | 0.80 | 3.5 | 5.9 | 5 | 4 | 3.9 | 0.00145 | 12.9 |
| 90L | 2.2 | 3 | 2840 | 83.2 | 0.81 | 4.7 | 6.2 | 7.5 | 4.2 | 4.4 | 0.00191 | 14.8 |
| 100A | 3 | 4 | 2840 | 84.6 | 0.84 | 6.2 | 7 | 10.1 | 4 | 4.5 | 0.00347 | 23.4 |
| 112A | 4 | 5.5 | 2890 | 85.8 | 0.81 | 8.3 | 7 | 13.2 | 3.7 | 3.6 | 0.00520 | 29 |
| 112B | 5.5 | 7.5 | 2900 | 87 | 0.82 | 11.5 | 7 | 18 | 2 | 2.8 | 0.00700 | 33 |
| 112C | 7.5 | 10 | 2880 | 88.1 | 0.84 | 15 | 7 | 24.8 | 2 | 2.1 | 0.00750 | 36 |
| 132SA | 5.5 | 7.5 | 2920 | 87 | 0.82 | 11.2 | 7.5 | 18 | 3.9 | 4 | 0.01350 | 46.5 |
| 132SB | 7.5 | 10 | 2920 | 88.1 | 0.85 | 15 | 8 | 24.5 | 4 | 4.2 | 0.01570 | 52.5 |
| 132MA | 11 | 15 | 2940 | 89.4 | 0.85 | 20.6 | 9 | 35.7 | 4.2 | 4.5 | 0.01873 | 65 |
| 160MA | 11 | 15 | 2930 | 89.4 | 0.85 | 22.9 | 8.6 | 35.8 | 3.5 | 3.8 | 0.03198 | 80 |
| 160MB | 15 | 20 | 2930 | 90.3 | 0.85 | 29.5 | 8.3 | 48.9 | 3.6 | 3.9 | 0.04221 | 91 |
| 160L | 18.5 | 25 | 2935 | 90.9 | 0.85 | 34.7 | 8.3 | 60.2 | 3.9 | 3.7 | 0.04860 | 100 |
| 180M | 22 | 30 | 2930 | 91.3 | 0.86 | 40 | 7 | 71.7 | 2.9 | 2.2 | 0.07790 | 125 |
| 200LA | 30 | 40 | 2940 | 92 | 0.90 | 52 | 6.6 | 97.5 | 3 | 2.2 | 0.10520 | 156 |
| 200LB | 37 | 50 | 2940 | 92.5 | 0.89 | 68.6 | 7 | 120 | 3 | 2.4 | 0.12080 | 205 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE2

 disponibile
available
verfügbar


4 poli

4 poles

50 Hz

4 polig


Dati tecnici / Technical Data / Technische Daten

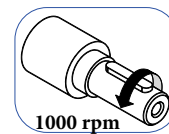
| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | | | |
| 80B | 0.75 | 1 | 1415 | 79.6 | 0.79 | 2 | 6 | 5 | 2.9 | 3 | 0.00260 | 10.7 |
| 90S | 1.1 | 1.5 | 1430 | 81.4 | 0.75 | 2.6 | 6.1 | 7.3 | 3.5 | 3.7 | 0.00300 | 13.3 |
| 90L | 1.5 | 2 | 1420 | 82.8 | 0.73 | 3.6 | 6.4 | 10.1 | 4 | 4 | 0.00380 | 15 |
| 100A | 2.2 | 3 | 1420 | 84.3 | 0.78 | 5 | 6.5 | 14.8 | 2.9 | 3.7 | 0.00550 | 20.5 |
| 100B | 3 | 4 | 1420 | 85.5 | 0.80 | 6.6 | 5.8 | 20.2 | 3.2 | 3.3 | 0.00680 | 24.5 |
| 112A | 4 | 5.5 | 1440 | 86.6 | 0.80 | 8.9 | 7 | 26.5 | 3.4 | 3.6 | 0.00170 | 30 |
| 132SA | 5.5 | 7.5 | 1440 | 87.7 | 0.81 | 11.7 | 7 | 36.5 | 3.5 | 3.7 | 0.02330 | 46 |
| 132MB | 7.5 | 10 | 1450 | 88.7 | 0.80 | 15.6 | 7.5 | 49.4 | 3.5 | 3.7 | 0.03040 | 56 |
| 160M | 11 | 15 | 1450 | 89.8 | 0.79 | 22 | 7.3 | 72.5 | 3.5 | 3.7 | 0.06430 | 80 |
| 160L | 15 | 20 | 1460 | 90.6 | 0.79 | 31 | 7 | 98.1 | 3.6 | 3.1 | 0.08380 | 98 |
| 180M | 18.5 | 25 | 1460 | 91.2 | 0.82 | 37 | 6 | 121 | 2.5 | 2.6 | 0.01310 | 126 |
| 180L | 22 | 30 | 1470 | 91.6 | 0.82 | 43 | 6.8 | 143 | 2.5 | 3 | 0.01410 | 136 |
| 200L | 30 | 40 | 1465 | 92.3 | 0.82 | 63 | 6 | 196 | 2.5 | 2.9 | 0.01510 | 182 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE2

 disponibile
available
verfügbar


6 poli

6 poles

6 polig

50 Hz



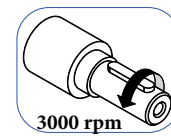
| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|---------------------|------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 90S | 0.75 | 1 | 930 | 75.9 | 0.71 | 2.4 | 3.5 | 7.7 | 1.8 | 2 | 0.00242 | 12.5 |
| 90L | 1.1 | 1.5 | 920 | 78.1 | 0.73 | 3.4 | 3.5 | 11.4 | 1.8 | 2 | 0.00398 | 14 |
| 100A | 1.5 | 2 | 950 | 79.8 | 0.75 | 4 | 4 | 15.1 | 1.8 | 2 | 0.00519 | 24 |
| 112A | 2.2 | 3 | 940 | 81.8 | 0.75 | 5.4 | 6 | 22.3 | 2.3 | 2.2 | 0.00720 | 34 |
| 132SA | 3 | 4 | 950 | 83.3 | 0.76 | 7.1 | 5.4 | 30.1 | 2.1 | 2.1 | 0.01940 | 44 |
| 132MB | 4 | 5.5 | 960 | 84.6 | 0.78 | 9.1 | 5.3 | 39.8 | 2.4 | 2.4 | 0.02688 | 55 |
| 132MC | 5.5 | 7.5 | 950 | 86 | 0.82 | 13.3 | 5.3 | 55.3 | 2.6 | 2.6 | 0.03430 | 60 |
| 160M | 7.5 | 10 | 950 | 87.2 | 0.82 | 17.1 | 5 | 75.4 | 2 | 2.3 | 0.08300 | 75 |
| 160L | 11 | 15 | 960 | 88.7 | 0.82 | 24.5 | 5.5 | 109 | 2.3 | 2.5 | 0.12500 | 100 |
| 180L | 15 | 20 | 960 | 89.7 | 0.82 | 30 | 5.2 | 149 | 2.3 | 2.2 | 0.20000 | 147 |
| 200LA | 18.5 | 25 | 950 | 90.4 | 0.84 | 37.5 | 5.2 | 186 | 2.1 | 2.3 | 0.25000 | 177 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE3

 disponibile
available
verfügbar


2 poli

2 poles

2 polig

50 Hz


Dati tecnici / Technical Data / Technische Daten

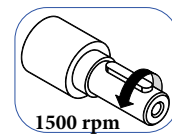
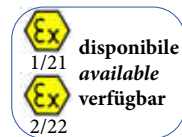
| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | kg |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | | | |
| 80A | 0.75 | 1 | 2910 | 80.7 | 0.75 | 1.7 | 7.8 | 2.4 | 4.8 | 4.4 | 0.00105 | 10.8 |
| 80B | 1.1 | 1.5 | 2880 | 82.7 | 0.83 | 2.4 | 7.4 | 3.6 | 4.2 | 3.9 | 0.00130 | 11.5 |
| 90S | 1.5 | 2 | 2880 | 84.2 | 0.76 | 3.4 | 7.3 | 5 | 5.4 | 5.3 | 0.00191 | 14.8 |
| 90L | 2.2 | 3 | 2880 | 85.9 | 0.76 | 4.9 | 7 | 7.3 | 3.9 | 3.9 | 0.00240 | 17.5 |
| 100A | 3 | 4 | 2870 | 87.1 | 0.80 | 6.3 | 7.6 | 10 | 4.7 | 4.3 | 0.00407 | 27 |
| 112A | 4 | 5.5 | 2940 | 88.1 | 0.72 | 9.2 | 11 | 13 | 5.2 | 6.1 | 0.00700 | 32 |
| 112B | 5.5 | 7.5 | 2900 | 89.2 | 0.86 | 11 | 8.5 | 18.1 | 4.3 | 3.6 | 0.00750 | 36 |
| 132SA | 5.5 | 7.5 | 2940 | 89.2 | 0.80 | 11.1 | 9 | 17.9 | 4.8 | 5.5 | 0.01570 | 52.5 |
| 132SB | 7.5 | 10.2 | 2940 | 90.1 | 0.86 | 14.1 | 9.3 | 24.4 | 4.5 | 4.8 | 0.01639 | 59 |
| 132MA | 11 | 15 | 2940 | 89.4 | 0.85 | 20.6 | 9 | 35.7 | 4.2 | 4.5 | 0.01873 | 65 |
| 160MA | 11 | 15 | 2950 | 91.2 | 0.83 | 21.5 | 11.2 | 35.7 | 4.9 | 5.3 | 0.04221 | 91 |
| 160MB | 15 | 20 | 2940 | 91.9 | 0.85 | 28.5 | 10.8 | 48.7 | 4.8 | 4.6 | 0.04860 | 100 |
| 160L | 18.5 | 25 | 2940 | 92.4 | 0.88 | 33.9 | 7.8 | 60.1 | 3.2 | 3.6 | 0.05730 | 112 |
| 180M | 22 | 30 | 2960 | 92.7 | 0.85 | 42 | 9.3 | 71 | 3.8 | 3 | 0.08860 | 145 |
| 200LA | 30 | 40 | 2960 | 93.3 | 0.89 | 56.2 | 11 | 96.8 | 4.3 | 3.9 | 0.12080 | 205 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE3



4 poli

4 poles

50 Hz

4 polig



TN - MN - XN - DN

Dati tecnici / Technical Data / Technische Daten

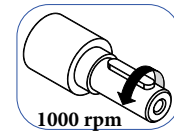
| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | kg |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | | | |
| 80B | 0.75 | 1 | 1420 | 82.5 | 0.67 | 2 | 5.3 | 5.1 | 3.7 | 3.6 | 0.00285 | 11.5 |
| 90S | 1.1 | 1.5 | 1430 | 84.1 | 0.75 | 2.6 | 6.1 | 7.3 | 3.5 | 2.7 | 0.00300 | 13.3 |
| 90L | 1.5 | 2 | 1430 | 85.3 | 0.76 | 3.4 | 7.8 | 10 | 4.3 | 4.1 | 0.00450 | 17.5 |
| 100A | 2.2 | 3 | 1440 | 86.7 | 0.75 | 5.1 | 7.6 | 14.6 | 4.3 | 4.5 | 0.00680 | 24.5 |
| 100B | 3 | 4 | 1440 | 87.7 | 0.76 | 7 | 6.7 | 20 | 2.4 | 2.7 | 0.00706 | 28 |
| 112A | 3 | 4 | 1430 | 87.7 | 0.83 | 6.1 | 6.3 | 20 | 2.6 | 2.7 | 0.01052 | 29 |
| 112B | 4 | 5.5 | 1440 | 88.6 | 0.79 | 8.6 | 6.4 | 26.5 | 3 | 3.1 | 0.01320 | 32 |
| 132MA | 5.5 | 7.5 | 1470 | 89.6 | 0.69 | 12 | 10 | 35.7 | 3.6 | 3.8 | 0.03040 | 56 |
| 132MB | 7.5 | 10 | 1460 | 90.4 | 0.73 | 12.5 | 10.6 | 49 | 3.4 | 3.6 | 0.03632 | 69 |
| 160L | 11 | 15 | 1460 | 91.4 | 0.79 | 21.9 | 7.9 | 72 | 3 | 3.8 | 0.08380 | 98 |
| 160LB | 15 | 20 | 1460 | 92.1 | 0.79 | 30 | 8.4 | 98 | 2.9 | 3.9 | 0.09200 | 122 |
| 180M | 18.5 | 25 | 1460 | 92.6 | 0.79 | 37 | 7.9 | 121 | 2.9 | 3.6 | 0.14100 | 136 |
| 200L | 22 | 30 | 1480 | 93 | 0.71 | 52 | 8.3 | 142 | 2.8 | 3.3 | 0.15100 | 182 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

TN IE3

 disponibile
available
verfügbar


6 poli

6 poles

6 polig

50 Hz



| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|-----|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | kg |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | |
| 90L | 0.75 | 1 | 940 | 78.9 | 0.73 | 2.2 | 4.7 | 7.6 | 2.6 | 2.8 | 0.00398 | 14 |
| 90LB | 1.1 | 1.5 | 930 | 81 | 0.72 | 2.9 | 4.7 | 11.3 | 2.6 | 2.8 | 0.00450 | 17 |
| 100A | 1.1 | 1.5 | 960 | 81 | 0.61 | 3.2 | 5.8 | 11 | 3.7 | 4 | 0.00519 | 24 |
| 100B | 1.5 | 2 | 955 | 82.5 | 0.67 | 4.2 | 5.8 | 15 | 2.6 | 2.8 | 0.00619 | 27 |
| 112A | 1.5 | 2 | 950 | 82.5 | 0.68 | 4 | 6.2 | 15 | 3.4 | 3.3 | 0.00720 | 34 |
| 112B | 2.2 | 3 | 950 | 84.3 | 0.64 | 6.2 | 8 | 22.1 | 2.3 | 2.2 | 0.01330 | 37 |
| 132SA | 2.2 | 3 | 960 | 84.3 | 0.73 | 5.1 | 6.1 | 22.1 | 3 | 3 | 0.01940 | 44 |
| 132SB | 3 | 4 | 950 | 85.6 | 0.76 | 7.1 | 4.5 | 30.2 | 2.2 | 2.4 | 0.02140 | 46 |
| 132MA | 4 | 5.5 | 960 | 86.8 | 0.77 | 9.1 | 5.1 | 39.8 | 2.5 | 2.7 | 0.02688 | 55 |
| 132MB | 5.5 | 7.5 | 960 | 88 | 0.81 | 13.3 | 5.6 | 54.7 | 2.8 | 3 | 0.03430 | 60 |
| 160L | 7.5 | 11 | 960 | 89.1 | 0.78 | 15.8 | 7 | 74.6 | 3.3 | 3.6 | 0.12500 | 100 |
| 180L | 11 | 15 | 970 | 90.3 | 0.78 | 23.7 | 6.1 | 108.3 | 3.2 | 3 | 0.20000 | 147 |
| 200LA | 15 | 20 | 970 | 91.2 | 0.76 | 31.6 | 5.8 | 147.7 | 2.5 | 2.8 | 0.25000 | 177 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

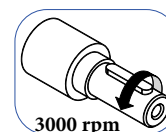
 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
MN - XN

MN

XN

 con scatola morsettiera in alluminio
 with aluminium terminal box
 mit Klemmenkasten aus Aluminium

**disponibile
available
2/22
verfügbar**

2 poli
2 poles
50 Hz
2 polig


I dati di coppia "M" e corrente "I" si riferiscono alla versione MN.

The torque data "M" and current data "I" refer to the MN version.

Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MN.

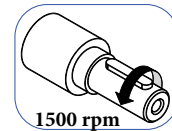
| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | | | |
|-------------------------|---|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|-------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] | kg MN |
| 56A | 0.09 | 0.12 | 2785 | 54 | 0.90 | 1 | 2.4 | 0.30 | 0.58 | 1.4 | 6.3 | 0.00011 | 3 |
| 63A | 0.12 | 0.16 | 2750 | 54 | 0.92 | 1.6 | 2.4 | 0.41 | 0.60 | 1.4 | 8 | 0.00020 | 4 |
| 63B | 0.18 | 0.25 | 2750 | 54 | 0.92 | 1.75 | 2.5 | 0.62 | 0.62 | 1.6 | 8 | 0.00025 | 4.7 |
| 63C | 0.25 | 0.33 | 2750 | 56 | 0.94 | 2.2 | 2.5 | 0.87 | 0.66 | 1.6 | 10 | 0.00034 | 4.8 |
| 71B | 0.37 | 0.50 | 2800 | 60 | 0.72 | 4.2 | 3 | 1.3 | 0.70 | 1.8 | 14 | 0.00047 | 6.7 |
| 71C | 0.55 | 0.75 | 2670 | 64 | 0.87 | 4.5 | 3.5 | 1.9 | 0.70 | 1.8 | 16 | 0.00057 | 7.4 |
| 80B | 0.75 | 1 | 2680 | 70 | 0.98 | 5.5 | 3.5 | 2.7 | 0.74 | 1.8 | 20 | 0.00105 | 11 |
| 80C | 1.1 | 1.5 | 2820 | 67 | 0.97 | 7.5 | 2.7 | 4 | 0.6 | 1.7 | 25 | 0.00140 | 11.4 |
| 90S | 1.1 | 1.5 | 2830 | 70 | 0.98 | 8.5 | 3.6 | 3.7 | 0.76 | 1.9 | 30 | 0.00172 | 13.2 |
| 90L | 1.5 | 2 | 2830 | 74 | 0.98 | 11.5 | 3.6 | 5.1 | 0.76 | 1.9 | 35 | 0.00191 | 15.1 |
| 90LB | 1.8 | 2.5 | 2780 | 74 | 0.98 | 14.2 | 3.8 | 6.2 | 0.7 | 1.9 | 40 | 0.00200 | 16 |
| 100A | 2.2 | 3 | 2830 | 76 | 0.98 | 13.2 | 4 | 7.4 | 0.70 | 1.9 | 55 | 0.00299 | 23 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
MN - XN

 con scatola morsettiera in alluminio
 with aluminium terminal box
 mit Klemmenkasten aus Aluminium

**disponibile
available
2/22
verfügbar**

4 poli
4 poles
50 Hz
4 polig


I dati di coppia "M" e corrente "I" si riferiscono alla versione MN.

The torque data "M" and current data "I" refer to the MN version.

Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MN.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J | MN |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] | kg |
| 56B* | 0.09 | 0.12 | 1340 | 54 | 0.93 | 0.95 | 1.6 | 0.64 | 0.90 | 1.4 | 6.3 | 0.00018 | 3.1 |
| 63B | 0.12 | 0.16 | 1370 | 58 | 0.90 | 1.4 | 2.5 | 0.84 | 0.74 | 1.6 | 8 | 0.00025 | 4.6 |
| 63C | 0.18 | 0.25 | 1370 | 58 | 0.92 | 1.6 | 2.5 | 1.3 | 0.78 | 1.6 | 8 | 0.00034 | 4.8 |
| 71B | 0.25 | 0.33 | 1340 | 58 | 0.94 | 2.6 | 2.5 | 1.8 | 0.78 | 1.6 | 14 | 0.00096 | 6.6 |
| 71C | 0.37 | 0.50 | 1380 | 58 | 0.94 | 3 | 2.8 | 2.6 | 0.82 | 1.6 | 16 | 0.00117 | 7.2 |
| 71D | 0.55 | 0.75 | 1380 | 59 | 0.89 | 4.6 | 2.7 | 3.7 | 0.5 | 1.5 | 1.6 | 0.00201 | 7.6 |
| 80B | 0.55 | 0.75 | 1400 | 62 | 0.94 | 4.5 | 3 | 3.7 | 0.75 | 1.8 | 20 | 0.00254 | 10.8 |
| 80C | 0.75 | 1 | 1400 | 66 | 0.94 | 6.5 | 3 | 5.1 | 0.73 | 1.8 | 25 | 0.00285 | 11.8 |
| 80D | 0.88 | 1.2 | 1400 | 66 | 0.94 | 7 | 3 | 6 | 0.70 | 1.8 | 25 | 0.00316 | 12.3 |
| 90 | 1.1 | 1.5 | 1410 | 68 | 0.96 | 8.5 | 3.2 | 7.5 | 0.70 | 1.8 | 30 | 0.00320 | 12.9 |
| 90L | 1.5 | 2 | 1390 | 68 | 0.93 | 10.5 | 3.2 | 10.3 | 0.65 | 1.8 | 40 | 0.00398 | 14.5 |
| 90LB | 1.8 | 2.5 | 1380 | 72 | 0.99 | 11.5 | 2.8 | 12 | 0.5 | 1.8 | 40 | 0.00450 | 17.5 |
| 100A | 1.8 | 2.5 | 1420 | 70 | 0.96 | 12.5 | 3.2 | 12.1 | 0.60 | 1.8 | 45 | 0.00520 | 21 |
| 100B | 2.2 | 3 | 1420 | 70 | 0.96 | 15 | 3.2 | 14.8 | 0.60 | 1.8 | 50 | 0.00668 | 25 |

* solo avvolgimento simmetrico a 3 fili / on symmetrical 3-row winding / nur symmetrische Wicklung mit 3 Reihen

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
MN - XN

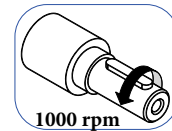
MN

XN

con scatola morsettiera in alluminio
with aluminium terminal box
mit Klemmenkasten aus Aluminium



disponibile
available
2/22
verfügbar



1000 rpm

6 poli

6 poles

6 polig



50 Hz

I dati di coppia "M" e corrente "I" si riferiscono alla versione MN.

The torque data "M" and current data "I" refer to the MN version.

Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MN.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | | |
|-------------------------|--|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|------------|---------------------|------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | | J | MN |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μ F] | [kgm ²] | kg |
| 63 | 0.12 | 0.16 | 870 | 50 | 0.90 | 1.5 | 2.5 | 1.3 | 0.68 | 1.4 | 8 | 0.00034 | 4.8 |
| 71B | 0.18 | 0.25 | 900 | 52 | 0.92 | 2 | 2.5 | 1.9 | 0.70 | 1.4 | 12.5 | 0.00117 | 6.6 |
| 80A | 0.37 | 0.50 | 920 | 58 | 0.90 | 3.1 | 2.7 | 3.8 | 0.72 | 1.5 | 40 | 0.00254 | 8.8 |
| 90S | 0.55 | 0.75 | 930 | 62 | 0.93 | 4.2 | 3 | 5.7 | 0.76 | 1.6 | 50 | 0.00242 | 12.9 |
| 90L | 0.75 | 1 | 850 | 65 | 0.88 | 6.4 | 2 | 8.4 | 0.70 | 1.6 | 60 | 0.00321 | 14.5 |
| 100A | 1.1 | 1.5 | 955 | 66 | 0.92 | 9 | 3.2 | 11 | 0.70 | 1.8 | 50 | 0.00662 | 21 |
| 100B | 1.5 | 2 | 900 | 66 | 0.96 | 13.5 | 3.2 | 15.9 | 0.70 | 1.8 | 50 | 0.00812 | 25 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

TN - MN - XN - DN

Motori standard
Standard motors
Standardmotoren

DN

 disponibile
available
verfügbar

 3000 rpm
1500 rpm

2/4 poli

2/4 poles

50 Hz

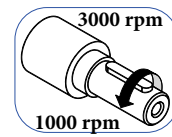
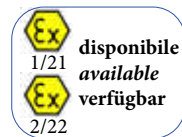
2/4 polig


Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | |
|-------------------------|----------------|-----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | |
| 63A | 0.18/0.12 | 0.25/0.16 | 2850/1420 | 0.75/0.85 | 3/2.5 | 0.60/0.80 | 1.3/1.3 | 1.4/1.5 | 0.00025 | 3.7 |
| 63B | 0.22/0.15 | 0.30/0.20 | 2760/1360 | 0.83/0.86 | 3/2.5 | 0.76/1 | 1.3/1.3 | 1.4/1.5 | 0.00029 | 4.5 |
| 71A | 0.30/0.20 | 0.40/0.28 | 2780/1400 | 1.2/1 | 3/3 | 1/1.4 | .5/1.3 | 1.6/1.8 | 0.00074 | 5.4 |
| 71B | 0.44/0.30 | 0.60/0.40 | 2880/1440 | 1.5/1.5 | 3/3 | 1.5/2 | 1.5/1.4 | 1.6/1.8 | 0.00096 | 6.4 |
| 80A | 0.60/0.45 | 0.80/0.60 | 2780/1400 | 2/1.6 | 3.5/3.5 | 2/3 | 1.5/1.3 | 1.8/1.8 | 0.00191 | 8.4 |
| 80B | 0.80/0.60 | 1.1/0.80 | 2800/1400 | 2.5/1.9 | 2.5/3.5 | 2.8/4.1 | 1.6/1.3 | 1.8/1.8 | 0.00254 | 10.5 |
| 90L | 1.8/1.2 | 2.5/1.7 | 2830/1420 | 4.5/3.1 | 5/4.5 | 6/8 | 2.1/2 | 2.2/2 | 0.00321 | 14 |
| 90LL | 2.2/1.5 | 3/2 | 2830/1420 | 5.5/3.7 | 5/4.5 | 7.4/10.1 | 2.1/2 | 2.4/2.2 | 0.00398 | 16 |
| 100A | 2.5/1.8 | 3.4/2.5 | 2830/1420 | 6.2/4.5 | 5/4.5 | 8.4/12.1 | 2.3/1.9 | 2.6/2 | 0.00519 | 20 |
| 100B | 3.3/2.5 | 4.4/3.4 | 2850/1430 | 8.1/5.9 | 6/5 | 11/16.7 | 2.4/2.2 | 2.8/2.4 | 0.00668 | 24 |
| 112A | 4.5/3.3 | 6/4.5 | 2850/1430 | 9.8/7.8 | 6/5 | 15/22 | 2.4/2.3 | 3/2.4 | 0.01223 | 34 |
| 132S | 5.5/4 | 7.5/5.5 | 2910/1450 | 13/9.5 | 6.5/5.5 | 18/26.3 | 2.4/2.3 | 3/2.5 | 0.01080 | 44 |
| 132M | 7.5/6.2 | 10/8.5 | 2910/1450 | 16.5/13.5 | 7/6 | 24.6/40.9 | 2.5/2.8 | 3/2.5 | 0.01639 | 59 |
| 160M | 11/9 | 15/12.2 | 2940/1460 | 25/19.5 | 7/6 | 35.7/58.9 | 2.5/2.6 | 3/2.5 | 0.06200 | 122 |
| 160L | 17/13 | 23/17.5 | 2930/1460 | 33/26 | 7.5/6.3 | 55.4/85 | 2.4/2.5 | 3/2.5 | 0.09200 | 142 |
| 180L | 22 / 18.5 | 30 / 25 | 2930/1460 | 44.2/38.2 | 7.5/6 | 71.7/120.5 | 2.4/2.8 | 3/2.5 | 0.15200 | 177 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
DN

2/6 poli
2/6 poles

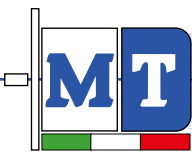
50 Hz
2/6 polig
Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | kg |
|-------------------------|----------------|-----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | |
| 71C | 0.25/0.15 | 0.33/0.20 | 2780/850 | 1.15/0.9 | 4/2 | 0.85/1.7 | 1.6/1.3 | 2/1.8 | 0.00117 | 7 |
| 80C | 0.75/0.37 | 1/0.50 | 2800/880 | 2.7/1.8 | 4.2/2.5 | 2.5/4 | 1.8/1.8 | 2.4/2.3 | 0.00285 | 11.5 |
| 90S | 1.1/0.55 | 1.5/0.75 | 2800/900 | 3.3/1.6 | 4.5/2.5 | 3.75/5.8 | 1.6/1.5 | 2.4/2.4 | 0.00242 | 12.5 |
| 90LB | 1.5/0.75 | 2/1 | 2800/910 | 4.3/3.7 | 4.8/2.8 | 5.1/7.9 | 1.6/1.5 | 2.3/2.4 | 0.00321 | 14 |
| 100B | 2.2/1.1 | 3/1.5 | 2820/910 | 5.5/4.8 | 5/3 | 7.5/11.5 | 1.8/1.5 | 2.4/2.3 | 0.00668 | 24 |
| 112B | 3/1.5 | 4/2 | 2820/920 | 6.9/5.8 | 5.5/3.5 | 10.2/15.6 | 1.9/1.3 | 2.5/1.8 | 0.01052 | 29 |
| 132S | 4/1.7 | 5.5/2.3 | 2840/930 | 9/4.3 | 5/4 | 13.5/17.5 | 2/1.8 | 2.3/1.8 | 0.01940 | 44 |
| 132M | 5.5/2 | 7.5/2.7 | 2850/930 | 12/6 | 5.5/4.6 | 18.4/20.5 | 2.2/1.8 | 2.3/1.8 | 0.03430 | 60 |
| 160M | 7.5/2.5 | 10.2/3.4 | 2880/950 | 16/7 | 6/4.7 | 25/25 | 2/2 | 1.8/1.8 | 0.06200 | 122 |
| 160L | 11/3.7 | 15/5 | 2900/960 | 25/11 | 6.2/4.8 | 36.2/36.8 | 2/2 | 1.8/1.8 | 0.09200 | 142 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

TN - MN - XN - DN

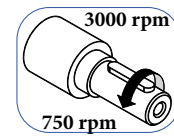
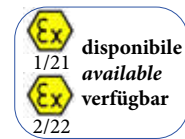


Motori standard

Standard motors

Standardmotoren

DN



2/8 poli

2/8 poles

2/8 polig



50 Hz



Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | |
|-------------------------|----------------|-----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | |
| 63C | 0.18/0.06 | 0.25/0.08 | 2740/640 | 0.60/0.60 | 3.4/2.3 | 0.62/0.89 | 1.6/1.9 | 1.8/1.6 | 0.00034 | 4.8 |
| 71C | 0.30/0.09 | 0.40/0.12 | 2770/660 | 1.15/0.65 | 4/2.3 | 1/1.3 | 1.6/2 | 2/1.6 | 0.00117 | 7 |
| 80B | 0.55/0.11 | 0.75/0.15 | 2800/680 | 2/0.9 | 4/2.4 | 1.9/1.6 | 1.8/2 | 2.2/1.8 | 0.00254 | 10.5 |
| 80C | 0.60/0.13 | 0.85/0.18 | 2800/680 | 2.6/1.2 | 4.2/2.4 | 2.1/1.8 | 1.8/2 | 2.4/2.1 | 0.00225 | 11.5 |
| 90S | 1.1/0.3 | 1.5/0.4 | 2830/700 | 3.3/1.5 | 4.5/2.5 | 3.7/4.1 | 1.6/1.8 | 2.4/2 | 0.00242 | 12.5 |
| 90L | 1.5/0.4 | 2/0.55 | 2850/700 | 4/1.6 | 4.5/2.5 | 5.1/5.5 | 1.6/1.8 | 2.4/2.1 | 0.00321 | 14 |
| 90LB | 1.8/0.50 | 2.5/0.65 | 2870/700 | 4.3/2 | 4.8/2.7 | 6/6.8 | 1.6/1.8 | 2/1.6 | 0.00400 | 16 |
| 100B | 2.2/0.60 | 3/0.8 | 2900/710 | 5.5/3 | 5/2.9 | 7.3/8.1 | 1.8/1.9 | 2/1.8 | 0.00668 | 24 |
| 112A | 3/0.75 | 4/1 | 2920/710 | 6.9/3.4 | 5.5/2.9 | 9.8/10.1 | 1.9/2 | 2.2/2 | 0.01052 | 29 |
| 132S | 4/1 | 5.5/1.3 | 2880/710 | 8.6/4.5 | 5/3.8 | 13.3/13.5 | 1.9/1.8 | 2.2/2 | 0.02688 | 44 |
| 132M | 5.5/1.4 | 7.5/1.9 | 2890/700 | 11.7/6.6 | 5.5/3.8 | 18.2/19.1 | 1.9/1.8 | 2.2/2 | 0.03430 | 60 |
| 160M | 7.5/1.8 | 10/2.5 | 2900/730 | 16.5/7 | 6/3.4 | 24.7/23.5 | 2/1.7 | 2/2 | 0.06200 | 122 |
| 160L | 11/2.5 | 15/3.4 | 2900/730 | 22/9 | 6.2/4 | 36.2/32.7 | 1.9/1.6 | 2.1/2 | 0.09200 | 142 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
DN

disponibile
available
verfügbar

1500 rpm
1000 rpm

4/6 poli
4/6 poles
4/6 polig
50 Hz

TN - MN - XN - DN

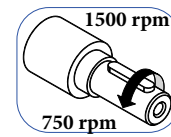
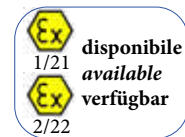
| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 71B | 0.30/0.22 | 0.40/0.30 | 1380/890 | 1/0.9 | 3.5/2 | 2/2.3 | 1.3/1.3 | 2/1.8 | 0.00057 | 6.5 |
| 80A | 0.37/0.26 | 0.50/0.35 | 1410/900 | 1.5/1.4 | 3.5/2.5 | 2.5/2.7 | 1.3/1.4 | 1.9/2.1 | 0.00191 | 8.5 |
| 80B | 0.55/0.45 | 0.75/0.60 | 1420/920 | 2/1.8 | 3.5/2.5 | 3.7/4.7 | 1.5/1.8 | 2.1/2.3 | 0.00254 | 10.5 |
| 90S | 0.75/0.5 | 1/0.7 | 1420/920 | 2.4/2.1 | 4/2.5 | 5/5.2 | 1.4/1.3 | 2.1/2 | 0.00242 | 12.5 |
| 90L | 1.1/0.75 | 1.5/1 | 1470/900 | 3.9/3.7 | 4.2/2.5 | 7.2/7.9 | 1.4/1.4 | 2.1/2.1 | 0.00321 | 14 |
| 100A | 1.3/0.9 | 1.8/1.2 | 1430/920 | 4/3.8 | 4.5/3 | 8.7/9.3 | 1.4/1.4 | 2.1/2.2 | 0.00519 | 21 |
| 100B | 1.5/1.1 | 2/1.5 | 1450/950 | 4.5/4.1 | 4.5/3 | 9.9/11 | 1.4/1.5 | 2.2/2.3 | 0.00668 | 24 |
| 112A | 2.2/1.5 | 3/2 | 1440/960 | 6/5.8 | 4.5/3.5 | 14.6/14.9 | 1.4/1.3 | 1.7/1.6 | 0.01052 | 34 |
| 132S | 2.5/1.8 | 3.5/2.5 | 1420/930 | 6.5/6 | 5.5/4.8 | 16.8/18.5 | 1.6/1.5 | 1.8/1.6 | 0.01080 | 44 |
| 132M | 4/3 | 5.5/4 | 1440/930 | 8.5/6.9 | 6.5/5.5 | 26.5/30.8 | 1.8/1.7 | 2/1.9 | 0.01639 | 59 |
| 160M | 6.5/4.5 | 8.8/6 | 1450/940 | 15/11.6 | 5/4.6 | 42.8/45.7 | 1.8/1.7 | 2/1.9 | 0.06200 | 122 |
| 160L | 9.5/6.5 | 13/8.8 | 1450/940 | 21/17 | 5.4/4.4 | 62.6/66 | 2/1.8 | 2/1.9 | 0.9200 | 152 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren

DN



50 Hz

4/8 poli

4/8 poles

4/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|------------|--------------|-------------------|---------------|-------------------|--------------------|--------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 63B | 0.09/0.04 | 0.12/0.06 | 1440/650 | 0.55/0.70 | 3.5/2 | 0.60/0.60 | 1.3/1.3 | 1.9/1.8 | 0.00029 | 4.6 |
| 71B | 0.15/0.09 | 0.20/0.12 | 1420/680 | 0.56/0.65 | 3.5/2 | 1/1.2 | 1.3/1.3 | 1.9/1.8 | 0.00096 | 6.5 |
| 80A | 0.30/0.18 | 0.40/0.25 | 1410/700 | 1.3/1.1 | 3.5/2.5 | 2/2.4 | 1.5/1.8 | 2/1.8 | 0.00191 | 8.5 |
| 80B | 0.37/0.22 | 0.50/0.30 | 1420/700 | 1.8/1.7 | 3.5/2.5 | 2.5/3 | 1.5/1.8 | 2/1.8 | 0.00254 | 10.5 |
| 90S | 0.60/0.25 | 0.80/0.35 | 1430/700 | 1.9/1.8 | 4/2.5 | 4/3.4 | 1.4/1.3 | 2/1.8 | 0.00242 | 12.5 |
| 90L | 1/0.5 | 1.3/0.7 | 1400/700 | 2.3/2.7 | 4.5/2.5 | 6.8/6.8 | 1.4/1.4 | 2/1.8 | 0.00321 | 14 |
| 100B | 1.5/0.75 | 2/1 | 1430/700 | 3.8/3.6 | 4.5/3 | 10/10 | 1.4/1.5 | 2/1.8 | 0.00668 | 24 |
| 112A | 2.2/1.3 | 3/1.8 | 1410/700 | 4.8/4.4 | 4.5/3.4 | 14.9/17.7 | 1.6/1.5 | 1.9/1.9 | 0.01223 | 34 |
| 132S | 3.1/1.7 | 4.2/2.3 | 1420/710 | 6.5/7.0 | 4.7/3.8 | 20.8/22.9 | 1.8/1.8 | 2/2.1 | 0.01080 | 44 |
| 132M | 5/2.8 | 6.8/3.8 | 1440/720 | 11.5/8.7 | 5.2/4.3 | 33.1/37.1 | 1.8/1.8 | 2.2/2.3 | 0.01639 | 59 |
| 160M | 6/4 | 8/5.5 | 1420/715 | 13.5/12 | 5/4.6 | 40.4/53.4 | 1.6/1.5 | 2/2 | 0.06200 | 122 |
| 160L | 11/7.5 | 15/10 | 1440/720 | 22/17.5 | 5.2/4.7 | 73/100 | 1.7/1.5 | 2/2 | 0.09200 | 142 |
| 180L | 15/9 | 20/12 | 1440/720 | 31.2/31.2 | 5.2/4 | 99.7/131.4 | 1.7/1.9 | 2/2 | 0.22900 | 177 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori standard
Standard motors
Standardmotoren
DN

disponibile
available
verfügbar

1000 rpm
750 rpm

6/8 poli
6/8 poles
6/8 polig
50 Hz

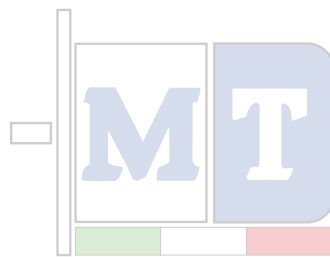
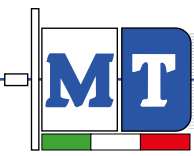

TN - MN - XN - DN

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] | kg |
|-------------------------|----------------|-----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | |
| 71C | 0.15/0.09 | 0.20/0.12 | 850/660 | 0.9/0.65 | 2/1.8 | 1.8/1.3 | 1.3/2 | 1.8/1.6 | 0.00117 | 7 |
| 80C | 0.30/0.13 | 0.40/0.18 | 880/680 | 1.8/1.2 | 2.5/2.2 | 3.2/1.9 | 1.8/2 | 2.3/2.1 | 0.00285 | 11.5 |
| 90S | 0.37/0.25 | 0.50/0.33 | 900/700 | 1.7/1.4 | 2.5/2.5 | 3.9/3.4 | 1.5/2 | 2.4/2.1 | 0.00242 | 12.5 |
| 90LB | 0.60/0.37 | 0.80/0.50 | 900/700 | 2.5/1.3 | 2.8/2.7 | 6.3/5 | 1.3/1.8 | 2.4/1.6 | 0.00400 | 14.5 |
| 100B | 1/0.50 | 1.3/0.70 | 910/710 | 4/3 | 3/2.9 | 10.5/6.8 | 1.5/1.8 | 2.3/1.8 | 0.00668 | 24 |
| 112B | 1.5/0.75 | 2/1 | 920/710 | 5/3.3 | 3.5/2.9 | 15.6/10.1 | 1.8/2 | 2.2/1.8 | 0.01052 | 29 |
| 132S | 1.8/1 | 2.5/1.3 | 940/720 | 6.6/5.1 | 4.5/4 | 18.3/13.3 | 1.8/1.7 | 2.2/1.8 | 0.02688 | 440 |
| 132M | 3/2.2 | 4/3 | 940/720 | 7/6.5 | 4.5/4 | 30.5/29.2 | 1.7/1.6 | 2.3/1.8 | 0.03430 | 60 |
| 160M | 5.5/4 | 7.5/5.5 | 970/720 | 12.5/9.5 | 5.2/4.3 | 54.2/53 | 1.6/1.6 | 2.2/1.8 | 0.06200 | 122 |
| 160L | 7.5/5.5 | 10/7.5 | 970/720 | 15.5/14.5 | 5.4/4.4 | 74/73 | 1.7/1.6 | 2.2/1.8 | 0.09200 | 142 |











 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar



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| Motori autofrenanti | Brake motors | Bremsmotoren |
|---------------------|--------------|--------------|
|---------------------|--------------|--------------|

| Tipo Type Typ | Descrizione Description Beschreibung | Potenza nominale Nominal Power Nennleistung P_n [kW] | Taglia Size Größe | Poli Poles Pole np | Tipo di freno Brake type Bremstyp | ATEX | UL-CSA |
|--|---|--|--|--|---|---|---|
| TF  | Motori asincroni trifase autofrenati <i>Three-phase asynchronous brake motors</i> Drehstrom-Asynchron-Bremsmotoren | 0.09 ÷ 37 | 56 63 71 80 90 100 112 132 160 180 200 | 2 4 6 8 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom |  2/22 |  |
| MF  | Motori monofase autofrenati <i>Single-phase brake motors</i> Einphasen-Wechselstrom-Bremsmotoren | 0.09 ÷ 2.2 | 56 63 71 80 90 100 | 2 4 6 | c.c. d.c. Gleichstrom | - |  |
| XF  | Motori monofase autofrenante ad alta coppia di spunto <i>Single-phase brake motors with high starting torque</i> Einphasen-Wechselstrom-Bremsmotoren mit hohem Anlaufdrehmoment | 0.09 ÷ 2.2 | 56 63 71 80 90 100 | 2 4 6 | c.c. d.c. Gleichstrom | - |  |
| DF  | Motori trifase autofrenante a doppia polarità <i>Three-phase brake motors with double polarity</i> Drehstrom-Bremsmotoren mit doppelter Polarität | 0.18/0.12 ÷ 22/18.5 | 63 71 80 90 100 112 132 160 180 | 2/4 2/6 2/8 4/6 4/8 6/8 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom |  2/22 |  |

TF - MF - XF - DF

Motori autofrenanti

La presente sezione tratta i motori MT nelle loro versioni autofrenanti:

- **TF** Motori asincroni trifase autofrenanti;
- **MF** Motori monofase autofrenanti;
- **XF** Motori monofase autofrenanti ad elevata coppia di spunto;
- **DF** Motori trifase autofrenanti a doppia polarità.

I motori autofrenanti nascono dalla applicazione su di un motore standard TN-MN-XN-DN di un freno elettromagnetico ad azione negativa; in caso di mancanza di alimentazione del motore elettrico il freno entra in funzione causando l'arresto del motore stesso.

Il motore autofrenante viene fornito standard con classe d'isolamento F e protezione IP54 (a richiesta IP55).

A richiesta può essere fornita la leva di sblocco meccanica. Il motore autofrenante garantisce precisione e velocità d'arresto in caso di interruzione volontaria e maggiore sicurezza in caso di interruzione accidentale dell'alimentazione motore.

Il freno adottato è un freno di tipo a disco; in caso di mancanza di corrente l'elettromagnete interno al freno, cessa la sua forza di trazione e lascia libere le molle di spostare l'ancora mobile che va a frizionare contro il disco freno (calettato sul mozzo freno) generando così la coppia frenante M_f .

Brake motors

This section covers the MT motors in their brake versions:

- **TF** Three-phase asynchronous brake motors;
- **MF** Single-phase brake motors;
- **XF** Single-phase brake motors with high starting torque;
- **DF** Three-phase brake motors with double polarity.

The brake motors arise from the application of an electromagnet brake with negative action on a TN-MN-XN-DN standard motor; in case of a power failure of the electric motor, the brake starts working causing the motor to stop.

The brake motor is standard supplied with insulation class F and IP54 protection.

On request, the mechanical hand release can be supplied.

The brake motor ensures stop precision and speed in case of voluntary interruption and greater safety in case of accidental motor power supply interruption.

The used brake is a disk-type brake; in case of a power failure the electromagnet inside the brake ceases its traction force and leaves the springs free to move the movable armature that rubs against the brake disk (fitted onto the brake hub), thus generating the braking torque M_f .

Bremsmotoren

Der vorliegende Abschnitt behandelt die MT Motoren in ihren Bremsmotor-Ausführungen:

- **TF** Drehstrom-Asynchron-Bremsmotoren;
- **MF** Einphasen-Wechselstrom-Bremsmotoren;
- **XF** Einphasen-Wechselstrom-Bremsmotoren mit hohem Anlaufdrehmoment;
- **DF** Drehstrom-Bremsmotoren mit doppelter Polarität.

Die Bremsmotoren entstanden durch den Einsatz einer elektromagnetischen Bremse mit negativer Wirkung an einem TN-MN-XN-DN Standardmotor; bei fehlender Versorgung des Elektromotors wird die Bremse in Betrieb gesetzt und verursacht das Anhalten des Motors.

Der Bremsmotor wird standardmäßig mit Isolationsklasse F und Schutzgrad IP54 geliefert.

Auf Anfrage kann der mechanische Entriegelungshebel geliefert werden.

Der Bremsmotor gewährleistet Genauigkeit und Schnelligkeit beim Anhalten im Falle einer absichtlichen Unterbrechung und eine höhere Sicherheit im Falle einer versehentlichen Unterbrechung der Motorversorgung.

Die verwendete Bremse ist eine Scheibenbremse; bei Stromausfall verliert der Magnet in der Bremse seine Zugkraft, setzt die Federn frei, damit diese den beweglichen Anker verschieben, der gegen die (an der Bremsnabe verzahnte) Brems Scheibe reibt und so das Bremsmoment M_f erzeugt.

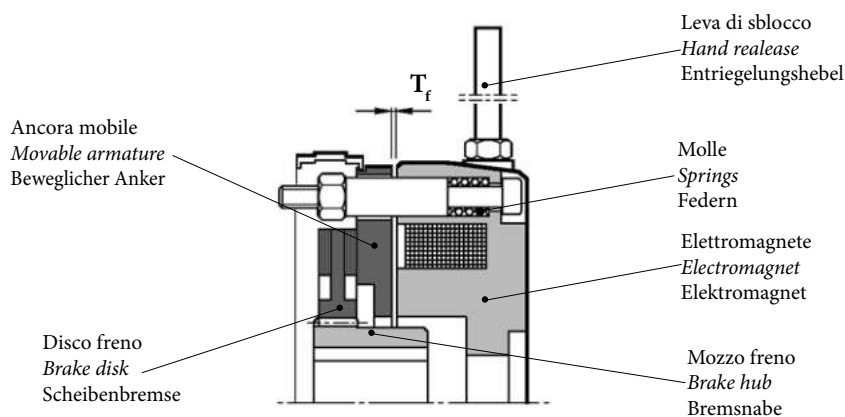


Fig.16

Le principali caratteristiche sono:

- esecuzione possibile su tutte le motorizzazioni;
- possibilità di albero bisporgente;
- possibilità di alimentazione separata;
- efficacia di frenatura su entrambe le direzioni di rotazione;
- semplicità di regolazione del traferro T_f ;
- possibilità di regolazione della coppia frenante;
- possibilità di avere freni in c.a. o in c.c. con raddrizzatore
- possibilità di montaggio encoder;
- possibilità di servoventilazione
- mozzo trascinatore con OR antivibrazioni;
- elevata velocità di inserimento e di disinserimento.

The main features are:

- execution possible on all motors;
- possibility of double ended shaft;
- possibility of separate power supply;
- braking efficiency on both rotation directions;
- simple air gap adjustment T_f ;
- possibility of adjusting the braking torque;
- possibility of having ac. or d.c. brakes with rectifier;
- possibility of encoder assembly;
- possibility of forced cooling;
- driving hub with anti-vibration OR;
- high connection and disconnection speed.

Wichtigste Merkmale:

- Ausführung an allen Motorisierungen möglich;
- beidseitige Welle möglich;
- getrennte Versorgung möglich;
- wirksame Bremsung in beiden Drehrichtungen;
- einfache Einstellung der Bremsstrecke T_f ;
- Einstellung des Bremsdrehmoments möglich;
- Wechselstrombremsen oder Gleichstrombremsen mit Gleichrichter möglich;
- Montage eines Encoders möglich;
- Servo-Lüfter möglich;
- Mitnahmenabe mit schwingungsdämpfenden O-Ringen;
- hohe Geschwindigkeit beim Einschalten und Ausschalten.

Motori autofrenanti
Brake motors
Bremsmotoren
FRENI IN C.A.
A.C. BRAKES
WECHSELSTROMBREMSEN

Tab.19

| Taglia Size Größe | M_{fmin}^{**} [Nm] | M_{fmax} [Nm] | P_f [VA] | I_{fn} (400V) [A] | J_f [kgm ²] | T_f [mm] | T_{fmax} [mm] | X | g_{fmin} [mm] | Tempo di intervento Brake intervention time Bremsaktivierungszeit | | kg |
|-------------------------|-------------------------|--------------------|---------------|---------------------------|------------------------------|---------------|--------------------|-----|--------------------|---|------------------|------|
| | | | | | | | | | | t_{fa} [ms] | t_{fc} [ms] | |
| 56 | 2 | 5 | 60 | 0.08 | 0.00004 | 0.20 | 0.50 | 0.6 | 1 | 20 | 4 | 1.1 |
| 63 | 2 | 5 | 60 | 0.08 | 0.00006 | 0.20 | 0.50 | 0.6 | 1 | 20 | 4 | 1.3 |
| 71 | 4 | 10 | 80 | 0.11 | 0.00011 | 0.20 | 0.50 | 0.8 | 1 | 40 | 4 | 1.9 |
| 80 | 7 | 20 | 110 | 0.15 | 0.00016 | 0.30 | 0.60 | 1.0 | 1 | 60 | 6 | 3.0 |
| 90 | 14 | 40 | 250 | 0.36 | 0.00035 | 0.30 | 0.60 | 1.0 | 1 | 90 | 8 | 5.6 |
| 100 | 26 | 70 | 470 | 0.65 | 0.00088 | 0.35 | 0.70 | 1.2 | 1 | 120 | 16 | 9.7 |
| 112 | 35 | 100 | 550 | 0.78 | 0.00103 | 0.35 | 0.70 | 1.2 | 1 | 140 | 16 | 10.3 |
| 132 | 53 | 150 | 600 | 0.90 | 0.00225 | 0.40 | 0.80 | 1.2 | 1 | 180 | 16 | 14.7 |
| 160 | 85 | 250 | 1200 | 1.20 | 0.00750 | 0.50 | 0.80 | 1.2 | 1 | 200 | 20 | 24.5 |
| 180/200 | 180 | 350 | 1200 | 1.20 | 0.01100 | 0.50 | 0.80 | 1.2 | 1 | 200 | 20 | 27 |

La coppia minima M_{fmin} è realizzata rispettando le quote X in tabella ed allentando completamente i grani (2)

The minimum torque M_{fmin} is made respecting the X values in the table and completely loosening the grub screws (2)

Das Mindestdrehmoment M_{fmin} wird durch Einhaltung der in der Tabelle aufgeführten Werte X und durch vollständiges Lösen der Stifte (2) erzielt

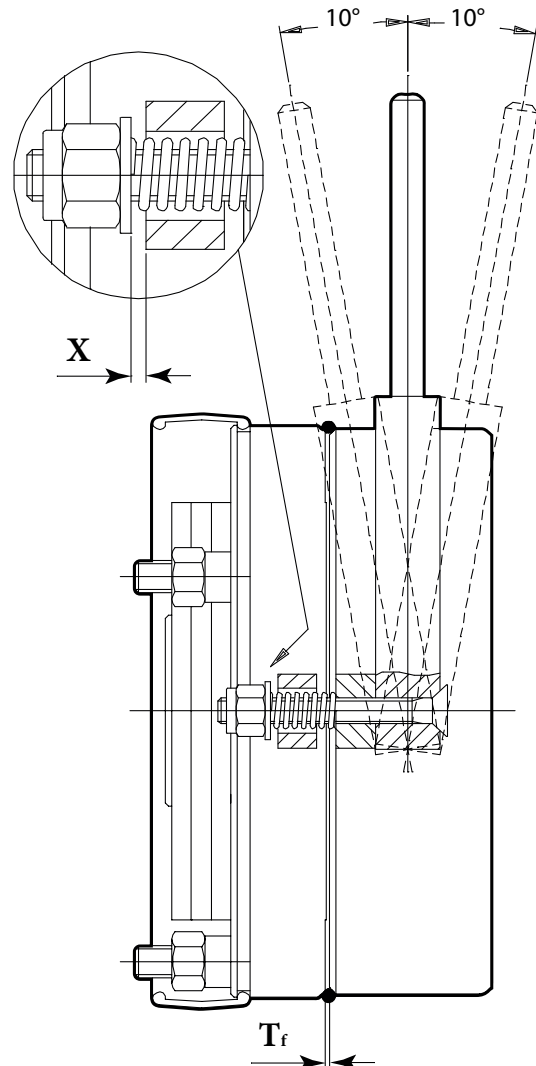
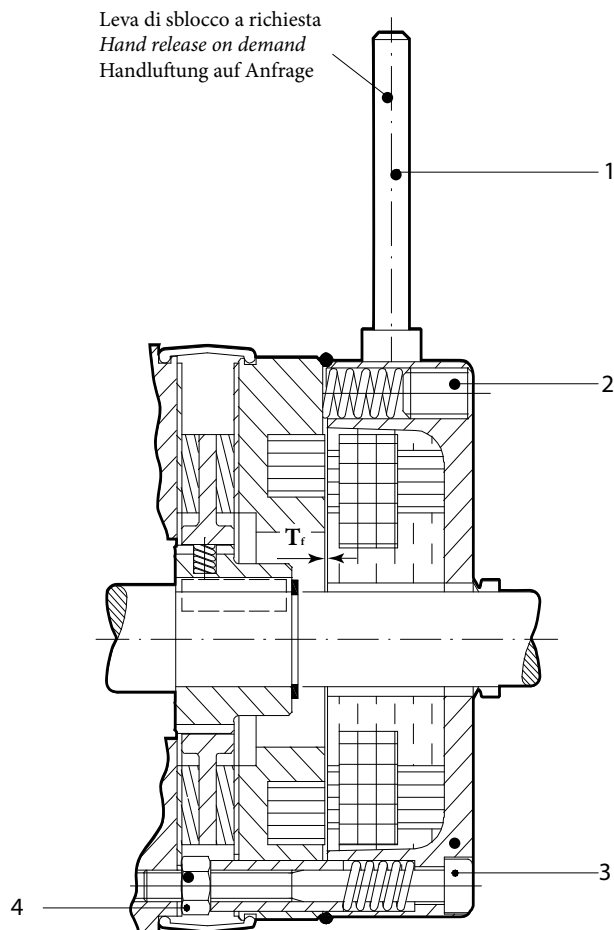
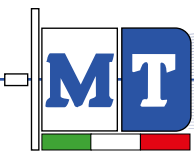


Fig.17



Motori autofrenanti

Il momento frenante può essere regolato agendo sui grani di regolazione (2) posti posteriormente sul freno.

Svitando completamente i grani il momento frenante non diminuirà mai sotto il valore di sicurezza del 35% di M_{fmax} .

Avvitando i grani (2) e portandoli a filo del piano posteriore, si otterrà una regolazione del momento frenante al 50% di M_{fmax} .

Nel caso sia montata la leva di sblocco, è necessario verificare che un eccessivo valore del traferro T_f non comporti l'annullamento della coppia frenante M_f a causa della ripresa del gioco X della leva stessa; per questo motivo è necessario controllare i valori di entrambe le quote T_f ed il gioco X.

Per motivi di sicurezza è necessario aumentare la quota X sino ad un valore che non permetta lo sblocco del freno. L'angolo di rotazione della leva aumenterà di conseguenza all'aumentare della quota X.

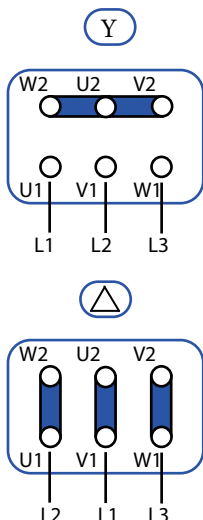
Tutti i motori autofrenanti sono forniti con coppia M_f regolata al 70% della M_{fmax} .

I freni in c.a. sono forniti standard per essere alimentati con tensione trifase V230/400 50Hz, a richiesta possibilità di altre tensioni trifase d'alimentazione.

A richiesta è possibile fornire il freno con alimentazione separata (con morsettiera propria) rispetto all'alimentazione motore; tale soluzione è necessaria in caso di utilizzo di inverter.

COLLEGAMENTI FRENI IN C.A. A.C. BRAKE CONNECTIONS

Di seguito le indicazioni per i collegamenti dei freni MT in c.a.



Brake motors

The braking torque can be adjusted using the adjustment grub screws (2) placed on the back of the brake.

By completely loosening the grub screws, the braking torque will never decrease below the safety value of 35% of M_{fmax} .

By tightening the grub screws (2) and moving them in line with the rear plane, the braking torque will adjust to 50% of M_{fmax} .

If the hand release is installed, it is necessary to check that an excessive air gap value T_f does not lead to the cancellation of the braking torque M_f due to the restart of clearance X of the lever itself; for this reason, it is necessary to check the values of both dimensions T_f and clearance X.

For safety reasons, it is necessary to increase dimension X up to a value that does not allow the brake to be released. The rotation angle of the lever will consequently increase as dimension X increases.

All brake motors are supplied with torque M_f adjusted to 70% of M_{fmax} .

The a.c. brakes are standard supplied to be powered with three-phase voltage V230/400 50Hz, possibility of other three-phase power supply voltages on demand.

On demand, it is possible to supply the brake with separate power supply (with own terminal board) with respect to the motor power supply; this solution is necessary if using an inverter.

Below indications for the MT brake connections in a.c.

| Pin | Colore / Color / Farbe | |
|-----|---|--|
| U1 | nero / black / schwarz | |
| V1 | rosso / red / rot | |
| W1 | marrone / brown / braun | |
| W2 | marrone-bianco / brown-white / braun-weiß | |
| U2 | nero-bianco / black-white / schwarz-weiß | |
| V2 | rosso-bianco / red-white / rot-weiß | |

Fig.18

Bremsmotoren

Das Bremsdrehmoment kann durch die Betätigung der Einstellstifte (2) am hinteren Teil der Bremse eingestellt werden.

Durch vollständiges Lösen der Stifte wird das Bremsdrehmoment nie unter den Sicherheitswert von 35% M_{fmax} gesenkt.

Durch Anschrauben und Positionieren der Stifte (2) bündig mit der hinteren Fläche wird eine Einstellung des Bremsdrehmoments von 50% M_{fmax} erzielt.

Sollte der Entriegelungshebel installiert sein, muss überprüft werden, ob ein übermäßiger Wert der Bremsstrecke T_f die Nullstellung des Bremsdrehmoments M_f aufgrund der Wiederaufnahme des Spiels X des Hebels verursacht; aus diesem Grund müssen die beiden Werte T_f und das Spiel X überprüft werden.

Aus Sicherheitsgründen muss der Wert X erhöht werden, bis ein Wert erreicht wird, der das Entriegeln der Bremse verhindert. Folglich wird der Drehwinkel des Hebels beim Erhöhen des Werts X erhöht.

Alle Bremsmotoren werden mit Drehmoment M_f geliefert, das auf 70% M_{fmax} eingestellt wird.

Die Wechselstrombremsen werden standardmäßig für die Versorgung mit Drehspannung V230/400 50Hz geliefert; andere Drehspannungen auf Anfrage möglich.

Auf Anfrage kann die Bremse mit von der Motorversorgung getrennter Versorgung (und mit eigenem Klemmenbrett) geliefert werden; diese Lösung ist bei Verwendung eines Inverters notwendig.

ANSCHLÜSSE WECHSELSTROMBREMSSEN

Nachfolgend die Angaben für die Anschlüsse der MT Wechselstrombremsen

| Motori autofrenanti | Brake motors | Bremsmotoren |
|---------------------|--------------|--------------|
|---------------------|--------------|--------------|

| FRENI IN C.C. | D.C. BRAKES | GLEICHSTROMBREMSEN |
|---------------|-------------|--------------------|
|---------------|-------------|--------------------|

Tab.20

| Taglia Size Größe | $M_{f_{**}}_{min}$ [Nm] | $M_{f_{max}}$ [Nm] | P_f [W] | I_{fn} (230V) [A] | J_f [kgm ²] | T_f [mm] | $T_{f_{max}}$ [mm] | X | g_{fmin} [mm] | Tempo di intervento Brake intervention time Aktivierungszeit | | | | n_{max} [rpm] | |
|-------------------------|----------------------------|-----------------------|--------------|---------------------------|------------------------------|---------------|-----------------------|-----|--------------------|--|-------------------|------------------|----------------------|--------------------|------|
| | | | | | | | | | | t_{fa1} [ms] | t_{fa2} [ms] | t_{fc} [ms] | t_{fcFAST} [ms] | | |
| | | | | | | | | | | | | | | | |
| 56 | 1.5 | 3 | 16 | 0.15 | 0.000012 | 0.20 | 0.35 | - | 1 | 30 | 10 | 30 | 12 | | 1.1 |
| 63 | 2 | 5 | 20 | 0.18 | 0.000060 | 0.20 | 0.50 | 0.6 | 1 | 100 | 10 | 30 | 20 | 3600 | 1.5 |
| 71 | 4 | 10 | 30 | 0.25 | 0.000110 | 0.20 | 0.50 | 0.8 | 1 | 120 | 10 | 60 | 25 | 3600 | 2.2 |
| 80 | 7 | 20 | 40 | 0.30 | 0.000160 | 0.30 | 0.60 | 1.0 | 1 | 150 | 10 | 60 | 40 | 3600 | 3.1 |
| 90 | 14 | 40 | 50 | 0.40 | 0.000350 | 0.30 | 0.60 | 1.0 | 1 | 220 | 15 | 120 | 50 | 3600 | 4.9 |
| 100 | 26 | 70 | 65 | 0.45 | 0.000880 | 0.35 | 0.70 | 1.2 | 1 | 300 | 30 | 80 | 80 | 3600 | 8.3 |
| 112 | 35 | 100 | 100 | 0.60 | 0.001030 | 0.35 | 0.70 | 1.2 | 1 | 300 | 30 | 80 | 80 | 3000 | 9.5 |
| 132 | 53 | 150 | 100 | 0.60 | 0.002250 | 0.40 | 0.80 | 1.2 | 1 | 300 | 30 | 100 | 100 | 3000 | 12.3 |
| 160 | 85 | 250 | 150 | 0.90 | 0.007500 | 0.50 | 0.80 | 1.2 | 1 | 300 | 30 | 150 | 150 | 1500 | 24.8 |
| 180 | 140 | 400 | 200 | 1.17 | 0.019800 | 0.50 | 0.80 | 1.4 | 1 | 450 | 40 | 200 | 200 | 1500 | 36 |
| 200 | 140 | 400 | 200 | 1.17 | 0.019800 | 0.50 | 0.80 | 1.4 | 1 | 450 | 40 | 200 | 200 | 1500 | 36 |

- t_{fa1} : tempo di apertura con utilizzo di raddrizzatore / opening time with use of rectifier / Öffnungszeit mit Gleichrichter
- t_{fa2} : tempo di apertura senza raddrizzatore (alim. diretta in c.c.) / opening time without rectifier (d.c. direct supply) / Öffnungszeit ohne Gleichrichter (direkte Versorgung mit Gleichstrom)
- t_{fc} : tempo di chiusura standard / standard closing time / Standardschließzeit
- t_{fcFAST} : tempo di chiusura FAST (con raddrizzatore FAST a richiesta) / FAST closing time (with FAST rectifier on demand) / FAST-Schließzeit (mit Gleichrichter FAST auf Anfrage)

La coppia minima $M_{f_{min}}$ è realizzata rispettando le quote X in tabella ed allentando completamente le viti (2)

The minimum torque $M_{f_{min}}$ is made respecting the X values in the table and completely loosen the screws (2)

Das Mindestdrehmoment $M_{f_{min}}$ wird durch Einhaltung der Werte X in der Tabelle und durch vollständiges Lösen der Schrauben (2) erzielt

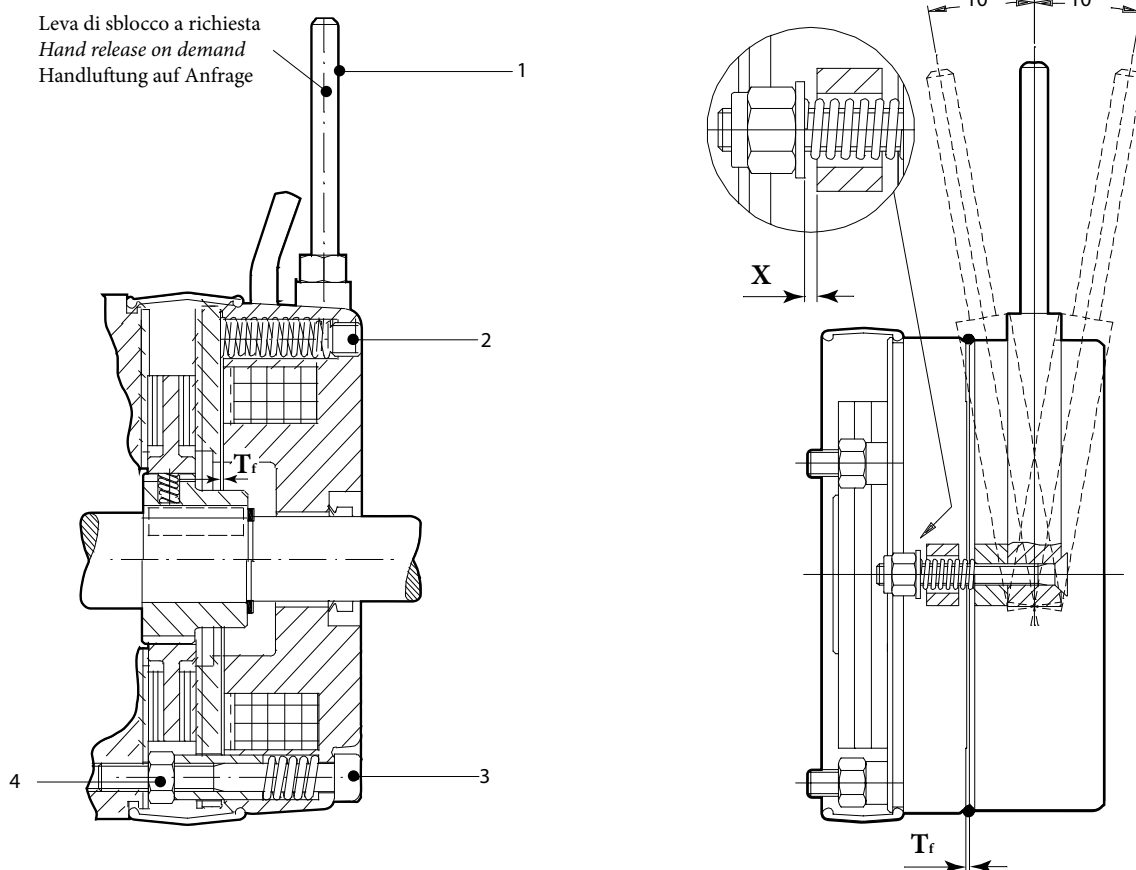


Fig.19

Motori autofrenanti

Il sistema di regolazione è analogo a quello nei freni in c.a.

Il momento frenante può essere regolato agendo sui grani di regolazione (2) posti posteriormente sul freno.

Svitando completamente i grani il momento frenante non diminuirà mai sotto il valore di sicurezza del 35% di M_{fmax} .

Avvitando i grani e portandoli a filo del piano posteriore, si otterrà una regolazione del momento frenante al 50% di M_{fmax} .

Nel caso sia montata la leva di sblocco, è necessario verificare che un eccessivo valore del traferro T_f non comporti l'annullamento della coppia frenante M_f a causa della ripresa del gioco X della leva stessa; per questo motivo è necessario controllare i valori di entrambe le quote T_f ed il gioco X .

Per motivi di sicurezza è necessario aumentare la quota X sino ad un valore che non permetta lo sblocco del freno. L'angolo di rotazione della leva aumenterà di conseguenza all'aumentare della quota X .

Tutti i motori autofrenanti sono forniti con coppia M_f regolata al 70% della M_{fmax} .

I freni in c.c. sono forniti standard per essere alimentati con tensione normale V103cc da potersi pilotare con raddrizzatore; a richiesta possibilità di altre tensioni da V12cc a V300cc.

Brake motors

The adjustment system is similar to the one in a.c. brakes.

The braking torque can be adjusted using the adjustment grub screws (2) placed on the back of the brake.

By completely loosening the grub screws, the braking torque will never decrease below the safety value of 35% of M_{fmax} .

By tightening the grub screws and moving them in line with the rear plane, the braking torque will adjust to 50% of M_{fmax} .

If the hand release is installed, it is necessary to check that an excessive air gap value T_f does not lead to the cancellation of the braking torque M_f due to the restart of clearance X of the lever itself; for this reason, it is necessary to check the values of both dimensions T_f and clearance X .

For safety reasons, it is necessary to increase dimension X up to a value that does not allow the brake to be released. The rotation angle of the lever will consequently increase as dimension X increases.

All brake motors are supplied with torque M_f adjusted to 70% of M_{fmax} .

The d.c. brakes are standard supplied to be powered with normal voltage V103cc to be driven with rectifier; on demand, possibility of other voltages from V12dc to V300dc.

Bremsmotoren

Das Einstellsystem ist ähnlich dem System in den Wechselstrombremsen

Das Bremsdrehmoment kann mit den Einstellstiften (2) am hinteren Teil der Bremse eingestellt werden.

Durch vollständiges Lösen der Stifte wird das Bremsdrehmoment nie unter den Sicherheitswert von 35% M_{fmax} gesenkt.

Durch Anschrauben und Positionieren der Stifte bündig mit der hinteren Fläche wird eine Einstellung des Bremsdrehmoments von 50% M_{fmax} erzielt.

Sollte der Entriegelungshebel installiert sein, muss überprüft werden, ob ein übermäßiger Wert der Bremsstrecke T_f die Nullstellung des Bremsdrehmoments M_f aufgrund der Wiederaufnahme des Spiels X des Hebels verursacht; aus diesem Grund müssen die beiden Werte T_f und das Spiel X überprüft werden.

Aus Sicherheitsgründen muss der Wert X erhöht werden, bis ein Wert erreicht wird, der das Entriegeln der Bremse verhindert. Folglich wird der Drehwinkel des Hebels beim Erhöhen des Werts X erhöht.

Alle Bremsmotoren werden mit Drehmoment M_f geliefert, das auf 70% M_{fmax} eingestellt wird.

Standardmäßig werden die Gleichstrombremsen für die normale Versorgung mit Spannung V103cc geliefert, die mit Gleichrichter gesteuert werden kann; andere Spannungen von V12cc bis V300cc sind auf Anfrage möglich.

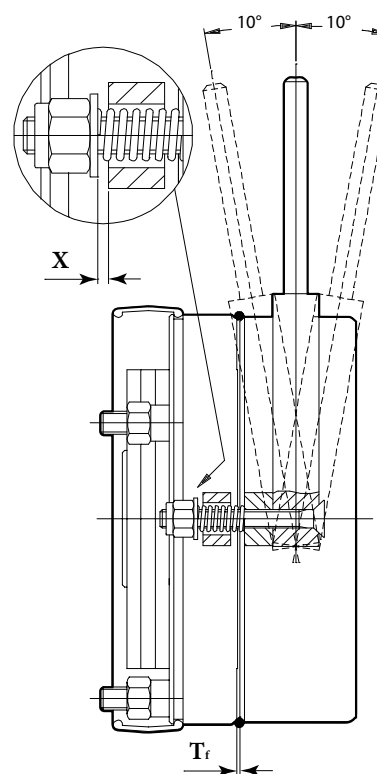
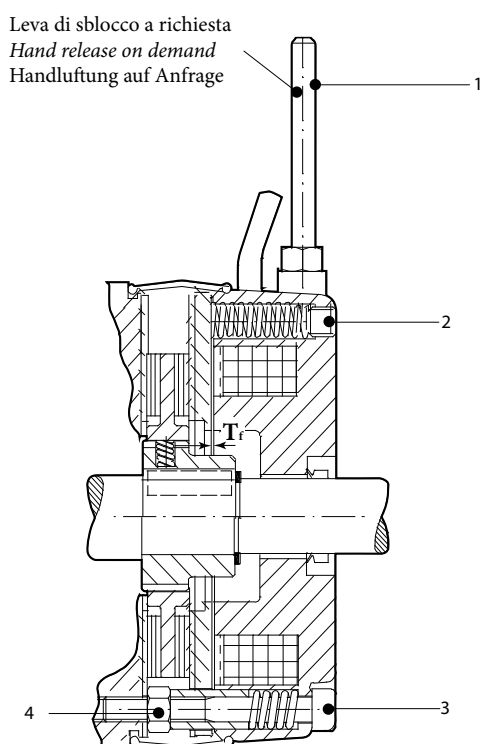


Fig.20

Motori autofrenanti

Brake motors

Bremsmotoren

RADDRIZZATORI DI CORRENTE

CURRENT RECTIFIERS

STROMGLEICRICHTER

I freni in c.c. hanno normalmente tempi di intervento maggiori rispetto ai freni in c.a. ma presentano migliore coppia d'attrito, maggiore stabilità dinamica con minori vibrazioni e minore rumorosità.

I raddrizzatori sono componenti elettrici che raddrizzano la tensione al loro ingresso e forniscono l'alimentazione necessaria al freno in c.c. per permetterne il funzionamento.

Tutti i raddrizzatori che equipaggiano i motori MT sono conformi alla Direttiva Bassa Tensione (LDV) 73/23/CEE, EN50081-1, EN50081-2 e successive modifiche.

Sui motori MT vengono utilizzate le seguenti tipologie di raddrizzatori:

The d.c. brakes normally have longer intervention times with respect to a.c. brakes but have better friction torque, greater dynamic stability with fewer vibrations and less noise.

The rectifiers are electrical components that modulate the voltage at their input and provide the necessary power supply to the d.c. brake to allow its operation.

All rectifiers fitted to MT motors comply with the Low Voltage Directive (LDV) 73/23/CEE, EN50081-1, EN50081-2 and subsequent modifications.

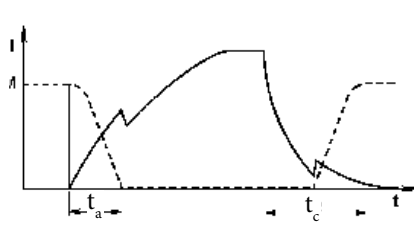
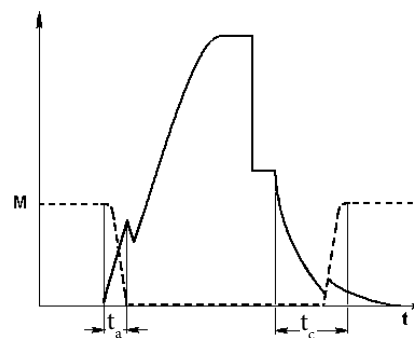
The following types of rectifiers are used on MT motors:

Normalerweise haben die Gleichstrombremsen höhere Aktivierungszeiten als die Wechselstrombremse, aber sie weisen ein besseres Reibungsdrehmoment, eine höhere dynamische Stabilität mit geringeren Vibrationen und geringerer Geräuschentwicklung auf.

Die Gleichrichter sind elektrische Komponenten zum Modulieren und Gleichrichten der Spannung an ihrem Eingang und liefern die notwendige Versorgung für den Betrieb der Gleichstrombremse.

Alle an den MT Motoren eingebauten Gleichrichter entsprechen der Niederspannungsrichtlinie (LDV) 73/23/EWG, EN50081-1, EN50081-2 und späteren Änderungen.

An den MT Motoren werden die folgenden Gleichrichter verwendet:

| Taglia motore Motor Size Motorgröße | Tipo raddrizzatore Current rectifiers type Gleichrichtertyp | Tempi di intervento Intervention times Aktivierungszeiten | Tab.21 |
|---|---|--|--------|
| 56 | NBR500-1 |  | |
| 63 | | | |
| 71 | | | |
| 80 | | | |
| 90 | | | |
| 100 | SBR440-1 |  | |
| 112 | | | |
| 132 | | | |
| 160 | | | |
| 180 | | | |
| 200 | | | |

NBR500-1:

- raddrizzatore di corrente a semionda 6+3 morsetti;
- tensione massima di alimentazione V500 AC con corrente massima di 1A;
- massima temperatura d'esercizio 75°C
- protezione mediante varistori sui morsetti;
- contatto per frenata rapida
- morsetti 7,8 e 9 per collegamenti ausiliari;
- rapporto tra la tensione continua in uscita $U_{\text{=}}$ e la tensione alternata d'alimentazione raddrizzatore $U_{\text{~}}$

NBR500-1:

- half-wave current rectifier 6+3 terminals;
- maximum power supply voltage V500 AC with maximum current of 1A;
- maximum operating temperature 75°C
- protection by varistors on the terminals;
- contact by rapid braking;
- terminals 7, 8 and 9 for auxiliary connections;
- ratio between output continuous voltage $U_{\text{=}}$ and alternate rectifier power supply voltage $U_{\text{~}}$

NBR500-1:

- Halbwellengleichrichter 6+3 Klemmen;
- maximale Versorgungsspannung V500 AC mit maximalem Strom 1A;
- maximale Betriebstemperatur 75°C
- Schutz durch Varistoren an den Klemmen;
- Kontakt für Schnellbremsung
- Klemmen 7,8 und 9 für Hilfsanschlüsse;
- Verhältnis von Gleichstromspannung im Ausgang $U_{\text{=}}$ und Wechselstromspannung Gleichrichter $U_{\text{~}}$

$$\frac{U_{\text{=}}}{U_{\text{~}}} = 0.445$$

Motori autofrenanti

Brake motors

Bremsmotoren

SBR440-1:

- raddrizzatore di corrente a semionda con sovralimentazione 6+3 morsetti;
- tensione massima di alimentazione V500 AC con corrente massima di 1A;
- tempo di sovralimentazione 400 ms ± 30%
- massima temperatura d'esercizio 75°C
- protezione mediante varistori sui morsetti;
- contatto per frenata rapida;
- morsetti 7,8 e 9 per collegamenti ausiliari;
- rapporto tra la tensione continua in uscita U= e la tensione alternata d'alimentazione raddrizzatore U~

SBR440-1:

- half-wave current rectifier with overfeeding 6+3 terminals;
- maximum power supply voltage V500 AC with maximum current of 1A;
- overfeeding time 400 ms ± 30%
- maximum operating temperature 75°C
- protection by varistors on the terminals;
- contact by rapid braking;
- terminals 7, 8 and 9 for auxiliary connections;
- ratio between output continuous voltage U= and alternate rectifier power supply voltage U~

SBR440-1:

- Halbwellengleichrichter mit dynamischer Aufladung 6+3 Klemmen;
- maximale Versorgungsspannung V500 AC mit maximalem Strom 1A;
- Zeit der dynamischen Aufladung 400 ms ± 30%
- maximale Betriebstemperatur 75°C
- Schutz durch Varistoren an den Klemmen;
- Kontakt für Schnellbremsung;
- Klemmen 7,8 und 9 für Hilfsanschlüsse;
- Verhältnis von Gleichstromspannung im Ausgang U= und Wechselstromspannung Gleichrichter U~

$$\frac{U_{=}}{U_{\sim}} = 0.445$$

Nella configurazione standard per i motori a singola polarità TF, il raddrizzatore viene collegato direttamente all'alimentazione trifase del motore.

Quando si utilizzano motori a doppia polarità autofrenanti DF (o motori TF pilotati da INVERTER), è necessario alimentare i raddrizzatori separatamente rispetto al motore.

In the standard configuration for single-polarity TF motors, the rectifier is connected directly to the three-phase power supply of the motor.

When using DF double polarity brake motors (or INVERTER-driven TF motors), it is necessary to feed the rectifiers separately from the motor.

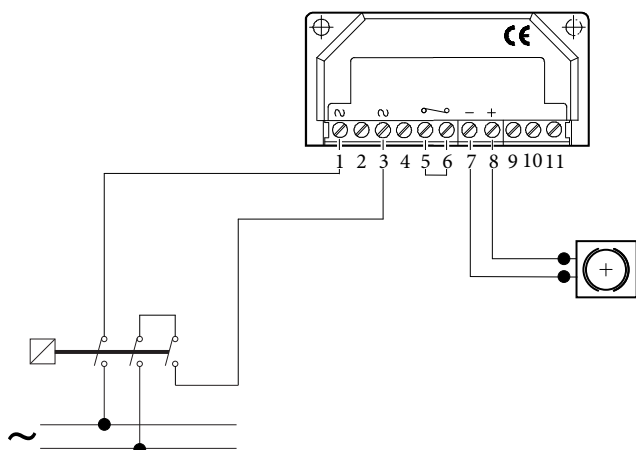
In der Standardkonfiguration für die TF Motoren mit Einzel-Polarität wird der Gleichrichter direkt an die Drehstrom-Versorgung des Motors angeschlossen.

Werden DF Bremsmotoren mit doppelter Polarität (oder über INVERTER gesteuerte TF Motoren) verwendet, müssen die Gleichrichter in Bezug auf den Motor getrennt versorgt werden.

COLLEGAMENTI FRENI IN C.C. D.C. BRAKE CONNECTIONS

ANSCHLÜSSE WECHSELSTROMBREMSSEN

Frenata standard / Standard braking / Standardbremsung



Frenata rapida / Fast braking / Schnellbremsung

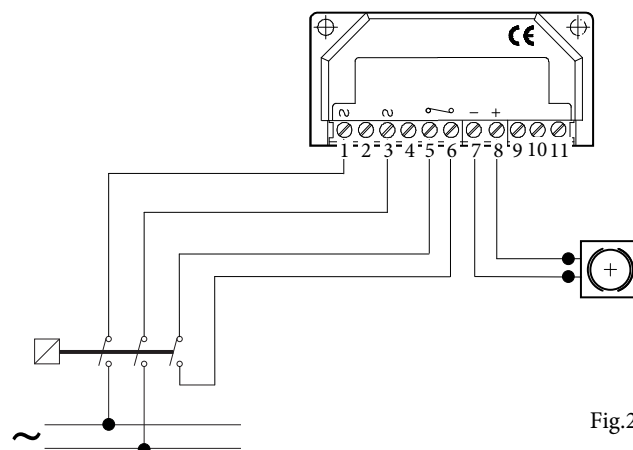


Fig.21

- 1-3 : Ingresso corrente alternata VCA alimentazione
 2-4 : Non collegato NC
 5-6 : Contatto frenata rapida
 7-8 : Uscita corrente continua VCC alimentazione freno
 9-10-11 : Connessioni ausiliarie

- Alternating current input VCA power supply
 Not connected NC
 Fast braking contact
 Direct current output VCC brake power supply
 Auxiliary connections

- Eingang Wechselstrom VCA Versorgung
 Kein NC-Anschluss
 Kontakt Schnellbremsung
 Ausgang Gleichstrom VCC Versorgung Bremse
 Hilfsanschlüsse

A richiesta:

- raddrizzatori per frenata rapida (FAST);
- raddrizzatori ad onda intera;

On demand:

- rectifiers for fast braking (FAST);
- full wave rectifiers;

Auf Anfrage:

- Gleichrichter für Schnellbremsung (FAST);
- Vollweggleichrichter;

$$\frac{U_{=}}{U_{\sim}} = 0.890$$

Contattare l'ufficio tecnico MT.

Contact the MT technical department.

Die technische Abteilung von MT kontaktieren.

Motori autofrenanti

Brake motors

Bremsmotoren

VERIFICHE E REGOLAZIONI

Tutti i motori vengono collaudati al 100% e la taratura dei freni viene effettuata ad un valore pari al 70% della coppia massima M_{max} .

Per l'intervallo di manutenzione periodica si suggerisce di tenere conto del:

- carico da frenare e lavoro di frenatura relativo;
- lavoro smaltibile dal freno fra due intervalli di regolazione;
- numero di cicli equivalenti.

Nel caso in cui, si avvertano malfunzionamenti del freno contattare l'Ufficio Tecnico MT e far effettuare controlli da personale specializzato in modo da riportare il sistema alle normali condizioni operative:

1. **Verificare la tensione di alimentazione.** Controllare che la tensione di alimentazione corrisponda alla tensione di targa.

CHECKS AND ADJUSTMENTS

All the motors are 100% tested and the brakes are calibrated at a value equal to 70% of the maximum torque M_{max} .

For the periodic maintenance interval it is suggested to take into account:

- load to be braked and relative braking work;
- work disposable by the brake between two adjustment intervals;
- number of equivalent cycles.

In the event of brake malfunctions, contact the MT Technical Department and have skilled personnel perform checks in order to restore the system to normal operating conditions:

1. **Check the power supply voltage.** Check that the power supply voltage corresponds to the plate voltage.

PRÜFUNGEN UND EINSTELLUNGEN

Alle Motoren werden 100% getestet und die Bremsen werden auf einen Wert gleich 70% des maximalen Drehmoments M_{max} kalibriert.

Für das Intervall der regelmäßigen Wartung muss Folgendes berücksichtigt werden:

- zu bremsende Last und entsprechende Bremstätigkeit;
- ausführbare Bremstätigkeit zwischen zwei Einstellintervallen;
- Anzahl gleichwertiger Zyklen.

Wird eine Fehlfunktion der Bremse festgestellt, die technische Abteilung von MT kontaktieren und Kontrollen durch Fachpersonal vornehmen lassen, um die normalen Betriebsbedingungen des Systems wiederherzustellen:

1. **Die Versorgungsspannung überprüfen.** Überprüfen, ob die Versorgungsspannung der auf dem Typenschild aufgeführten Spannung entspricht.

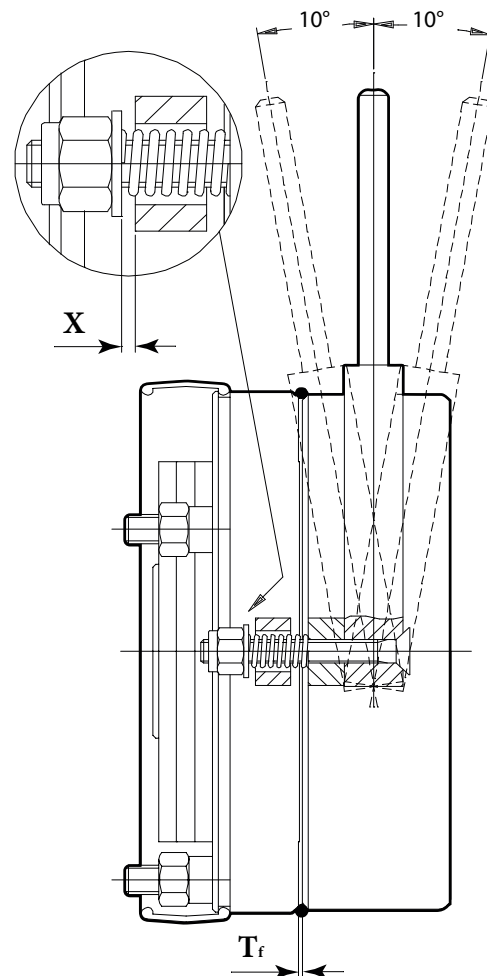
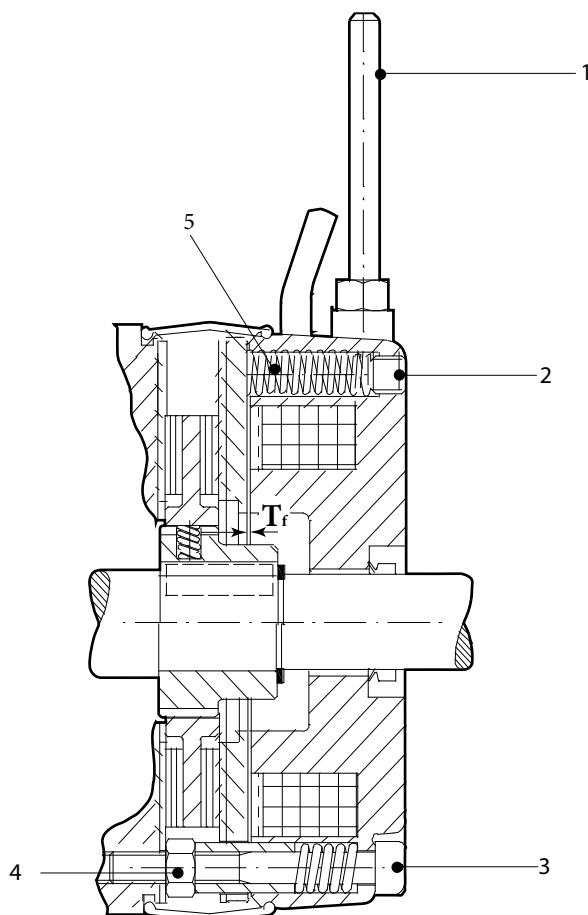


Fig.22

2. Verifica del traferro.

Con uno spessimetro misurare il traferro T_f (distanza fra l'elettromagnete e l'ancora mobile) controllando che il valore rilevato rientri nel campo indicato in tabella. Se questa condizione non fosse verificata, sarà necessario effettuare la regolazione allentando i dadi (4) e agendo sulle viti (3) fino a che il traferro non avrà raggiunto il valore prestabilito. Ad operazione conclusa stringere nuovamente i dadi (4). Questo controllo e l'eventuale intervento dovranno essere effettuati periodicamente ad intervalli stabiliti in base all' utilizzo del freno. Nel caso in cui sia montata la leva di sblocco è necessario verificare che un eccessivo valore del traferro non comporti l'annullamento della coppia frenante dovuto alla ripresa del gioco della leva stessa. Nelle tabelle è riportato il valore max del gioco della leva (X).

3. Regolazione della coppia frenante.

La coppia frenante è proporzionale alla compressione delle molle (5) ed è possibile variarla agendo sui grani (2) (n°3 per motori grand. 63 - 112 e n° 6 per grand. 132 -160) in successione e in modo uniforme; a tale proposito si consiglia di effettuare una rotazione di 1/2 giro a ciascuna vite di regolazione e riprovare il funzionamento del freno.

Se alimentando il freno l'elettromagnete non riesce a richiamare l'ancora mobile e a tenerla attratta senza vibrazioni, è necessario ridurre la pressione delle molle (5) allentando uniformemente i grani (2).

Sotto viene riportato l'andamento della coppia frenante in base al nr. di giri dei grani di regolazione (2).

2. Air gap inspection.

Using a thickness gauge, measure the air gap T_f (distance between the electromagnet and the movable armature), checking that the detected value is within the range indicated in the table. If this condition is not verified, it will be necessary to make the adjustment by loosening the nuts (4) and act on the screws (3) until the air gap has reached the preset value. Once the operation is completed, tighten the nuts (4). This check and possible intervention must be carried out periodically at set intervals based on the use of the brake. If the hand release is installed, it is necessary to check that an excessive air gap value means that the braking torque is not cancelled due to the restarting of the lever clearance. The tables show the maximum value of the lever clearance (X).

3. Braking torque adjustment.

The braking torque is proportional to the compression of the springs (5) and it can be changed by acting on the grub screws (2) (3 for motors sizes 63 - 112 and 6 for sizes 132 - 160) in succession and uniformly; in this regard, it is advisable to rotate each adjustment screw by 1/2 turn and retry the brake operation.

If by feeding the brake the electromagnet cannot recall the movable armature and keep it attracted without vibrations, it is necessary to reduce the pressure of the springs (5) by loosening the grub screws (2) evenly.

Below is the trend of the braking torque based on the no. of revolutions of the adjustment grub screws (2).

2. Überprüfung der Bremsstrecke.

Die Bremsstrecke T_f (Abstand zwischen dem Elektromagnet und dem beweglichen Anker) überprüfen und darauf achten, dass der ermittelte Wert im in der Tabelle angezeigten Bereich liegt. Andernfalls muss die Einstellung vorgenommen werden, dazu die Muttern (4) lockern und die Schrauben (3) betätigen, bis die Bremsstrecke den vorab festgelegten Wert erreicht. Nach Abschluss des Verfahrens die Muttern wieder festziehen (4).

Diese Kontrolle und der eventuelle Eingriff müssen regelmäßig in abhängig von der Verwendung der Bremse festgelegten Zeitabständen erfolgen. Sollte ein Entriegelungshebel montiert sein, muss sichergestellt werden, dass ein übermäßiger Wert der Bremsstrecke die nicht durch die Wiederaufnahme des Spiels des Hebels bedingte Nullstellung des Bremsdrehmoments zulässt. In den Tabellen ist der maximale Wert für das Spiel des Hebels aufgeführt (X).

3. Einstellung des Bremsdrehmoments.

Das Bremsdrehmoment ist proportional zur Kompression der Federn (5) und kann mit den Stiften (2) (3 für Motoren in der Größe 63 - 112 und 6 für Größen 132 -160) der Reihe nach und einheitlich geändert werden; dazu sollte jede Einstellschraube um 1/2 U gedreht und der Betrieb der Bremse erneut geprüft werden.

Wenn der Elektromagnet bei der Versorgung der Bremse den beweglichen Anker nicht anziehen und ohne Vibrationen angezogen halten kann, muss der Druck der Federn (5) durch gleichförmiges Lockern der Stifte (2) verringert werden.

Nachfolgend wird der Bremsdrehmomentverlauf abhängig von der Anzahl der Umdrehungen der Einstellstifte (2) aufgeführt.

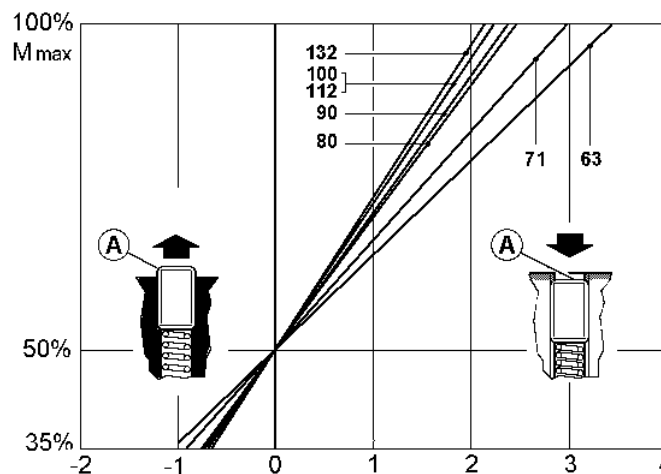


Fig.23

Nr. giri grani / Screw turns number / Anzahl der Schraubenumdrehungen

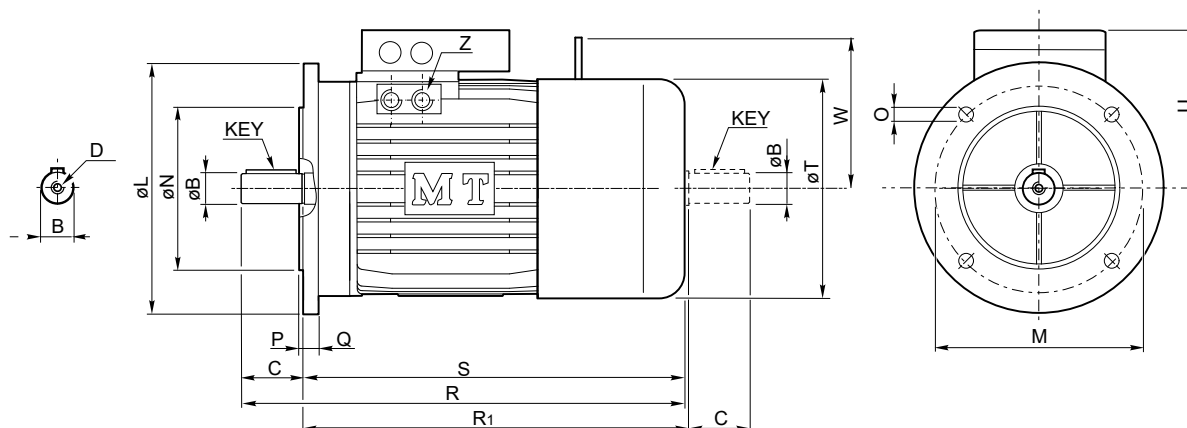


Fig.24

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen | | | | | | | | | | | | | | | | | |
|-------------------------|---------------------------------------|-----|-----|-----|-----|------|-----|-------|-----------|------|------|-----|-----|-----|----|-----|----|-----|
| | [mm] | | | | | | | | | | | | | | | | | |
| | B | C | D | R | R1 | T | U | Z | Key | W | | L | M | N | O | P | Q | S |
| | | | | | | | | | | c.a. | c.c. | | | | | | | |
| 56 | ø9 j6 | 20 | M4 | 236 | 226 | ø110 | 105 | M16 | 3x3x15 | - | - | 120 | 100 | 80 | 7 | 3 | 8 | 216 |
| 63 | ø11 j6 | 23 | M4 | 268 | 241 | ø123 | 110 | M16 | 4x4x15 | 116 | 96 | 140 | 115 | 95 | 9 | 3 | 9 | 245 |
| 71 | ø14 j6 | 30 | M5 | 298 | 275 | ø138 | 120 | M20 | 5x5x25 | 124 | 103 | 160 | 130 | 110 | 9 | 3.5 | 9 | 268 |
| 80 | ø19 j6 | 40 | M6 | 336 | 303 | ø156 | 130 | M20 | 6x6x30 | 134 | 129 | 200 | 165 | 130 | 12 | 3.5 | 10 | 296 |
| 90S | ø24 j6 | 50 | M8 | 336 | 344 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 200 | 165 | 130 | 12 | 3.5 | 10 | 316 |
| 90L | ø24 j6 | 50 | M8 | 391 | 319 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 200 | 165 | 130 | 12 | 3.5 | 10 | 341 |
| 100 | ø28 j6 | 60 | M10 | 441 | 383 | ø194 | 150 | M20 | 8x7x50 | 198 | 199 | 250 | 215 | 180 | 14 | 4 | 14 | 381 |
| 112 | ø28 j6 | 60 | M10 | 465 | 420 | ø216 | 160 | M20 | 8x7x50 | 200 | 204 | 250 | 215 | 180 | 14 | 4 | 14 | 405 |
| 132S | ø38 k6 | 80 | M12 | 553 | 484 | ø257 | 195 | M25 | 10x8x70 | 217 | 226 | 300 | 265 | 230 | 14 | 4 | 19 | 473 |
| 132M | ø38 k6 | 80 | M12 | 593 | 522 | ø257 | 195 | M25 | 10x8x70 | 217 | 226 | 300 | 265 | 230 | 14 | 4 | 19 | 513 |
| 160M | ø42 k6 | 110 | M16 | 735 | 636 | ø310 | 220 | 2xM32 | 12x8x90 | 247 | 266 | 350 | 300 | 250 | 19 | 5 | 16 | 625 |
| 160L | ø42 k6 | 110 | M16 | 780 | 680 | ø310 | 220 | 2xM32 | 12x8x90 | 247 | 266 | 350 | 300 | 250 | 19 | 5 | 16 | 670 |
| 180 | ø48 k6 | 110 | M16 | 810 | 705 | ø360 | 263 | 2xM32 | 14x9x100 | 247 | 305 | 350 | 300 | 250 | 19 | 5 | 18 | 700 |
| 200 | ø55 k6 | 110 | M20 | 825 | 720 | ø400 | 263 | 2xM32 | 16x10x100 | 247 | 305 | 400 | 350 | 300 | 19 | 5 | 19 | 715 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

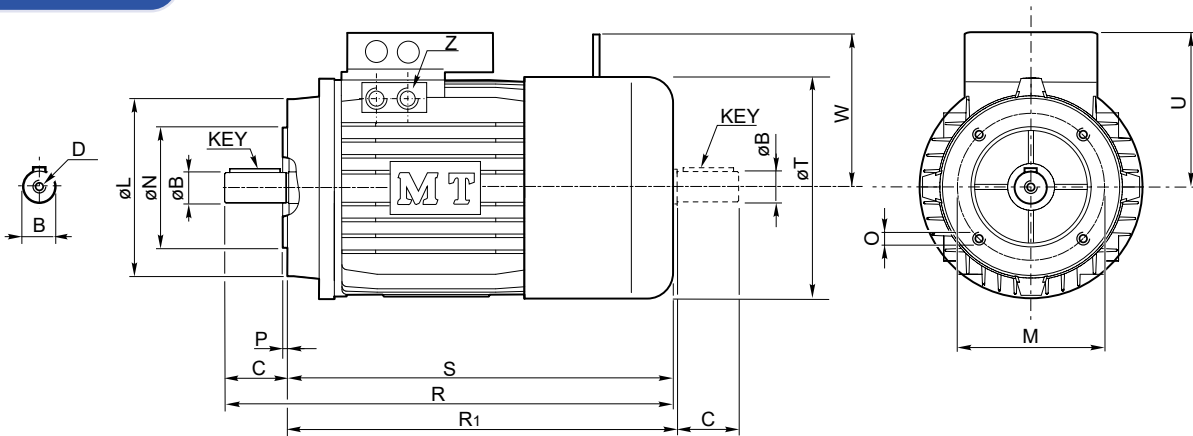
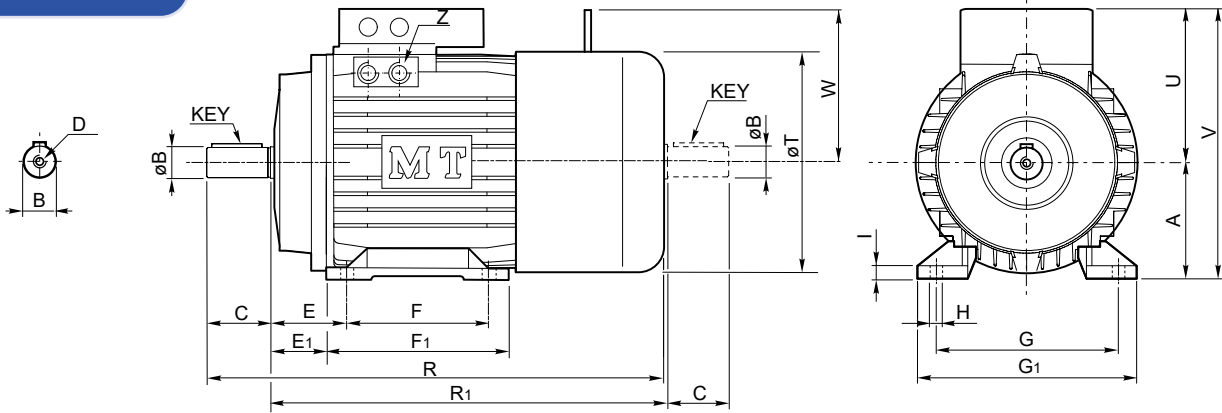


Fig.25

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-----|------|-----|-------|----------|------|------|-----|-----|-----|-----|-----|-----|
| | B | C | D | R | R1 | T | U | Z | Key | W | | L | M | N | O | P | S |
| | | | | | | | | | | c.a. | c.c. | | | | | | |
| 56 | ø9 j6 | 20 | M4 | 236 | 226 | ø110 | 105 | M16 | 3x3x15 | - | - | 80 | 65 | 50 | M5 | 2.5 | 216 |
| 63 | ø11 j6 | 23 | M5 | 268 | 241 | ø123 | 110 | M16 | 4x4x15 | 116 | 96 | 90 | 75 | 60 | M5 | 2.5 | 245 |
| 71 | ø14 j6 | 30 | M6 | 298 | 275 | ø138 | 120 | M20 | 5x5x25 | 124 | 103 | 105 | 85 | 70 | M6 | 2.5 | 268 |
| 80 | ø19 j6 | 40 | M8 | 336 | 303 | ø156 | 130 | M20 | 6x6x30 | 134 | 129 | 120 | 100 | 80 | M6 | 3 | 296 |
| 90S | ø24 j6 | 50 | M8 | 336 | 344 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 140 | 115 | 95 | M8 | 3 | 316 |
| 90L | ø24 j6 | 50 | M10 | 391 | 319 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 140 | 115 | 95 | M8 | 3 | 341 |
| 100 | ø28 j6 | 60 | M10 | 441 | 383 | ø194 | 150 | M20 | 8x7x50 | 198 | 199 | 160 | 130 | 110 | M8 | 3.5 | 381 |
| 112 | ø28 j6 | 60 | M12 | 465 | 420 | ø216 | 160 | M20 | 8x7x50 | 200 | 204 | 160 | 130 | 110 | M8 | 3.5 | 405 |
| 132S | ø38 k6 | 80 | M12 | 553 | 484 | ø257 | 195 | M25 | 10x8x70 | 217 | 226 | 200 | 165 | 130 | M10 | 4 | 473 |
| 132M | ø38 k6 | 80 | M16 | 593 | 522 | ø257 | 195 | M25 | 10x8x70 | 217 | 226 | 200 | 165 | 130 | M10 | 4 | 513 |
| 160M | ø42 k6 | 110 | M16 | 735 | 636 | ø310 | 220 | 2xM32 | 12x8x90 | 247 | 266 | 250 | 215 | 180 | M12 | 4 | 625 |
| 160L | ø42 k6 | 110 | M16 | 780 | 680 | ø310 | 220 | 2xM32 | 12x8x90 | 247 | 266 | 250 | 215 | 180 | M12 | 4 | 670 |
| 180 | ø48 k6 | 110 | M16 | 810 | 705 | ø360 | 263 | 2xM32 | 14x9x100 | 247 | 305 | 290 | 215 | 180 | M12 | 4 | 700 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Motori autofrenanti
Brake motors
Bremsmotoren
TF-MF-XF-DF
B3

Fig.26

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-----|------|-----|-------|-----------|------|------|-----|-----|----|-----|-----|-----|-----|----------|----|-----|
| | B | C | D | R | R1 | T | U | Z | Key | W | | A | E | E1 | F | F1 | G | G1 | H | I | V |
| | | | | | | | | | | c.a. | c.c. | | | | | | | | | | |
| 56 | ø9 j6 | 20 | M4 | 236 | 226 | ø110 | 105 | M16 | 3x3x15 | - | - | 56 | 36 | 26 | 71 | 90 | 90 | 108 | 6x11 | 9 | 161 |
| 63 | ø11 j6 | 23 | M4 | 268 | 241 | ø123 | 110 | M16 | 4x4x15 | 116 | 96 | 63 | 42 | 28 | 80 | 105 | 100 | 120 | 7x12 | 10 | 173 |
| 71 | ø14 j6 | 30 | M5 | 298 | 275 | ø138 | 120 | M20 | 5x5x25 | 124 | 103 | 71 | 45 | 36 | 90 | 108 | 112 | 136 | 7x12 | 11 | 191 |
| 80 | ø19 j6 | 40 | M6 | 336 | 303 | ø156 | 130 | M20 | 6x6x30 | 134 | 129 | 80 | 50 | 38 | 100 | 125 | 125 | 154 | 9.5x16.5 | 13 | 210 |
| 90S | ø24 j6 | 50 | M8 | 336 | 344 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 90 | 56 | 41 | 100 | 130 | 140 | 174 | 10x17.5 | 14 | 230 |
| 90L | ø24 j6 | 50 | M8 | 391 | 319 | ø176 | 140 | M20 | 8x7x40 | 160 | 160 | 90 | 56 | 41 | 125 | 155 | 140 | 174 | 10x17.5 | 14 | 230 |
| 100 | ø28 j6 | 60 | M10 | 441 | 383 | ø194 | 150 | M20 | 8x7x50 | 198 | 199 | 100 | 63 | 46 | 140 | 175 | 160 | 192 | 12x22 | 14 | 250 |
| 112A | ø28 j6 | 60 | M10 | 465 | 420 | ø216 | 160 | M20 | 8x7x50 | 200 | 204 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 272 |
| 112B | ø38 k6 | 80 | M10 | 465 | 420 | ø216 | 160 | M20 | 10x8x70 | 200 | 204 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 272 |
| 132S | ø38 k6 | 80 | M12 | 553 | 484 | ø257 | 195 | M25 | 10x8x70 | 217 | 226 | 132 | 89 | 60 | 140 | 180 | 216 | 256 | 12.5x28 | 16 | 327 |
| 132M | ø38 k6 | 80 | M12 | 593 | 522 | ø257 | 195 | M25 | 12x8x90 | 217 | 226 | 132 | 89 | 60 | 178 | 218 | 216 | 256 | 12.5x28 | 16 | 327 |
| 160M | ø42 k6 | 110 | M16 | 735 | 636 | ø310 | 220 | 2xM32 | 12x8x90 | 247 | 266 | 160 | 108 | 83 | 210 | 260 | 254 | 310 | 14.5x30 | 23 | 380 |
| 160L | ø42 k6 | 110 | M16 | 780 | 680 | ø310 | 220 | 2xM32 | 14x9x100 | 247 | 266 | 160 | 108 | 72 | 254 | 320 | 254 | 310 | 14.5x30 | 23 | 380 |
| 180M | ø48 k6 | 110 | M16 | 810 | 705 | ø360 | 263 | 2xM32 | 14x9x100 | 247 | 305 | 180 | 121 | 80 | 241 | 315 | 279 | 355 | 13x38 | 25 | 443 |
| 180L | ø48 k6 | 110 | M16 | 810 | 705 | ø360 | 263 | 2xM32 | 14X9X100 | 247 | 305 | 180 | 121 | 80 | 279 | 353 | 279 | 355 | 13x38 | 25 | 443 |
| 200 | ø55 k6 | 110 | M20 | 825 | 720 | ø400 | 263 | 2xM32 | 16X10X100 | 247 | 305 | 200 | 133 | 91 | 305 | 400 | 318 | 395 | 18x38 | 25 | 463 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

TF - MF - XF - DF

Motori autofrenanti
Brake motors
Bremsmotoren
TF

Ex disponibile
available
2/22 verfügbar

2 poli
2 poles
50 Hz
2 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | kg |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | |
| 55A | 0.05 | 0.07 | 2750 | 52 | 0.71 | 0.30 | 2.8 | 0.18 | 2 | 2.2 | 0.000112 | 3 |
| 56A | 0.09 | 0.12 | 2700 | 52 | 0.76 | 0.45 | 3 | 0.32 | 2 | 2.2 | 0.000112 | 4 |
| 56B | 0.13 | 0.18 | 2730 | 52 | 0.73 | 0.50 | 3.2 | 0.46 | 2 | 2.3 | 0.000112 | 4 |
| 56C | 0.18 | 0.25 | 2700 | 53 | 0.82 | 0.60 | 2.9 | 0.63 | 2.5 | 2.5 | 0.000132 | 4.1 |
| 63A | 0.18 | 0.25 | 2720 | 53.2 | 0.69 | 0.60 | 2.5 | 0.63 | 2 | 2 | 0.000220 | 5.1 |
| 63B | 0.25 | 0.33 | 2710 | 58 | 0.82 | 0.80 | 3 | 0.88 | 2 | 2 | 0.000220 | 5.1 |
| 63C | 0.37 | 0.50 | 2770 | 68 | 0.78 | 1 | 3.5 | 1.3 | 2.1 | 2.2 | 0.000350 | 6.1 |
| 71A | 0.37 | 0.50 | 2800 | 68 | 0.73 | 1.1 | 3.5 | 1.3 | 2.5 | 2.7 | 0.000400 | 6.9 |
| 71B | 0.55 | 0.75 | 2800 | 72 | 0.74 | 1.4 | 4.5 | 1.8 | 2.3 | 2.6 | 0.000580 | 7.9 |
| 71C | 0.75 | 1 | 2820 | 72 | 0.74 | 2 | 4.5 | 2.5 | 2.3 | 2.6 | 0.000680 | 8.6 |
| 80A | 0.75 | 1 | 2830 | 72.1 | 0.83 | 1.8 | 5 | 2.5 | 2.3 | 2.6 | 0.001010 | 10.2 |
| 80B | 1.1 | 1.5 | 2830 | 75 | 0.84 | 2.5 | 5 | 3.7 | 2.3 | 2.6 | 0.001210 | 12.7 |
| 90S | 1.5 | 2 | 2820 | 77.2 | 0.86 | 3.6 | 5.8 | 5.1 | 2.6 | 2.7 | 0.001800 | 16 |
| 90L | 2.2 | 3 | 2840 | 79.7 | 0.86 | 4.7 | 5.5 | 7.4 | 2.9 | 3 | 0.002260 | 17.9 |
| 100A | 3 | 4 | 2890 | 81.5 | 0.85 | 6 | 5.8 | 9.9 | 2.4 | 3 | 0.003870 | 27.6 |
| 100B | 4 | 5.5 | 2880 | 81.5 | 0.85 | 8.1 | 6.2 | 13.2 | 2.5 | 3.2 | 0.004950 | 32.6 |
| 112A | 4 | 5.5 | 2900 | 83.1 | 0.88 | 8 | 6.6 | 13.2 | 2.1 | 2.6 | 0.006230 | 38.7 |
| 112B | 5.5 | 7.5 | 2900 | 85.7 | 0.86 | 12.3 | 6.6 | 18 | 2 | 2.8 | 0.008030 | 41.7 |
| 112C | 7.5 | 10 | 2860 | 86 | 0.82 | 16 | 6.5 | 24.8 | 2.7 | 3.2 | 0.008330 | 43.7 |
| 132SA | 5.5 | 7.5 | 2910 | 84.7 | 0.83 | 11.6 | 6.5 | 18 | 3.3 | 3.1 | 0.013050 | 61 |
| 132SB | 7.5 | 10 | 2910 | 86 | 0.84 | 15 | 7 | 24.6 | 3.5 | 3.3 | 0.015250 | 67 |
| 132MC | 9.2 | 12.5 | 2910 | 86 | 0.87 | 18.5 | 7.1 | 30.2 | 3.6 | 3.8 | 0.018640 | 75 |
| 132MD | 11 | 15 | 2910 | 86 | 0.87 | 21 | 7.6 | 36 | 3.4 | 3.8 | 0.020980 | 82 |
| 160MA | 11 | 15 | 2930 | 89.4 | 0.85 | 22.9 | 8.6 | 35.8 | 3.5 | 3.8 | 0.039480 | 132 |
| 160MB | 15 | 20 | 2930 | 90.3 | 0.85 | 29.5 | 8.3 | 48.9 | 3.6 | 3.9 | 0.049710 | 143 |
| 160L | 18.5 | 25 | 2935 | 90.9 | 0.85 | 34.7 | 8.3 | 60.2 | 3.9 | 3.7 | 0.056100 | 152 |
| 180M | 22 | 30 | 2930 | 91.3 | 0.86 | 40 | 7 | 71.7 | 2.9 | 2.2 | 0.097700 | 194 |
| 200LA | 30 | 40 | 2940 | 92 | 0.90 | 52 | 6.6 | 97.5 | 3 | 2.2 | 0.125000 | 228 |
| 200LB | 37 | 50 | 2940 | 92.5 | 0.89 | 68.6 | 7 | 120 | 3 | 2.4 | 0.140600 | 277 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
TF

**disponibile
available
2/22
verfügbar**

4 poli
4 poles

50 Hz
4 polig

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|---------------------|------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 55A | 0.05 | 0.07 | 1330 | 35 | 0.65 | 0.35 | 1.8 | 0.4 | 1.7 | 1.3 | 0.00011 | - |
| 56B | 0.09 | 0.12 | 1340 | 56 | 0.65 | 0.43 | 2.5 | 0.6 | 2.6 | 2.6 | 0.00019 | 4 |
| 63A | 0.13 | 0.18 | 1360 | 60 | 0.68 | 0.60 | 2.4 | 0.9 | 2 | 2.2 | 0.00031 | 5.1 |
| 63B | 0.18 | 0.25 | 1380 | 62 | 0.69 | 0.70 | 2.5 | 1.3 | 2.2 | 2.3 | 0.00035 | 5.9 |
| 71A | 0.25 | 0.33 | 1400 | 70 | 0.70 | 0.85 | 3 | 1.7 | 2.3 | 2.3 | 0.00085 | 6.8 |
| 71B | 0.37 | 0.50 | 1400 | 70 | 0.71 | 1.1 | 3.7 | 2.5 | 2.8 | 2.8 | 0.00107 | 7.8 |
| 71C | 0.55 | 0.75 | 1400 | 72 | 0.75 | 1.45 | 3.9 | 3.8 | 2.5 | 2.5 | 0.00128 | 8.4 |
| 80A | 0.55 | 0.75 | 1400 | 72 | 0.78 | 1.6 | 4 | 3.8 | 2.4 | 2.5 | 0.00207 | 10.4 |
| 80B | 0.75 | 1 | 1400 | 72.1 | 0.78 | 2.1 | 4 | 5.1 | 2.4 | 2.5 | 0.00270 | 12.4 |
| 80C | 0.95 | 1.3 | 1420 | 72.1 | 0.75 | 2.5 | 4 | 6.4 | 2.3 | 2.6 | 0.00301 | 13.4 |
| 90S | 1.1 | 1.5 | 1380 | 75 | 0.84 | 2.6 | 4.3 | 7.6 | 2.2 | 2.2 | 0.00277 | 15.6 |
| 90L | 1.5 | 2 | 1410 | 77.2 | 0.84 | 3.6 | 4.7 | 10.1 | 2.7 | 2.9 | 0.00356 | 17.1 |
| 90LB | 1.8 | 2.5 | 1400 | 77.2 | 0.84 | 4.4 | 4.7 | 12.2 | 2.7 | 2.9 | 0.00435 | 19.1 |
| 90LC | 2.2 | 3 | 1400 | 83 | 0.82 | 4.8 | 5.6 | 14.9 | 2.9 | 2.8 | 0.00485 | 20.6 |
| 100A | 2.2 | 3 | 1440 | 79.7 | 0.84 | 5 | 4.8 | 14.5 | 2.2 | 2.5 | 0.00608 | 25.6 |
| 100B | 3 | 4 | 1450 | 81.5 | 0.84 | 6.7 | 5 | 19.7 | 2.3 | 2.6 | 0.00756 | 29.6 |
| 100C | 4 | 5.5 | 1410 | 81.5 | 0.82 | 8 | 4.7 | 27 | 2.4 | 2.7 | 0.00794 | 31.6 |
| 112A | 4 | 5.5 | 1420 | 83.1 | 0.88 | 8.4 | 5 | 27 | 2.2 | 2.3 | 0.01155 | 38.7 |
| 112B | 5.5 | 7.5 | 1420 | 83.1 | 0.90 | 13 | 6 | 37 | 1.9 | 2 | 0.01423 | 41.7 |
| 132SA | 5.5 | 7.5 | 1440 | 84.7 | 0.81 | 13 | 6.2 | 36.5 | 2.1 | 2.5 | 0.02293 | 60 |
| 132MB | 7.5 | 10 | 1440 | 86 | 0.81 | 17.5 | 6.3 | 49.7 | 2.5 | 2.7 | 0.02913 | 71 |
| 132MC | 9.2 | 12.5 | 1450 | 86 | 0.83 | 18.5 | 7 | 60.6 | 2.4 | 2.6 | 0.03284 | 75 |
| 132MD | 11 | 15 | 1450 | 86 | 0.83 | 22 | 8 | 72.4 | 2.3 | 2.4 | 0.03857 | 81 |
| 160M | 11 | 15 | 1450 | 89.8 | 0.79 | 22 | 7.3 | 72.5 | 3.5 | 3.7 | 0.07180 | 132 |
| 160L | 15 | 20 | 1460 | 90.6 | 0.79 | 31 | 7 | 98.1 | 3.6 | 3.1 | 0.09130 | 150 |
| 180M | 18.5 | 25 | 1460 | 91.2 | 0.82 | 37 | 6 | 121 | 2.5 | 2.6 | 0.03290 | 168 |
| 180L | 22 | 30 | 1470 | 91.6 | 0.82 | 43 | 6.8 | 143 | 2.5 | 3 | 0.03390 | 178 |
| 200L | 30 | 40 | 1465 | 92.3 | 0.82 | 63 | 6 | 196 | 2.5 | 2.9 | 0.03490 | 224 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
TF


Ex disponibile
available
2/22 verfügbar


6 poli
6 poles
50 Hz
6 polig


| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 56A | 0.06 | 0.08 | 840 | 48 | 0.59 | 0.40 | 2 | 0.7 | 1.8 | 2 | 0.00019 | 4,1 |
| 63A | 0.09 | 0.12 | 920 | 54 | 0.60 | 0.71 | 2 | 1 | 1.8 | 2 | 0.00040 | 5 |
| 63B | 0.12 | 0.16 | 900 | 56 | 0.60 | 0.76 | 2 | 1.3 | 1.8 | 2 | 0.00066 | 6 |
| 71A | 0.18 | 0.25 | 880 | 56 | 0.62 | 0.80 | 2.5 | 1.9 | 1.8 | 2 | 0.00085 | 6,9 |
| 71B | 0.25 | 0.33 | 900 | 60 | 0.65 | 1.2 | 2.9 | 2.6 | 1.9 | 2.2 | 0.00107 | 7,9 |
| 80A | 0.37 | 0.50 | 920 | 65 | 0.66 | 1.5 | 3.2 | 3.8 | 1.9 | 2.2 | 0.00207 | 10,4 |
| 80B | 0.55 | 0.75 | 920 | 69 | 0.70 | 1.7 | 3.5 | 5.7 | 2 | 2.3 | 0.00280 | 12,4 |
| 90S | 0.75 | 1 | 920 | 70 | 0.73 | 2.4 | 3.5 | 7.7 | 1.8 | 2 | 0.00277 | 15,6 |
| 90L | 1.1 | 1.5 | 920 | 72.9 | 0.71 | 3.4 | 3.5 | 11.4 | 1.8 | 2 | 0.00433 | 17,1 |
| 100A | 1.5 | 2 | 940 | 75.2 | 0.75 | 4 | 4 | 15.2 | 1.8 | 2 | 0.00607 | 29,8 |
| 112A | 2.2 | 3 | 950 | 77.7 | 0.75 | 5.4 | 6 | 22 | 2.3 | 2.2 | 0.00823 | 43,7 |
| 132SA | 3 | 4 | 950 | 79.7 | 0.76 | 7.1 | 5.4 | 30.1 | 2.1 | 2.1 | 0.02165 | 61 |
| 132MB | 4 | 5.5 | 950 | 81.4 | 0.78 | 9.1 | 5.3 | 40.2 | 2.4 | 2.4 | 0.02913 | 72 |
| 132MC | 5.5 | 7.5 | 965 | 83.1 | 0.82 | 13.3 | 5.3 | 54.4 | 2.6 | 2.6 | 0.03655 | 127 |
| 160M | 7.5 | 10 | 950 | 87.2 | 0.82 | 17.1 | 5 | 75.4 | 2 | 2.3 | 0.09050 | 152 |
| 160L | 11 | 15 | 960 | 88.7 | 0.82 | 24.5 | 5.5 | 109 | 2.3 | 2.5 | 0.13250 | 189 |
| 180L | 15 | 20 | 960 | 89.7 | 0.82 | 30 | 5.2 | 149 | 2.3 | 2.2 | 0.21980 | 219 |
| 200LA | 18.5 | 25 | 950 | 90.4 | 0.84 | 37.5 | 5.2 | 186 | 2.1 | 2.3 | 0.26980 | 249 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
TF

**disponibile
available
2/22
verfügbar**

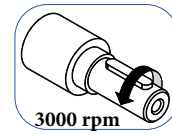
8 poli
8 poles

50 Hz
8 polig

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J | |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 63A | 0.07 | 0.1 | 640 | 42 | 0.52 | 0.70 | 1.3 | 1 | 1.8 | 2 | 0.00035 | 5.9 |
| 71A | 0.12 | 0.16 | 670 | 46 | 0.60 | 0.80 | 2 | 1.7 | 1.8 | 2 | 0.00107 | 7.9 |
| 80A | 0.18 | 0.25 | 690 | 50 | 0.60 | 0.90 | 2.5 | 2.5 | 1.8 | 2 | 0.00207 | 10.3 |
| 80B | 0.25 | 0.33 | 700 | 50 | 0.60 | 1.3 | 2.5 | 3.4 | 1.8 | 2 | 0.00270 | 12.3 |
| 90S | 0.37 | 0.50 | 700 | 58 | 0.60 | 1.6 | 3 | 5 | 2 | 2.2 | 0.00277 | 15.4 |
| 90L | 0.55 | 0.75 | 680 | 62 | 0.61 | 2.3 | 3.2 | 7.7 | 2 | 2.2 | 0.00355 | 16.9 |
| 100A | 0.75 | 1 | 700 | 70 | 0.64 | 2.6 | 3.5 | 10.2 | 2 | 2.4 | 0.00607 | 28.6 |
| 100B | 1.1 | 1.5 | 700 | 72 | 0.64 | 3.6 | 3.5 | 15 | 2 | 2.4 | 0.00756 | 35.6 |
| 112A | 1.5 | 2 | 700 | 74 | 0.66 | 5.2 | 4 | 20.5 | 2.1 | 2.4 | 0.01323 | 42.7 |
| 132SA | 2.2 | 3 | 700 | 75 | 0.65 | 7 | 4.1 | 30 | 2.2 | 2.4 | 0.02165 | 61 |
| 132MB | 3 | 4 | 700 | 77 | 0.65 | 9 | 4.3 | 41 | 2.2 | 2.4 | 0.03655 | 72 |
| 160MA | 4 | 5.5 | 710 | 80 | 0.70 | 10.8 | 4.5 | 53.8 | 1.8 | 2 | 0.07000 | 112 |
| 160MB | 5.5 | 7.5 | 720 | 84 | 0.74 | 12.6 | 5 | 73 | 1.8 | 2 | 0.09250 | 127 |
| 160L | 7.5 | 10 | 720 | 85 | 0.75 | 16.8 | 5 | 99.5 | 1.8 | 2 | 0.13340 | 152 |
| 180LB | 11 | 15 | 725 | 86.7 | 0.75 | 30 | 4.5 | 145 | 2 | 2.2 | 0.22180 | 219 |
| 200LB | 15 | 20 | 725 | 87.1 | 0.75 | 34 | 5 | 197.6 | 2.1 | 2.3 | 0.26980 | 219 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
MF - XF

2 poli
2 poles
50 Hz
2 polig

MF

XF

I dati di coppia "M" e corrente "I" si riferiscono alla versione MF.

The torque data "M" and current data "I" refer to the MF version.

Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MF.

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | — — [μF] | J [kgm ²] | kg MF |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------|--------------------------|-------|
| | [kW] | [HP] | | | | | | | | | | | |
| 56A | 0.09 | 0.12 | 2785 | 54 | 0.90 | 1 | 2.4 | 0.30 | 0.58 | 1.4 | 6.3 | 0.00012 | 4.1 |
| 63A | 0.12 | 0.16 | 2750 | 54 | 0.92 | 1.6 | 2.4 | 0.41 | 0.60 | 1.4 | 8 | 0.00026 | 5.5 |
| 63B | 0.18 | 0.25 | 2750 | 54 | 0.92 | 1.75 | 2.5 | 0.62 | 0.62 | 1.6 | 8 | 0.00031 | 6.2 |
| 63C | 0.25 | 0.33 | 2750 | 56 | 0.94 | 2.2 | 2.5 | 0.87 | 0.66 | 1.6 | 10 | 0.00040 | 6.3 |
| 71B | 0.37 | 0.50 | 2800 | 60 | 0.72 | 4.2 | 3 | 1.3 | 0.70 | 1.8 | 14 | 0.00058 | 8.2 |
| 71C | 0.55 | 0.75 | 2670 | 64 | 0.87 | 4.5 | 3.5 | 1.9 | 0.70 | 1.8 | 16 | 0.00068 | 8.9 |
| 80B | 0.75 | 1 | 2680 | 70 | 0.98 | 5.5 | 3.5 | 2.7 | 0.74 | 1.8 | 20 | 0.00121 | 13.2 |
| 80C | 1.1 | 1.5 | 2820 | 67 | 0.97 | 7.5 | 2.7 | 4 | 0.6 | 1.7 | 25 | 0.00156 | 13.6 |
| 90S | 1.1 | 1.5 | 2830 | 70 | 0.98 | 8.5 | 3.6 | 3.7 | 0.76 | 1.9 | 30 | 0.00207 | 16.3 |
| 90L | 1.5 | 2 | 2830 | 74 | 0.98 | 11.5 | 3.6 | 5.1 | 0.76 | 1.9 | 35 | 0.00226 | 18.2 |
| 90LB | 1.8 | 2.5 | 2780 | 74 | 0.98 | 14.2 | 3.8 | 6.2 | 0.7 | 1.9 | 40 | 0.00235 | 19.1 |
| 100A | 2.2 | 3 | 2830 | 76 | 0.98 | 13.2 | 4 | 7.4 | 0.70 | 1.9 | 55 | 0.00387 | 28.3 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
MF - XF

4 poli
4 poles
50 Hz
4 polig

MF

XF

I dati di coppia "M" e corrente "I" si riferiscono alla versione MF.

The torque data "M" and current data "I" refer to the MF version.

Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MF.

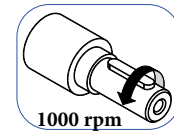
Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | — — [μF] | J [kgm ²] | kg MF |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|-------------|--------------------------|-------|
| | [kW] | [HP] | | | | | | | | | | | |
| 56B* | 0.09 | 0.12 | 1340 | 54 | 0.93 | 0.95 | 1.6 | 0.64 | 0.90 | 1.4 | 6.3 | 0.00019 | 4,2 |
| 63B | 0.12 | 0.16 | 1370 | 58 | 0.90 | 1.4 | 2.5 | 0.84 | 0.74 | 1.6 | 8 | 0.00031 | 6,1 |
| 63C | 0.18 | 0.25 | 1370 | 58 | 0.92 | 1.6 | 2.5 | 1.3 | 0.78 | 1.6 | 8 | 0.00040 | 6,3 |
| 71B | 0.25 | 0.33 | 1340 | 58 | 0.94 | 2.6 | 2.5 | 1.8 | 0.78 | 1.6 | 14 | 0.00107 | 8,1 |
| 71C | 0.37 | 0.50 | 1380 | 58 | 0.94 | 3 | 2.8 | 2.6 | 0.82 | 1.6 | 16 | 0.00128 | 8,7 |
| 71D | 0.55 | 0.75 | 1380 | 59 | 0.89 | 4.6 | 2.7 | 3.7 | 0.5 | 1.5 | 1.6 | 0.00212 | 9,1 |
| 80B | 0.55 | 0.75 | 1400 | 62 | 0.94 | 4.5 | 3 | 3.7 | 0.75 | 1.8 | 20 | 0.00270 | 13 |
| 80C | 0.75 | 1 | 1400 | 66 | 0.94 | 6.5 | 3 | 5.1 | 0.73 | 1.8 | 25 | 0.00301 | 14 |
| 80D | 0.88 | 1.2 | 1400 | 66 | 0.94 | 7 | 3 | 6 | 0.70 | 1.8 | 25 | 0.00332 | 14,5 |
| 90 | 1.1 | 1.5 | 1410 | 68 | 0.96 | 8.5 | 3.2 | 7.5 | 0.70 | 1.8 | 30 | 0.00355 | 16 |
| 90L | 1.5 | 2 | 1390 | 68 | 0.93 | 10.5 | 3.2 | 10.3 | 0.65 | 1.8 | 40 | 0.00433 | 17,6 |
| 90LB | 1.8 | 2.5 | 1380 | 72 | 0.99 | 11.5 | 2.8 | 12 | 0.5 | 1.8 | 40 | 0.00485 | 20,1 |
| 100A | 1.8 | 2.5 | 1420 | 70 | 0.96 | 12.5 | 3.2 | 12.1 | 0.60 | 1.8 | 45 | 0.00608 | 26,5 |
| 100B | 2.2 | 3 | 1420 | 70 | 0.96 | 15 | 3.2 | 14.8 | 0.60 | 1.8 | 50 | 0.00756 | 30,5 |

* solo avvolgimento simmetrico a 3 fili / on symmetrical 3-row winding / nur symmetrische Wicklung mit 3 Reihen

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
MF - XF

6 poli
6 poles
50 Hz
6 polig

MF
XF

I dati di coppia "M" e corrente "I" si riferiscono alla versione MF.

The torque data "M" and current data "I" refer to the MF version.

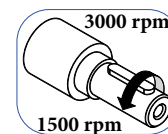
Die Daten für Drehmoment „M“ und Strom „I“ beziehen sich auf die Ausführung MF.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J | MF |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] | kg |
| 63 | 0.12 | 0.16 | 870 | 50 | 0.90 | 1.5 | 2.5 | 1.3 | 0.68 | 1.4 | 8 | 0.00040 | 6.3 |
| 71B | 0.18 | 0.25 | 900 | 52 | 0.92 | 2 | 2.5 | 1.9 | 0.70 | 1.4 | 12.5 | 0.00128 | 8.1 |
| 80A | 0.37 | 0.50 | 920 | 58 | 0.90 | 3.1 | 2.7 | 3.8 | 0.72 | 1.5 | 40 | 0.00270 | 11 |
| 90S | 0.55 | 0.75 | 930 | 62 | 0.93 | 4.2 | 3 | 5.7 | 0.76 | 1.6 | 50 | 0.00277 | 16 |
| 90L | 0.75 | 1 | 850 | 65 | 0.88 | 6.4 | 2 | 8.4 | 0.70 | 1.6 | 60 | 0.00356 | 17.6 |
| 100A | 1.1 | 1.5 | 955 | 66 | 0.92 | 9 | 3.2 | 11 | 0.70 | 1.8 | 50 | 0.00750 | 26.5 |
| 100B | 1.5 | 2 | 900 | 66 | 0.96 | 13.5 | 3.2 | 15.9 | 0.70 | 1.8 | 50 | 0.00900 | 30.5 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF

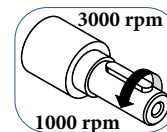
**disponibile
available
verfügbar**

2/4 poli
2/4 poles

50 Hz
2/4 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 63A | 0.18/0.12 | 0.25/0.16 | 2850/1420 | 0.75/0.85 | 3/2.5 | 0.60/0.80 | 1.3/1.3 | 1.4/1.5 | 0.00031 | 5.1 |
| 63B | 0.22/0.15 | 0.30/0.20 | 2760/1360 | 0.83/0.86 | 3/2.5 | 0.76/1 | 1.3/1.3 | 1.4/1.5 | 0.00035 | 5.9 |
| 71A | 0.30/0.20 | 0.40/0.28 | 2780/1400 | 1.2/1 | 3/3 | 1/1.4 | 1.5/1.3 | 1.6/1.8 | 0.00085 | 6.8 |
| 71B | 0.44/0.30 | 0.60/0.40 | 2880/1440 | 1.5/1.5 | 3/3 | 1.5/2 | 1.5/1.4 | 1.6/1.8 | 0.00107 | 7.8 |
| 80A | 0.60/0.45 | 0.80/0.60 | 2780/1400 | 2/1.6 | 3.5/3.5 | 2/3 | 1.5/1.3 | 1.8/1.8 | 0.00207 | 10.3 |
| 80B | 0.80/0.60 | 1.1/0.80 | 2800/1400 | 2.5/1.9 | 2.5/3.5 | 2.8/4.1 | 1.6/1.3 | 1.8/1.8 | 0.00270 | 12.4 |
| 90L | 1.8/1.2 | 2.5/1.7 | 2830/1420 | 4.5/3.1 | 5/4.5 | 6/8 | 2.1/2 | 2.2/2 | 0.00356 | 17.1 |
| 90LL | 2.2/1.5 | 3/2 | 2830/1420 | 5.5/3.7 | 5/4.5 | 7.4/10.1 | 2.1/2 | 2.4/2.2 | 0.00433 | 19.1 |
| 100A | 2.5/1.8 | 3.4/2.5 | 2830/1420 | 6.2/4.5 | 5/4.5 | 8.4/12.1 | 2.3/1.9 | 2.6/2 | 0.00607 | 25.6 |
| 100B | 3.3/2.5 | 4.4/3.4 | 2850/1430 | 8.1/5.9 | 6/5 | 11/16.7 | 2.4/2.2 | 2.8/2.4 | 0.00756 | 29.6 |
| 112A | 4.5/3.3 | 6/4.5 | 2850/1430 | 9.8/7.8 | 6/5 | 15/22 | 2.4/2.3 | 3/2.4 | 0.01326 | 43.7 |
| 132S | 5.5/4 | 7.5/5.5 | 2910/1450 | 13/9.5 | 6.5/5.5 | 18/26.3 | 2.4/2.3 | 3/2.5 | 0.01305 | 60 |
| 132M | 7.5/6.2 | 10/8.5 | 2910/1450 | 16.5/13.5 | 7/6 | 24.6/40.9 | 2.5/2.8 | 3/2.5 | 0.01864 | 75 |
| 160M | 11/9 | 15/12.2 | 2940/1460 | 25/19.5 | 7/6 | 35.7/58.9 | 2.5/2.6 | 3/2.5 | 0.06950 | 149 |
| 160L | 17/13 | 23/17.5 | 2930/1460 | 33/26 | 7.5/6.3 | 55.4/85 | 2.4/2.5 | 3/2.5 | 0.09950 | 169 |
| 180L | 22 / 18.5 | 30 / 25 | 2930/1460 | 44.2/38.2 | 7.5/6 | 71.7/120.5 | 2.4/2.8 | 3/2.5 | 0.17180 | 204 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF
**disponibile
available
2/22 verfügbar**

2/6 poli
2/6 poles
50 Hz
2/6 polig

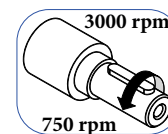
Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P_n | | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | |
|-------------------------|-----------|-----------|------------|--------------|-------------------|---------------|-------------------|--------------------|--------------------------|------|
| | [kW] | [HP] | | | | | | | | |
| 71C | 0.25/0.15 | 0.33/0.20 | 2780/850 | 1.15/0.9 | 4/2 | 0.85/1.7 | 1.6/1.3 | 2/1.8 | 0.00128 | 8.4 |
| 80C | 0.75/0.37 | 1/0.50 | 2800/880 | 2.7/1.8 | 4.2/2.5 | 2.5/4 | 1.8/1.8 | 2.4/2.3 | 0.00301 | 13.4 |
| 90S | 1.1/0.55 | 1.5/0.75 | 2800/900 | 3.3/1.6 | 4.5/2.5 | 3.75/5.8 | 1.6/1.5 | 2.4/2.4 | 0.00277 | 15.6 |
| 90LB | 1.5/0.75 | 2/1 | 2800/910 | 4.3/3.7 | 4.8/2.8 | 5.1/7.9 | 1.6/1.5 | 2.3/2.4 | 0.00356 | 17.1 |
| 100B | 2.2/1.1 | 3/1.5 | 2820/910 | 5.5/4.8 | 5/3 | 7.5/11.5 | 1.8/1.5 | 2.4/2.3 | 0.00756 | 29.6 |
| 112B | 3/1.5 | 4/2 | 2820/920 | 6.9/5.8 | 5.5/3.5 | 10.2/15.6 | 1.9/1.3 | 2.5/1.8 | 0.01155 | 38.7 |
| 132S | 4/1.7 | 5.5/2.3 | 2840/930 | 9/4.3 | 5/4 | 13.5/17.5 | 2/1.8 | 2.3/1.8 | 0.02165 | 60 |
| 132M | 5.5/2 | 7.5/2.7 | 2850/930 | 12/6 | 5.5/4.6 | 18.4/20.5 | 2.2/1.8 | 2.3/1.8 | 0.03655 | 77 |
| 160M | 7.5/2.5 | 10.2/3.4 | 2880/950 | 16/7 | 6/4.7 | 25/25 | 2/2 | 1.8/1.8 | 0.06950 | 149 |
| 160L | 11/3.7 | 15/5 | 2900/960 | 25/11 | 6.2/4.8 | 36.2/36.8 | 2/2 | 1.8/1.8 | 0.09950 | 169 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF

**disponibile
available
verfügbar**

2/8 poli
2/8 poles

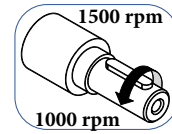
50 Hz
2/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 63C | 0.18/0.06 | 0.25/0.08 | 2740/640 | 0.60/0.60 | 3.4/2.3 | 0.62/0.89 | 1.6/1.9 | 1.8/1.6 | 0.00040 | 6.2 |
| 71C | 0.30/0.09 | 0.40/0.12 | 2770/660 | 1.15/0.65 | 4/2.3 | 1/1.3 | 1.6/2 | 2/1.6 | 0.00128 | 8.4 |
| 80B | 0.55/0.11 | 0.75/0.15 | 2800/680 | 2/0.9 | 4/2.4 | 1.9/1.6 | 1.8/2 | 2.2/1.8 | 0.00270 | 12.4 |
| 80C | 0.60/0.13 | 0.85/0.18 | 2800/680 | 2.6/1.2 | 4.2/2.4 | 2.1/1.8 | 1.8/2 | 2.4/2.1 | 0.00241 | 13.4 |
| 90S | 1.1/0.3 | 1.5/0.4 | 2830/700 | 3.3/1.5 | 4.5/2.5 | 3.7/4.1 | 1.6/1.8 | 2.4/2 | 0.00277 | 15.6 |
| 90L | 1.5/0.4 | 2/0.55 | 2850/700 | 4/1.6 | 4.5/2.5 | 5.1/5.5 | 1.6/1.8 | 2.4/2.1 | 0.00356 | 17.1 |
| 90LB | 1.8/0.50 | 2.5/0.65 | 2870/700 | 4.3/2 | 4.8/2.7 | 6/6.8 | 1.6/1.8 | 2/1.6 | 0.00435 | 19.1 |
| 100B | 2.2/0.60 | 3/0.8 | 2900/710 | 5.5/3 | 5/2.9 | 7.3/8.1 | 1.8/1.9 | 2/1.8 | 0.00756 | 29.6 |
| 112A | 3/0.75 | 4/1 | 2920/710 | 6.9/3.4 | 5.5/2.9 | 9.8/10.1 | 1.9/2 | 2.2/2 | 0.01155 | 38.7 |
| 132S | 4/1 | 5.5/1.3 | 2880/710 | 8.6/4.5 | 5/3.8 | 13.3/13.5 | 1.9/1.8 | 2.2/2 | 0.02913 | 60 |
| 132M | 5.5/1.4 | 7.5/1.9 | 2890/700 | 11.7/6.6 | 5.5/3.8 | 18.2/19.1 | 1.9/1.8 | 2.2/2 | 0.03655 | 77 |
| 160M | 7.5/1.8 | 10/2.5 | 2900/730 | 16.5/7 | 6/3.4 | 24.7/23.5 | 2/1.7 | 2/2 | 0.06950 | 149 |
| 160L | 11/2.5 | 15/3.4 | 2900/730 | 22/9 | 6.2/4 | 36.2/32.7 | 1.9/1.6 | 2.1/2 | 0.09950 | 169 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF

**disponibile
available
2/22 verfügbar**

4/6 poli
4/6 poles

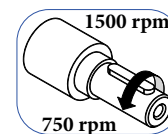
50 Hz
4/6 polig

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | |
|-------------------------|--|-----------|----------|---------|--------------|-----------|--------------|---------------|---------------------|------|
| | P_n | | n | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J | |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] | kg |
| 71B | 0.30/0.22 | 0.40/0.30 | 1380/890 | 1/0.9 | 3.5/2 | 2/2.3 | 1.3/1.3 | 2/1.8 | 0.00068 | 7.9 |
| 80A | 0.37/0.26 | 0.50/0.35 | 1410/900 | 1.5/1.4 | 3.5/2.5 | 2.5/2.7 | 1.3/1.4 | 1.9/2.1 | 0.00207 | 10.4 |
| 80B | 0.55/0.45 | 0.75/0.60 | 1420/920 | 2/1.8 | 3.5/2.5 | 3.7/4.7 | 1.5/1.8 | 2.1/2.3 | 0.00270 | 12.4 |
| 90S | 0.75/0.5 | 1/0.7 | 1420/920 | 2.4/2.1 | 4/2.5 | 5/5.2 | 1.4/1.3 | 2.1/2 | 0.00277 | 15.6 |
| 90L | 1.1/0.75 | 1.5/1 | 1470/900 | 3.9/3.7 | 4.2/2.5 | 7.2/7.9 | 1.4/1.4 | 2.1/2.1 | 0.00356 | 17.1 |
| 100A | 1.3/0.9 | 1.8/1.2 | 1430/920 | 4/3.8 | 4.5/3 | 8.7/9.3 | 1.4/1.4 | 2.1/2.2 | 0.00607 | 26.6 |
| 100B | 1.5/1.1 | 2/1.5 | 1450/950 | 4.5/4.1 | 4.5/3 | 9.9/11 | 1.4/1.5 | 2.2/2.3 | 0.00756 | 29.6 |
| 112A | 2.2/1.5 | 3/2 | 1440/960 | 6/5.8 | 4.5/3.5 | 14.6/14.9 | 1.4/1.3 | 1.7/1.6 | 0.01155 | 43.7 |
| 132S | 2.5/1.8 | 3.5/2.5 | 1420/930 | 6.5/6 | 5.5/4.8 | 16.8/18.5 | 1.6/1.5 | 1.8/1.6 | 0.01305 | 60 |
| 132M | 4/3 | 5.5/4 | 1440/930 | 8.5/6.9 | 6.5/5.5 | 26.5/30.8 | 1.8/1.7 | 2/1.9 | 0.01864 | 75 |
| 160M | 6.5/4.5 | 8.8/6 | 1450/940 | 15/11.6 | 5/4.6 | 42.8/45.7 | 1.8/1.7 | 2/1.9 | 0.06950 | 149 |
| 160L | 9.5/6.5 | 13/8.8 | 1450/940 | 21/17 | 5.4/4.4 | 62.6/66 | 2/1.8 | 2/1.9 | 0.92750 | 179 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF

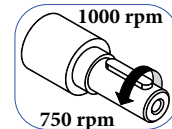
**disponibile
available
verfügbar**

4/8 poli
4/8 poles

50 Hz
4/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 63B | 0.09/0.04 | 0.12/0.06 | 1440/650 | 0.55/0.70 | 3.5/2 | 0.60/0.60 | 1.3/1.3 | 1.9/1.8 | 0.00035 | 6 |
| 71B | 0.15/0.09 | 0.20/0.12 | 1420/680 | 0.56/0.65 | 3.5/2 | 1/1.2 | 1.3/1.3 | 1.9/1.8 | 0.00107 | 7.9 |
| 80A | 0.30/0.18 | 0.40/0.25 | 1410/700 | 1.3/1.1 | 3.5/2.5 | 2/2.4 | 1.5/1.8 | 2/1.8 | 0.00207 | 10.4 |
| 80B | 0.37/0.22 | 0.50/0.30 | 1420/700 | 1.8/1.7 | 3.5/2.5 | 2.5/3 | 1.5/1.8 | 2/1.8 | 0.00270 | 12.4 |
| 90S | 0.60/0.25 | 0.80/0.35 | 1430/700 | 1.9/1.8 | 4/2.5 | 4/3.4 | 1.4/1.3 | 2/1.8 | 0.00277 | 15.6 |
| 90L | 1/0.5 | 1.3/0.7 | 1400/700 | 2.3/2.7 | 4.5/2.5 | 6.8/6.8 | 1.4/1.4 | 2/1.8 | 0.00356 | 17.1 |
| 100B | 1.5/0.75 | 2/1 | 1430/700 | 3.8/3.6 | 4.5/3 | 10/10 | 1.4/1.5 | 2/1.8 | 0.00756 | 29.6 |
| 112A | 2.2/1.3 | 3/1.8 | 1410/700 | 4.8/4.4 | 4.5/3.4 | 14.9/17.7 | 1.6/1.5 | 1.9/1.9 | 0.01326 | 44 |
| 132S | 3.1/1.7 | 4.2/2.3 | 1420/710 | 6.5/70 | 4.7/3.8 | 20.8/22.9 | 1.8/1.8 | 2/2.1 | 0.01305 | 60 |
| 132M | 5/2.8 | 6.8/3.8 | 1440/720 | 11.5/8.7 | 5.2/4.3 | 33.1/37.1 | 1.8/1.8 | 2.2/2.3 | 0.01864 | 75 |
| 160M | 6/4 | 8/5.5 | 1420/715 | 13.5/12 | 5/4.6 | 40.4/53.4 | 1.6/1.5 | 2/2 | 0.06950 | 149 |
| 160L | 11/7.5 | 15/10 | 1440/720 | 22/17.5 | 5.2/4.7 | 73/100 | 1.7/1.5 | 2/2 | 0.09950 | 169 |
| 180L | 15/9 | 20/12 | 1440/720 | 31.2/31.2 | 5.2/4 | 99.7/131.4 | 1.7/1.9 | 2/2 | 0.24880 | 204 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti
Brake motors
Bremsmotoren
DF

6/8 poli
6/8 poles


50 Hz
6/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] | kg |
| 71C | 0.15/0.09 | 0.20/0.12 | 850/660 | 0.9/0.65 | 2/1.8 | 1.8/1.3 | 1.3/2 | 1.8/1.6 | 0.00128 | 8,4 |
| 80C | 0.30/0.13 | 0.40/0.18 | 880/680 | 1.8/1.2 | 2.5/2.2 | 3.2/1.9 | 1.8/2 | 2.3/2.1 | 0.00301 | 13,4 |
| 90S | 0.37/0.25 | 0.50/0.33 | 900/700 | 1.7/1.4 | 2.5/2.5 | 3.9/3.4 | 1.5/2 | 2.4/2.1 | 0.00277 | 15,6 |
| 90LB | 0.60/0.37 | 0.80/0.50 | 900/700 | 2.5/1.3 | 2.8/2.7 | 6.3/5 | 1.3/1.8 | 2.4/1.6 | 0.00435 | 17,6 |
| 100B | 1/0.50 | 1.3/0.70 | 910/710 | 4/3 | 3/2.9 | 10.5/6.8 | 1.5/1.8 | 2.3/1.8 | 0.00756 | 29,6 |
| 112B | 1.5/0.75 | 2/1 | 920/710 | 5/3.3 | 3.5/2.9 | 15.6/10.1 | 1.8/2 | 2.2/1.8 | 0.01155 | 38,6 |
| 132S | 1.8/1 | 2.5/1.3 | 940/720 | 6.6/5.1 | 4.5/4 | 18.3/13.3 | 1.8/1.7 | 2.2/1.8 | 0.02913 | 60 |
| 132M | 3/2.2 | 4/3 | 940/720 | 7/6.5 | 4.5/4 | 30.5/29.2 | 1.7/1.6 | 2.3/1.8 | 0.03655 | 77 |
| 160M | 5.5/4 | 7.5/5.5 | 970/720 | 12.5/9.5 | 5.2/4.3 | 54.2/53 | 1.6/1.6 | 2.2/1.8 | 0.06950 | 149 |
| 160L | 7.5/5.5 | 10/7.5 | 970/720 | 15.5/14.5 | 5.4/4.4 | 74/73 | 1.7/1.6 | 2.2/1.8 | 0.09950 | 169 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti potenziati **High braking torque motors** **Leistungsgesteigerte Bremsmotoren**

| Tipo Type Typ | Descrizione Description Beschreibung | Potenza nominale Nominal Power Nennleistung P_n [kW] | Taglia Size Größe | Poli Poles Polig np | Tipo di freno Type of brake Bremsstyp | ATEX | UL-CSA |
|---|---|--|--|--|---|---|---|
| <p>TFP</p>  | <p>Motori asincroni trifase autofrenanti potenziati <i>Three-phase asynchronous high braking torque motors</i> Drehstrom-Asynchronmotoren leistungsgesteigerte Bremsmotoren</p> | 0.09 ÷ 37 | 63 71 80 90 100 112 132 160 180 200 | 2 4 6 8 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom |  2/22 |  |
| <p>MFP</p>  | <p>Motori monofase autofrenanti potenziati <i>Single-phase high braking torque motors</i> Einphasen-Wechselstrommotoren leistungsgesteigerte Bremsmotoren</p> | 0.09 ÷ 2.2 | 63 71 80 90 100 | 2 4 6 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom | - |  |
| <p>XFP</p>  | <p>Motori monofase autofrenanti potenziati ad alta coppia di spunto <i>Single-phase high braking torque motors with high starting torque</i> Leistungsgesteigerte Einphasen- Wechselstrom-Bremsmotoren mit hohem Anlaufdrehmoment</p> | 0.09 ÷ 2.2 | 63 71 80 90 100 | 2 4 6 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom | - |  |
| <p>DFP</p>  | <p>Motori trifase autofrenanti potenziati a doppia polarità <i>Three-phase high braking torque motors with double polarity</i> Leistungsgesteigerte Drehstrom- Bremsmotoren mit doppelter Polarität</p> | 0.18/0.12 ÷ 22/18.5 | 63 71 80 90 100 112 132 160 180 | 2/4 2/6 2/8 4/6 4/8 6/8 | c.a. c.c. a.c. d.c. Wechselstrom Gleichstrom |  2/22 |  |

TFP - MFP - XFP - DFP

Motori autofrenanti potenziati

La presente sezione tratta i motori MT nelle loro versioni autofrenanti potenziati

- **TFP** Motori asincroni trifase autofrenanti potenziati;
- **MFP** Motori monofase autofrenanti potenziati;
- **XFP** Motori monofase autofrenanti potenziati ad elevata coppia di spunto;
- **DFP** Motori trifase autofrenanti potenziati a doppia polarità.

I motori autofrenanti potenziati nascono accoppiando un freno potenziato ad un motore trifase TN-MN-XN-DN.

Il freno autofrenante è un freno negativo a mancanza di corrente con doppia superficie di attrito.

In caso di mancanza di corrente i solenoidi interni all'elettromagnete (1), cessano la loro azione attrattiva e le molle (5) premono sull'ancora mobile (2); le superfici dell'ancora frizionano contro il doppio disco freno (3) applicando il momento frenante sul mozzo (4).

La coppia frenante è regolabile agendo sui dadi (7).

High braking torque motors

This section covers the MT motors in their high braking torque motor versions

- **TFP** Three-phase asynchronous high braking torque motors;
- **MFP** Single-phase high braking torque motors;
- **XFP** Single-phase high braking torque motors with high starting torque;
- **DFP** Three-phase high braking torque motors with double polarity.

The high braking torque motors arise by coupling an enhanced brake to a TN-MN-XN-DN three-phase motor.

The self-braking brake is a negative brake for lack of current with double friction surface.

In the event of a power failure, the solenoids inside the electromagnet (1) cease their attractive action and the springs (5) press on the movable armature(2); the armature surfaces rub against the double brake disk (3), applying the braking torque on the hub (4).

The braking torque can be adjusted by acting on the nuts (7).

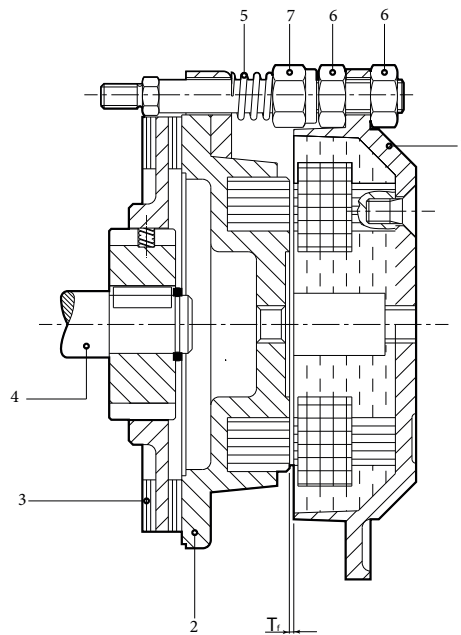


Fig.27

Le principali caratteristiche sono:

- massima precisione di sblocco e di frenata;
- possibilità di elevata frequenza di azionamenti;
- possibilità di alimentazione separata;
- efficacia di frenatura su entrambe le direzioni di rotazione;
- possibilità di regolazione della coppia frenante;
- possibilità di avere freni in c.a. o in c.c. con raddrizzatore;
- possibilità di accoppiamento con volano.

The main features are:

- maximum release and braking precision;
- possibility of high drive frequency;
- possibility of separate power supply;
- braking efficiency on both rotation directions;
- possibility of adjusting the braking torque;
- possibility of having ac. or d.c brakes with rectifier;
- possibility of coupling with flywheel.

Leistungsgesteigerte Bremsmotoren

Der vorliegende Abschnitt behandelt die MT Motoren in ihren Bremsmotor-Ausführungen

- **TFP** Leistungsgesteigerte Drehstrom-Asynchron-Bremsmotoren;
- **MFP** Leistungsgesteigerte Einphasen-Wechselstrom-Bremsmotoren;
- **XFP** Leistungsgesteigerte Einphasen-Wechselstrom-Bremsmotoren mit hohem Anlaufdrehmoment;
- **DFP** Leistungsgesteigerte Drehstrom-Bremsmotoren mit doppelter Polarität.

Die leistungsgesteigerten Bremsmotoren entstanden durch Koppelung einer leistungsgesteigerten Bremse mit einem TN-MN-XN-DN Drehstrommotor.

Die Bremse ist eine negative Stromausfall-Bremse mit doppelter Reibungsfläche.

Bei Stromausfall verlieren die Solenoide im Elektromagnet (1) ihre Anziehungskraft und die Federn (5) drücken gegen den beweglichen Anker (2); die Oberflächen des Ankers reiben gegen die doppelte Bremscheibe (3) und übertragen so das Bremsdrehmoment auf die Nabe (4).

Das Bremsdrehmoment kann mit den Muttern (7) eingestellt werden.

Die wichtigsten Merkmale sind:

- maximale Genauigkeit beim Entriegeln und Bremsen;
- häufige Betätigung möglich;
- getrennte Versorgung möglich;
- wirksame Bremsung in beiden Drehrichtungen;
- Einstellung des Bremsdrehmoments möglich;
- Wechselstrombremsen oder Gleichstrombremsen mit Gleichrichter möglich;
- Koppelung mit Schwungrad möglich.

Motori autofrenanti potenziati

High braking torque motors

Leistungsgesteigerte Bremsmotoren

- mozzo trascinatore con OR antivibrazione;
- elevata velocità d'inserimento e disinserimento (versione in c.a.);
- possibilità di avviamento e frenata progressiva adottando la versione con volano;
- possibilità di sblocco manuale del freno mediante tirante a vite.

- driving hub with anti-vibration OR;
- high connection and disconnection speed (a.c. version);
- possibility of soft start-up and braking by using the version with flywheel;
- possibility of manual brake release by means of the screw rod.

- Mitnahmenabe mit schwingungsdämpfenden O-Ringen;
- hohe Geschwindigkeit beim Einschalten und Ausschalten (Ausführung mit Wechselstrom);
- Anlaufen und fortlaufende Bremsung unter Verwendung der Ausführung mit Schwungrad möglich;
- manuelles Entriegeln der Bremse durch Stehbolzen möglich.

Tutti i freni FP vengono forniti standard con taratura per una coppia frenante al 70% della M_{max} .

L'alimentazione standard in c.a. è la trifase 230/400 - 50Hz ed il freno è corredato di morsettiera a 6 contatti M4 per permettere l'alimentazione dedicata del solo freno; l'alimentazione standard in c.c. è la V103 ottenuta da raddrizzatore alimentato con V230 in c.a.

All the FP brakes are standard supplied with calibration for a braking torque at 70% of the M_{max} .

The standard a.c. power supply is the three-phase 230/400 - 50Hz and the brake is equipped with M4 6-contact terminal board for brake-only power supply; the standard d.c. power supply is the V103 obtained from a rectifier fed with a.c. V230.

Alle FP-Bremsen werden standardmäßig mit Kalibrierung für ein Bremsdrehmoment von 70% M_{max} geliefert.


Die Standardwechselstromversorgung ist Drehstrom 230/400 - 50Hz und die Bremse ist mit einem Klemmenbrett mit 6 Kontakten M4 ausgestattet, um die entsprechende ausschließliche Versorgung der Bremse zu ermöglichen; die Standardgleichstromversorgung ist V103 und erfolgt über einen Wechselstromgleichrichter V230.

FRENI IN C.A.

A.C. BRAKES

WECHSELSTROMBREMSEN

Tab.22


| Taglia Size Größe | M_{fmin} [Nm] | M_{fmax} [Nm] | P_f [VA] | I_{fn} (230V) [A] | I_{fn} (400V) [A] | J_f [kgm ²] | T_f [mm] | T_{fmax} [mm] | g_{fmin} [mm] | Tempo di intervento Brake intervention time Aktivierungszeit | |  |
|-------------------------|--------------------|--------------------|---------------|---------------------------|---------------------------|------------------------------|---------------|--------------------|--------------------|--|------------------|--|
| | | | | | | | | | | T_{fa} [ms] | T_{fc} [ms] | |
| 63 | 2 | 8 | 75 | 0.19 | 0.11 | 0.0002 | 0.30 | 0.70 | 1 | 20 | 5 | 2.3 |
| 71 | 4 | 18 | 110 | 0.28 | 0.16 | 0.0003 | 0.30 | 0.70 | 1 | 25 | 6 | 2.8 |
| 80 | 7 | 35 | 185 | 0.47 | 0.27 | 0.0007 | 0.30 | 0.70 | 1 | 25 | 6 | 4.0 |
| 90 | 14 | 50 | 225 | 0.55 | 0.32 | 0.00012 | 0.30 | 0.70 | 1 | 35 | 8 | 5.4 |
| 100 | 26 | 75 | 270 | 0.67 | 0.39 | 0.00016 | 0.35 | 0.70 | 1 | 35 | 8 | 7.0 |
| 112 | 35 | 100 | 330 | 0.83 | 0.48 | 0.00030 | 0.40 | 0.80 | 1 | 40 | 10 | 10.3 |
| 132 | 53 | 150 | 530 | 1.31 | 0.76 | 0.00050 | 0.40 | 0.80 | 1 | 60 | 15 | 19.0 |
| 160 | 125 | 350 | 760 | 1.91 | 1.1 | 0.00060 | 0.50 | 1.00 | 1 | 60 | 15 | 29.0 |
| 180 | 175 | 500 | 825 | 2.1 | 1.2 | 0.00280 | 0.65 | 1.30 | 1 | 100 | 25 | 48.0 |
| 200 | 270 | 750 | 1100 | 2.8 | 1.6 | 0.00280 | 0.65 | 1.30 | 1 | 170 | 35 | 52 |

FRENI IN C.C.

D.C. BRAKES

GLEICHSTROMBREMSEN

Tab.23

| Taglia Size Größe | M_{fmin} [Nm] | M_{fmax} [Nm] | P_f [W] | I_{fn} (230V) [A] | J_f [kgm ²] | T_f [mm] | T_{fmax} [mm] | g_{fmin} [mm] |  |
|-------------------------|--------------------|--------------------|--------------|---------------------------|------------------------------|---------------|--------------------|--------------------|---|
| | | | | | | | | | |
| 71 | 4 | 18 | 25 | 0.24 | 0.0003 | 0.30 | 0.70 | 1 | 2.8 |
| 80 | 7 | 35 | 33 | 0.32 | 0.0007 | 0.30 | 0.70 | 1 | 4.0 |
| 90 | 14 | 50 | 45 | 0.43 | 0.00012 | 0.30 | 0.70 | 1 | 5.4 |
| 100 | 26 | 75 | 69 | 0.67 | 0.00016 | 0.35 | 0.70 | 1 | 7.0 |
| 112 | 35 | 100 | 84 | 0.82 | 0.00030 | 0.40 | 0.80 | 1 | 10.3 |
| 132 | 53 | 150 | 115 | 1.12 | 0.00050 | 0.40 | 0.80 | 1 | 19.0 |
| 160 | 125 | 350 | 130 | 1.27 | 0.00060 | 0.50 | 1.00 | 1 | 29.0 |
| 180 | 175 | 500 | 150 | 1.47 | 0.00280 | 0.65 | 1.30 | 1 | 48.0 |
| 200 | 270 | 750 | 240 | 2.33 | 0.00280 | 0.65 | 1.30 | 1 | 52 |

Motori autofrenanti potenziati

High braking torque motors

Leistungsgesteigerte Bremsmotoren

COLLEGAMENTI FRENI IN C.A.

A.C. BRAKE CONNECTIONS

ANSCHLÜSSE WECHSELSTROMBREMSEN

Di seguito le indicazioni per i collegamenti dei freni MT in c.a.

Below indications for the MT brake connections in a.c.

Nachfolgend die Angaben für die Anschlüsse der MT Wechselstrombremsen

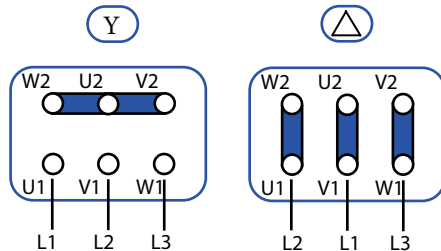


Fig.28

| Pin | Colore / Color / Farbe | |
|-----|---|-------------|
| U1 | nero / black / schwarz | Black |
| V1 | rosso / red / rot | Red |
| W1 | marrone / brown / braun | Brown |
| W2 | marrone-bianco / brown-white / braun-weiß | Brown-White |
| U2 | nero-bianco / black-white / schwarz-weiß | Black-White |
| V2 | rosso-bianco / red-white / rot-weiß | Red-White |

COLLEGAMENTI FRENI IN C.C.

D.C. BRAKE CONNECTIONS

ANSCHLÜSSE WECHSELSTROMBREMSEN

Nella configurazione standard per i motori a singola polarità TFP, il raddrizzatore viene collegato direttamente all'alimentazione trifase del motore.

I raddrizzatori standard forniti sono del tipo a semionda con rapporto

In the standard configuration for single-polarity TFP motors, the rectifier is connected directly to the three-phase power supply of the motor. The standard rectifiers supplied are of the half-wave type with ratio

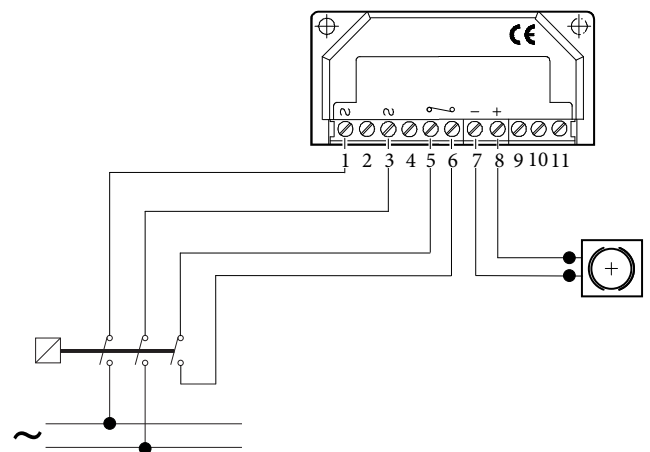
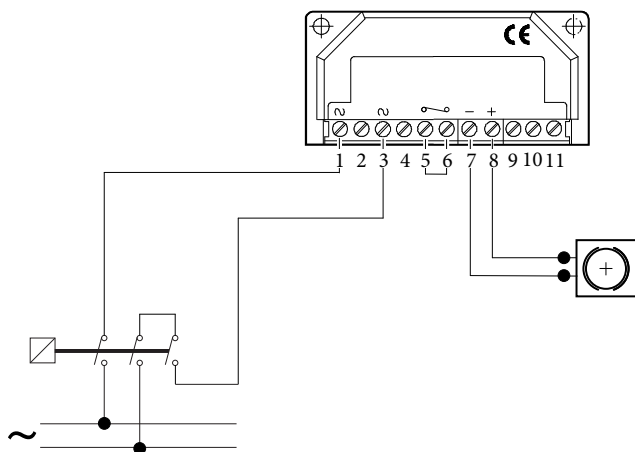
In der Standardkonfiguration für die Motoren TFP mit Einzel-Polarität wird der Gleichrichter direkt an die Drehstrom-Versorgung des Motors angeschlossen.

Die standardmäßig gelieferten Gleichrichter sind Halbwellengleichrichter mit Verhältnis

$$\frac{U_{\text{==}}}{U_{\sim}} = 0.445$$

Frenata standard / Standard braking / Standardbremsung

Frenata rapida / Fast braking / Schnellbremsung



- 1-3 : Ingresso corrente alternata VCA alimentazione
- 2-4 : Non collegato NC
- 5-6 : Contatto frenata rapida
- 7-8 : Uscita corrente continua VCC alimentazione freno
- 9-10-11 : Connessioni ausiliarie

- Alternating current input VCA power supply
- Not connected NC
- Fast braking contact
- Direct current output VCC brake power supply
- Auxiliary connections

- Eingang Wechselstrom VCA Versorgung
- Kein NC-Anschluss
- Kontakt Schnellbremsung
- Ausgang Gleichstrom VCC Versorgung Bremse
- Hilfsanschlüsse

A richiesta:

- raddrizzatori per frenata rapida (FAST);
- raddrizzatori ad onda intera;

On demand:

- rectifiers for fast braking (FAST);
- full wave rectifiers;

Auf Anfrage:

- Gleichrichter für Schnellbremsung (FAST);
- Vollweggleichrichter;

$$\frac{U_{\text{==}}}{U_{\sim}} = 0.890$$

Contattare l'ufficio tecnico MT.

Contact the MT technical department.

Die technische Abteilung von MT kontaktieren.

VERIFICHE E REGOLAZIONI
CHECKS AND ADJUSTMENTS
PRÜFUNGEN UND EINSTELLUNGEN

Tutti i motori vengono collaudati e la taratura dei freni viene effettuata ad un valore pari al 70% della coppia massima M_{max} .

L'intervallo di manutenzione periodica deve essere stabilito tenendo conto di:

- carico da frenare e lavoro di frenatura relativo;
- lavoro smaltibile dal freno fra due intervalli di regolazione;
- numero di cicli equivalenti.

Nel caso in cui, si avvertano malfunzionamenti del freno contattare l'Ufficio Tecnico MT e far effettuare controlli da personale specializzato in modo da riportare il sistema alle normali condizioni operative:

1. **Verificare la tensione di alimentazione.**
Controllare che la tensione di alimentazione corrisponda alla tensione di targa.

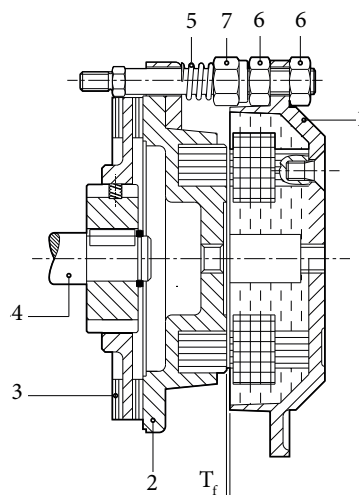
All the motors are tested and the brakes are calibrated at a value equal to 70% of the maximum torque M_{max} .

The periodic maintenance interval must be established taking into account:

- load to be braked and relative braking work;
- work disposable by the brake between two adjustment intervals;
- number of equivalent cycles.

In the event of brake malfunctions, contact the MT Technical Department and have skilled personnel perform checks in order to restore the system to normal operating conditions:

1. **Check the power supply voltage.** Check that the power supply voltage corresponds to the plate voltage.



2. **Verifica del traferro.**
Con uno spessore misurare il traferro T (distanza fra l'elettromagnete e l'ancora mobile) controllando che il valore rilevato rientri nel campo indicato in tabella. Se questa condizione non fosse verificata, sarà necessario effettuare la regolazione agendo sui dadi (6) fino a che il traferro T non avrà raggiunto il valore stabilito da tabella. Ad operazione conclusa stringere nuovamente i dadi (6).
Questo controllo e l'eventuale intervento dovranno essere effettuati periodicamente ad intervalli stabiliti in base all'uso del freno.

2. **Air gap inspection.**
Using a thickness gauge, measure the air gap T (distance between the electromagnet and the movable armature), checking that the detected value is within the range indicated in the table. If this condition is not verified, it will be necessary to make the adjustment by acting on the nuts (6) until the T air gap has reached the value established in the table. Once the operation is completed, tighten the nuts (6).
This check and possible intervention must be carried out periodically at set intervals based on the use of the brake.

3. **Regolazione della coppia frenante.**
La coppia frenante è proporzionale alla compressione delle molle (5) ed è possibile variarla agendo sul dado (7) (n°3 per motori grand. 63 - 112 e n°6 per grand. 132 - 200) in successione e in modo uniforme; a tale proposito si consiglia di effettuare una rotazione di 1/2 giro a ciascun dado e riprovare il funzionamento del freno.

3. **Braking torque adjustment.**
The braking torque is proportional to the compression of the springs (5) and it can be changed by acting on the nut (7) (3 for motors sizes 63 - 112 and 6 for sizes 132 - 200) in succession and uniformly; in this regard, it is advisable to rotate each nut by 1/2 turn and retry the brake operation.

Alle Motoren werden getestet und die Bremsen werden auf einen Wert gleich 70% des maximalen Drehmoments M_{max} kalibriert.

Das Intervall der regelmäßigen Wartung muss unter der Berücksichtigung der folgenden Elemente festgelegt werden:

- zu bremsende Last und entsprechende Bremstätigkeit;
- ausführbare Bremstätigkeit zwischen zwei Einstellintervallen;
- Anzahl gleichwertiger Zyklen.

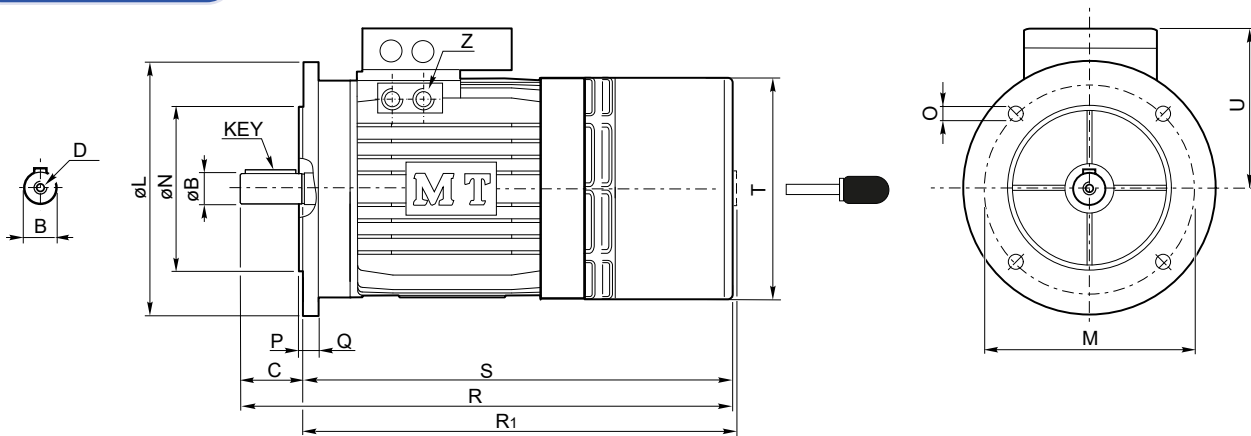
Wird eine Fehlfunktion der Bremse festgestellt, die technische Abteilung von MT kontaktieren und Kontrollen durch Fachpersonal vornehmen lassen, um die normalen Betriebsbedingungen des Systems wiederherzustellen:

1. **Die Versorgungsspannung überprüfen.**
Überprüfen, ob die Versorgungsspannung der auf dem Typenschild aufgeführten Spannung entspricht.

2. **Überprüfung der Bremsstrecke.**
Die Bremsstrecke T (Abstand zwischen dem Elektromagnet und dem beweglichen Anker) mit einem Dickenmesser überprüfen und darauf achten, dass der ermittelte Wert im in der Tabelle angezeigten Bereich liegt. Andernfalls muss die Einstellung vorgenommen werden, dazu die Muttern (6) betätigen, bis die Bremsstrecke T den vorab festgelegten Wert erreicht. Nach Abschluss des Verfahrens die Muttern wieder festziehen (6). Diese Kontrolle und der eventuelle Eingriff müssen regelmäßig in abhängig von der Verwendung der Bremse festgelegten Zeitabständen erfolgen.

3. **Einstellung des Bremsdrehmoments.**
Das Bremsdrehmoment ist proportional zur Kompression der Federn (5) und kann mit der Mutter (7) (3 für Motoren in der Größe 63 - 112 und 6 für Größen 132 - 200) der Reihe nach und einheitlich geändert werden; dazu sollte jede Einstellschraube um 1/2 U gedreht und der Betrieb der Bremse wieder geprüft werden.

Fig.29


Fig.30

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-----|------|-----|-------|-----------|-----|-----|-----|----|-----|----|-----|
| | B | C | D | R | R1 | T | U | Z | Key | L | M | N | O | P | Q | S |
| 63 | ø11 j6 | 23 | M4 | 303 | 286 | ø123 | 110 | M16 | 4x4x15 | 140 | 115 | 95 | 9 | 3 | 9 | 280 |
| 71 | ø14 j6 | 30 | M5 | 332 | 308 | ø138 | 120 | M20 | 5x5x25 | 160 | 130 | 110 | 9 | 3.5 | 9 | 302 |
| 80 | ø19 j6 | 40 | M6 | 376 | 342 | ø156 | 130 | M20 | 6x6x30 | 200 | 165 | 130 | 12 | 3.5 | 10 | 336 |
| 90S | ø24 j6 | 50 | M8 | 415 | 371 | ø176 | 140 | M20 | 8x7x40 | 200 | 165 | 130 | 12 | 3.5 | 10 | 365 |
| 90L | ø24 j6 | 50 | M8 | 440 | 396 | ø176 | 140 | M20 | 8x7x40 | 200 | 165 | 130 | 12 | 3.5 | 10 | 390 |
| 100 | ø28 j6 | 60 | M10 | 475 | 421 | ø194 | 150 | M20 | 8x7x50 | 250 | 215 | 180 | 14 | 4 | 14 | 415 |
| 112 | ø28 j6 | 60 | M10 | 515 | 461 | ø216 | 160 | M20 | 8x7x50 | 250 | 215 | 180 | 14 | 4 | 14 | 455 |
| 132S | ø38 k6 | 80 | M12 | 612 | 538 | ø257 | 195 | M25 | 10x8x70 | 300 | 265 | 230 | 14 | 4 | 19 | 532 |
| 132M | ø38 k6 | 80 | M12 | 650 | 576 | ø257 | 195 | M25 | 10x8x70 | 300 | 265 | 230 | 14 | 4 | 19 | 570 |
| 160M | ø42 k6 | 110 | M16 | 778 | 674 | ø310 | 220 | 2xM32 | 12x8x90 | 350 | 300 | 250 | 19 | 5 | 16 | 668 |
| 160L | ø42 k6 | 110 | M16 | 822 | 718 | ø310 | 220 | 2xM32 | 12x8x90 | 350 | 300 | 250 | 19 | 5 | 16 | 712 |
| 180 | ø48 k6 | 110 | M16 | 940 | 836 | ø360 | 263 | 2xM32 | 14x9x100 | 350 | 300 | 250 | 19 | 5 | 18 | 830 |
| 200 | ø55 k6 | 110 | M20 | 955 | 851 | ø400 | 263 | 2xM32 | 16x10x100 | 400 | 350 | 300 | 19 | 5 | 19 | 845 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

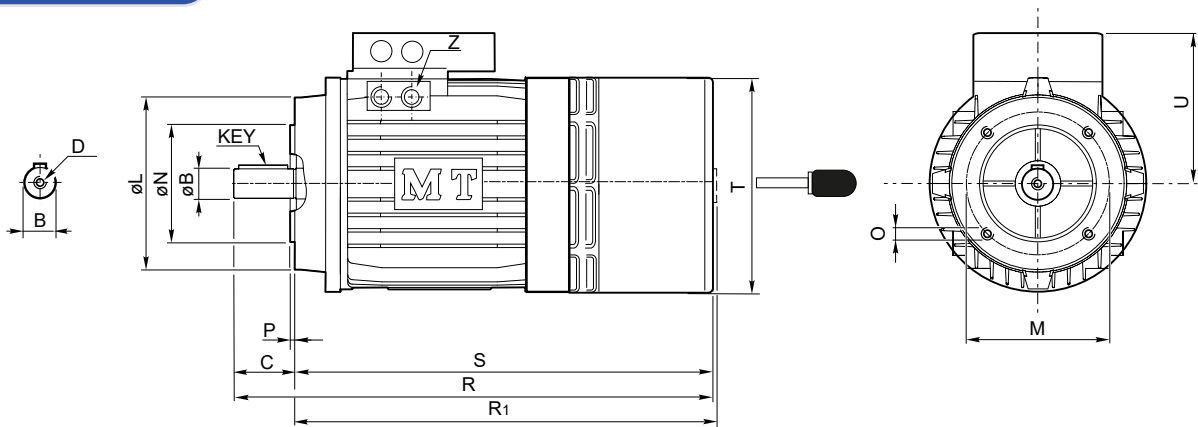


Fig.31

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-----|------|-----|-------|----------|-----|-----|-----|-----|-----|-----|
| | B | C | D | R | R1 | T | U | Z | Key | L | M | N | O | P | S |
| 63 | ø11 j6 | 23 | M5 | 303 | 286 | ø123 | 110 | M16 | 4x4x15 | 90 | 75 | 60 | M5 | 2.5 | 280 |
| 71 | ø14 j6 | 30 | M6 | 332 | 308 | ø138 | 120 | M20 | 5x5x25 | 105 | 85 | 70 | M6 | 2.5 | 302 |
| 80 | ø19 j6 | 40 | M8 | 376 | 342 | ø156 | 130 | M20 | 6x6x30 | 120 | 100 | 80 | M6 | 3 | 336 |
| 90S | ø24 j6 | 50 | M8 | 415 | 371 | ø176 | 140 | M20 | 8x7x40 | 140 | 115 | 95 | M8 | 3 | 365 |
| 90L | ø24 j6 | 50 | M10 | 440 | 396 | ø176 | 140 | M20 | 8x7x40 | 140 | 115 | 95 | M8 | 3 | 390 |
| 100 | ø28 j6 | 60 | M10 | 475 | 421 | ø194 | 150 | M20 | 8x7x50 | 160 | 130 | 110 | M8 | 3.5 | 415 |
| 112 | ø28 j6 | 60 | M12 | 515 | 461 | ø216 | 160 | M20 | 8x7x50 | 160 | 130 | 110 | M8 | 3.5 | 455 |
| 132S | ø38 k6 | 80 | M12 | 612 | 538 | ø257 | 195 | M25 | 10x8x70 | 200 | 165 | 130 | M10 | 4 | 532 |
| 132M | ø38 k6 | 80 | M16 | 650 | 576 | ø257 | 195 | M25 | 10x8x70 | 200 | 165 | 130 | M10 | 4 | 570 |
| 160M | ø42 k6 | 110 | M16 | 778 | 674 | ø310 | 220 | 2xM32 | 12x8x90 | 250 | 215 | 180 | M12 | 4 | 668 |
| 160L | ø42 k6 | 110 | M16 | 822 | 718 | ø310 | 220 | 2xM32 | 12x8x90 | 250 | 215 | 180 | M12 | 4 | 712 |
| 180 | ø48 k6 | 110 | M16 | 940 | 836 | ø360 | 263 | 2xM32 | 14x9x100 | 290 | 215 | 180 | M12 | 4 | 830 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

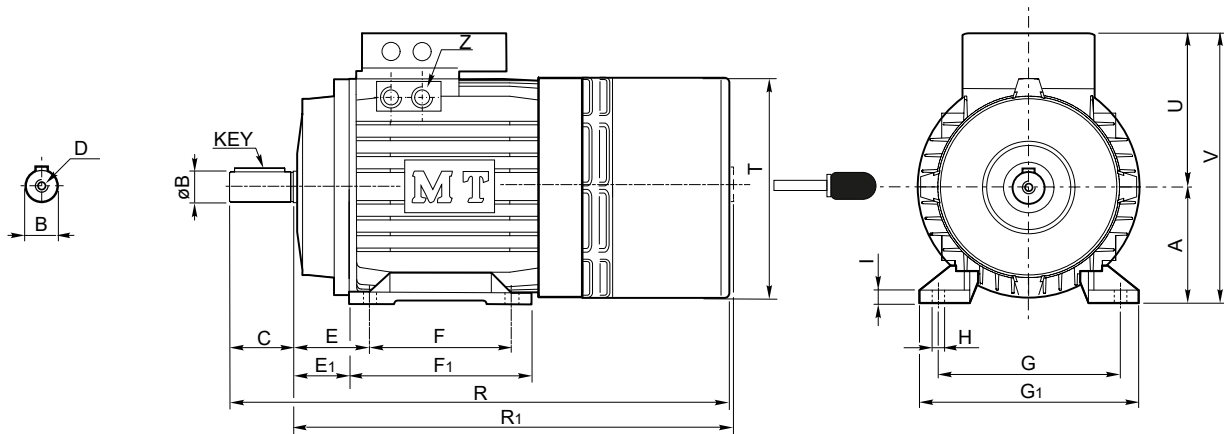


Fig.32

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|-----|------|-----|-------|-----------|-----|-----|----|-----|-----|-----|-----|----------|----|-----|
| | B | C | D | R | R1 | T | U | Z | Key | A | E | E1 | F | F1 | G | G1 | H | I | V |
| 63 | ø11 j6 | 23 | M4 | 303 | 286 | ø123 | 110 | M16 | 4x4x15 | 63 | 42 | 28 | 80 | 105 | 100 | 120 | 7x12 | 10 | 173 |
| 71 | ø14 j6 | 30 | M5 | 332 | 308 | ø138 | 120 | M20 | 5x5x20 | 71 | 45 | 36 | 90 | 108 | 112 | 136 | 7x12 | 11 | 191 |
| 80 | ø19 j6 | 40 | M6 | 376 | 342 | ø156 | 130 | M20 | 6x6x30 | 80 | 50 | 38 | 100 | 125 | 125 | 154 | 9.5x16.5 | 13 | 210 |
| 90S | ø24 j6 | 50 | M8 | 415 | 371 | ø176 | 140 | M20 | 8x7x40 | 90 | 56 | 41 | 100 | 130 | 140 | 174 | 10x17.5 | 14 | 230 |
| 90L | ø24 j6 | 50 | M8 | 440 | 396 | ø176 | 140 | M20 | 8x7x40 | 90 | 56 | 41 | 125 | 155 | 140 | 174 | 10x17.5 | 14 | 230 |
| 100 | ø28 j6 | 60 | M10 | 475 | 421 | ø194 | 150 | M20 | 8x7x50 | 100 | 63 | 46 | 140 | 175 | 160 | 192 | 12x22 | 14 | 250 |
| 112 | ø28 j6 | 60 | M10 | 515 | 461 | ø216 | 160 | M20 | 8x7x50 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 272 |
| 132S | ø38 k6 | 80 | M12 | 612 | 538 | ø257 | 195 | M25 | 10x8x70 | 132 | 89 | 60 | 140 | 180 | 216 | 256 | 12.5x28 | 16 | 327 |
| 132M | ø38 k6 | 80 | M12 | 650 | 576 | ø257 | 195 | M25 | 10x8x70 | 132 | 89 | 60 | 178 | 218 | 216 | 256 | 12.5x28 | 16 | 327 |
| 160M | ø42 k6 | 110 | M16 | 778 | 674 | ø310 | 220 | 2xM32 | 10x8x70 | 160 | 108 | 83 | 210 | 260 | 254 | 310 | 14.5x30 | 23 | 380 |
| 160L | ø42 k6 | 110 | M16 | 822 | 718 | ø310 | 220 | 2xM32 | 12x8x100 | 160 | 108 | 72 | 254 | 320 | 254 | 310 | 14.5x30 | 23 | 380 |
| 180M | ø48 k6 | 110 | M16 | 940 | 836 | ø360 | 263 | 2xM32 | 12x8x100 | 180 | 121 | 80 | 241 | 315 | 279 | 355 | 13x38 | 25 | 443 |
| 180L | ø48 k6 | 110 | M16 | 940 | 836 | ø360 | 263 | 2xM32 | 14x8x100 | 180 | 121 | 80 | 279 | 353 | 279 | 355 | 13x38 | 25 | 443 |
| 200 | ø55 k6 | 110 | M20 | 955 | 851 | ø400 | 263 | 2xM32 | 16x10x100 | 200 | 133 | 91 | 305 | 400 | 318 | 395 | 18x38 | 25 | 463 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
TFP

**disponibile
available
2/22 verfügbar**

2 poli
2 poles

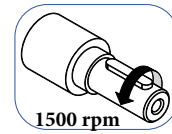
50 Hz
2 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] |
| 63A | 0.18 | 0.25 | 2720 | 53.2 | 0.69 | 0.60 | 2.5 | 0.63 | 2 | 2 | 0.00036 |
| 63B | 0.25 | 0.33 | 2710 | 58 | 0.82 | 0.80 | 3 | 0.88 | 2 | 2 | 0.00036 |
| 63C | 0.37 | 0.50 | 2770 | 68 | 0.78 | 1 | 3.5 | 1.3 | 2.1 | 2.2 | 0.00049 |
| 71A | 0.37 | 0.50 | 2800 | 68 | 0.73 | 1.1 | 3.5 | 1.3 | 2.5 | 2.7 | 0.00059 |
| 71B | 0.55 | 0.75 | 2800 | 72 | 0.74 | 1.4 | 4.5 | 1.8 | 2.3 | 2.6 | 0.00077 |
| 71C | 0.75 | 1 | 2820 | 72 | 0.74 | 2 | 4.5 | 2.5 | 2.3 | 2.6 | 0.00087 |
| 80A | 0.75 | 1 | 2830 | 72.1 | 0.83 | 1.8 | 5 | 2.5 | 2.3 | 2.6 | 0.00155 |
| 80B | 1.1 | 1.5 | 2830 | 75 | 0.84 | 2.5 | 5 | 3.7 | 2.3 | 2.6 | 0.00175 |
| 90S | 1.5 | 2 | 2820 | 77.2 | 0.86 | 3.6 | 5.8 | 5.1 | 2.6 | 2.7 | 0.00157 |
| 90L | 2.2 | 3 | 2840 | 79.7 | 0.86 | 4.7 | 5.5 | 7.4 | 2.9 | 3 | 0.00203 |
| 100A | 3 | 4 | 2890 | 81.5 | 0.85 | 6 | 5.8 | 9.9 | 2.4 | 3 | 0.00315 |
| 100B | 4 | 5.5 | 2880 | 81.5 | 0.85 | 8.1 | 6.2 | 13.2 | 2.5 | 3.2 | 0.00423 |
| 112A | 4 | 5.5 | 2900 | 83.1 | 0.88 | 8 | 6.6 | 13.2 | 2.1 | 2.6 | 0.00550 |
| 112B | 5.5 | 7.5 | 2900 | 85.7 | 0.86 | 12.3 | 6.6 | 18 | 2 | 2.8 | 0.00730 |
| 112C | 7.5 | 10 | 2860 | 86 | 0.82 | 16 | 6.5 | 24.8 | 2.7 | 3.2 | 0.00760 |
| 132SA | 5.5 | 7.5 | 2910 | 84.7 | 0.83 | 11.6 | 6.5 | 18 | 3.3 | 3.1 | 0.01130 |
| 132SB | 7.5 | 10 | 2910 | 86 | 0.84 | 15 | 7 | 24.6 | 3.5 | 3.3 | 0.01350 |
| 132MC | 9.2 | 12.5 | 2910 | 86 | 0.87 | 18.5 | 7.1 | 30.2 | 3.6 | 3.8 | 0.01689 |
| 132MD | 11 | 15 | 2910 | 86 | 0.87 | 21 | 7.6 | 36 | 3.4 | 3.8 | 0.01923 |
| 160MA | 11 | 15 | 2930 | 89.4 | 0.85 | 22.9 | 8.6 | 35.8 | 3.5 | 3.8 | 0.03258 |
| 160MB | 15 | 20 | 2930 | 90.3 | 0.85 | 29.5 | 8.3 | 48.9 | 3.6 | 3.9 | 0.04281 |
| 160L | 18.5 | 25 | 2935 | 90.9 | 0.85 | 34.7 | 8.3 | 60.2 | 3.9 | 3.7 | 0.04920 |
| 180M | 22 | 30 | 2930 | 91.3 | 0.86 | 40 | 7 | 71.7 | 2.9 | 2.2 | 0.07940 |
| 200LA | 30 | 40 | 2940 | 92 | 0.90 | 52 | 6.6 | 97.5 | 3 | 2.2 | 0.10800 |
| 200LB | 37 | 50 | 2940 | 92.5 | 0.89 | 68.6 | 7 | 120 | 3 | 2.4 | 0.12360 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

TFP

**disponibile
available
2/22
verfügbar**

4 poli
4 poles

50 Hz
4 polig

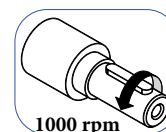
| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | |
|-------------------------|--|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|---------------------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] |
| 63A | 0.13 | 0.18 | 1360 | 60 | 0.68 | 0.60 | 2.4 | 0.9 | 2 | 2.2 | 0.00045 |
| 63B | 0.18 | 0.25 | 1380 | 62 | 0.69 | 0.70 | 2.5 | 1.3 | 2.2 | 2.3 | 0.00049 |
| 71A | 0.25 | 0.33 | 1400 | 70 | 0.70 | 0.85 | 3 | 1.7 | 2.3 | 2.3 | 0.00104 |
| 71B | 0.37 | 0.50 | 1400 | 70 | 0.71 | 1.1 | 3.7 | 2.5 | 2.8 | 2.8 | 0.00126 |
| 71C | 0.55 | 0.75 | 1400 | 72 | 0.75 | 1.45 | 3.9 | 3.8 | 2.5 | 2.5 | 0.00147 |
| 80A | 0.55 | 0.75 | 1400 | 72 | 0.78 | 1.6 | 4 | 3.8 | 2.4 | 2.5 | 0.00261 |
| 80B | 0.75 | 1 | 1400 | 72.1 | 0.78 | 2.1 | 4 | 5.1 | 2.4 | 2.5 | 0.00324 |
| 80C | 0.95 | 1.3 | 1420 | 72.1 | 0.75 | 2.5 | 4 | 6.4 | 2.3 | 2.6 | 0.00355 |
| 90S | 1.1 | 1.5 | 1380 | 75 | 0.84 | 2.6 | 4.3 | 7.6 | 2.2 | 2.2 | 0.00254 |
| 90L | 1.5 | 2 | 1410 | 77.2 | 0.84 | 3.6 | 4.7 | 10.1 | 2.7 | 2.9 | 0.00333 |
| 90LB | 1.8 | 2.5 | 1400 | 77.2 | 0.84 | 4.4 | 4.7 | 12.2 | 2.7 | 2.9 | 0.00412 |
| 90LC | 2.2 | 3 | 1400 | 83 | 0.82 | 4.8 | 5.6 | 14.9 | 2.9 | 2.8 | 0.00462 |
| 100A | 2.2 | 3 | 1440 | 79.7 | 0.84 | 5 | 4.8 | 14.5 | 2.2 | 2.5 | 0.00536 |
| 100B | 3 | 4 | 1450 | 81.5 | 0.84 | 6.7 | 5 | 19.7 | 2.3 | 2.6 | 0.00684 |
| 100C | 4 | 5.5 | 1410 | 81.5 | 0.82 | 8 | 4.7 | 27 | 2.4 | 2.7 | 0.00722 |
| 112A | 4 | 5.5 | 1420 | 83.1 | 0.88 | 8.4 | 5 | 27 | 2.2 | 2.3 | 0.01082 |
| 112B | 5.5 | 7.5 | 1420 | 83.1 | 0.90 | 13 | 6 | 37 | 1.9 | 2 | 0.01350 |
| 132SA | 5.5 | 7.5 | 1440 | 84.7 | 0.81 | 13 | 6.2 | 36.5 | 2.1 | 2.5 | 0.02118 |
| 132MB | 7.5 | 10 | 1440 | 86 | 0.81 | 17.5 | 6.3 | 49.7 | 2.5 | 2.7 | 0.02738 |
| 132MC | 9.2 | 12.5 | 1450 | 86 | 0.83 | 18.5 | 7 | 60.6 | 2.4 | 2.6 | 0.03109 |
| 132MD | 11 | 15 | 1450 | 86 | 0.83 | 22 | 8 | 72.4 | 2.3 | 2.4 | 0.03682 |
| 160M | 11 | 15 | 1450 | 89.8 | 0.79 | 22 | 7.3 | 72.5 | 3.5 | 3.7 | 0.06490 |
| 160L | 15 | 20 | 1460 | 90.6 | 0.79 | 31 | 7 | 98.1 | 3.6 | 3.1 | 0.08440 |
| 180M | 18.5 | 25 | 1460 | 91.2 | 0.82 | 37 | 6 | 121 | 2.5 | 2.6 | 0.01460 |
| 180L | 22 | 30 | 1470 | 91.6 | 0.82 | 43 | 6.8 | 143 | 2.5 | 3 | 0.01690 |
| 200L | 30 | 40 | 1465 | 92.3 | 0.82 | 63 | 6 | 196 | 2.5 | 2.9 | 0.01790 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
TFP


Ex disponibile
available
2/22 verfügbar


6 poli
6 poles

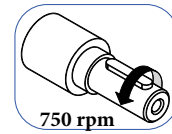
50 Hz
6 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | |
|-------------------------|---|------|-------|------|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] |
| 63A | 0.09 | 0.12 | 920 | 54 | 0.60 | 0.71 | 2 | 1 | 1.8 | 2 | 0.00054 |
| 63B | 0.12 | 0.16 | 900 | 56 | 0.60 | 0.76 | 2 | 1.3 | 1.8 | 2 | 0.00080 |
| 71A | 0.18 | 0.25 | 880 | 56 | 0.62 | 0.80 | 2.5 | 1.9 | 1.8 | 2 | 0.00104 |
| 71B | 0.25 | 0.33 | 900 | 60 | 0.65 | 1.2 | 2.9 | 2.6 | 1.9 | 2.2 | 0.00126 |
| 80A | 0.37 | 0.50 | 920 | 65 | 0.66 | 1.5 | 3.2 | 3.8 | 1.9 | 2.2 | 0.00261 |
| 80B | 0.55 | 0.75 | 920 | 69 | 0.70 | 1.7 | 3.5 | 5.7 | 2 | 2.3 | 0.00334 |
| 90S | 0.75 | 1 | 920 | 70 | 0.73 | 2.4 | 3.5 | 7.7 | 1.8 | 2 | 0.00254 |
| 90L | 1.1 | 1.5 | 920 | 72.9 | 0.71 | 3.4 | 3.5 | 11.4 | 1.8 | 2 | 0.00410 |
| 100A | 1.5 | 2 | 940 | 75.2 | 0.75 | 4 | 4 | 15.2 | 1.8 | 2 | 0.00535 |
| 112A | 2.2 | 3 | 950 | 77.7 | 0.75 | 5.4 | 6 | 22 | 2.3 | 2.2 | 0.00750 |
| 132SA | 3 | 4 | 950 | 79.7 | 0.76 | 7.1 | 5.4 | 30.1 | 2.1 | 2.1 | 0.01990 |
| 132MB | 4 | 5.5 | 950 | 81.4 | 0.78 | 9.1 | 5.3 | 40.2 | 2.4 | 2.4 | 0.02738 |
| 132MC | 5.5 | 7.5 | 965 | 83.1 | 0.82 | 13.3 | 5.3 | 54.4 | 2.6 | 2.6 | 0.03480 |
| 160M | 7.5 | 10 | 950 | 87.2 | 0.82 | 17.1 | 5 | 75.4 | 2 | 2.3 | 0.08360 |
| 160L | 11 | 15 | 960 | 88.7 | 0.82 | 24.5 | 5.5 | 109 | 2.3 | 2.5 | 0.12560 |
| 180L | 15 | 20 | 960 | 89.7 | 0.82 | 30 | 5.2 | 149 | 2.3 | 2.2 | 0.20280 |
| 200LA | 18.5 | 25 | 950 | 90.4 | 0.84 | 37.5 | 5.2 | 186 | 2.1 | 2.3 | 0.25280 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

TFP

**disponibile
available
2/22
verfügbar**

8 poli
8 poles

50 Hz
8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | | | |
|-------------------------|---|------|-------|--------|----------------|-------|--------------|-------|--------------|---------------|---------------------|
| | P_n | | n | η | $\cos \varphi$ | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] |
| 63A | 0.07 | 0.1 | 640 | 42 | 0.52 | 0.70 | 1.3 | 1 | 1.8 | 2 | 0.00049 |
| 71A | 0.12 | 0.16 | 670 | 46 | 0.60 | 0.80 | 2 | 1.7 | 1.8 | 2 | 0.00126 |
| 80A | 0.18 | 0.25 | 690 | 50 | 0.60 | 0.90 | 2.5 | 2.5 | 1.8 | 2 | 0.00261 |
| 80B | 0.25 | 0.33 | 700 | 50 | 0.60 | 1.3 | 2.5 | 3.4 | 1.8 | 2 | 0.00324 |
| 90S | 0.37 | 0.50 | 700 | 58 | 0.60 | 1.6 | 3 | 5 | 2 | 2.2 | 0.00254 |
| 90L | 0.55 | 0.75 | 680 | 62 | 0.61 | 2.3 | 3.2 | 7.7 | 2 | 2.2 | 0.00332 |
| 100A | 0.75 | 1 | 700 | 70 | 0.64 | 2.6 | 3.5 | 10.2 | 2 | 2.4 | 0.00535 |
| 100B | 1.1 | 1.5 | 700 | 72 | 0.64 | 3.6 | 3.5 | 15 | 2 | 2.4 | 0.00684 |
| 112A | 1.5 | 2 | 700 | 74 | 0.66 | 5.2 | 4 | 20.5 | 2.1 | 2.4 | 0.01250 |
| 132SA | 2.2 | 3 | 700 | 75 | 0.65 | 7 | 4.1 | 30 | 2.2 | 2.4 | 0.01990 |
| 132MB | 3 | 4 | 700 | 77 | 0.65 | 9 | 4.3 | 41 | 2.2 | 2.4 | 0.03480 |
| 160MA | 4 | 5.5 | 710 | 80 | 0.70 | 10.8 | 4.5 | 53.8 | 1.8 | 2 | 0.06310 |
| 160MB | 5.5 | 7.5 | 720 | 84 | 0.74 | 12.6 | 5 | 73 | 1.8 | 2 | 0.08560 |
| 160L | 7.5 | 10 | 720 | 85 | 0.75 | 16.8 | 5 | 99.5 | 1.8 | 2 | 0.12650 |
| 180LB | 11 | 15 | 725 | 86.7 | 0.75 | 30 | 4.5 | 145 | 2 | 2.2 | 0.20480 |
| 200LB | 15 | 20 | 725 | 87.1 | 0.75 | 34 | 5 | 197.6 | 2.1 | 2.3 | 0.25280 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
MFP - XFP

2 poli
2 poles
50 Hz
2 polig

MFP

XFP

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFP.

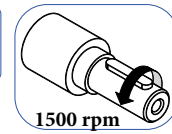
The torque data "M" and current data "I" refer to the MFP version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFP.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | ⚡ | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] |
| 63A | 0.12 | 0.16 | 2750 | 54 | 0.92 | 1.6 | 2.4 | 0.41 | 0.60 | 1.4 | 8 | 0.00031 |
| 63B | 0.18 | 0.25 | 2750 | 54 | 0.92 | 1.75 | 2.5 | 0.62 | 0.62 | 1.6 | 8 | 0.00040 |
| 63C | 0.25 | 0.33 | 2750 | 56 | 0.94 | 2.2 | 2.5 | 0.87 | 0.66 | 1.6 | 10 | 0.00045 |
| 71B | 0.37 | 0.50 | 2800 | 60 | 0.72 | 4.2 | 3 | 1.3 | 0.70 | 1.8 | 14 | 0.00064 |
| 71C | 0.55 | 0.75 | 2670 | 64 | 0.87 | 4.5 | 3.5 | 1.9 | 0.70 | 1.8 | 16 | 0.00077 |
| 80B | 0.75 | 1 | 2680 | 70 | 0.98 | 5.5 | 3.5 | 2.7 | 0.74 | 1.8 | 20 | 0.00127 |
| 80C | 1.1 | 1.5 | 2820 | 67 | 0.97 | 7.5 | 2.7 | 4 | 0.6 | 1.7 | 25 | 0.00175 |
| 90S | 1.1 | 1.5 | 2830 | 70 | 0.98 | 8.5 | 3.6 | 3.7 | 0.76 | 1.9 | 30 | 0.00152 |
| 90L | 1.5 | 2 | 2830 | 74 | 0.98 | 11.5 | 3.6 | 5.1 | 0.76 | 1.9 | 35 | 0.00184 |
| 90LB | 1.8 | 2.5 | 2780 | 74 | 0.98 | 14.2 | 3.8 | 6.2 | 0.7 | 1.9 | 40 | 0.00203 |
| 100A | 2.2 | 3 | 2830 | 76 | 0.98 | 13.2 | 4 | 7.4 | 0.70 | 1.9 | 55 | 0.00216 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

MFP - XFP

4 poli
4 poles
50 Hz
4 polig

MFP

XFP

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFP.

The torque data "M" and current data "I" refer to the MFP version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFP.

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | [μF] | J [kgm ²] |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|----------|--------------------------|
| | [kW] | [HP] | | | | | | | | | | |
| 63B | 0.12 | 0.16 | 1370 | 58 | 0.90 | 1.4 | 2.5 | 0.84 | 0.74 | 1.6 | 8 | 0.00045 |
| 63C | 0.18 | 0.25 | 1370 | 58 | 0.92 | 1.6 | 2.5 | 1.3 | 0.78 | 1.6 | 8 | 0.00054 |
| 71B | 0.25 | 0.33 | 1340 | 58 | 0.94 | 2.6 | 2.5 | 1.8 | 0.78 | 1.6 | 14 | 0.00126 |
| 71C | 0.37 | 0.50 | 1380 | 58 | 0.94 | 3 | 2.8 | 2.6 | 0.82 | 1.6 | 16 | 0.00147 |
| 71D | 0.55 | 0.75 | 1380 | 59 | 0.89 | 4.6 | 2.7 | 3.7 | 0.5 | 1.5 | 1.6 | 0.00231 |
| 80B | 0.55 | 0.75 | 1400 | 62 | 0.94 | 4.5 | 3 | 3.7 | 0.75 | 1.8 | 20 | 0.00324 |
| 80C | 0.75 | 1 | 1400 | 66 | 0.94 | 6.5 | 3 | 5.1 | 0.73 | 1.8 | 25 | 0.00355 |
| 80D | 0.88 | 1.2 | 1400 | 66 | 0.94 | 7 | 3 | 6 | 0.70 | 1.8 | 25 | 0.00386 |
| 90 | 1.1 | 1.5 | 1410 | 68 | 0.96 | 8.5 | 3.2 | 7.5 | 0.70 | 1.8 | 30 | 0.00332 |
| 90L | 1.5 | 2 | 1390 | 68 | 0.93 | 10.5 | 3.2 | 10.3 | 0.65 | 1.8 | 40 | 0.00410 |
| 90LB | 1.8 | 2.5 | 1380 | 72 | 0.99 | 11.5 | 2.8 | 12 | 0.5 | 1.8 | 40 | 0.00462 |
| 100A | 1.8 | 2.5 | 1420 | 70 | 0.96 | 12.5 | 3.2 | 12.1 | 0.60 | 1.8 | 45 | 0.00536 |
| 100B | 2.2 | 3 | 1420 | 70 | 0.96 | 15 | 3.2 | 14.8 | 0.60 | 1.8 | 50 | 0.00684 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
MFP - XFP

6 poli
6 poles
50 Hz
6 polig

MFP

XFP

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFP.

The torque data "M" and current data "I" refer to the MFP version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFP.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] |
| 63 | 0.12 | 0.16 | 870 | 50 | 0.90 | 1.5 | 2.5 | 1.3 | 0.68 | 1.4 | 8 | 0.00054 |
| 71B | 0.18 | 0.25 | 900 | 52 | 0.92 | 2 | 2.5 | 1.9 | 0.70 | 1.4 | 12.5 | 0.00147 |
| 80A | 0.37 | 0.50 | 920 | 58 | 0.90 | 3.1 | 2.7 | 3.8 | 0.72 | 1.5 | 40 | 0.00324 |
| 90S | 0.55 | 0.75 | 930 | 62 | 0.93 | 4.2 | 3 | 5.7 | 0.76 | 1.6 | 50 | 0.00254 |
| 90L | 0.75 | 1 | 850 | 65 | 0.88 | 6.4 | 2 | 8.4 | 0.70 | 1.6 | 60 | 0.00333 |
| 100A | 1.1 | 1.5 | 955 | 66 | 0.92 | 9 | 3.2 | 11 | 0.70 | 1.8 | 50 | 0.00678 |
| 100B | 1.5 | 2 | 900 | 66 | 0.96 | 13.5 | 3.2 | 15.9 | 0.70 | 1.8 | 50 | 0.00828 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

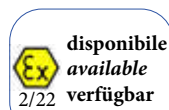
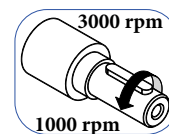
DFP
**disponibile
available
verfügbar**
**3000 rpm
1500 rpm**
2/4 poli
2/4 poles
2/4 polig
CE
50 Hz

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] |
|-------------------------|----------------|-----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|
| | [kW] | [HP] | | | | | | | |
| 63A | 0.18/0.12 | 0.25/0.16 | 2850/1420 | 0.75/0.85 | 3/2.5 | 0.60/0.80 | 1.3/1.3 | 1.4/1.5 | 0.00045 |
| 63B | 0.22/0.15 | 0.30/0.20 | 2760/1360 | 0.83/0.86 | 3/2.5 | 0.76/1 | 1.3/1.3 | 1.4/1.5 | 0.00049 |
| 71A | 0.30/0.20 | 0.40/0.28 | 2780/1400 | 1.2/1 | 3/3 | 1/1.4 | .5/1.3 | 1.6/1.8 | 0.00104 |
| 71B | 0.44/0.30 | 0.60/0.40 | 2880/1440 | 1.5/1.5 | 3/3 | 1.5/2 | 1.5/1.4 | 1.6/1.8 | 0.00126 |
| 80A | 0.60/0.45 | 0.80/0.60 | 2780/1400 | 2/1.6 | 3.5/3.5 | 2/3 | 1.5/1.3 | 1.8/1.8 | 0.00261 |
| 80B | 0.80/0.60 | 1.1/0.80 | 2800/1400 | 2.5/1.9 | 2.5/3.5 | 2.8/4.1 | 1.6/1.3 | 1.8/1.8 | 0.00324 |
| 90L | 1.8/1.2 | 2.5/1.7 | 2830/1420 | 4.5/3.1 | 5/4.5 | 6/8 | 2.1/2 | 2.2/2 | 0.00333 |
| 90LL | 2.2/1.5 | 3/2 | 2830/1420 | 5.5/3.7 | 5/4.5 | 7.4/10.1 | 2.1/2 | 2.4/2.2 | 0.00410 |
| 100A | 2.5/1.8 | 3.4/2.5 | 2830/1420 | 6.2/4.5 | 5/4.5 | 8.4/12.1 | 2.3/1.9 | 2.6/2 | 0.00535 |
| 100B | 3.3/2.5 | 4.4/3.4 | 2850/1430 | 8.1/5.9 | 6/5 | 11/16.7 | 2.4/2.2 | 2.8/2.4 | 0.00684 |
| 112A | 4.5/3.3 | 6/4.5 | 2850/1430 | 9.8/7.8 | 6/5 | 15/22 | 2.4/2.3 | 3/2.4 | 0.01253 |
| 132S | 5.5/4 | 7.5/5.5 | 2910/1450 | 13/9.5 | 6.5/5.5 | 18/26.3 | 2.4/2.3 | 3/2.5 | 0.01130 |
| 132M | 7.5/6.2 | 10/8.5 | 2910/1450 | 16.5/13.5 | 7/6 | 24.6/40.9 | 2.5/2.8 | 3/2.5 | 0.01689 |
| 160M | 11/9 | 15/12.2 | 2940/1460 | 25/19.5 | 7/6 | 35.7/58.9 | 2.5/2.6 | 3/2.5 | 0.06260 |
| 160L | 17/13 | 23/17.5 | 2930/1460 | 33/26 | 7.5/6.3 | 55.4/85 | 2.4/2.5 | 3/2.5 | 0.09260 |
| 180L | 22 / 18.5 | 30 / 25 | 2930/1460 | 44.2/38.2 | 7.5/6 | 71.7/120.5 | 2.4/2.8 | 3/2.5 | 0.15480 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

DFP

 disponibile
available
verfügbar


2/6 poli

2/6 poles



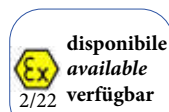
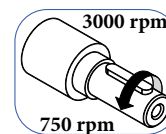
50 Hz

2/6 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | |
|-------------------------|---|-----------|----------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] |
| 71C | 0.25/0.15 | 0.33/0.20 | 2780/850 | 1.15/0.9 | 4/2 | 0.85/1.7 | 1.6/1.3 | 2/1.8 | 0.00147 |
| 80C | 0.75/0.37 | 1/0.50 | 2800/880 | 2.7/1.8 | 4.2/2.5 | 2.5/4 | 1.8/1.8 | 2.4/2.3 | 0.00355 |
| 90S | 1.1/0.55 | 1.5/0.75 | 2800/900 | 3.3/1.6 | 4.5/2.5 | 3.75/5.8 | 1.6/1.5 | 2.4/2.4 | 0.00254 |
| 90LB | 1.5/0.75 | 2/1 | 2800/910 | 4.3/3.7 | 4.8/2.8 | 5.1/7.9 | 1.6/1.5 | 2.3/2.4 | 0.00333 |
| 100B | 2.2/1.1 | 3/1.5 | 2820/910 | 5.5/4.8 | 5/3 | 7.5/11.5 | 1.8/1.5 | 2.4/2.3 | 0.00684 |
| 112B | 3/1.5 | 4/2 | 2820/920 | 6.9/5.8 | 5.5/3.5 | 10.2/15.6 | 1.9/1.3 | 2.5/1.8 | 0.01082 |
| 132S | 4/1.7 | 5.5/2.3 | 2840/930 | 9/4.3 | 5/4 | 13.5/17.5 | 2/1.8 | 2.3/1.8 | 0.01990 |
| 132M | 5.5/2 | 7.5/2.7 | 2850/930 | 12/6 | 5.5/4.6 | 18.4/20.5 | 2.2/1.8 | 2.3/1.8 | 0.03480 |
| 160M | 7.5/2.5 | 10.2/3.4 | 2880/950 | 16/7 | 6/4.7 | 25/25 | 2/2 | 1.8/1.8 | 0.06260 |
| 160L | 11/3.7 | 15/5 | 2900/960 | 25/11 | 6.2/4.8 | 36.2/36.8 | 2/2 | 1.8/1.8 | 0.09260 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

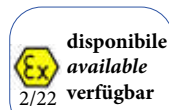
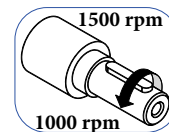
DFP

 disponibile
available
verfügbar

2/8 poli
2/8 poles

50 Hz
2/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | |
|-------------------------|---|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
| 63C | 0.18/0.06 | 0.25/0.08 | 2740/640 | 0.60/0.60 | 3.4/2.3 | 0.62/0.89 | 1.6/1.9 | 1.8/1.6 | 0.00054 |
| 71C | 0.30/0.09 | 0.40/0.12 | 2770/660 | 1.15/0.65 | 4/2.3 | 1/1.3 | 1.6/2 | 2/1.6 | 0.00147 |
| 80B | 0.55/0.11 | 0.75/0.15 | 2800/680 | 2/0.9 | 4/2.4 | 1.9/1.6 | 1.8/2 | 2.2/1.8 | 0.00324 |
| 80C | 0.60/0.13 | 0.85/0.18 | 2800/680 | 2.6/1.2 | 4.2/2.4 | 2.1/1.8 | 1.8/2 | 2.4/2.1 | 0.00295 |
| 90S | 1.1/0.3 | 1.5/0.4 | 2830/700 | 3.3/1.5 | 4.5/2.5 | 3.7/4.1 | 1.6/1.8 | 2.4/2 | 0.00254 |
| 90L | 1.5/0.4 | 2/0.55 | 2850/700 | 4/1.6 | 4.5/2.5 | 5.1/5.5 | 1.6/1.8 | 2.4/2.1 | 0.00333 |
| 90LB | 1.8/0.50 | 2.5/0.65 | 2870/700 | 4.3/2 | 4.8/2.7 | 6/6.8 | 1.6/1.8 | 2/1.6 | 0.00412 |
| 100B | 2.2/0.60 | 3/0.8 | 2900/710 | 5.5/3 | 5/2.9 | 7.3/8.1 | 1.8/1.9 | 2/1.8 | 0.00684 |
| 112A | 3/0.75 | 4/1 | 2920/710 | 6.9/3.4 | 5.5/2.9 | 9.8/10.1 | 1.9/2 | 2.2/2 | 0.01082 |
| 132S | 4/1 | 5.5/1.3 | 2880/710 | 8.6/4.5 | 5/3.8 | 13.3/13.5 | 1.9/1.8 | 2.2/2 | 0.02738 |
| 132M | 5.5/1.4 | 7.5/1.9 | 2890/700 | 11.7/6.6 | 5.5/3.8 | 18.2/19.1 | 1.9/1.8 | 2.2/2 | 0.03480 |
| 160M | 7.5/1.8 | 10/2.5 | 2900/730 | 16.5/7 | 6/3.4 | 24.7/23.5 | 2/1.7 | 2/2 | 0.06260 |
| 160L | 11/2.5 | 15/3.4 | 2900/730 | 22/9 | 6.2/4 | 36.2/32.7 | 1.9/1.6 | 2.1/2 | 0.09260 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

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Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
DFP

 disponibile
available
verfügbar


4/6 poli

4/6 poles



50 Hz

4/6 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | |
|-------------------------|---|-----------|----------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] |
| 71B | 0.30/0.22 | 0.40/0.30 | 1380/890 | 1/0.9 | 3.5/2 | 2/2.3 | 1.3/1.3 | 2/1.8 | 0.00087 |
| 80A | 0.37/0.26 | 0.50/0.35 | 1410/900 | 1.5/1.4 | 3.5/2.5 | 2.5/2.7 | 1.3/1.4 | 1.9/2.1 | 0.00261 |
| 80B | 0.55/0.45 | 0.75/0.60 | 1420/920 | 2/1.8 | 3.5/2.5 | 3.7/4.7 | 1.5/1.8 | 2.1/2.3 | 0.00324 |
| 90S | 0.75/0.5 | 1/0.7 | 1420/920 | 2.4/2.1 | 4/2.5 | 5/5.2 | 1.4/1.3 | 2.1/2 | 0.00254 |
| 90L | 1.1/0.75 | 1.5/1 | 1470/900 | 3.9/3.7 | 4.2/2.5 | 7.2/7.9 | 1.4/1.4 | 2.1/2.1 | 0.00333 |
| 100A | 1.3/0.9 | 1.8/1.2 | 1430/920 | 4/3.8 | 4.5/3 | 8.7/9.3 | 1.4/1.4 | 2.1/2.2 | 0.00535 |
| 100B | 1.5/1.1 | 2/1.5 | 1450/950 | 4.5/4.1 | 4.5/3 | 9.9/11 | 1.4/1.5 | 2.2/2.3 | 0.00684 |
| 112A | 2.2/1.5 | 3/2 | 1440/960 | 6/5.8 | 4.5/3.5 | 14.6/14.9 | 1.4/1.3 | 1.7/1.6 | 0.01082 |
| 132S | 2.5/1.8 | 3.5/2.5 | 1420/930 | 6.5/6 | 5.5/4.8 | 16.8/18.5 | 1.6/1.5 | 1.8/1.6 | 0.01130 |
| 132M | 4/3 | 5.5/4 | 1440/930 | 8.5/6.9 | 6.5/5.5 | 26.5/30.8 | 1.8/1.7 | 2/1.9 | 0.01689 |
| 160M | 6.5/4.5 | 8.8/6 | 1450/940 | 15/11.6 | 5/4.6 | 42.8/45.7 | 1.8/1.7 | 2/1.9 | 0.06260 |
| 160L | 9.5/6.5 | 13/8.8 | 1450/940 | 21/17 | 5.4/4.4 | 62.6/66 | 2/1.8 | 2/1.9 | 0.92060 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

DFP

 disponibile
available
verfügbar

 1500 rpm
750 rpm

4/8 poli

4/8 poles

50 Hz

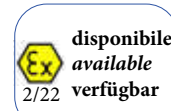
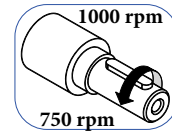
4/8 polig


Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P_n | | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
|-------------------------|-----------|-----------|------------|--------------|-------------------|---------------|-------------------|--------------------|--------------------------|
| | [kW] | [HP] | | | | | | | |
| 63B | 0.09/0.04 | 0.12/0.06 | 1440/650 | 0.55/0.70 | 3.5/2 | 0.60/0.60 | 1.3/1.3 | 1.9/1.8 | 0.00049 |
| 71B | 0.15/0.09 | 0.20/0.12 | 1420/680 | 0.56/0.65 | 3.5/2 | 1/1.2 | 1.3/1.3 | 1.9/1.8 | 0.00126 |
| 80A | 0.30/0.18 | 0.40/0.25 | 1410/700 | 1.3/1.1 | 3.5/2.5 | 2/2.4 | 1.5/1.8 | 2/1.8 | 0.00261 |
| 80B | 0.37/0.22 | 0.50/0.30 | 1420/700 | 1.8/1.7 | 3.5/2.5 | 2.5/3 | 1.5/1.8 | 2/1.8 | 0.00324 |
| 90S | 0.60/0.25 | 0.80/0.35 | 1430/700 | 1.9/1.8 | 4/2.5 | 4/3.4 | 1.4/1.3 | 2/1.8 | 0.00254 |
| 90L | 1/0.5 | 1.3/0.7 | 1400/700 | 2.3/2.7 | 4.5/2.5 | 6.8/6.8 | 1.4/1.4 | 2/1.8 | 0.00333 |
| 100B | 1.5/0.75 | 2/1 | 1430/700 | 3.8/3.6 | 4.5/3 | 10/10 | 1.4/1.5 | 2/1.8 | 0.00684 |
| 112A | 2.2/1.3 | 3/1.8 | 1410/700 | 4.8/4.4 | 4.5/3.4 | 14.9/17.7 | 1.6/1.5 | 1.9/1.9 | 0.01253 |
| 132S | 3.1/1.7 | 4.2/2.3 | 1420/710 | 6.5/7.0 | 4.7/3.8 | 20.8/22.9 | 1.8/1.8 | 2/2.1 | 0.01130 |
| 132M | 5/2.8 | 6.8/3.8 | 1440/720 | 11.5/8.7 | 5.2/4.3 | 33.1/37.1 | 1.8/1.8 | 2.2/2.3 | 0.01689 |
| 160M | 6/4 | 8/5.5 | 1420/715 | 13.5/12 | 5/4.6 | 40.4/53.4 | 1.6/1.5 | 2/2 | 0.06260 |
| 160L | 11/7.5 | 15/10 | 1440/720 | 22/17.5 | 5.2/4.7 | 73/100 | 1.7/1.5 | 2/2 | 0.09260 |
| 180L | 15/9 | 20/12 | 1440/720 | 31.2/31.2 | 5.2/4 | 99.7/131.4 | 1.7/1.9 | 2/2 | 0.23180 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

Motori autofrenanti potenziati
High braking torque motors
Leistungsgesteigerte Bremsmotoren
DFP

 disponibile
available
verfügbar


6/8 poli

6/8 poles



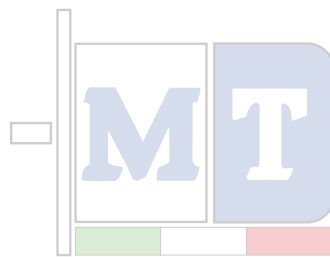
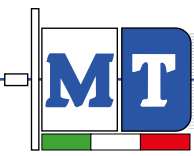
50 Hz

6/8 polig

| Taglia Size Größe | Dati tecnici / <i>Technical Data</i> / Technische Daten | | | | | | | | |
|-------------------------|---|-----------|---------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] |
| 71C | 0.15/0.09 | 0.20/0.12 | 850/660 | 0.9/0.65 | 2/1.8 | 1.8/1.3 | 1.3/2 | 1.8/1.6 | 0.00147 |
| 80C | 0.30/0.13 | 0.40/0.18 | 880/680 | 1.8/1.2 | 2.5/2.2 | 3.2/1.9 | 1.8/2 | 2.3/2.1 | 0.00355 |
| 90S | 0.37/0.25 | 0.50/0.33 | 900/700 | 1.7/1.4 | 2.5/2.5 | 3.9/3.4 | 1.5/2 | 2.4/2.1 | 0.00254 |
| 90LB | 0.60/0.37 | 0.80/0.50 | 900/700 | 2.5/1.3 | 2.8/2.7 | 6.3/5 | 1.3/1.8 | 2.4/1.6 | 0.00412 |
| 100B | 1/0.50 | 1.3/0.70 | 910/710 | 4/3 | 3/2.9 | 10.5/6.8 | 1.5/1.8 | 2.3/1.8 | 0.00684 |
| 112B | 1.5/0.75 | 2/1 | 920/710 | 5/3.3 | 3.5/2.9 | 15.6/10.1 | 1.8/2 | 2.2/1.8 | 0.01082 |
| 132S | 1.8/1 | 2.5/1.3 | 940/720 | 6.6/5.1 | 4.5/4 | 18.3/13.3 | 1.8/1.7 | 2.2/1.8 | 0.02738 |
| 132M | 3/2.2 | 4/3 | 940/720 | 7/6.5 | 4.5/4 | 30.5/29.2 | 1.7/1.6 | 2.3/1.8 | 0.03480 |
| 160M | 5.5/4 | 7.5/5.5 | 970/720 | 12.5/9.5 | 5.2/4.3 | 54.2/53 | 1.6/1.6 | 2.2/1.8 | 0.06260 |
| 160L | 7.5/5.5 | 10/7.5 | 970/720 | 15.5/14.5 | 5.4/4.4 | 74/73 | 1.7/1.6 | 2.2/1.8 | 0.09260 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar



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| Motori autofrenanti di stazionamento | Stationary brake motors | Bremsmotoren mit Feststellbremse |
|--------------------------------------|-------------------------|----------------------------------|
|--------------------------------------|-------------------------|----------------------------------|

| Tipo <i>Type</i> Typ | Descrizione <i>Description</i> Beschreibung | Potenza nominale <i>Nominal Power</i> Nennleistung P_n [kW] | Taglia <i>Size</i> Größe | Poli <i>Poles</i> Polig np | Tipo di freno <i>Type of brake</i> Bremstyp | UL-CSA |
|---|---|---|--|--|---|---|
| TFS  | Motori asincroni trifase autofrenanti di stazionamento <i>Three-phase asynchronous motors stationary brake motors</i> Drehstrom-Asynchron-Bremsmotoren mit Feststellbremse | 0.09 ÷ 37 | 63 71 80 90 100 112 132 160 | 2 4 6 8 | c.c. d.c. Gleichstrom |  |
| MFS  | Motori monofase autofrenanti di stazionamento <i>Single-phase stationary brake motors</i> Einphasen-Wechselstrom-Bremsmotoren mit Feststellbremse | 0.09 ÷ 2.2 | 63 71 80 90 100 | 2 4 6 | c.c. d.c. Gleichstrom |  |
| XFS  | Motori monofase autofrenanti di stazionamento ad alta coppia di spunto <i>Single-phase stationary brake motors with high starting torque</i> Einphasen-Wechselstrom-Bremsmotoren mit Feststellbremse mit hohem Anlaufdrehmoment | 0.09 ÷ 2.2 | 63 71 80 90 100 | 2 4 6 | c.c. d.c. Gleichstrom |  |
| DFS  | Motori trifase autofrenanti di stazionamento a doppia polarità <i>Three-phase stationary brake motors with double polarity</i> Drehstrom-Bremsmotoren mit Feststellbremse mit doppelter Polarität | 0.18/0.12 ÷ 22/18.5 | 63 71 80 90 100 112 132 160 | 2/4 2/6 2/8 4/6 4/8 6/8 | c.c. d.c. Gleichstrom |  |

Motori autofrenanti di stazionamento

La presente sezione tratta i motori MT nelle loro versioni autofrenanti con freno di stazionamento:

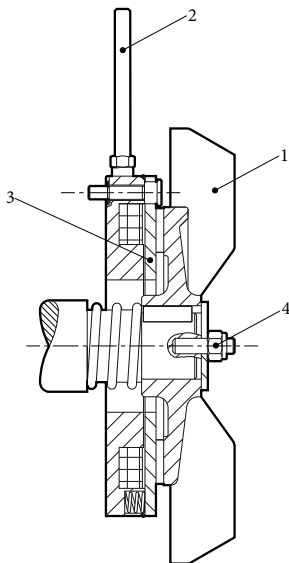
- TFS Motori asincroni trifase autofrenanti di stazionamento;
- MFS Motori monofase autofrenanti di stazionamento;
- XFS Motori monofase autofrenanti di stazionamento ad elevata coppia di spunto;
- DFS Motori trifase autofrenanti di stazionamento a doppia polarità.

I motori autofrenanti di stazionamento nascono accoppiando un freno di stazionamento ad un motore trifase TN-MN-XN-DN.

Il freno di stazionamento è un freno a comando negativo di corrente in c.c. a coppia frenante fissa.

Il freno è dotato di una ventola (1) in ghisa cassetata sull'albero motore che assume funzione di volano e da dissipatore termico durante la frenata.

I freni vengono forniti standard nella versione a tre molle.



A richiesta è possibile fornire motori autofrenanti con freno di stazionamento a comando positivo mantenendo invariate le dimensioni d'ingombro rispetto al freno negativo.

Tutti i freni sono forniti standard per servizio S1, classe d'isolamento F e bobina stagna.

La regolazione del traferro T_f avviene agendo sul dado autobloccante (4).

Questi freni assicurano massima silenziosità e ridotto ingombro assiale; la lunghezza totale che si ottiene risulta di poco superiore alla versione normale TN non frenata (vedere tabelle dimensionali).

Stationary brake motors

This section covers the MT motors in their stationary brake motor versions:

- TFS Three-phase asynchronous stationary brake motors;
- MFS Single-phase asynchronous stationary brake motors;
- XFS Single-phase stationary brake motors with high starting torque;
- DFS Three-phase stationary brake motors with double polarity.

The stationary brake motors arise by coupling a stationary brake to a TN-MN-XN-DN three-phase motor.

The stationary brake is a negative DC brake with fixed braking torque.

The brake is equipped with a cast iron fan (1) fitted on the crankshaft which acts as flywheel and heat sink during braking.

The brakes are standard supplied in the three-spring version.

On request it is possible to supply self-braking motors with a positive-controlled parking brake, keeping the overall dimensions unchanged compared to the negative brake.

The brakes are standard supplied for S1 duty, insulation class F and watertight coil.

The air gap T_f can be adjusted by means of the self-locking nut (4).

These brakes ensure maximum silence and reduced axial clearance; the total length obtained is slightly higher than the non-braked TN standard version (see dimensional tables).

Bremsmotoren mit Feststellbremse

Der vorliegende Abschnitt behandelt die MT Motoren in ihren Bremsmotor-Ausführungen mit Feststellbremse:

- TFS Drehstrom-Asynchron-Bremsmotoren mit Feststellbremse;
- MFS Einphasen-Wechselstrom-Bremsmotoren mit Feststellbremse;
- XFS Einphasen-Wechselstrom-Bremsmotoren mit Feststellbremse mit hohem Anlaufdrehmoment;
- DFS Drehstrom-Bremsmotoren mit Feststellbremse mit doppelter Polarität.

Die Bremsmotoren mit Feststellbremse entstanden durch Koppelung einer Feststellbremse mit einem TN-MN-XN-DN Drehstrommotor.

Die Feststellbremse ist eine Gleichstrombremse mit negativer Steuerung und mit festem Bremsdrehmoment.

Die Bremse ist mit einem an der Motorwelle verzahnten Lüfter (1) aus Gusseisen ausgestattet, der während der Bremsung als Schwungrad und Wärmeableiter dient.

Standardmäßig werden die Bremsen in der Ausführung mit drei Federn geliefert.

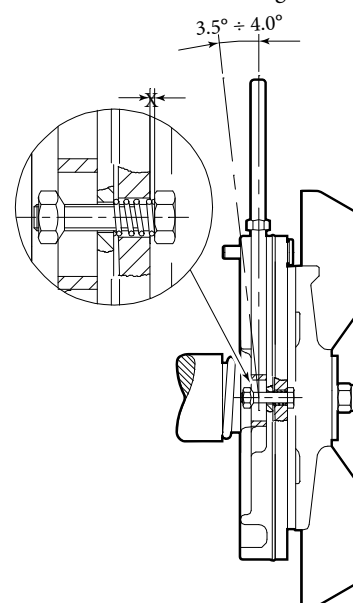


Fig.33

Auf Wunsch ist es möglich, selbstbremsende Motoren mit einer positiv gesteuerten Feststellbremse zu liefern, wobei die Gesamtabmessungen gegenüber der negativen Bremse unverändert bleiben.

Standardmäßig werden die Bremsen für die Betriebsart S1, mit Isolationsklasse F und abgedichteter Spule geliefert. Die Einstellung der Bremsstrecke T_f erfolgt mit der Sicherungsmutter (4).

Diese Bremsen gewährleisten die maximale Geräuschlosigkeit und einen reduzierten Axialplatzbedarf; die erzielte Gesamtlänge liegt leicht über der normalen Ausführung TN ohne Bremsung (siehe Abmessungstabellen).

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
FRENI IN C.C.
D.C. BRAKES
GLEICHSTROMBREMSEN

Tab.24

| Taglia Size Größe | M _{fmax} [Nm] | P _f [W] | I _{fn} (230V) [A] | J _f [kgm ²] | T _f [mm] | T _{fmax} [mm] | g _{fmin} [mm] | Tempo di intervento Brake intervention time Bremsaktivierungszeit | | | |
|-------------------------|---------------------------|-----------------------|----------------------------------|---------------------------------------|------------------------|---------------------------|---------------------------|---|--------------------------|-------------------------|-----|
| | | | | | | | | T _{fa1} [ms] | T _{fa2} [ms] | T _{fc} [ms] | |
| 63 | 3 | 22 | 0.21 | 0.0003 | 0.20 | 0.50 | 1 | 80 | 8 | 30 | 1.1 |
| 71 | 4 | 22 | 0.21 | 0.0005 | 0.20 | 0.60 | 1 | 100 | 10 | 40 | 1.3 |
| 80 | 7 | 34 | 0.33 | 0.0010 | 0.20 | 0.60 | 1 | 150 | 15 | 60 | 2.1 |
| 90 | 7 | 34 | 0.33 | 0.00011 | 0.20 | 0.60 | 1 | 150 | 15 | 60 | 2.1 |
| 100 | 18 | 40 | 0.38 | 0.00018 | 0.25 | 0.65 | 1 | 250 | 25 | 80 | 3.6 |
| 112 | 18 | 40 | 0.38 | 0.00030 | 0.25 | 0.65 | 1 | 250 | 25 | 80 | 3.9 |
| 132 | 30 | 57 | 0.55 | 0.00050 | 0.25 | 0.65 | 1 | 250 | 25 | 80 | 4.2 |
| 160 | 45 | 57 | 0.55 | 0.00050 | 0.30 | 0.70 | 1 | 400 | 40 | 150 | 7.3 |

- t_{fa1}** : tempo di apertura con utilizzo di raddrizzatore / opening time with use of rectifier / Öffnungszeit mit Gleichrichter
t_{fa2} : tempo di apertura senza raddrizzatore (alim. diretta in c.c.) / opening time without rectifier (d.c. direct supply) / Öffnungszeit ohne Gleichrichter (direkte Versorgung mit Gleichstrom)
t_{fc} : tempo di chiusura standard / standard closing time / Standardschließzeit

I freni FS, a seconda del motore a cui sono accoppiati, sono forniti standard con le seguenti alimentazioni:

The FS brakes, depending on the motor they are coupled with, are standard supplied with the following power supplies:

Je nach Motor, mit dem sie gekoppelt sind, werden die FS-Bremsen standardmäßig mit den folgenden Versorgungen geliefert:

Tab.25

| Tipo motore Motor Type Motortyp | Alimentazione standard / Standard power supply / Standardversorgung | |
|---------------------------------------|---|------------------------|
| | Motore / Motor / Motor | Freno / Brake / Bremse |
| TFS | 230/400 V (50/60Hz) | 103 V c.c. |
| DFS | 230V (50/60Hz) | 103 V c.c. |
| | 400 V (50/60Hz) | 178 V c.c. |
| MFS - XFS | 230 V (50/60Hz) | 103 V c.c. |

A richiesta è possibile fornire il freno con alimentazione separata da quella del motore.

Quando si utilizzano motori a doppia polarità o a singola polarità pilotati da inverter è consigliabile adottare alimentazione separata per il gruppo freno.

I freni di stazionamento standard sono idonei ad un numero massimo di interventi pari a 20 al minuto.

Nella configurazione standard per i motori a singola polarità, il raddrizzatore viene collegato direttamente all'alimentazione trifase del motore.

I raddrizzatori standard forniti sono del tipo a semionda con rapporto

On demand, it is possible to supply the brake with power supply separate from the motor power supply.

When using inverter-drive motors with double or single polarity, it is advisable to use a separate power supply for the brake unit.

The standard stationary brakes are suitable for a maximum number of 20 interventions per minute.

In the standard configuration for single-polarity TFP motors, the rectifier is connected directly to the three-phase power supply of the motor.

The standard rectifiers supplied are of the half-wave type with ratio

$$\frac{U_{\sim\sim}}{U_{\sim}} = 0.445$$

A richiesta:

- raddrizzatori per frenata rapida (FAST);
- raddrizzatori ad onda intera;

On demand:

- rectifiers for fast braking (FAST);
- full wave rectifiers;

$$\frac{U_{\sim\sim}}{U_{\sim}} = 0.890$$

Contattare l'ufficio tecnico MT.

Contact the MT technical department.

Auf Anfrage kann die Bremse mit von der Motorversorgung getrennter Versorgung geliefert werden. Werden Motoren mit doppelter Polarität oder Einzel-Polarität verwendet, die über Inverter gesteuert sind, sollte für das Bremsaggregat eine getrennte Versorgung verwendet werden.

Die Standardfeststellbremsen sind für maximal 20 Betätigungen pro Minute geeignet.

In der Standardkonfiguration für die Motoren TFP mit Einzel-Polarität wird der Gleichrichter direkt an die Drehstrom-Versorgung des Motors angeschlossen.

Die standardmäßig gelieferten Gleichrichter sind Halbwellengleichrichter mit Verhältnis

Auf Anfrage:

- Gleichrichter für Schnellbremsung (FAST);
- Vollweggleichrichter;

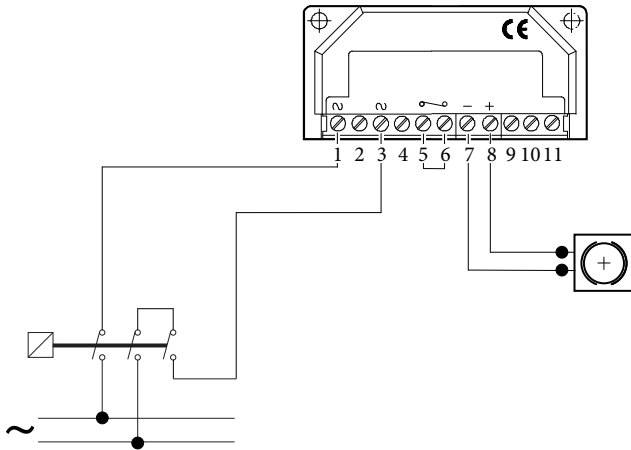
Die technische Abteilung von MT kontaktieren.

Motori autofrenanti di stazionamento

Stationary brake motors

Bremsmotoren mit Feststellbremse

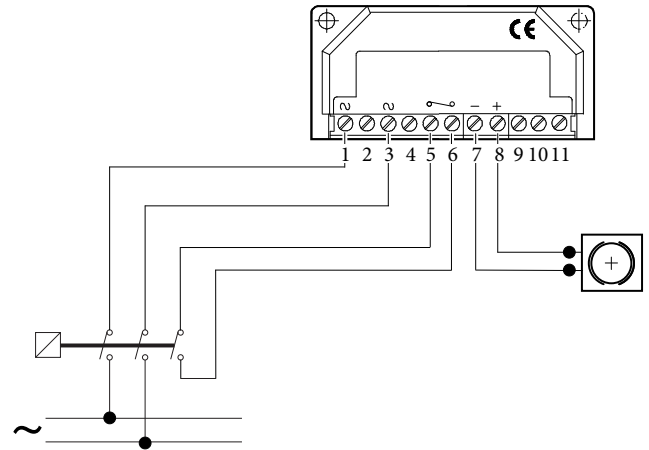
Frenata standard / Standard braking / Standardbremsung



- 1-3 : Ingresso corrente alternata VCA alimentazione
- 2-4 : Non collegato NC
- 5-6 : Contatto frenata rapida
- 7-8 : Uscita corrente continua VCC alimentazione freno
- 9-10-11 : Connessioni ausiliarie

- Alternating current input VCA power supply
- Not connected NC
- Fast braking contact
- Direct current output VCC brake power supply
- Auxiliary connections

Frenata rapida / Fast braking / Schnellbremsung



- Eingang Wechselstrom VCA Versorgung
- Kein NC-Anschluss
- Kontakt Schnellbremsung
- Ausgang Gleichstrom VCC Versorgung Bremse
- Hilfsanschlüsse

VERIFICHE E REGOLAZIONI

L'intervallo di manutenzione periodica deve essere stabilito tenendo conto di:

- carico da frenare e lavoro di frenatura relativo;
- lavoro smaltibile dal freno fra due intervalli di regolazione;
- numero di cicli equivalenti.

Nel caso in cui, si avvertano malfunzionamenti del freno contattare l'Ufficio Tecnico MT e far effettuare controlli da personale specializzato in modo da riportare il sistema alle normali condizioni operative:

1. **Verificare la tensione di alimentazione.**
Verificare la correttezza della tensione di alimentazione che deve essere:
input raddrizzatore V400 c.a. output V178 c.c.
input raddrizzatore V230 c.a. output V103 c.c.
In caso di valori errati verificare i collegamenti e/o sostituire i componenti difettosi.
2. **Verifica dello spessore minimo.**
Verificare che lo spessore minimo della guarnizione di attrito g_{\min} non sia inferiore ad 1 mm ed abbia un consumo uniforme su tutta la sua circonferenza.
3. **Verifica accoppiamento ventola.**
Verificare l'accoppiamento tra il corpo ventola e l'albero motore e che non vi sia gioco tra la linguetta di trasmissione e la sua sede nel mozzo ventola.

CHECKS AND ADJUSTMENTS

The periodic maintenance interval must be established taking into account:

- load to be braked and relative braking work;
- work disposable by the brake between two adjustment intervals;
- number of equivalent cycles.

In the event of brake malfunctions, contact the MT Technical Department and have skilled personnel perform checks in order to restore the system to normal operating conditions:

1. **Check the power supply voltage.**
Check the correctness of the power supply: rectifier input V400 a.c. output V178 d.c. rectifier input V230 a.c. output V103 d.c. In case of incorrect values, check the connections and/or replace the faulty components.
2. **Minimum thickness check.**
Check that the minimum thickness of the friction lining g_{\min} is not less than 1 mm and has a uniform consumption over its entire circumference.
3. **Fan coupling check.**
Check the coupling between the fan body and crankshaft and that there is no clearance between the drive feather key and its seat in the fan hub.

PRÜFUNGEN UND EINSTELLUNGEN

Das Intervall der regelmäßigen Wartung muss unter Berücksichtigung der folgenden Elemente festgelegt werden:

- zu bremsende Last und entsprechende Bremsfähigkeit;
- ausführbare Bremsfähigkeit zwischen zwei Einstellintervallen;
- Anzahl gleichwertiger Zyklen.

Wird eine Fehlfunktion der Bremse festgestellt, die technische Abteilung von MT kontaktieren und Kontrollen durch Fachpersonal vornehmen lassen, um die normalen Betriebsbedingungen des Systems wiederherzustellen:

1. **Die Versorgungsspannung überprüfen.**
Sicherstellen, dass die Versorgung korrekt ist und den folgenden Angaben entspricht: Input Gleichrichter Wechselstrom V400 Output Gleichstrom V178 Input Gleichrichter Wechselstrom V230 Output Gleichstrom V103 Sollten die Werte fehlerhaft sein, müssen die Anschlüsse überprüft und/oder die defekten Komponenten ausgetauscht werden.
2. **Überprüfung der Mindeststärke.**
Sicherstellen, dass die Mindeststärke des Reibbelags g_{\min} nicht unter 1 mm liegt und sein gesamter Umfang einen homogenen Verbrauch aufweist.
3. **Überprüfung der Koppelung des Lüfters.**
Die Koppelung zwischen der Lüfterhaube und der Motorwelle überprüfen und sicherstellen, dass kein Spiel zwischen der Antriebsfeder und ihrem Sitz in der Lüfternaube vorliegt.

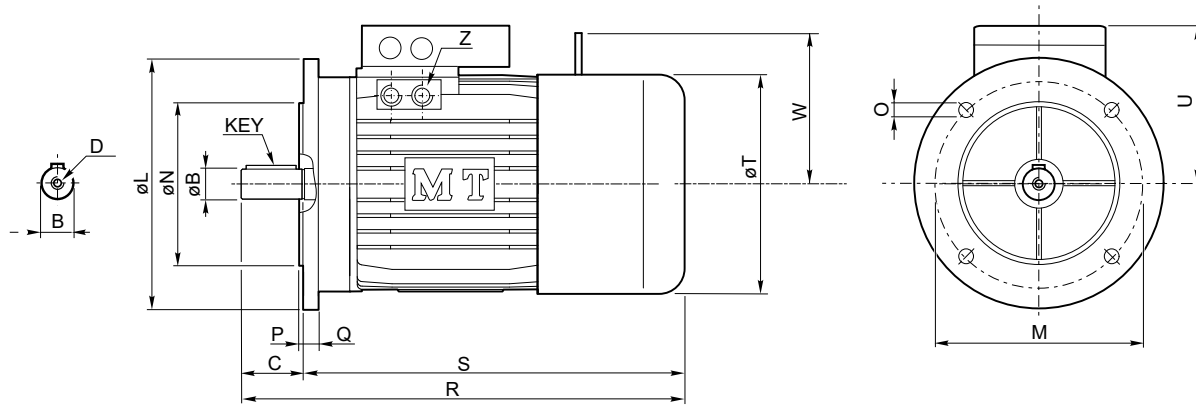


Fig.34

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|------|-----|-------|---------|-----|-----|-----|-----|----|-----|----|-----|
| | B | C | D | R | T | U | Z | Key | W | L | M | N | O | P | Q | S |
| 63 | ø11 j6 | 23 | M4 | 230 | ø123 | 110 | M16 | 4x4x15 | - | 140 | 115 | 95 | 9 | 3 | 9 | 207 |
| 71 | ø14 j6 | 30 | M5 | 265 | ø138 | 120 | M20 | 5x5x25 | 103 | 160 | 130 | 110 | 9 | 3.5 | 9 | 235 |
| 80 | ø19 j6 | 40 | M6 | 301 | ø156 | 130 | M20 | 6x6x30 | 128 | 200 | 165 | 130 | 12 | 3.5 | 10 | 261 |
| 90S | ø24 j6 | 50 | M8 | 317 | ø176 | 140 | M20 | 8x7x40 | 128 | 200 | 165 | 130 | 12 | 3.5 | 10 | 267 |
| 90L | ø24 j6 | 50 | M8 | 342 | ø176 | 140 | M20 | 8x7x40 | 128 | 200 | 165 | 130 | 12 | 3.5 | 10 | 292 |
| 100 | ø28 j6 | 60 | M10 | 387 | ø194 | 150 | M20 | 8x7x50 | 148 | 250 | 215 | 180 | 14 | 4 | 14 | 327 |
| 112 | ø28 j6 | 60 | M10 | 400 | ø216 | 160 | M20 | 8x7x50 | 148 | 250 | 215 | 180 | 14 | 4 | 14 | 340 |
| 132S | ø38 k6 | 80 | M12 | 470 | ø257 | 195 | M25 | 10x8x70 | 172 | 300 | 265 | 230 | 14 | 4 | 19 | 390 |
| 132M | ø38 k6 | 80 | M12 | 510 | ø257 | 195 | M25 | 10x8x70 | 172 | 300 | 265 | 230 | 14 | 4 | 19 | 430 |
| 160M | ø42 k6 | 110 | M16 | 620 | ø310 | 220 | 2xM32 | 12x8x90 | 172 | 350 | 300 | 250 | 19 | 5 | 16 | 510 |
| 160L | ø42 k6 | 110 | M16 | 660 | ø310 | 220 | 2xM32 | 12x8x90 | 172 | 350 | 300 | 250 | 19 | 5 | 16 | 550 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

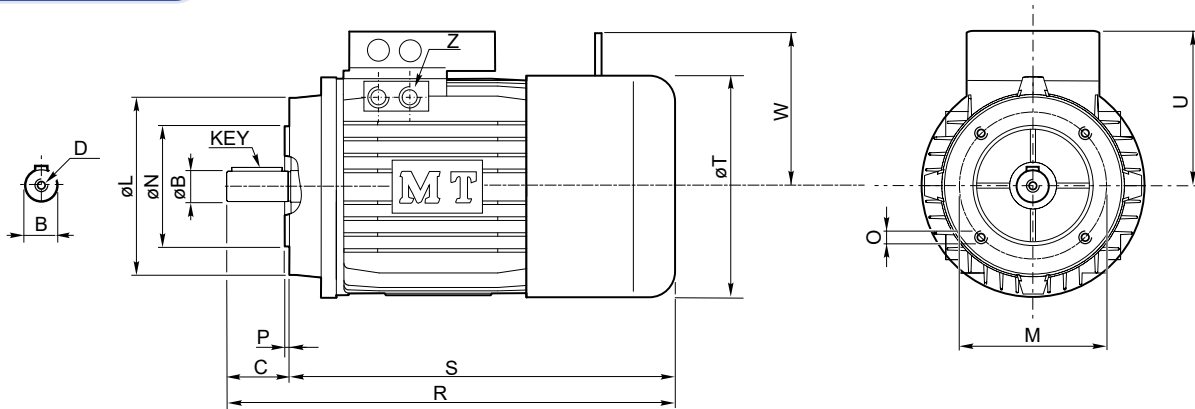


Fig.35

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|------|-----|-------|----------|-----|-----|-----|-----|-----|-----|-----|
| | B | C | D | R | T | U | Z | Key | W | L | M | N | O | P | S |
| 63 | ø11 j6 | 23 | M5 | 230 | ø123 | 110 | M16 | 4x4x15 | - | 90 | 75 | 60 | M5 | 2.5 | 207 |
| 71 | ø14 j6 | 30 | M5 | 265 | ø138 | 120 | M20 | 5x5x20 | 103 | 105 | 85 | 70 | M6 | 2.5 | 235 |
| 80 | ø19 j6 | 40 | M6 | 301 | ø156 | 130 | M20 | 6x6x30 | 128 | 120 | 100 | 80 | M6 | 3 | 261 |
| 90S | ø24 j6 | 50 | M8 | 317 | ø176 | 140 | M20 | 8x7x40 | 128 | 140 | 115 | 95 | M8 | 3 | 267 |
| 90L | ø24 j6 | 50 | M8 | 342 | ø176 | 140 | M20 | 8x7x40 | 128 | 140 | 115 | 95 | M8 | 3 | 292 |
| 100 | ø28 j6 | 60 | M10 | 387 | ø194 | 150 | M20 | 8x7x50 | 148 | 160 | 130 | 110 | M8 | 3.5 | 327 |
| 112 | ø38 k6 | 80 | M10 | 400 | ø216 | 160 | M20 | 8x7x50 | 148 | 160 | 130 | 110 | M8 | 3.5 | 340 |
| 132S | ø38 k6 | 80 | M12 | 470 | ø257 | 195 | M25 | 10x8x70 | 172 | 200 | 165 | 130 | M10 | 4 | 390 |
| 132M | ø38 k6 | 80 | M12 | 510 | ø257 | 195 | M25 | 10x8x70 | 172 | 200 | 165 | 130 | M10 | 4 | 430 |
| 160M | ø42 k6 | 110 | M16 | 620 | ø310 | 220 | 2xM32 | 10x8x70 | 172 | 250 | 215 | 180 | M12 | 4 | 510 |
| 160L | ø42 k6 | 110 | M16 | 660 | ø310 | 220 | 2xM32 | 12x8x100 | 172 | 250 | 215 | 180 | M12 | 4 | 550 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

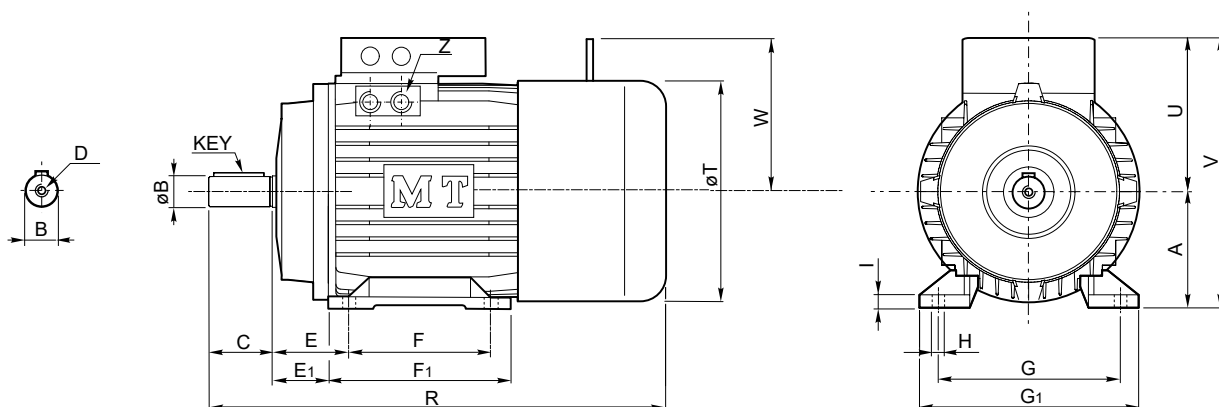
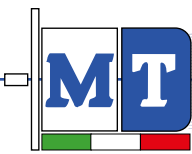


Fig.36

| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen | | | | | | | | | | | | | | | | | | |
|-------------------------|---------------------------------------|-----|-----|-----|------|-----|-------|----------|-----|-----|-----|----|-----|-----|-----|-----|----------|----|-----|
| | [mm] | | | | | | | | | | | | | | | | | | |
| | B | C | D | R | T | U | Z | Key | W | A | E | E1 | F | F1 | G | G1 | H | I | V |
| 63 | ø11 j6 | 23 | M4 | 230 | ø123 | 110 | M16 | 4x4x15 | - | 63 | 42 | 28 | 80 | 105 | 100 | 120 | 7x12 | 10 | 173 |
| 71 | ø14 j6 | 30 | M5 | 265 | ø138 | 120 | M20 | 5x5x20 | 103 | 71 | 45 | 36 | 90 | 108 | 112 | 136 | 7x12 | 11 | 191 |
| 80 | ø19 j6 | 40 | M6 | 301 | ø156 | 130 | M20 | 6x6x30 | 128 | 80 | 50 | 38 | 100 | 125 | 125 | 154 | 9.5x16.5 | 13 | 210 |
| 90S | ø24 j6 | 50 | M8 | 317 | ø176 | 140 | M20 | 8x7x40 | 128 | 90 | 56 | 41 | 100 | 130 | 140 | 174 | 10x17.5 | 14 | 230 |
| 90L | ø24 j6 | 50 | M8 | 342 | ø176 | 140 | M20 | 8x7x40 | 128 | 90 | 56 | 41 | 125 | 155 | 140 | 174 | 10x17.5 | 14 | 230 |
| 100 | ø28 j6 | 60 | M10 | 387 | ø194 | 150 | M20 | 8x7x50 | 148 | 100 | 63 | 46 | 140 | 175 | 160 | 192 | 12x22 | 14 | 250 |
| 112 | ø28 j6 | 60 | M10 | 400 | ø216 | 160 | M20 | 8x7x50 | 148 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 272 |
| 132S | ø38 k6 | 80 | M12 | 470 | ø257 | 195 | M25 | 10x8x70 | 172 | 132 | 89 | 60 | 140 | 180 | 216 | 256 | 12.5x28 | 16 | 327 |
| 132M | ø38 k6 | 80 | M12 | 510 | ø257 | 195 | M25 | 10x8x70 | 172 | 132 | 89 | 60 | 178 | 218 | 216 | 256 | 12.5x28 | 16 | 327 |
| 160M | ø42 k6 | 110 | M16 | 620 | ø310 | 220 | 2xM32 | 10x8x70 | 172 | 160 | 108 | 83 | 210 | 260 | 254 | 310 | 14.5x30 | 23 | 380 |
| 160L | ø42 k6 | 110 | M16 | 660 | ø310 | 220 | 2xM32 | 12x8x100 | 172 | 160 | 108 | 72 | 254 | 320 | 254 | 310 | 14.5x30 | 23 | 380 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte



**Motori autofrenanti
di stazionamento**

**Stationary brake
motors**

**Bremsmotoren
mit Feststellbremse**

TFS



2 poli

2 poles

50 Hz

2 polig



Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|
| | [kW] | [HP] | | | | | | | | | |
| 63A | 0.18 | 0.25 | 2720 | 53.2 | 0.69 | 0.60 | 2.5 | 0.63 | 2 | 2 | 0.00046 |
| 63B | 0.25 | 0.33 | 2710 | 58 | 0.82 | 0.80 | 3 | 0.88 | 2 | 2 | 0.00046 |
| 63C | 0.37 | 0.50 | 2770 | 68 | 0.78 | 1 | 3.5 | 1.3 | 2.1 | 2.2 | 0.00059 |
| 71A | 0.37 | 0.50 | 2800 | 68 | 0.73 | 1.1 | 3.5 | 1.3 | 2.5 | 2.7 | 0.00079 |
| 71B | 0.55 | 0.75 | 2800 | 72 | 0.74 | 1.4 | 4.5 | 1.8 | 2.3 | 2.6 | 0.00097 |
| 71C | 0.75 | 1 | 2820 | 72 | 0.74 | 2 | 4.5 | 2.5 | 2.3 | 2.6 | 0.00107 |
| 80A | 0.75 | 1 | 2830 | 72.1 | 0.83 | 1.8 | 5 | 2.5 | 2.3 | 2.6 | 0.00185 |
| 80B | 1.1 | 1.5 | 2830 | 75 | 0.84 | 2.5 | 5 | 3.7 | 2.3 | 2.6 | 0.00205 |
| 90S | 1.5 | 2 | 2820 | 77.2 | 0.86 | 3.6 | 5.8 | 5.1 | 2.6 | 2.7 | 0.00156 |
| 90L | 2.2 | 3 | 2840 | 79.7 | 0.86 | 4.7 | 5.5 | 7.4 | 2.9 | 3 | 0.00202 |
| 100A | 3 | 4 | 2890 | 81.5 | 0.85 | 6 | 5.8 | 9.9 | 2.4 | 3 | 0.00317 |
| 100B | 4 | 5.5 | 2880 | 81.5 | 0.85 | 8.1 | 6.2 | 13.2 | 2.5 | 3.2 | 0.00425 |
| 112A | 4 | 5.5 | 2900 | 83.1 | 0.88 | 8 | 6.6 | 13.2 | 2.1 | 2.6 | 0.00550 |
| 112B | 5.5 | 7.5 | 2900 | 85.7 | 0.86 | 12.3 | 6.6 | 18 | 2 | 2.8 | 0.00730 |
| 112C | 7.5 | 10 | 2860 | 86 | 0.82 | 16 | 6.5 | 24.8 | 2.7 | 3.2 | 0.00760 |
| 132SA | 5.5 | 7.5 | 2910 | 84.7 | 0.83 | 11.6 | 6.5 | 18 | 3.3 | 3.1 | 0.01130 |
| 132SB | 7.5 | 10 | 2910 | 86 | 0.84 | 15 | 7 | 24.6 | 3.5 | 3.3 | 0.01350 |
| 132MC | 9.2 | 12.5 | 2910 | 86 | 0.87 | 18.5 | 7.1 | 30.2 | 3.6 | 3.8 | 0.01689 |
| 132MD | 11 | 15 | 2910 | 86 | 0.87 | 21 | 7.6 | 36 | 3.4 | 3.8 | 0.01923 |
| 160MA | 11 | 15 | 2930 | 89.4 | 0.85 | 22.9 | 8.6 | 35.8 | 3.5 | 3.8 | 0.03248 |
| 160MB | 15 | 20 | 2930 | 90.3 | 0.85 | 29.5 | 8.3 | 48.9 | 3.6 | 3.9 | 0.04271 |
| 160L | 18.5 | 25 | 2935 | 90.9 | 0.85 | 34.7 | 8.3 | 60.2 | 3.9 | 3.7 | 0.04910 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

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**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
TFS

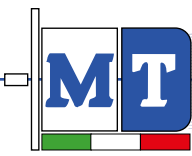
4 poli
4 poles
50 Hz
4 polig

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|
| | [kW] | [HP] | | | | | | | | | |
| 63A | 0.13 | 0.18 | 1360 | 60 | 0.68 | 0.60 | 2.4 | 0.9 | 2 | 2.2 | 0.00055 |
| 63B | 0.18 | 0.25 | 1380 | 62 | 0.69 | 0.70 | 2.5 | 1.3 | 2.2 | 2.3 | 0.00059 |
| 71A | 0.25 | 0.33 | 1400 | 70 | 0.70 | 0.85 | 3 | 1.7 | 2.3 | 2.3 | 0.00124 |
| 71B | 0.37 | 0.50 | 1400 | 70 | 0.71 | 1.1 | 3.7 | 2.5 | 2.8 | 2.8 | 0.00146 |
| 71C | 0.55 | 0.75 | 1400 | 72 | 0.75 | 1.45 | 3.9 | 3.8 | 2.5 | 2.5 | 0.00167 |
| 80A | 0.55 | 0.75 | 1400 | 72 | 0.78 | 1.6 | 4 | 3.8 | 2.4 | 2.5 | 0.00291 |
| 80B | 0.75 | 1 | 1400 | 72.1 | 0.78 | 2.1 | 4 | 5.1 | 2.4 | 2.5 | 0.00354 |
| 80C | 0.95 | 1.3 | 1420 | 72.1 | 0.75 | 2.5 | 4 | 6.4 | 2.3 | 2.6 | 0.00385 |
| 90S | 1.1 | 1.5 | 1380 | 75 | 0.84 | 2.6 | 4.3 | 7.6 | 2.2 | 2.2 | 0.00253 |
| 90L | 1.5 | 2 | 1410 | 77.2 | 0.84 | 3.6 | 4.7 | 10.1 | 2.7 | 2.9 | 0.00332 |
| 90LB | 1.8 | 2.5 | 1400 | 77.2 | 0.84 | 4.4 | 4.7 | 12.2 | 2.7 | 2.9 | 0.00411 |
| 90LC | 2.2 | 3 | 1400 | 83 | 0.82 | 4.8 | 5.6 | 14.9 | 2.9 | 2.8 | 0.00461 |
| 100A | 2.2 | 3 | 1440 | 79.7 | 0.84 | 5 | 4.8 | 14.5 | 2.2 | 2.5 | 0.00538 |
| 100B | 3 | 4 | 1450 | 81.5 | 0.84 | 6.7 | 5 | 19.7 | 2.3 | 2.6 | 0.00686 |
| 100C | 4 | 5.5 | 1410 | 81.5 | 0.82 | 8 | 4.7 | 27 | 2.4 | 2.7 | 0.00724 |
| 112A | 4 | 5.5 | 1420 | 83.1 | 0.88 | 8.4 | 5 | 27 | 2.2 | 2.3 | 0.01082 |
| 112B | 5.5 | 7.5 | 1420 | 83.1 | 0.90 | 13 | 6 | 37 | 1.9 | 2 | 0.01350 |
| 132SA | 5.5 | 7.5 | 1440 | 84.7 | 0.81 | 13 | 6.2 | 36.5 | 2.1 | 2.5 | 0.02118 |
| 132MB | 7.5 | 10 | 1440 | 86 | 0.81 | 17.5 | 6.3 | 49.7 | 2.5 | 2.7 | 0.02738 |
| 132MC | 9.2 | 12.5 | 1450 | 86 | 0.83 | 18.5 | 7 | 60.6 | 2.4 | 2.6 | 0.03109 |
| 132MD | 11 | 15 | 1450 | 86 | 0.83 | 22 | 8 | 72.4 | 2.3 | 2.4 | 0.03682 |
| 160M | 11 | 15 | 1450 | 89.8 | 0.79 | 22 | 7.3 | 72.5 | 3.5 | 3.7 | 0.06480 |
| 160L | 15 | 20 | 1460 | 90.6 | 0.79 | 31 | 7 | 98.1 | 3.6 | 3.1 | 0.08430 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

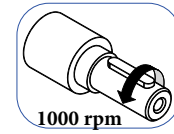


**Motori autofrenanti
di stazionamento**

**Stationary brake
motors**

**Bremsmotoren
mit Feststellbremse**

TFS



6 poli

6 poles

50 Hz

6 polig



Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | J [kgm ²] |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|--------------------------|
| | [kW] | [HP] | | | | | | | | | |
| 63A | 0.09 | 0.12 | 920 | 54 | 0.60 | 0.71 | 2 | 1 | 1.8 | 2 | 0.00064 |
| 63B | 0.12 | 0.16 | 900 | 56 | 0.60 | 0.76 | 2 | 1.3 | 1.8 | 2 | 0.00090 |
| 71A | 0.18 | 0.25 | 880 | 56 | 0.62 | 0.80 | 2.5 | 1.9 | 1.8 | 2 | 0.00124 |
| 71B | 0.25 | 0.33 | 900 | 60 | 0.65 | 1.2 | 2.9 | 2.6 | 1.9 | 2.2 | 0.00146 |
| 80A | 0.37 | 0.50 | 920 | 65 | 0.66 | 1.5 | 3.2 | 3.8 | 1.9 | 2.2 | 0.00291 |
| 80B | 0.55 | 0.75 | 920 | 69 | 0.70 | 1.7 | 3.5 | 5.7 | 2 | 2.3 | 0.00364 |
| 90S | 0.75 | 1 | 920 | 70 | 0.73 | 2.4 | 3.5 | 7.7 | 1.8 | 2 | 0.00253 |
| 90L | 1.1 | 1.5 | 920 | 72.9 | 0.71 | 3.4 | 3.5 | 11.4 | 1.8 | 2 | 0.00409 |
| 100A | 1.5 | 2 | 940 | 75.2 | 0.75 | 4 | 4 | 15.2 | 1.8 | 2 | 0.00537 |
| 112A | 2.2 | 3 | 950 | 77.7 | 0.75 | 5.4 | 6 | 22 | 2.3 | 2.2 | 0.00750 |
| 132SA | 3 | 4 | 950 | 79.7 | 0.76 | 7.1 | 5.4 | 30.1 | 2.1 | 2.1 | 0.01990 |
| 132MB | 4 | 5.5 | 950 | 81.4 | 0.78 | 9.1 | 5.3 | 40.2 | 2.4 | 2.4 | 0.02738 |
| 132MC | 5.5 | 7.5 | 965 | 83.1 | 0.82 | 13.3 | 5.3 | 54.4 | 2.6 | 2.6 | 0.03480 |
| 160M | 7.5 | 10 | 950 | 87.2 | 0.82 | 17.1 | 5 | 75.4 | 2 | 2.3 | 0.08350 |
| 160L | 11 | 15 | 960 | 88.7 | 0.82 | 24.5 | 5.5 | 109 | 2.3 | 2.5 | 0.12550 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

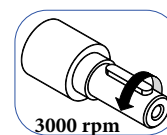
**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
TFS

8 poli
8 poles
50 Hz
8 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [kgm ²] |
| 63A | 0.07 | 0.1 | 640 | 42 | 0.52 | 0.70 | 1.3 | 1 | 1.8 | 2 | 0.00059 |
| 71A | 0.12 | 0.16 | 670 | 46 | 0.60 | 0.80 | 2 | 1.7 | 1.8 | 2 | 0.00146 |
| 80A | 0.18 | 0.25 | 690 | 50 | 0.60 | 0.90 | 2.5 | 2.5 | 1.8 | 2 | 0.00291 |
| 80B | 0.25 | 0.33 | 700 | 50 | 0.60 | 1.3 | 2.5 | 3.4 | 1.8 | 2 | 0.00354 |
| 90S | 0.37 | 0.50 | 700 | 58 | 0.60 | 1.6 | 3 | 5 | 2 | 2.2 | 0.00253 |
| 90L | 0.55 | 0.75 | 680 | 62 | 0.61 | 2.3 | 3.2 | 7.7 | 2 | 2.2 | 0.00331 |
| 100A | 0.75 | 1 | 700 | 70 | 0.64 | 2.6 | 3.5 | 10.2 | 2 | 2.4 | 0.00537 |
| 100B | 1.1 | 1.5 | 700 | 72 | 0.64 | 3.6 | 3.5 | 15 | 2 | 2.4 | 0.00686 |
| 112A | 1.5 | 2 | 700 | 74 | 0.66 | 5.2 | 4 | 20.5 | 2.1 | 2.4 | 0.01250 |
| 132SA | 2.2 | 3 | 700 | 75 | 0.65 | 7 | 4.1 | 30 | 2.2 | 2.4 | 0.01990 |
| 132MB | 3 | 4 | 700 | 77 | 0.65 | 9 | 4.3 | 41 | 2.2 | 2.4 | 0.03480 |
| 160MA | 4 | 5.5 | 710 | 80 | 0.70 | 10.8 | 4.5 | 53.8 | 1.8 | 2 | 0.06300 |
| 160MB | 5.5 | 7.5 | 720 | 84 | 0.74 | 12.6 | 5 | 73 | 1.8 | 2 | 0.08550 |
| 160L | 7.5 | 10 | 720 | 85 | 0.75 | 16.8 | 5 | 99.5 | 1.8 | 2 | 0.12640 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
MFS - XFS

2 poli
2 poles
50 Hz
2 polig

MFS

XFS

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFS.

The torque data "M" and current data "I" refer to the MFS version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFS.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] |
| 63A | 0.12 | 0.16 | 2750 | 54 | 0.92 | 1.6 | 2.4 | 0.41 | 0.60 | 1.4 | 8 | 0.00050 |
| 63B | 0.18 | 0.25 | 2750 | 54 | 0.92 | 1.75 | 2.5 | 0.62 | 0.62 | 1.6 | 8 | 0.00055 |
| 63C | 0.25 | 0.33 | 2750 | 56 | 0.94 | 2.2 | 2.5 | 0.87 | 0.66 | 1.6 | 10 | 0.00064 |
| 71B | 0.37 | 0.50 | 2800 | 60 | 0.72 | 4.2 | 3 | 1.3 | 0.70 | 1.8 | 14 | 0.00097 |
| 71C | 0.55 | 0.75 | 2670 | 64 | 0.87 | 4.5 | 3.5 | 1.9 | 0.70 | 1.8 | 16 | 0.00107 |
| 80B | 0.75 | 1 | 2680 | 70 | 0.98 | 5.5 | 3.5 | 2.7 | 0.74 | 1.8 | 20 | 0.00205 |
| 80C | 1.1 | 1.5 | 2820 | 67 | 0.97 | 7.5 | 2.7 | 4 | 0.6 | 1.7 | 25 | 0.00240 |
| 90S | 1.1 | 1.5 | 2830 | 70 | 0.98 | 8.5 | 3.6 | 3.7 | 0.76 | 1.9 | 30 | 0.00183 |
| 90L | 1.5 | 2 | 2830 | 74 | 0.98 | 11.5 | 3.6 | 5.1 | 0.76 | 1.9 | 35 | 0.00202 |
| 90LB | 1.8 | 2.5 | 2780 | 74 | 0.98 | 14.2 | 3.8 | 6.2 | 0.7 | 1.9 | 40 | 0.00211 |
| 100A | 2.2 | 3 | 2830 | 76 | 0.98 | 13.2 | 4 | 7.4 | 0.70 | 1.9 | 55 | 0.00317 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
MFS - XFS

4 poli
4 poles
50 Hz
4 polig

MFS

XFS

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFS.

The torque data "M" and current data "I" refer to the MFS version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFS.

Dati tecnici / Technical Data / Technische Daten

| Taglia Size Größe | P _n | | n [rpm] | η [%] | cos φ - | I _n [A] | I _{sp} /I _n - | M _n [Nm] | M _{sp} /M _n - | M _{max} /M _n - | — — [μF] | J [kgm ²] |
|-------------------------|----------------|------|------------|----------|------------|-----------------------|--------------------------------------|------------------------|--------------------------------------|---------------------------------------|-------------|--------------------------|
| | [kW] | [HP] | | | | | | | | | | |
| 56B* | 0.09 | 0.12 | 1340 | 54 | 0.93 | 0.95 | 1.6 | 0.64 | 0.90 | 1.4 | 6.3 | |
| 63B | 0.12 | 0.16 | 1370 | 58 | 0.90 | 1.4 | 2.5 | 0.84 | 0.74 | 1.6 | 8 | 0.00055 |
| 63C | 0.18 | 0.25 | 1370 | 58 | 0.92 | 1.6 | 2.5 | 1.3 | 0.78 | 1.6 | 8 | 0.00064 |
| 71B | 0.25 | 0.33 | 1340 | 58 | 0.94 | 2.6 | 2.5 | 1.8 | 0.78 | 1.6 | 14 | 0.00146 |
| 71C | 0.37 | 0.50 | 1380 | 58 | 0.94 | 3 | 2.8 | 2.6 | 0.82 | 1.6 | 16 | 0.00167 |
| 71D | 0.55 | 0.75 | 1380 | 59 | 0.89 | 4.6 | 2.7 | 3.7 | 0.5 | 1.5 | 1.6 | 0.00251 |
| 80B | 0.55 | 0.75 | 1400 | 62 | 0.94 | 4.5 | 3 | 3.7 | 0.75 | 1.8 | 20 | 0.00354 |
| 80C | 0.75 | 1 | 1400 | 66 | 0.94 | 6.5 | 3 | 5.1 | 0.73 | 1.8 | 25 | 0.00385 |
| 80D | 0.88 | 1.2 | 1400 | 66 | 0.94 | 7 | 3 | 6 | 0.70 | 1.8 | 25 | 0.00416 |
| 90 | 1.1 | 1.5 | 1410 | 68 | 0.96 | 8.5 | 3.2 | 7.5 | 0.70 | 1.8 | 30 | 0.00331 |
| 90L | 1.5 | 2 | 1390 | 68 | 0.93 | 10.5 | 3.2 | 10.3 | 0.65 | 1.8 | 40 | 0.00409 |
| 90LB | 1.8 | 2.5 | 1380 | 72 | 0.99 | 11.5 | 2.8 | 12 | 0.5 | 1.8 | 40 | 0.00461 |
| 100A | 1.8 | 2.5 | 1420 | 70 | 0.96 | 12.5 | 3.2 | 12.1 | 0.60 | 1.8 | 45 | 0.00538 |
| 100B | 2.2 | 3 | 1420 | 70 | 0.96 | 15 | 3.2 | 14.8 | 0.60 | 1.8 | 50 | 0.00686 |

* solo avvolgimento simmetrico a 3 fili / on symmetrical 3-row winding / nur symmetrische Wicklung mit 3 Reihen

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
MFS - XFS

6 poli
6 poles
50 Hz
6 polig

MFS

XFS

I dati di coppia "M" e corrente "I" si riferiscono alla versione MFS.

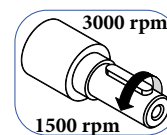
The torque data "M" and current data "I" refer to the MFS version.

Die Daten für Drehmoment "M" und Strom "I" beziehen sich auf die Ausführung MFS.

| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | | | | |
|-------------------------|--|------|-------|-----|-------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|------|---------------------|
| | P _n | | n | η | cos φ | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | | J |
| | [kW] | [HP] | [rpm] | [%] | - | [A] | - | [Nm] | - | - | [μF] | [kgm ²] |
| 63 | 0.12 | 0.16 | 870 | 50 | 0.90 | 1.5 | 2.5 | 1.3 | 0.68 | 1.4 | 8 | 0.00064 |
| 71B | 0.18 | 0.25 | 900 | 52 | 0.92 | 2 | 2.5 | 1.9 | 0.70 | 1.4 | 12.5 | 0.00167 |
| 80A | 0.37 | 0.50 | 920 | 58 | 0.90 | 3.1 | 2.7 | 3.8 | 0.72 | 1.5 | 40 | 0.00354 |
| 90S | 0.55 | 0.75 | 930 | 62 | 0.93 | 4.2 | 3 | 5.7 | 0.76 | 1.6 | 50 | 0.00253 |
| 90L | 0.75 | 1 | 850 | 65 | 0.88 | 6.4 | 2 | 8.4 | 0.70 | 1.6 | 60 | 0.00332 |
| 100A | 1.1 | 1.5 | 955 | 66 | 0.92 | 9 | 3.2 | 11 | 0.70 | 1.8 | 50 | 0.00680 |
| 100B | 1.5 | 2 | 900 | 66 | 0.96 | 13.5 | 3.2 | 15.9 | 0.70 | 1.8 | 50 | 0.00830 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

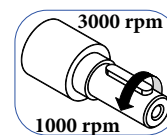
Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
DFS

2/4 poli
2/4 poles
50 Hz
2/4 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
| 63A | 0.18/0.12 | 0.25/0.16 | 2850/1420 | 0.75/0.85 | 3/2.5 | 0.60/0.80 | 1.3/1.3 | 1.4/1.5 | 0.00055 |
| 63B | 0.22/0.15 | 0.30/0.20 | 2760/1360 | 0.83/0.86 | 3/2.5 | 0.76/1 | 1.3/1.3 | 1.4/1.5 | 0.00059 |
| 71A | 0.30/0.20 | 0.40/0.28 | 2780/1400 | 1.2/1 | 3/3 | 1/1.4 | .5/1.3 | 1.6/1.8 | 0.00124 |
| 71B | 0.44/0.30 | 0.60/0.40 | 2880/1440 | 1.5/1.5 | 3/3 | 1.5/2 | 1.5/1.4 | 1.6/1.8 | 0.00146 |
| 80A | 0.60/0.45 | 0.80/0.60 | 2780/1400 | 2/1.6 | 3.5/3.5 | 2/3 | 1.5/1.3 | 1.8/1.8 | 0.00291 |
| 80B | 0.80/0.60 | 1.1/0.80 | 2800/1400 | 2.5/1.9 | 2.5/3.5 | 2.8/4.1 | 1.6/1.3 | 1.8/1.8 | 0.00354 |
| 90L | 1.8/1.2 | 2.5/1.7 | 2830/1420 | 4.5/3.1 | 5/4.5 | 6/8 | 2.1/2 | 2.2/2 | 0.00332 |
| 90LL | 2.2/1.5 | 3/2 | 2830/1420 | 5.5/3.7 | 5/4.5 | 7.4/10.1 | 2.1/2 | 2.4/2.2 | 0.00409 |
| 100A | 2.5/1.8 | 3.4/2.5 | 2830/1420 | 6.2/4.5 | 5/4.5 | 8.4/12.1 | 2.3/1.9 | 2.6/2 | 0.00537 |
| 100B | 3.3/2.5 | 4.4/3.4 | 2850/1430 | 8.1/5.9 | 6/5 | 11/16.7 | 2.4/2.2 | 2.8/2.4 | 0.00686 |
| 112A | 4.5/3.3 | 6/4.5 | 2850/1430 | 9.8/7.8 | 6/5 | 15/22 | 2.4/2.3 | 3/2.4 | 0.01253 |
| 132S | 5.5/4 | 7.5/5.5 | 2910/1450 | 13/9.5 | 6.5/5.5 | 18/26.3 | 2.4/2.3 | 3/2.5 | 0.01130 |
| 132M | 7.5/6.2 | 10/8.5 | 2910/1450 | 16.5/13.5 | 7/6 | 24.6/40.9 | 2.5/2.8 | 3/2.5 | 0.01689 |
| 160M | 11/9 | 15/12.2 | 2940/1460 | 25/19.5 | 7/6 | 35.7/58.9 | 2.5/2.6 | 3/2.5 | 0.06250 |
| 160L | 17/13 | 23/17.5 | 2930/1460 | 33/26 | 7.5/6.3 | 55.4/85 | 2.4/2.5 | 3/2.5 | 0.09250 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

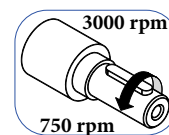
Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
DFS

2/6 poli
2/6 poles
50 Hz
2/6 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
| 71C | 0.25/0.15 | 0.33/0.20 | 2780/850 | 1.15/0.9 | 4/2 | 0.85/1.7 | 1.6/1.3 | 2/1.8 | 0.00167 |
| 80C | 0.75/0.37 | 1/0.50 | 2800/880 | 2.7/1.8 | 4.2/2.5 | 2.5/4 | 1.8/1.8 | 2.4/2.3 | 0.00385 |
| 90S | 1.1/0.55 | 1.5/0.75 | 2800/900 | 3.3/1.6 | 4.5/2.5 | 3.75/5.8 | 1.6/1.5 | 2.4/2.4 | 0.00253 |
| 90LB | 1.5/0.75 | 2/1 | 2800/910 | 4.3/3.7 | 4.8/2.8 | 5.1/7.9 | 1.6/1.5 | 2.3/2.4 | 0.00332 |
| 100B | 2.2/1.1 | 3/1.5 | 2820/910 | 5.5/4.8 | 5/3 | 7.5/11.5 | 1.8/1.5 | 2.4/2.3 | 0.00686 |
| 112B | 3/1.5 | 4/2 | 2820/920 | 6.9/5.8 | 5.5/3.5 | 10.2/15.6 | 1.9/1.3 | 2.5/1.8 | 0.01082 |
| 132S | 4/1.7 | 5.5/2.3 | 2840/930 | 9/4.3 | 5/4 | 13.5/17.5 | 2/1.8 | 2.3/1.8 | 0.01990 |
| 132M | 5.5/2 | 7.5/2.7 | 2850/930 | 12/6 | 5.5/4.6 | 18.4/20.5 | 2.2/1.8 | 2.3/1.8 | 0.03480 |
| 160M | 7.5/2.5 | 10.2/3.4 | 2880/950 | 16/7 | 6/4.7 | 25/25 | 2/2 | 1.8/1.8 | 0.06250 |
| 160L | 11/3.7 | 15/5 | 2900/960 | 25/11 | 6.2/4.8 | 36.2/36.8 | 2/2 | 1.8/1.8 | 0.09250 |

 Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

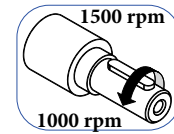
 Disponibili tutte le forme costruttive / *All mounting types available* / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
DFS

2/8 poli
2/8 poles
50 Hz
2/8 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
| 63C | 0.18/0.06 | 0.25/0.08 | 2740/640 | 0.60/0.60 | 3.4/2.3 | 0.62/0.89 | 1.6/1.9 | 1.8/1.6 | 0.00064 |
| 71C | 0.30/0.09 | 0.40/0.12 | 2770/660 | 1.15/0.65 | 4/2.3 | 1/1.3 | 1.6/2 | 2/1.6 | 0.00167 |
| 80B | 0.55/0.11 | 0.75/0.15 | 2800/680 | 2/0.9 | 4/2.4 | 1.9/1.6 | 1.8/2 | 2.2/1.8 | 0.00354 |
| 80C | 0.60/0.13 | 0.85/0.18 | 2800/680 | 2.6/1.2 | 4.2/2.4 | 2.1/1.8 | 1.8/2 | 2.4/2.1 | 0.00325 |
| 90S | 1.1/0.3 | 1.5/0.4 | 2830/700 | 3.3/1.5 | 4.5/2.5 | 3.7/4.1 | 1.6/1.8 | 2.4/2 | 0.00253 |
| 90L | 1.5/0.4 | 2/0.55 | 2850/700 | 4/1.6 | 4.5/2.5 | 5.1/5.5 | 1.6/1.8 | 2.4/2.1 | 0.00332 |
| 90LB | 1.8/0.50 | 2.5/0.65 | 2870/700 | 4.3/2 | 4.8/2.7 | 6/6.8 | 1.6/1.8 | 2/1.6 | 0.00411 |
| 100B | 2.2/0.60 | 3/0.8 | 2900/710 | 5.5/3 | 5/2.9 | 7.3/8.1 | 1.8/1.9 | 2/1.8 | 0.00686 |
| 112A | 3/0.75 | 4/1 | 2920/710 | 6.9/3.4 | 5.5/2.9 | 9.8/10.1 | 1.9/2 | 2.2/2 | 0.01082 |
| 132S | 4/1 | 5.5/1.3 | 2880/710 | 8.6/4.5 | 5/3.8 | 13.3/13.5 | 1.9/1.8 | 2.2/2 | 0.02738 |
| 132M | 5.5/1.4 | 7.5/1.9 | 2890/700 | 11.7/6.6 | 5.5/3.8 | 18.2/19.1 | 1.9/1.8 | 2.2/2 | 0.03480 |
| 160M | 7.5/1.8 | 10/2.5 | 2900/730 | 16.5/7 | 6/3.4 | 24.7/23.5 | 2/1.7 | 2/2 | 0.06250 |
| 160L | 11/2.5 | 15/3.4 | 2900/730 | 22/9 | 6.2/4 | 36.2/32.7 | 1.9/1.6 | 2.1/2 | 0.09250 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

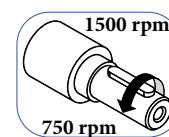
Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
DFS

4/6 poli
4/6 poles
50 Hz
4/6 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|-----------|----------|----------------|---------------------------------|----------------|---------------------------------|----------------------------------|---------------------|
| | P _n | | n | I _n | I _{sp} /I _n | M _n | M _{sp} /M _n | M _{max} /M _n | J |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] |
| 71B | 0.30/0.22 | 0.40/0.30 | 1380/890 | 1/0.9 | 3.5/2 | 2/2.3 | 1.3/1.3 | 2/1.8 | 0.00107 |
| 80A | 0.37/0.26 | 0.50/0.35 | 1410/900 | 1.5/1.4 | 3.5/2.5 | 2.5/2.7 | 1.3/1.4 | 1.9/2.1 | 0.00291 |
| 80B | 0.55/0.45 | 0.75/0.60 | 1420/920 | 2/1.8 | 3.5/2.5 | 3.7/4.7 | 1.5/1.8 | 2.1/2.3 | 0.00354 |
| 90S | 0.75/0.5 | 1/0.7 | 1420/920 | 2.4/2.1 | 4/2.5 | 5/5.2 | 1.4/1.3 | 2.1/2 | 0.00253 |
| 90L | 1.1/0.75 | 1.5/1 | 1470/900 | 3.9/3.7 | 4.2/2.5 | 7.2/7.9 | 1.4/1.4 | 2.1/2.1 | 0.00332 |
| 100A | 1.3/0.9 | 1.8/1.2 | 1430/920 | 4/3.8 | 4.5/3 | 8.7/9.3 | 1.4/1.4 | 2.1/2.2 | 0.00537 |
| 100B | 1.5/1.1 | 2/1.5 | 1450/950 | 4.5/4.1 | 4.5/3 | 9.9/11 | 1.4/1.5 | 2.2/2.3 | 0.00686 |
| 112A | 2.2/1.5 | 3/2 | 1440/960 | 6/5.8 | 4.5/3.5 | 14.6/14.9 | 1.4/1.3 | 1.7/1.6 | 0.01082 |
| 132S | 2.5/1.8 | 3.5/2.5 | 1420/930 | 6.5/6 | 5.5/4.8 | 16.8/18.5 | 1.6/1.5 | 1.8/1.6 | 0.01130 |
| 132M | 4/3 | 5.5/4 | 1440/930 | 8.5/6.9 | 6.5/5.5 | 26.5/30.8 | 1.8/1.7 | 2/1.9 | 0.01689 |
| 160M | 6.5/4.5 | 8.8/6 | 1450/940 | 15/11.6 | 5/4.6 | 42.8/45.7 | 1.8/1.7 | 2/1.9 | 0.06250 |
| 160L | 9.5/6.5 | 13/8.8 | 1450/940 | 21/17 | 5.4/4.4 | 62.6/66 | 2/1.8 | 2/1.9 | 0.92050 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

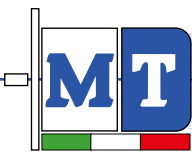
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**Motori autofrenanti
di stazionamento**
**Stationary brake
motors**
**Bremsmotoren
mit Feststellbremse**
DFS

4/8 poli
4/8 poles
50 Hz
4/8 polig


| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|---------------|--------------|--------------|-------------------|---------------|-------------------|--------------------|----------------------------|
| | P_n [kW] | P_n [HP] | n [rpm] | I_n [A] | I_{sp}/I_n - | M_n [Nm] | M_{sp}/M_n - | M_{max}/M_n - | J [kgm ²] |
| 63B | 0.09/0.04 | 0.12/0.06 | 1440/650 | 0.55/0.70 | 3.5/2 | 0.60/0.60 | 1.3/1.3 | 1.9/1.8 | 0.00059 |
| 71B | 0.15/0.09 | 0.20/0.12 | 1420/680 | 0.56/0.65 | 3.5/2 | 1/1.2 | 1.3/1.3 | 1.9/1.8 | 0.00146 |
| 80A | 0.30/0.18 | 0.40/0.25 | 1410/700 | 1.3/1.1 | 3.5/2.5 | 2/2.4 | 1.5/1.8 | 2/1.8 | 0.00291 |
| 80B | 0.37/0.22 | 0.50/0.30 | 1420/700 | 1.8/1.7 | 3.5/2.5 | 2.5/3 | 1.5/1.8 | 2/1.8 | 0.00354 |
| 90S | 0.60/0.25 | 0.80/0.35 | 1430/700 | 1.9/1.8 | 4/2.5 | 4/3.4 | 1.4/1.3 | 2/1.8 | 0.00253 |
| 90L | 1/0.5 | 1.3/0.7 | 1400/700 | 2.3/2.7 | 4.5/2.5 | 6.8/6.8 | 1.4/1.4 | 2/1.8 | 0.00332 |
| 100B | 1.5/0.75 | 2/1 | 1430/700 | 3.8/3.6 | 4.5/3 | 10/10 | 1.4/1.5 | 2/1.8 | 0.00686 |
| 112A | 2.2/1.3 | 3/1.8 | 1410/700 | 4.8/4.4 | 4.5/3.4 | 14.9/17.7 | 1.6/1.5 | 1.9/1.9 | 0.01253 |
| 132S | 3.1/1.7 | 4.2/2.3 | 1420/710 | 6.5/7.0 | 4.7/3.8 | 20.8/22.9 | 1.8/1.8 | 2/2.1 | 0.01130 |
| 132M | 5/2.8 | 6.8/3.8 | 1440/720 | 11.5/8.7 | 5.2/4.3 | 33.1/37.1 | 1.8/1.8 | 2.2/2.3 | 0.01689 |
| 160M | 6/4 | 8/5.5 | 1420/715 | 13.5/12 | 5/4.6 | 40.4/53.4 | 1.6/1.5 | 2/2 | 0.06250 |
| 160L | 11/7.5 | 15/10 | 1440/720 | 22/17.5 | 5.2/4.7 | 73/100 | 1.7/1.5 | 2/2 | 0.09250 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar

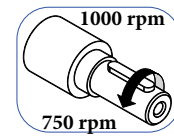


**Motori autofrenanti
di stazionamento**

**Stationary brake
motors**

**Bremsmotoren
mit Feststellbremse**

DFS



6/8 poli

6/8 poles

50 Hz

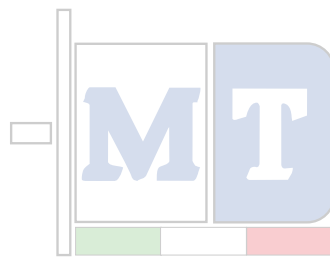
6/8 polig



| Taglia Size Größe | Dati tecnici / Technical Data / Technische Daten | | | | | | | | |
|-------------------------|--|-----------|---------|-----------|--------------|-----------|--------------|---------------|---------------------|
| | P_n | | n | I_n | I_{sp}/I_n | M_n | M_{sp}/M_n | M_{max}/M_n | J |
| | [kW] | [HP] | [rpm] | [A] | - | [Nm] | - | - | [kgm ²] |
| 71C | 0.15/0.09 | 0.20/0.12 | 850/660 | 0.9/0.65 | 2/1.8 | 1.8/1.3 | 1.3/2 | 1.8/1.6 | 0.00167 |
| 80C | 0.30/0.13 | 0.40/0.18 | 880/680 | 1.8/1.2 | 2.5/2.2 | 3.2/1.9 | 1.8/2 | 2.3/2.1 | 0.00385 |
| 90S | 0.37/0.25 | 0.50/0.33 | 900/700 | 1.7/1.4 | 2.5/2.5 | 3.9/3.4 | 1.5/2 | 2.4/2.1 | 0.00253 |
| 90LB | 0.60/0.37 | 0.80/0.50 | 900/700 | 2.5/1.3 | 2.8/2.7 | 6.3/5 | 1.3/1.8 | 2.4/1.6 | 0.00411 |
| 100B | 1/0.50 | 1.3/0.70 | 910/710 | 4/3 | 3/2.9 | 10.5/6.8 | 1.5/1.8 | 2.3/1.8 | 0.00686 |
| 112B | 1.5/0.75 | 2/1 | 920/710 | 5/3.3 | 3.5/2.9 | 15.6/10.1 | 1.8/2 | 2.2/1.8 | 0.01082 |
| 132S | 1.8/1 | 2.5/1.3 | 940/720 | 6.6/5.1 | 4.5/4 | 18.3/13.3 | 1.8/1.7 | 2.2/1.8 | 0.02738 |
| 132M | 3/2.2 | 4/3 | 940/720 | 7/6.5 | 4.5/4 | 30.5/29.2 | 1.7/1.6 | 2.3/1.8 | 0.03480 |
| 160M | 5.5/4 | 7.5/5.5 | 970/720 | 12.5/9.5 | 5.2/4.3 | 54.2/53 | 1.6/1.6 | 2.2/1.8 | 0.06250 |
| 160L | 7.5/5.5 | 10/7.5 | 970/720 | 15.5/14.5 | 5.4/4.4 | 74/73 | 1.7/1.6 | 2.2/1.8 | 0.09250 |

Valori numerici indicativi e non impegnativi / Indicative and non-binding numerical values / Numerische, nicht verbindliche Richtwerte

Disponibili tutte le forme costruttive / All mounting types available / Alle Bauformen verfügbar



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Esecuzioni speciali ed optional

Special executions and optional

Sonderausführungen und Optionen

La gamma di motori MT dispone di una ampia possibilità di optional con cui configurare i motori in base alle diverse esigenze.

MT è inoltre in grado di realizzare esecuzioni speciali e a disegno cliente; per ogni richiesta speciale contattare l'Ufficio Tecnico MT.

- **Avvolgimento in classe H:**

Avvolgimenti standard in classe F (idoneità dei componenti fino a 155 °C), a richiesta in classe H (idoneità fino a 180 °C).

- **Sonde termiche:**

PTO – (termica) protezione termica annegata direttamente sulle fasi dell'avvolgimento. È composta da una sonda bimetallica con contatto normalmente chiuso (NC): al raggiungimento della temperatura nominale di intervento (130 °C per motori dalla grandezza 55 alla 71, 140 °C per le altre grandezze) il contatto si apre.

I terminali del PTO sono posti all'interno della scatola morsettiera del motore e vanno collegati a un relè.

Sono disponibili PTO singole, doppie e triple con diverse temperature nominali di intervento. A richiesta è possibile fornire protezioni termiche con contatto normalmente aperto (NA).

PTC – (termistore) protezione termica annegata direttamente sulle fasi dell'avvolgimento.

È composta da una resistenza che varia al variare della temperatura, fino al raggiungimento della temperatura nominale di intervento (130 °C).

I terminali del PTC sono posti all'interno della scatola morsettiera e non possono essere collegati a un relè, ma devono essere collegati ad un'apposita apparecchiatura che blocchi l'alimentazione del motore (PLC).

Sono disponibili PTC con diverse temperature nominali di intervento.

A richiesta è possibile installare anche termoresistenze PT100: termoresistenza in platino la cui resistenza alla temperatura di 0 °C è pari a 100 Ω.

The MT motor range has a wide range of options with which to configure the motors according to different needs.

MT is also able to create special executions and customer designs; for any special request, contact the MT Technical Department.

- **Class H winding:**

Standard class F windings (component suitability up to 155°C), on demand class H (suitability up to 180°C).

- **Thermal probes:**

PTO – (thermal) thermal protection embedded directly on the winding phases. It consists of a bimetallic probe with normally closed contact (NC): when the nominal trip temperature is reached (130°C for motors sized 55 to 71, 140°C for the other sizes), the contact opens.

The PTO terminals are located inside the motor terminal board box and must be connected to a relay.

Single, double and triple PTOs with different nominal trip temperatures are available. On demand, it is possible to supply thermal protections with normally open contact (NA).

PTC – (thermistor) thermal protection embedded directly on the winding phases.

It consists of a resistance that varies with temperature changes, until the nominal trip temperature is reached (130°C).

The PTC terminals are located inside the terminal board box and cannot be connected to a relay, but must be connected to specific equipment that blocks the motor power supply (PLC).

PTCs with different nominal trip temperatures are available.

On request, it is possible to also install PT100 thermoresistances: platinum thermoresistance whose temperature resistance of 0°C is equal to 100 Ω.

Die Baureihe der MT Motoren verfügt über viele optionalen Zubehörteile, mit denen die Motoren abhängig von den verschiedenen Anforderungen konfiguriert werden können. Weiterhin kann MT Sonderausführungen und Anfertigungen nach Zeichnung des Kunden herstellen; für spezielle Anfragen die technische Abteilung von MT kontaktieren.

- **Wicklung nach Klasse H:**

Standardwicklungen nach Klasse F (Tauglichkeit der Komponenten bis 155 °C), auf Anfrage nach Klasse H (Tauglichkeit bis 180 °C).

- **Wärmefühler:**

PTO – (Wärmeschutz) direkt an den Phasen der Wicklung eingebetteter Wärmeschutz. Besteht aus einem Bimetallfühler mit normalerweise geschlossenem Kontakt (NC): beim Erreichen der Nennauslösetemperatur (130 °C für Motoren mit Größe ab 55 bis 71, 140 °C für die weiteren Größen) öffnet sich der Kontakt.

Die Klemmen des PTO sind im Klemmenkasten des Motors angebracht und werden mit einem Relais verbunden.

Verfügbar sind einzelne, zweifache und dreifache PTO mit verschiedenen Nennauslösetemperaturen. Auf Anfrage können Wärmeschütze mit normalerweise geöffnetem Kontakt (NA) geliefert werden.

PTO – (Heißleiter) direkt an den Phasen der Wicklung eingebetteter Heißleiter.

Besteht aus einem Widerstand, der bis zum Erreichen der Nennauslösetemperatur (130 °C) mit der Temperaturänderung variiert.

Die Klemmen des PTC sind im Klemmenkasten des Motors angebracht und werden mit einem Relais verbunden, müssen aber an ein entsprechendes Gerät angeschlossen werden, das die Motorversorgung sperrt (SPS).

Verfügbar sind PTC mit verschiedenen Nennauslösetemperaturen.

Auf Anfrage können auch Heißwiderstände PT100 installiert werden: Heißwiderstand aus Platin mit einem 0 °C Temperaturwiderstand von 100 Ω.

Esecuzioni speciali ed optional Special executions and optional Sonderausführungen und Optionen

• **Tropicalizzazione:**

È disponibile la tropicalizzazione dell'avvolgimento per mezzo di apposite vernici di elevata qualità igroscopica che garantiscono la protezione dei materiali isolanti dalla condensa, in modo tale da rendere il motore idoneo all'installazione in ambienti gravosi (temperatura e tasso di umidità elevati).

• **Tropicalisation:**

The tropicalisation of the winding is available by means of special high hygroscopic quality paints that ensure protection of the insulating materials from condensation, so as to make the motor suitable for installation in harsh environments (high temperature and humidity).

• **Tropenfestmachen:**

Die Wicklung kann durch entsprechende Lackierungen mit hohen hygroskopischen Eigenschaften tropenfest gemacht werden, die den Schutz der Kondensiermaterialien gewährleisten, um den Motor für die Installation in kritischen Umgebungen (hohe Temperatur und hoher Feuchtigkeitsgrad) geeignet zu machen.

• **Scaldiglia anticondensa**

L'installazione della scaldiglia anticondensa è indicata in ambienti con elevato tasso di umidità o temperatura particolarmente bassa.

La scaldiglia è una resistenza che riveste l'avvolgimento e si utilizza con il motore elettrico non in funzione.

Alimentazione disponibile V110 o V220 per mezzo di connettori posti nella scatola morsettiera del motore.

• **Anti-condensation heater**

The installation of the anti-condensation heater is indicated in environments with high humidity or particularly low temperature.

The heater is a resistance that covers the winding and is used with the electric motor not in operation.

Power supply available V 110 or V 220 by means of connectors located in the motor terminal board box.

• **Stillstandsheizung**

Die Installation der Stillstandsheizung ist für Umgebungen mit hohem Feuchtigkeitsgrad oder mit besonders niedriger Temperatur geeignet.

Die Stillstandsheizung ist ein Widerstand, der die Wicklung verkleidet und bei nicht laufendem Elektromotor verwendet wird.

Versorgung V 110 oder V 220 durch im Klemmenkasten des Motors angebrachte Steckverbinder verfügbar.

• **Foro scarico condensa:**

Il foro scarico condensa è consigliato nel caso di utilizzo del motore in ambienti con un tasso di umidità elevato.

È possibile prevedere i fori sugli scudi, sulle flange o sulla carcassa, a seconda del tipo di installazione del motore e comunque a richiesta del cliente. I fori scarico condensa possono essere chiusi per mezzo di appositi tappi.

• **Condensate drain hole:**

The condensate drain hole is recommended if using the motor in environments with high humidity.

It is possible to provide holes on the shields, flanges or casings, depending on the type of installation and, in any case, on customer request. The condensate drain holes can be closed with appropriate plugs.

• **Kondenswasserablauföffnung:**

Die Kondenswasserablauföffnung wird empfohlen, wenn der Motor in Umgebungen mit hohem Feuchtigkeitsgrad verwendet wird.

Die Öffnungen können an Schildern, Flanschen oder Gehäusen, je nach Installation des Motors und auf Anfrage des Kunden, angebracht werden. Die Kondenswasserablauföffnung können mit entsprechenden Verschlüssen geschlossen werden.

• **Tettuccio di protezione:**

In caso di applicazioni all'esterno con motore in verticale ed albero rivolto verso il basso, è consigliato applicare sulla calotta del copriventola un tettuccio in lamiera con la funzione di protezione contro lo stillicidio (tettuccio parapioggia) o l'entrata di corpi estranei (tettuccio di tipo tessile).

Il tettuccio di protezione può essere montato su tutti i motori MT ad esclusione della serie potenziati TFP-MFP-XFP-DFP.

• **Protective roof:**

In case of outdoor applications with motor vertical and shaft pointing down, it is advisable to apply a sheet metal roof on the fan cover for protection against dripping (rain cover) or the entry of foreign bodies (textile roof).

The protective roof can be fitted on all MT motors except for the high braking torque motor series TFP-MFP-XFP-DFP.

• **Schutzabdeckung:**

Bei Anwendungen im Außenbereich mit senkrecht eingebautem Motor und nach unten gerichteter Welle sollte an der Kappe der Lüfterhaube eine Blechabdeckung installiert werden, die vor Tropfwasser (Regenschutzdach) oder Eindringen von Fremdkörpern (Dach aus Textil) schützt.

Die Schutzabdeckung kann an allen MT -Motoren, mit Ausnahme der Baureihe der leistungsgesteigerter TFP-MFP-XFP-DFP Motoren, montiert werden.

Tab.26

| Taglia Size Größe | S1 [mm] | T1 [mm] |
|-------------------------|------------|------------|
| 56 | 10 | Ø110 |
| 63 | 10 | Ø123 |
| 71 | 11 | Ø138 |
| 80 | 11 | Ø156 |
| 90 | 12 | Ø176 |
| 100 | 12 | Ø194 |
| 112 | 13 | Ø216 |
| 132 | 13 | Ø257 |
| 160 | 18 | Ø310 |
| 180 | 18 | Ø360 |
| 200 | 20 | Ø400 |

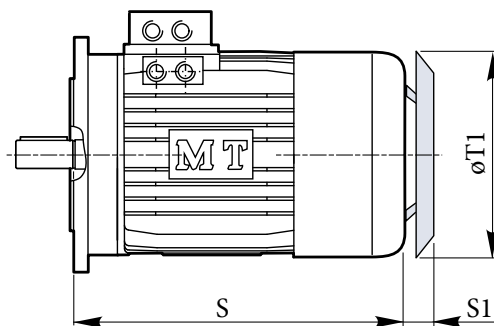


Fig.37

- **Motore resinato:**

In particolari condizioni d'utilizzo (es. impianti di autolavaggio, etc.), si rende necessario proteggere completamente tutti gli avvolgimenti e collegamenti del motore. In tale situazione è possibile resinare l'intera morsettiera e tutto il corpo dello statore utilizzando speciali resine poliestere con cui proteggere completamente il motore da acqua e liquidi.

- **Resin motor:**

In particular conditions of use (e.g. car wash facilities, etc.), it is necessary to completely protect all motor windings and connections. In this situation it is possible to resin the entire terminal board and the entire body of the stator using special polyester resins with which to completely isolate the motor from water and liquids.

- **Harzbeschichteter Motor:**

Unter besonderen Verwendungsbedingungen (z.B. Autowaschanlagen, etc.) müssen alle Wicklungen und Anschlüsse des Motors geschützt werden. In diesem Fall können das gesamte Klemmenbrett und das gesamte Statorgehäuse mit speziellen Polyesterharzen beschichtet werden, die den Motor gegen Wasser und Flüssigkeiten abdichten.

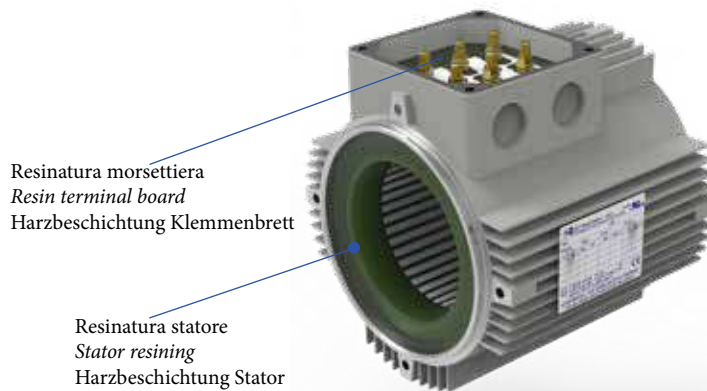


Fig.38

- **Motore semichiuso IP66:**

Per particolari applicazioni dove il motore viene costantemente a contatto con acqua (tipo autolavaggi, etc) è possibile fornire motori semichiusi a tenuta IP66. In tali motori si ha la resinatura di tutti gli avvolgimenti, la resinatura della morsettiera e lo scudo posteriore risulta essere parte integrale del corpo motore.

- **Semi-enclosed IP66 motor:**

For particular applications where the motor is constantly in contact with water (such as car washes, etc.) it is possible to supply semi-enclosed motors with IP66 sealing. In these motors, all the windings are resined, the resin of the terminal board and the back shield are an integral part of the motor body.

- **Teilweise geschlossener IP66-Motor:**

Für bestimmte Anwendungen, bei denen der Motor ständig in Kontakt mit Wasser steht (wie Autowaschanlagen usw.), können halbgeschlossene Motoren mit IP66-Dichtung geliefert werden. Bei diesen Motoren sind alle Wicklungen geschliffen, das Harz der Anschlussplatte und die hintere Abschirmung sind ein integraler Bestandteil des Motorkörpers.

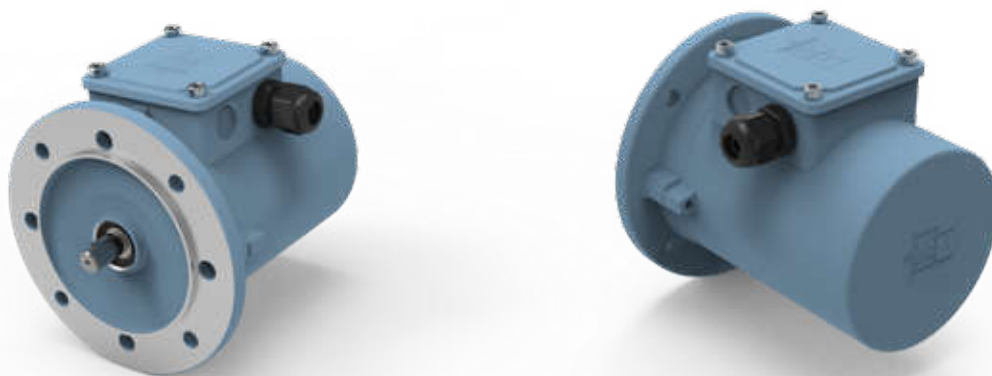


Fig.39

- **Indice di protezione:**

L'indice di protezione IP indica il grado di protezione del motore contro l'ingresso di particelle solide e di particelle liquide. I gradi di protezione standard ed opzionali ordinabili sono:

- **Protection index:**

The IP protection index indicates the degree of motor protection to the entering of solid and liquid particles. The standard protection degree and optional that can be ordered are:

- **Schutzindex:**

Der IP-Schutzindex gibt den Schutzgrad vor festen und flüssigen Teilchen am Eingang des Motors an. Der Standardschutzgrad und der optionale Schutzgrad, die bestellt werden können:

Esecuzioni speciali ed optional Special executions and optional Sonderausführungen und Optionen

Tab.27

| Tipo motore <i>Motor type</i> Motortyp | Taglia <i>Size</i> Größe | Standard <i>Standard</i> Standard | a richiesta <i>on demand</i> auf anfrage |
|--|--------------------------------|---|--|
| TN - DN | 55 | IP54 | -- |
| | 56 ÷ 200 | IP55 | IP56 IP65 IP66 |
| MN - XN | 56 ÷ 100 | IP55 | - |
| TF - DF | 56 ÷ 200 | IP54 | IP55 |
| MF - XF | 56 ÷ 100 | IP54 | - |
| TFP - DFP | 63 ÷ 200 | IP54 | IP55 |
| MFP - XFP | 63 ÷ 100 | IP54 | - |
| TFS - DFS | 63 ÷ 200 | IP54 | - |
| MFS - XFS | 63 ÷ 100 | IP54 | - |

- **Ventola in alluminio:**
Nel caso in cui il motore debba lavorare in ambienti con temperature elevate, è possibile richiedere che la ventola standard in plastica sia sostituita con una ventola in alluminio.
- **Aluminium fan:**
If the motor has to work in environments with high temperatures, it is possible to request that the standard plastic fan be replaced with an aluminium fan.
- **Lüfter aus Aluminium:**
Sollte der Motor in Umgebungen mit hohen Temperaturen laufen, kann der Standardlüfter aus Kunststoff auf Anfrage gegen einen Lüfter aus Aluminium ausgetauscht werden.
- **Morsettiera lato ventola:**
Per applicazioni particolari è possibile richiedere che la morsettiera sia in posizione arretrata (opposta all'albero di uscita).
- **Fan side terminal board:**
For particular applications it is possible to request that the terminal board be in retracted position (opposite to the output shaft).
- **Klemmenbrett Seite Lüfter:**
Für spezielle Anwendungen kann das Klemmenbrett auf Anfrage nach hinten (der Ausgangswelle entgegengesetzt) verlegt werden.
- **Albero motore bisporgente:**
Per le serie TN-MN-XN-DN e TF-MF-XF-DF sono disponibili motori con alberi bisporgenti standard con sporgenza uguale al lato flangia; a richiesta altre bisporgenze a disegno cliente.
- **Double ended crankshaft:**
For the TN-MN-XN-DN and TF-MF-XF-DF series motors with double ended shafts are available; lengths, diameters and key to be defined when ordering.
Contact the MT Motors technical department.
- **Beidseitige Motorwelle:**
Für die Baureihen TN-MN-XN-DN und TF-MF-XF-DF sind Motoren mit beidseitigen Wellen verfügbar; Längen, Durchmesser und Keile werden bei der Bestellung festgelegt.
Die technische Abteilung von MT Motoren kontaktieren.
- **Flangia motore a disegno cliente:**
Per esigenze particolari è possibile fornire i motori con flange speciali a disegno cliente. Contattare l'ufficio tecnico MT Motori.
- **Customer design motor flange:**
For special requirements, it is possible to supply motors with special flanges according to customer design. Contact the MT Motors technical department.
- **Motorflansch nach Zeichnung des Kunden:**
Für spezielle Anforderungen können die Motoren mit Sonderflanschen nach Zeichnung des Kunden geliefert werden. Die technische Abteilung von MT-Motoren kontaktieren.
- **Volano:**
E' possibile fornire su richiesta un volano che determina una maggiore progressività in fase di avviamento ed in fase di frenatura.
Per ulteriori dettagli contattare l'Ufficio Tecnico MT.
- **Flywheel:**
On request, it is possible to supply a flywheel which determines greater softness during start-up and braking.
For further details, contact the MT Technical Department.
- **Schwungrad:**
Auf Anfrage kann ein Schwungrad geliefert werden, das ein progressiveres Anlaufen und Bremsen des Motors bewirkt.
Für weitere Details die technische Abteilung von MT-Motoren kontaktieren.
- **Avvolgimento simmetrico:**
Sui motori elettrici monofase, è possibile richiedere l'avvolgimento simmetrico (detto anche equilibrato) che consente il funzionamento del motore in entrambi i sensi di rotazione adottando un cablaggio semplificato ed un funzionamento più silenzioso dello standard (a scapito di circa 15-20% della coppia di spunto).
- **Symmetrical winding:**
It is possible to request symmetrical winding (also called balanced) on the single-phase electric motors which allows motor operation in both rotation directions by adopting simplified wiring and a quieter operation than the standard (at the expense of about 15-20% of the starting torque).
- **Symmetrische Wicklung:**
Bei Einphasenwechselstrom-Elektromotoren kann die symmetrische (auch als abgegliche bezeichnet) Wicklung angefordert werden, die durch die Verwendung einer vereinfachten Verkabelung den Betrieb des Motors in beiden Drehrichtungen, sowie einen geräuschärmeren Betrieb als den Standardbetrieb (zum Nachteil von ca. 15-20% des Anlaufdrehmoments) ermöglicht.

Esecuzioni speciali ed optional *Special executions and optional* Sonderausführungen und Optionen

- **Albero motore a disegno cliente:**

Per esigenze particolari è possibile fornire i motori con alberi speciali per applicazioni specifiche del cliente. Contattare l'Ufficio Tecnico MT.

- **Customer design crankshaft:**

For special requirements, it is possible to supply motors with special shafts according to customer design. Contact the MT Motors technical department.

- **Motorwelle nach Zeichnung des Kunden:**

Für spezielle Anforderungen können die Motoren mit Sonderwellen nach Zeichnung des Kunden geliefert werden. Die technische Abteilung von MT Motoren kontaktieren.



Albero speciale per agitatori
Special shaft for agitators
Spezialwelle für Rührwerke



Albero speciale per apertura portoni industriali
Special shaft for industrial doors
Spezialschaft für Industrietore



Albero speciale con sporgenza per sblocco manuale portone industriale
Special shaft with protrusion for manual release of industrial doors
Spezialschaft mit Überstand zur manuellen Entriegelung von Industrietoren

- **Interruttori e cablaggi:**

A richiesta è possibile fornire interruttori speciali, cablaggi speciali a specifiche cliente, cavi speciali senza coprimorsettiera e morsettiere a disegno.

- **Switches and wiring:**

On request it is possible to supply special circuit-breakers, special wirings to customer specifications, special cables without terminal block cover and custom-made terminal blocks.

- **Schalter und Verdrahtung:**

Auf Wunsch können Sonder-Leistungsschalter, Sonderverkabelungen nach Kundenwunsch, Spezialkabel ohne Klemmenblockabdeckung und Sonderanfertigungen geliefert werden.



con invertitore di marcia e di polarità
with gear reversing and polarity reversing
mit Bewegungsumkehr und Polaritätsumkehr



START&STOP con interruttore amperometrico
START & STOP with amperometric switc
START & STOP mit amperometrischem Schalter

- **Cuscinetti:**

standard radiali a sfere con doppia schermatura tipo 2Z e lato freno standard con schermatura tipo DDU/2RS. A richiesta è possibile fornire cuscinetti con schermature speciali, gioco maggiorato C3, grasso per alte temperature, cuscinetti sensorizzati, cuscinetti doppio giro di sfera, cuscinetti unidirezionali.

- **Bearings:**

standard radial ball bearings with double shielding type 2Z and standard brake side with shielding type DDU / 2RS. On request it is possible to supply bearings with special shields, increased clearance C3, high temperature grease, sensorized bearings, double ball bearing, unidirectional bearings.

- **Lager:**

Standard-Radialkugellager mit doppelter Abschirmung Typ 2Z und Standardbremsseite mit Abschirmung Typ DDU / 2RS. Auf Anfrage ist es möglich, Lager mit speziellen Schirmen, erhöhtem Spiel C3, Hochtemperaturfett, sensorisierten Lagern, Doppelkugellagern, einseitig gerichteten Lagern zu liefern.

Esecuzioni speciali ed optional Special executions and optional Sonderausführungen und Optionen

• **Motore servoventilato:**

I motori elettrici MT possono essere dotati a richiesta di raffreddamento IC416 con elettroventilatore assiale aggiuntivo, alimentato autonomamente a V230 50/60Hz monofase o V 230/400 50Hz trifase, inserito all'interno di apposito copriventola; altre tensioni a richiesta cliente.

E' possibile adottare la servoventilazione per tutte le serie di motori MT tranne per la serie dei motori autofrenanti potenziati TFP-MFP-XFP-DFP.

• **Servo-ventilated motor:**

On request, the MT electric motors can be equipped with IC416 cooling with additional axial electric fan, independently fed at V230 50/60 Hz single-phase or V 230/400 50 Hz three-phase, inserted inside appropriate fan cover.

It is possible to adopt forced cooling for all MT motor series except for the TFP-MFP-XFP-DFP high braking torque motor series.

• **Motor mit Servo-Lüfter:**

Auf Anfrage können die MT Elektromotoren mit einer IC416 Kühlung mit zusätzlichem Axial-Elektrolüfter ausgestattet werden, der mit V230 50/60Hz einphasig oder V 230/400 50Hz dreiphasig autonom versorgt werden kann, und im Inneren einer entsprechenden Lüfterhaube eingebaut ist.

Der Servo-Lüfter kann bei allen Baureihen der TM Motoren, mit Ausnahme der Baureihe der leistungsgesteigerten TFP-MFP-XFP-DFP Bremsmotoren, verwendet werden.

~ : Motore servoventola monofase 230V 50 Hz / Single phase servo-fan motor 230V 50 Hz / Einphasiger Servo-Lüfter 230V 50Hz

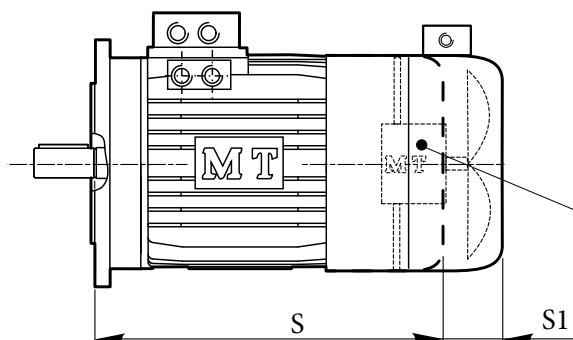
Δ : Motore servoventola trifase 230/400V 50Hz / Three phase servo-fan motor 230/400V 50Hz / Drehstrom-Lüftermotor 230/400V 50Hz

| TN-MN-XN-DN | S1 [mm] | | Elettroventola / Electric fan / Elektrolüfter | | | | n [rpm] |
|-------------|------------|-------------|---|-------------|----------|-------------|------------|
| | ~ | Δ (400V) | I [A] | | P [w] | | |
| | | | ~ | Δ (400V) | ~ | Δ (400V) | |
| 56 | 45 | - | 0.10 | - | 12 | - | 2800 |
| 63 | 30 | - | 0.14 | - | 16 | - | 2800 |
| 71 | 20 | 110 | 0.14 | 0.28 | 16 | 40 | 2800 |
| 80 | 45 | 110 | 0.28 | 0.28 | 36 | 40 | 2800 |
| 90S | 30 | 100 | 0.28 | 0.28 | 36 | 40 | 2800 |
| 90L | 30 | 100 | 0.28 | 0.28 | 36 | 40 | 2800 |
| 100 | 35 | 90 | 0.28 | 0.28 | 36 | 40 | 2800 |
| 112 | 40 | 85 | 0.28 | 0.28 | 36 | 40 | 2800 |
| 132S | 50 | 70 | 0.32 | 0.28 | 50 | 40 | 2800 |
| 132M | 50 | 70 | 0.32 | 0.28 | 50 | 40 | 2800 |
| 160M | 50 | 45 | 0.52 | 0.28 | 40 | 40 | 2800 |
| 160L | 50 | 45 | 0.52 | 0.28 | 40 | 40 | 2800 |
| 180M | 50 | 50 | 0.52 | 0.28 | 40 | 40 | 2800 |
| 180L | 50 | 50 | 0.52 | 0.28 | 40 | 40 | 2800 |
| 200 | 50 | 50 | 0.52 | 0.28 | 40 | 40 | 2800 |

Per i motori TF-MF-XF-DF e TFS-MFS-XFS-DFS contattare l'Ufficio Tecnico MT.

For motors TF-MF-XF-DF and TFS-MFS-XFS-DFS contact the MT Technical Department.

Für Motoren TF-MF-XF-DF und TFS-MFS-XFS-DFS wenden Sie sich an die technische Abteilung von MT.



Motore elettrico servoventilazione MT 2 poli trifase 40W.
Three-phase 2-pole 40W MT forced cooling electric motor.
Elektromotor mit Servo-Lüfter MT 2 polig dreiphasig 40W.

Fig.40

Esecuzioni speciali ed optional

Special executions and optional

Sonderausführungen und Optionen

Encoder:

L'encoder è un trasduttore di spostamento e di velocità; trasforma il movimento dell'albero motore in una serie di impulsi elettrici digitali.

Tali impulsi possono quindi essere utilizzati per monitorare lo spostamento angolare dell'albero motore, la sua velocità ed il suo senso di rotazione.

Gli encoder standard presentano le seguenti caratteristiche:

Encoder:

The encoder is a displacement and speed transducer; transforms the crankshaft movement into a series of digital electric pulses.

These pulses can be used to monitor the angular displacement of the crankshaft, its speed and its rotation direction.

The standard encoders have the following features:

Encoder:

Der Encoder ist ein Messgeber für Verschiebung und Geschwindigkeit; er wandelt die Bewegung der Motorwelle in eine Reihe von elektrischen Digitalimpulsen um.

Diese Impulse können verwendet werden, um die Winkelverschiebung der Motorwelle, deren Geschwindigkeit und Drehrichtung zu überwachen.

Die Standard-Encoder haben die folgenden Merkmale:

Caratteristiche standard / Standard characteristics / Standardmerkmale

Tab.29

| | | |
|--|--------------------------|--|
| Risoluzione [impulsi/giro] <i>Resolution [impulses/revolution]</i> Auflösung [Impulse/U] | 200 ÷ 2048 ppr | non moltiplicati elettronicamente <i>not geared up electronically</i> nicht elektronisch multipliziert |
| Tensione di alimentazione <i>Power supply voltage</i> Versorgungsspannung | 5 ÷ 30 Vdc | - |
| Assorbimento a vuoto <i>No-load absorption</i> Absorption ohne Last | 800 mW | - |
| Configurazione elettronica in uscita <i>Output electronic configuration</i> Elektronische Konfiguration im Ausgang | PUSH PULL LINE DRIVER | - |
| Massima corrente <i>Maximum current</i> Max. Strom | 20 mA | per canale/ <i>for channel</i> / je Kanal per canale con / <i>for channel with</i> / je Kanal mit |
| Max. frequenza di utilizzo <i>Max. working frequency</i> Max. Nutzstrom | Max 105 KHz | F= R.P.M. x Risoluzione 60 F= R.P.M. x Resolution 60 F= R.P.M. x Auflösung 60 |
| Max. rpm | 3000 | - |
| Temperatura di funzionamento <i>Operating temperature</i> Betriebstemperatur | -10° ÷ +85 °C | - |
| IP | IP54 | - |

L'adozione dell'encoder sui motori MT è possibile su tutte le serie tranne che per le serie potenziati TFP-MFP-XFP-DFP.

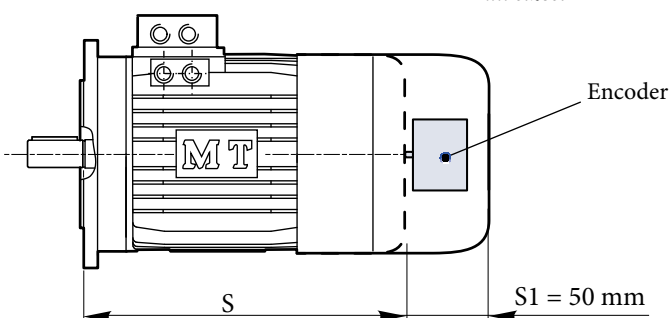
L'utilizzo dell'encoder comporta su tutti i tipi di motori e per tutte le grandezze un incremento assiale di lunghezza di circa 50mm.

The adoption of the encoder on the MT motors is possible on all series except for the TFP-MFP-XFP-DFP high braking torque motor series.

Using the encoder involves an axial length increase of 50 mm on all types of motors and for all sizes.

Die Verwendung des Encoders an MT Motoren ist bei allen Baureihen möglich, mit Ausnahme der Baureihen der leistungsgesteigerten Motoren TFP-MFP-XFP-DFP.

Die Verwendung des Encoders bedingt bei allen Motortypen und Größen eine Erhöhung der Achse mit einer Länge von 50mm.



Soluzione standard MT / MT standard solution / MT-Standardlösung

Fig.41



a richiesta / on demand / auf Anfrage

Esecuzioni speciali ed optional

Special executions and optional

Sonderausführungen und Optionen

Gli encoder sono corredati di un cavo di lunghezza variabile (in base alle specifiche del cliente) con uscita radiale. A richiesta è possibile fornire encoder con connettore fissato sul motore (maschio + femmina).

Gli encoder MT sono alloggiati all'interno del copriventola motore.

Nel caso di combinazione tra freno e/o servoventilazione e/o encoder, contattare l'Ufficio Tecnico MT per disegni specifici ed ingombri precisi.

The encoders are equipped with a variable length cable (according to customer specifications) with radial output. On request it is possible to supply encoders with connectors fixed on the motor (male + female).

The MT encoders are housed inside the motor fan cover.

In the case of a combination of brake and / or servo ventilation and / or encoder, contact the MT Technical Office for specific drawings and precise dimensions.

Die Drehgeber sind mit einem Kabel mit variabler Länge (nach Kundenspezifikation) mit radialem Ausgang ausgestattet. Auf Wunsch können Encoder mit am Motor fixierten Steckern (männlich + weiblich) geliefert werden.

Die MT-Encoder sind in der Motorlüfterabdeckung untergebracht.

Wenden Sie sich bei einer Kombination aus Brems- und / oder Servolüftung und / oder Encoder an das MT-Büro, um spezifische Zeichnungen und genaue Abmessungen zu erhalten.

- **Motori autofrenanti con doppio freno:**

Per offrire una maggiore sicurezza possiamo installare sui nostri motori autofrenanti serie TF/DF un secondo freno negativo c.c. garantendo in questo modo una grande precisione d'arresto ed un elevato grado di sicurezza se l'interruzione è accidentale.

- **Double-brake motors:**

In order to guarantee a better safety, we can install an additional d.c. negative brake on our TF/DF brake motors in order to double the braking torque, thus ensuring a high stopping accuracy and a high safety level in case of accidental interruption.

- **Bremsmotoren mit Doppelpbremse:**

Für eine höhere Sicherheit können wir unsere Bremsmotoren der Serien TF/DF mit einer zusätzlichen Gleichstrombremse ausstatten, um höhere Anhaltgenauigkeit und Hochsicherheit im Falle eines zufälligen Spannungsabfall zu gewährleisten.

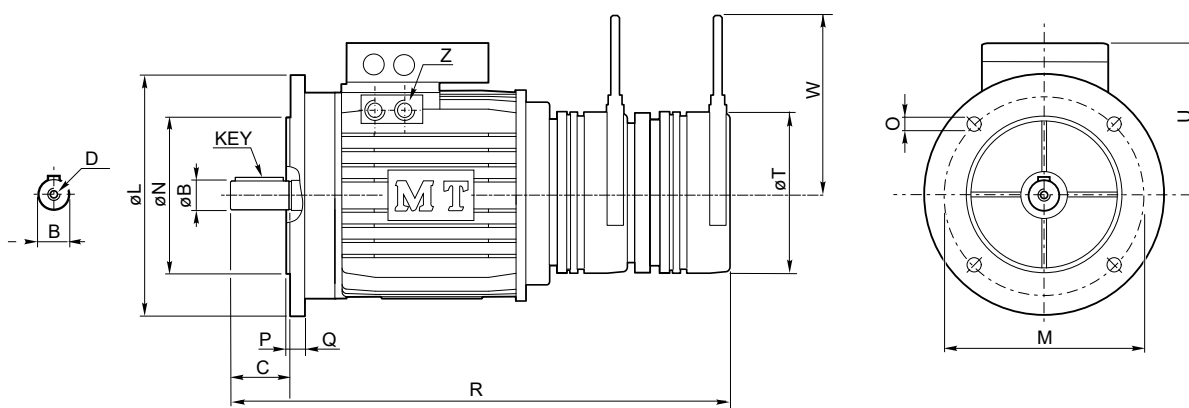


| Taglia Size Größe | Coppia frenante / Brake torque / Bremsdrehmoment | | |
|-------------------------|--|---|-----|
| | $M_{f\max}$ [Nm] | | |
| 63 | 5 + 5 | → | 10 |
| 71 | 10 + 10 | → | 20 |
| 80 | 20 + 20 | → | 40 |
| 90S | 40 + 40 | → | 80 |
| 90L | 40 + 40 | → | 80 |
| 100 | 70 + 70 | → | 140 |
| 112 | 100 + 100 | → | 200 |
| 132S | 150 + 150 | → | 300 |
| 132M | 150 + 150 | → | 300 |
| 160M | 250 + 250 | → | 500 |
| 160L | 250 + 250 | → | 500 |
| 180M | 400 + 400 | → | 800 |
| 180L | 400 + 400 | → | 800 |

Motori autofrenanti con doppio freno
Double-brake motors
Bremsmotoren mit Doppelpbremse

disponibile
 available
 2/22 verfügbar

B5



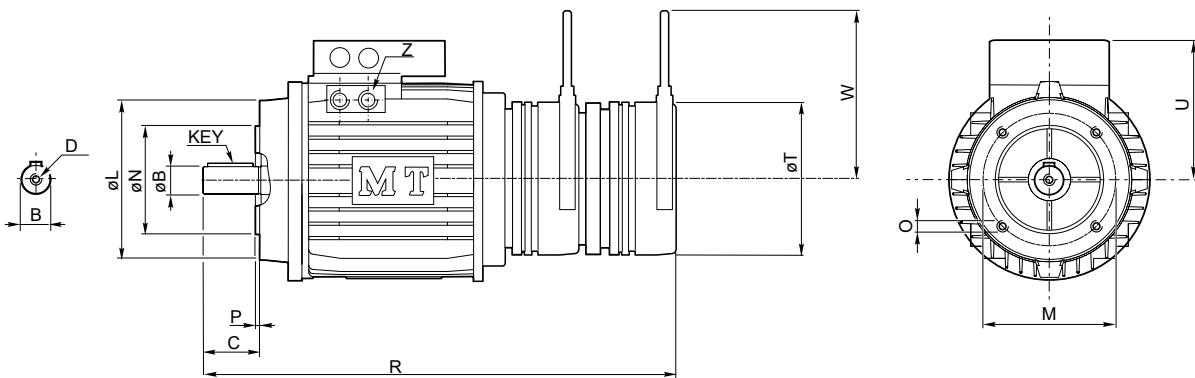
| Taglia Size Größe | Dimensioni / <i>Dimensions</i> / Abmessungen [mm] | | | | | | | | | | | | | | |
|-------------------------|--|-----|-----|-----|------|-----|-------|----------|-----------|-----|-----|-----|----|-----|----|
| | B | C | D | R | T | U | Z | Key | W c.c. | L | M | N | O | P | Q |
| 63 | ø11 j6 | 23 | M4 | 291 | ø88 | 110 | M16 | 4x4x15 | 96 | 140 | 115 | 95 | 9 | 3 | 9 |
| 71 | ø14 j6 | 30 | M5 | 333 | ø101 | 120 | M20 | 5x5x25 | 103 | 160 | 130 | 110 | 9 | 3.5 | 9 |
| 80 | ø19 j6 | 40 | M6 | 369 | ø115 | 130 | M20 | 6x6x30 | 129 | 200 | 165 | 130 | 12 | 3.5 | 10 |
| 90S | ø24 j6 | 50 | M8 | 394 | ø135 | 140 | M20 | 8x7x40 | 160 | 200 | 165 | 130 | 12 | 3.5 | 10 |
| 90L | ø24 j6 | 50 | M8 | 419 | ø135 | 140 | M20 | 8x7x40 | 160 | 200 | 165 | 130 | 12 | 3.5 | 10 |
| 100 | ø28 j6 | 60 | M10 | 482 | ø169 | 150 | M20 | 8x7x50 | 199 | 250 | 215 | 180 | 14 | 4 | 14 |
| 112 | ø28 j6 | 60 | M10 | 500 | ø170 | 160 | M20 | 8x7x50 | 204 | 250 | 215 | 180 | 14 | 4 | 14 |
| 132S | ø38 k6 | 80 | M12 | 575 | ø190 | 195 | M25 | 10x8x70 | 226 | 300 | 265 | 230 | 14 | 4 | 19 |
| 132M | ø38 k6 | 80 | M12 | 613 | ø190 | 195 | M25 | 10x8x70 | 226 | 300 | 265 | 230 | 14 | 4 | 19 |
| 160M | ø42 k6 | 110 | M16 | 761 | ø230 | 220 | 2xM32 | 12x8x90 | 266 | 350 | 300 | 250 | 19 | 5 | 16 |
| 160L | ø42 k6 | 110 | M16 | 803 | ø230 | 220 | 2xM32 | 12x8x90 | 266 | 350 | 300 | 250 | 19 | 5 | 16 |
| 180M | ø48 k6 | 110 | M16 | 875 | ø254 | 220 | 2xM32 | 12x8x90 | 266 | 350 | 300 | 250 | 19 | 5 | 16 |
| 180L | ø48 k6 | 110 | M16 | 875 | ø254 | 263 | 2xM32 | 14x9x100 | 305 | 350 | 300 | 250 | 19 | 5 | 16 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Motori autofrenanti con doppio freno
Double-brake motors
Bremsmotoren mit Doppelfremse

disponibile
available
 2/22 verfügbar

B14



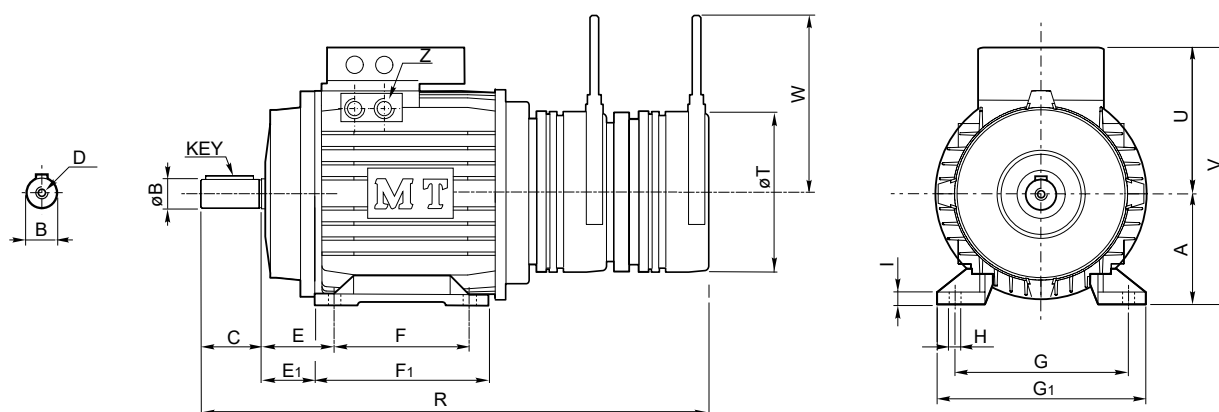
| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|------|-----|-------|---------|-----------|-----|-----|-----|-----|-----|
| | B | C | D | R | T | U | Z | Key | W c.c. | L | M | N | O | P |
| 63 | ø11 j6 | 23 | M5 | 291 | ø88 | 110 | M16 | 4x4x15 | 96 | 90 | 75 | 60 | M5 | 2.5 |
| 71 | ø14 j6 | 30 | M6 | 333 | ø101 | 120 | M20 | 5x5x25 | 103 | 105 | 85 | 70 | M6 | 2.5 |
| 80 | ø19 j6 | 40 | M8 | 369 | ø115 | 130 | M20 | 6x6x30 | 129 | 120 | 100 | 80 | M6 | 3 |
| 90S | ø24 j6 | 50 | M8 | 394 | ø135 | 140 | M20 | 8x7x40 | 160 | 140 | 115 | 95 | M8 | 3 |
| 90L | ø24 j6 | 50 | M10 | 419 | ø135 | 140 | M20 | 8x7x40 | 160 | 140 | 115 | 95 | M8 | 3 |
| 100 | ø28 j6 | 60 | M10 | 482 | ø169 | 150 | M20 | 8x7x50 | 199 | 160 | 130 | 110 | M8 | 3.5 |
| 112 | ø28 j6 | 60 | M12 | 500 | ø170 | 160 | M20 | 8x7x50 | 204 | 160 | 130 | 110 | M8 | 3.5 |
| 132S | ø38 k6 | 80 | M12 | 575 | ø190 | 195 | M25 | 10x8x70 | 226 | 200 | 165 | 130 | M10 | 4 |
| 132M | ø38 k6 | 80 | M16 | 613 | ø190 | 195 | M25 | 10x8x70 | 226 | 200 | 165 | 130 | M10 | 4 |
| 160M | ø42 k6 | 110 | M16 | 761 | ø230 | 220 | 2xM32 | 12x8x90 | 266 | 250 | 215 | 180 | M12 | 4 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Motori autofrenanti con doppio freno
Double-brake motors
Bremsmotoren mit Doppelpbremse

Ex disponibile
 2/22 verfügbar

B3



| Taglia Size Größe | Dimensioni / Dimensions / Abmessungen [mm] | | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----|-----|-----|------|-----|-------|----------|-----------|-----|-----|----|-----|-----|-----|-----|----------|----|-----|
| | B | C | D | R | T | U | Z | Key | W c.c. | A | E | E1 | F | F1 | G | G1 | H | I | V |
| 63 | ø11 j6 | 23 | M4 | 291 | ø88 | 110 | M16 | 4x4x15 | 96 | 63 | 42 | 28 | 80 | 105 | 100 | 120 | 7x12 | 10 | 173 |
| 71 | ø14 j6 | 30 | M5 | 333 | ø101 | 120 | M20 | 5x5x25 | 103 | 71 | 45 | 36 | 90 | 108 | 112 | 136 | 7x12 | 11 | 191 |
| 80 | ø19 j6 | 40 | M6 | 369 | ø115 | 130 | M20 | 6x6x30 | 129 | 80 | 50 | 38 | 100 | 125 | 125 | 154 | 9.5x16.5 | 13 | 210 |
| 90S | ø24 j6 | 50 | M8 | 394 | ø135 | 140 | M20 | 8x7x40 | 160 | 90 | 56 | 41 | 100 | 130 | 140 | 174 | 10x17.5 | 14 | 230 |
| 90L | ø24 j6 | 50 | M8 | 419 | ø135 | 140 | M20 | 8x7x40 | 160 | 90 | 56 | 41 | 125 | 155 | 140 | 174 | 10x17.5 | 14 | 230 |
| 100 | ø28 j6 | 60 | M10 | 482 | ø169 | 150 | M20 | 8x7x50 | 199 | 100 | 63 | 46 | 140 | 175 | 160 | 192 | 12x22 | 14 | 250 |
| 112 | ø28 j6 | 60 | M10 | 500 | ø170 | 160 | M20 | 8x7x50 | 204 | 112 | 70 | 53 | 140 | 180 | 190 | 234 | 12.5x22 | 14 | 272 |
| 132S | ø38 k6 | 80 | M12 | 575 | ø190 | 195 | M25 | 10x8x70 | 226 | 132 | 89 | 60 | 140 | 180 | 216 | 256 | 12.5x28 | 16 | 327 |
| 132M | ø38 k6 | 80 | M12 | 613 | ø190 | 195 | M25 | 12x8x90 | 226 | 132 | 89 | 60 | 178 | 218 | 216 | 256 | 12.5x28 | 16 | 327 |
| 160M | ø42 k6 | 110 | M16 | 761 | ø230 | 220 | 2xM32 | 12x8x90 | 266 | 160 | 108 | 83 | 210 | 260 | 254 | 310 | 14.5x30 | 23 | 380 |
| 160L | ø42 k6 | 110 | M16 | 803 | ø230 | 263 | 2xM32 | 12x8x90 | 266 | 160 | 108 | 72 | 254 | 320 | 254 | 310 | 14.5x30 | 23 | 380 |
| 180M | ø48 k6 | 110 | M16 | 875 | ø254 | 263 | 2xM32 | 14x9x100 | 305 | 180 | 121 | 80 | 241 | 315 | 279 | 355 | 13x38 | 25 | 443 |
| 180L | ø48 k6 | 110 | M16 | 875 | ø254 | 263 | 2xM32 | 14x9x100 | 305 | 180 | 121 | 80 | 279 | 353 | 279 | 355 | 13x38 | 25 | 443 |

Valori numerici indicativi e non impegnativi / *Indicative and non-binding numerical values* / Numerische, nicht verbindliche Richtwerte

Esecuzioni speciali ed optional

Special executions and optional

Sonderausführungen und Optionen

La **MT Motori** è in grado di supportare il proprio cliente in ogni sua esigenza.

Su ordinazione è possibile inoltre fornire motori per applicazioni speciali:

- motori con predisposizioni per encoder su scelta del cliente;
- motori a tripla polarità per impastatrici;
- motori speciali a doppia polarità per ventilatori;
- motori con morsettiere speciali;
- motori con interruttori/cablaggi speciali.

Su richiesta **MT Motori** è inoltre in grado di eseguire assemblaggi di motoriduttori su specifiche cliente:

MT Motori is able to support its customers in every need.

On request it is also possible to supply motors for special applications:

- *motors with encoder arrangements according to customer's choice;*
- *triple p emolarity motors for mixers;*
- *special double polarity motors for fans;*
- *motors with special terminal blocks;*
- *motors with special switches / wiring.*

Upon request MT Motori is also able to perform gearmotor assemblies based on specific customer requirements:

MT Motori kann seine Kunden in jeder Hinsicht unterstützen.

Auf Anfrage können auch Motoren für spezielle Anwendungen geliefert werden:

- Motoren mit Geberanordnungen nach Wahl des Kunden;
- Triple-P-Polaritätsmotoren für Mischer;
- spezielle Motoren mit doppelter Polarität für Lüfter;
- Motoren mit speziellen Klemmenblöcken;
- Motoren mit speziellen Schaltern / Verkabelungen.

Auf Anfrage kann **MT Motori** auch Getriebemotoren mit speziellen Kundenanforderungen:



Linea di assemblaggio / Assembly line / Montagelinie

TN-MN-XN-DN

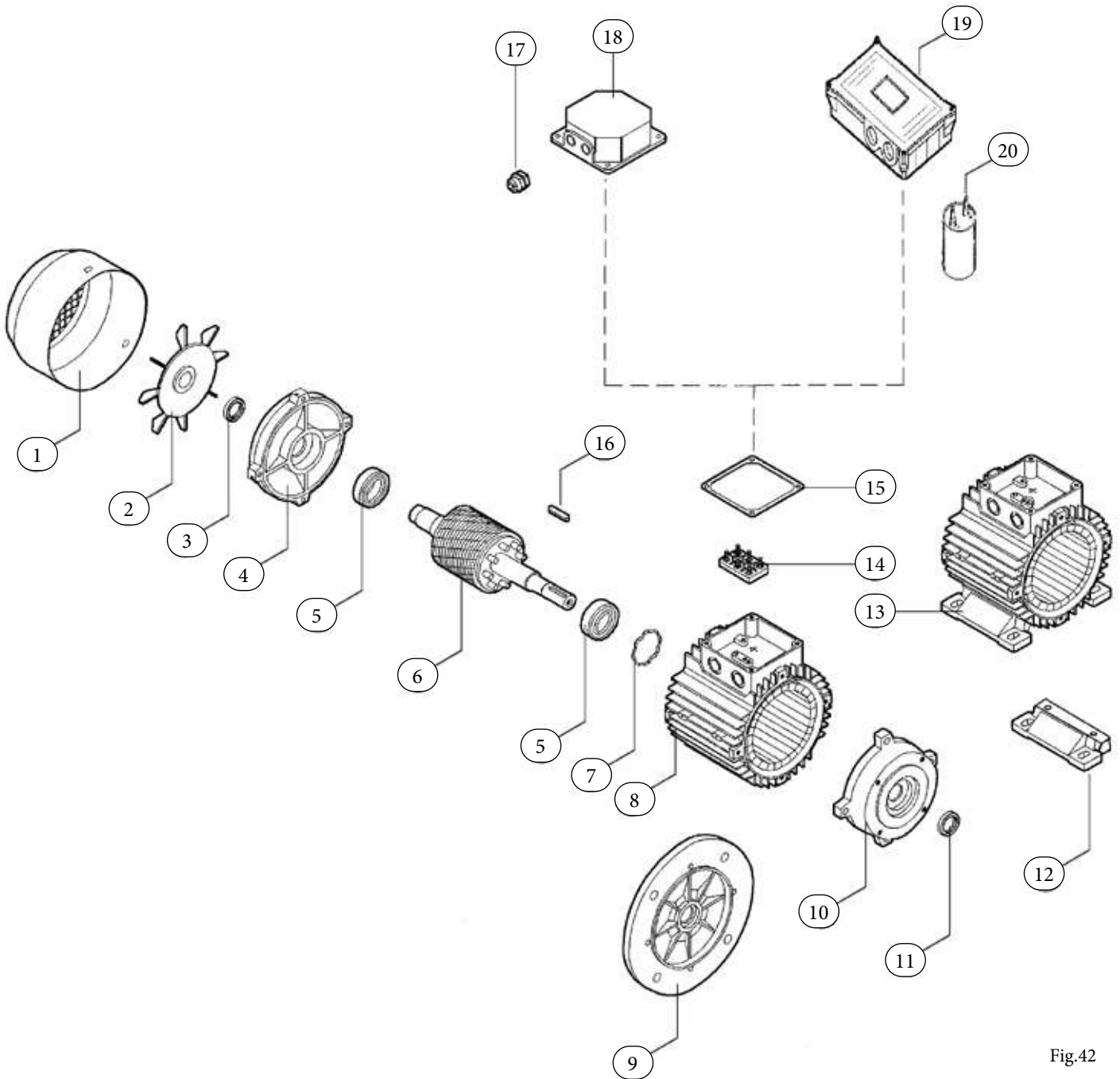


Fig.42

| Taglia Size Größe | 55 | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 |
|---------------------------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Cuscinetti Bearings Lager | (5) 6201-2Z | 6201-2Z | 6202-2Z | 6003-2Z | 6204-2Z | 6205-2Z | 6206-2Z | 6306-2Z | 6308-2Z | 6309-2Z | 6310-2Z | 6312-2Z |

Ricambi
Spare parts
Ersatzteile

| Nr. | Ricambio | Spare parts | Ersatzteil | Tipo motore Motor type Motortyp | Note Notes Anmerkungen |
|-----|--|---|--|---------------------------------------|------------------------------|
| 1 | Copriventola | <i>Fan cover</i> | Lüfterhaube | TN-MN-XN-DN | |
| 2 | Ventola | <i>Fan</i> | Lüfter | TN-MN-XN-DN | |
| 3 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | TN-MN-XN-DN | |
| 4 | Scudo posteriore | <i>Rear shield</i> | Hinteres Schild | TN-MN-XN-DN | |
| 5 | Cuscinetto | <i>Bearing</i> | Lager | TN-MN-XN-DN | |
| 6 | Rotore | <i>Rotor</i> | Rotor | TN-MN-XN-DN | |
| 7 | Molla precarico | <i>Preload spring</i> | Feder Vorspannung | TN-MN-XN-DN | |
| 8 | Carcassa con statore avvolto | <i>Casing with wound stator</i> | Gehäuse mit umwickeltem Stator | TN-MN-XN-DN | |
| 9 | Flangia B5 | <i>Flange B5</i> | Flansch B5 | TN-MN-XN-DN | |
| 10 | Flangia B14 | <i>Flange B14</i> | Flansch B14 | TN-MN-XN-DN | |
| 11 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | TN-MN-XN-DN | |
| 12 | Piedi riportati | <i>Foot</i> | Fuß | TN-MN-XN-DN | 63 ÷ 180 SX=DX 200 SX≠DX |
| 13 | Carcassa con piedi integrali e statore avvolto | <i>Casing with integral feet and wound stator</i> | Gehäuse mit vollständigen Füßen und umwickeltem Stator | TN-MN-XN-DN | solo/only/nur 56 |
| 14 | Morsettiera | <i>Terminal board</i> | Klemmenbrett | TN-MN-XN-DN | |
| 15 | Guarnizione | <i>Gasket</i> | Dichtung | TN-MN-XN-DN | |
| 16 | Linguetta | <i>Feather key</i> | Feder | TN-MN-XN-DN | |
| 17 | Pressacavo | <i>Cable gland</i> | Kabelverschraubung | TN-MN-XN-DN | |
| 18 | Scatola morsettiera | <i>Terminal board box</i> | Klemmenkasten | TN-MN-XN-DN | |
| 19 | Scatola morsettiera monofase | <i>Single-phase terminal board box</i> | Klemmenkasten einphasig | MN - XN | |
| 20 | Condensatore | <i>Capacitor</i> | Kondensator | MN - XN | |

TF-MF-XF-DF

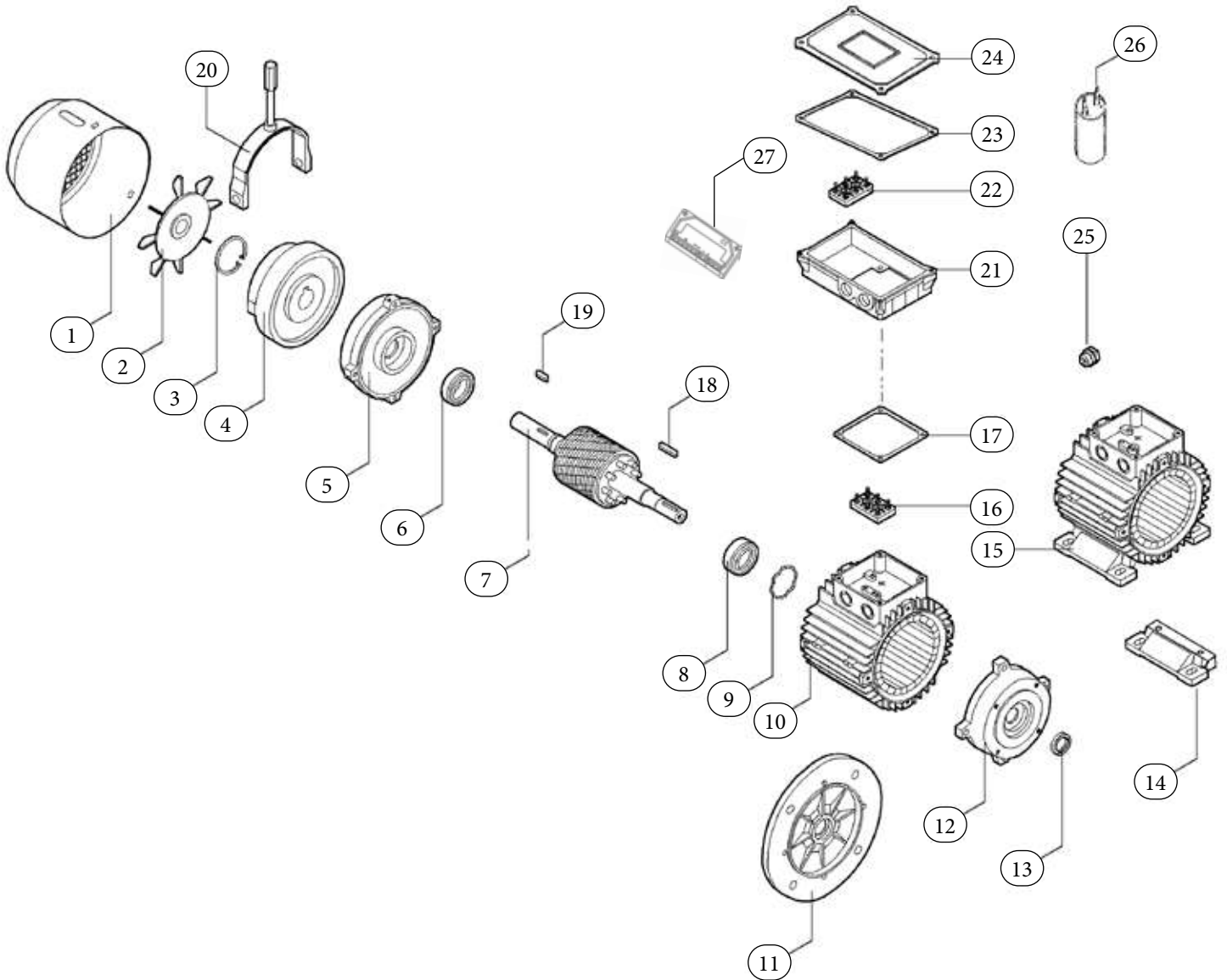


Fig.43

| Taglia Size Größe | | 55 | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 |
|-------------------------|---|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|---------|
| Cuscinetti Bearings | 6 | - | 6201-2RS | 6202-2RS | 6003-2RS | 6204-2RS | 6205-2RS | 6206-2RS | 6306-2RS | 6308-2RS | 6309-2RS | - | - |
| Lager | 8 | 6201-2Z | 6201-2Z | 6202-2Z | 6203-2Z | 6204-2Z | 6205-2Z | 6206-2Z | 6306-2Z | 6308-2Z | 6309-2Z | 6310-2Z | 6312-2Z |

| Ricambi | Spare parts | Ersatzteile | |
|---------|-------------|-------------|--|
|---------|-------------|-------------|--|

| Nr. | Ricambio | Spare parts | Ersatzteil | Tipo motore Motor type Motortyp | Note Notes Anmerkungen |
|-----|--|---|--|---------------------------------------|------------------------------|
| 1 | Copriventola | <i>Fan cover</i> | Lüfterhaube | TF-MF-XF-DF | |
| 2 | Ventola | <i>Fan</i> | Lüfter | TF-MF-XF-DF | |
| 3 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | TF-MF-XF-DF | |
| 4 | Gruppo freno | <i>Brake unit</i> | Bremsaggregat | TF-MF-XF-DF | |
| 5 | Scudo posteriore | <i>Rear shield</i> | Hinteres Schild | TF-MF-XF-DF | |
| 6 | Cuscinetto | <i>Bearing</i> | Lager | TF-MF-XF-DF | |
| 7 | Rotore | <i>Rotor</i> | Rotor | TF-MF-XF-DF | |
| 8 | Cuscinetto | <i>Bearing</i> | Lager | TF-MF-XF-DF | |
| 9 | Molla precarico | <i>Preload spring</i> | Feder Vorspannung | TF-MF-XF-DF | |
| 10 | Carcassa con statore avvolto | <i>Casing with wound stator</i> | Gehäuse mit umwickeltem Stator | TF-MF-XF-DF | |
| 11 | Flangia B5 | <i>Flange B5</i> | Flansch B5 | TF-MF-XF-DF | |
| 12 | Flangia B14 | <i>Flange B14</i> | Flansch B14 | TF-MF-XF-DF | |
| 13 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | TF-MF-XF-DF | |
| 14 | Piedi riportati | <i>Foot</i> | Fuß | TF-MF-XF-DF | 63 ÷ 180 SX=DX 200 SX≠DX |
| 15 | Carcassa con piedi integrali e statore avvolto | <i>Casing with integral feet and wound stator</i> | Gehäuse mit vollständigen Füßen und umwickeltem Stator | TF-MF-XF-DF | solo/only/nur 56 |
| 16 | Morsettiera | <i>Terminal board</i> | Klemmenbrett | TF-MF-XF-DF | |
| 17 | Guarnizione | <i>Gasket</i> | Dichtung | TF-MF-XF-DF | |
| 18 | Linguetta | <i>Feather key</i> | Feder | TF-MF-XF-DF | |
| 19 | Linguetta lato freno | <i>Brake side feather key</i> | Feder Seite Bremse | TF-MF-XF-DF | |
| 20 | Leva di sblocco freno | <i>Brake release lever</i> | Entriegelungshebel Bremse | TF-MF-XF-DF | |
| 21 | Scatola morsettiera | <i>Terminal board box</i> | Klemmenkasten | TF-MF-XF-DF | |
| 22 | Morsettiera | <i>Terminal board</i> | Klemmenbrett | TF-MF-XF-DF | |
| 23 | Guarnizione | <i>Gasket</i> | Dichtung | TF-MF-XF-DF | |
| 24 | Coperchio morsettiera | <i>Terminal board cover</i> | Deckel Klemmenbrett | TF-MF-XF-DF | |
| 25 | Pressacavo | <i>Cable gland</i> | Kabelverschraubung | TF-MF-XF-DF | |
| 26 | Condensatore | <i>Capacitor</i> | Kondensator | MF-XF | |
| 27 | Raddrizzatore freno c.c. | <i>D.C. brake rectifier</i> | Gleichrichter Gleichstrombremse | TF-MF-XF-DF | c.c. / d.c. Gleichstrom |

TFP-MFP-XFP-DFP

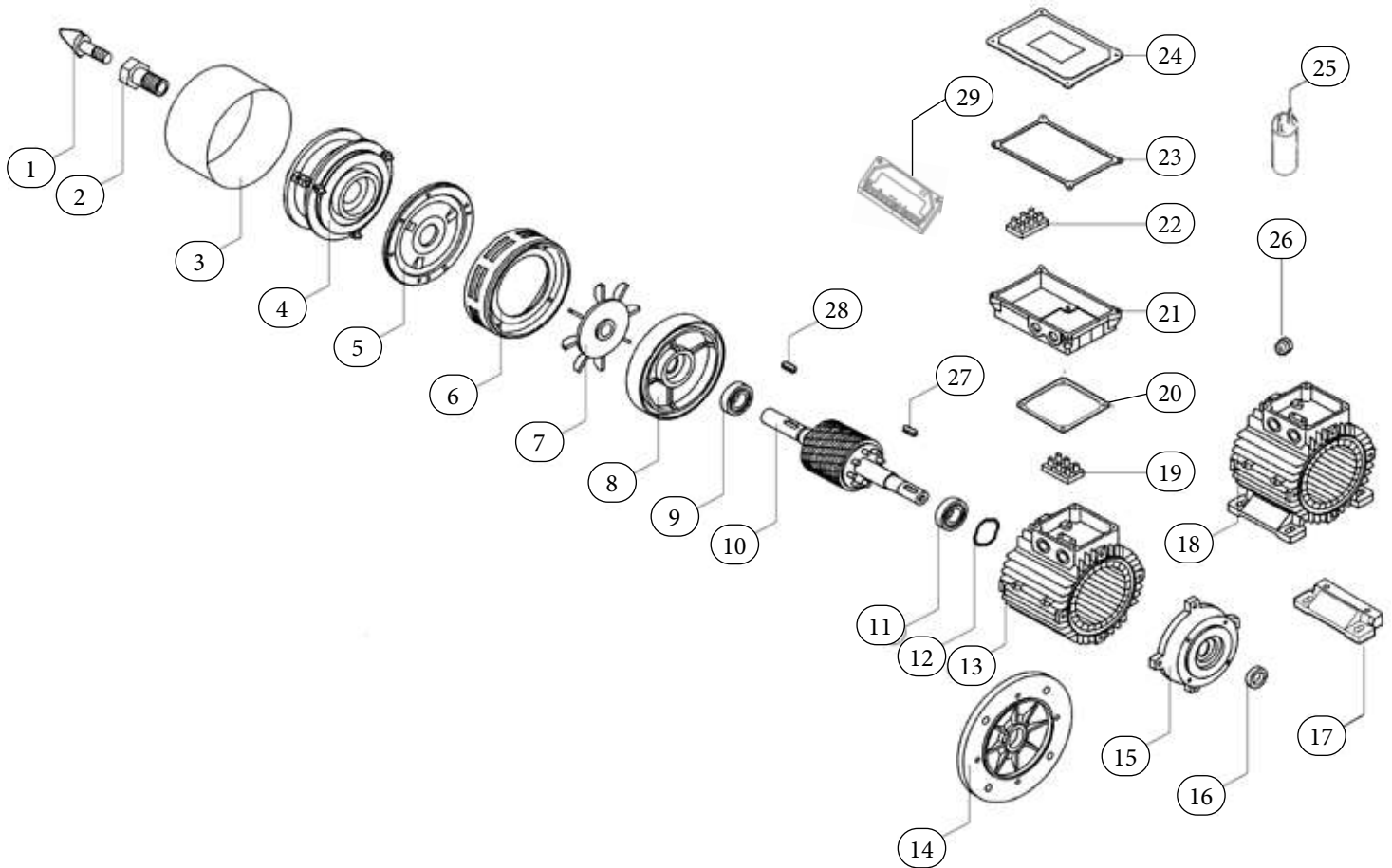


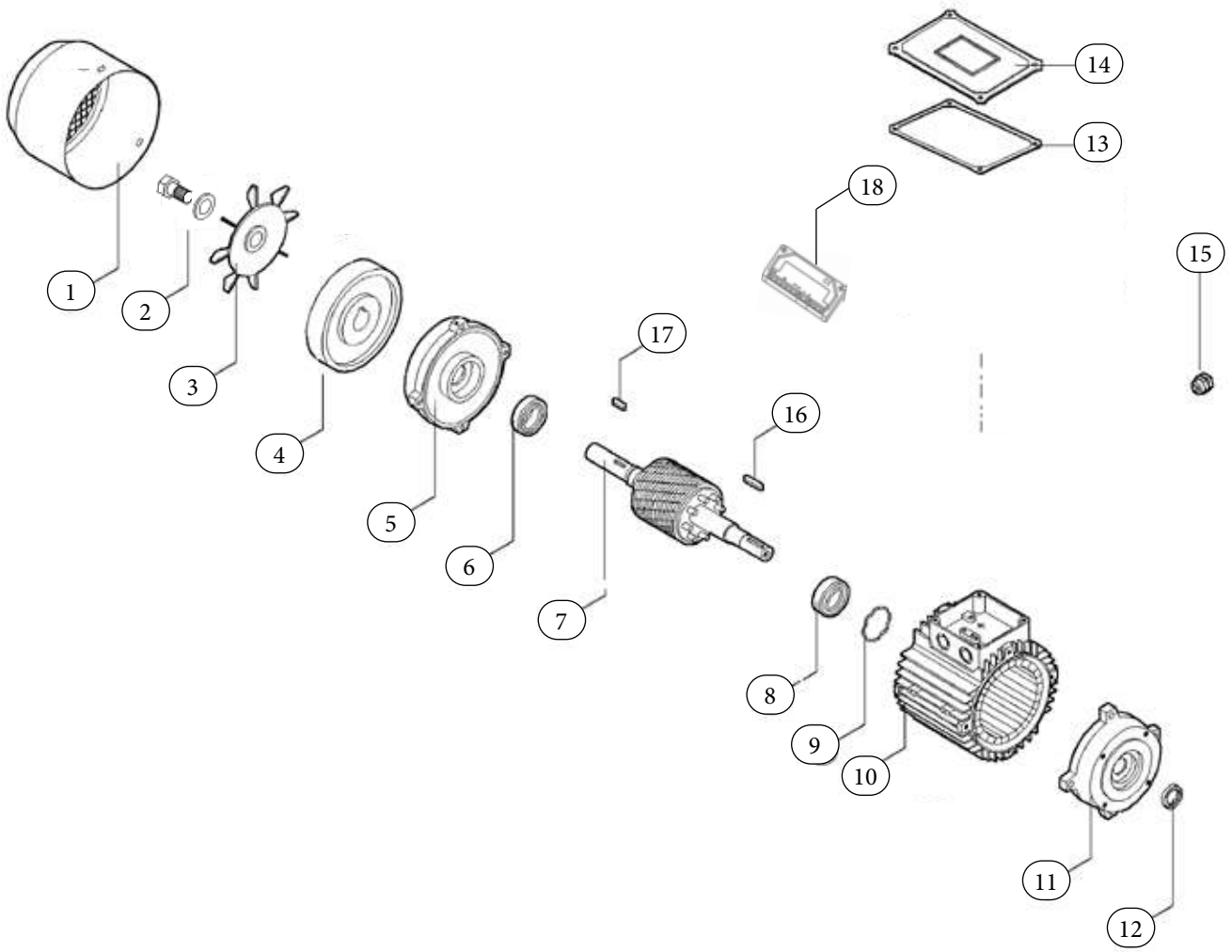
Fig.44

| | Taglia Size Größe | 55 | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 |
|------------------------|-------------------------|----|----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Cuscinetti Bearings | 9 | - | - | 6202-2RS | 6203-2RS | 6204-2RS | 6205-2RS | 6206-2RS | 6306-2RS | 6308-2RS | 6309-2RS | 6312-2RS | 6312-2RS |
| Lager | 11 | - | - | 6202-2Z | 6203-2Z | 6204-2Z | 6205-2Z | 6206-2Z | 6306-2Z | 6308-2Z | 6309-2Z | 6310-2Z | 6312-2Z |

| Ricambi | Spare parts | Ersatzteile | |
|---------|-------------|-------------|--|
|---------|-------------|-------------|--|

| Nr. | Ricambio | Spare parts | Ersatzteil | Tipo motore Motor type Motortyp | Note Notes Anmerkungen |
|-----|--|---|--|---------------------------------------|------------------------------|
| 1 | Vite sblocco freno | <i>Brake release screw</i> | Entriegelungsschraube Bremse | TFP-MFP-XFP-DFP | |
| 2 | Dado fissaggio coprifreno | <i>Brake cover fixing nut</i> | Mutter für Befestigung Bremsabdeckung | TFP-MFP-XFP-DFP | |
| 3 | Coprifreno | <i>Brake cover</i> | Bremsabdeckung | TFP-MFP-XFP-DFP | |
| 4 | Gruppo freno | <i>Brake unit</i> | Bremsaggregat | TFP-MFP-XFP-DFP | |
| 5 | Flangia frenante | <i>Braking flange</i> | Bremsflansch | TFP-MFP-XFP-DFP | |
| 6 | Convogliatore | <i>Conveyor</i> | Förderer | TFP-MFP-XFP-DFP | |
| 7 | Ventola | <i>Fan</i> | Lüfter | TFP-MFP-XFP-DFP | |
| 8 | Scudo posteriore | <i>Rear shield</i> | Hinteres Schild | TFP-MFP-XFP-DFP | |
| 9 | Cuscinetto | <i>Bearing</i> | Lager | TFP-MFP-XFP-DFP | |
| 10 | Rotore | <i>Rotor</i> | Rotor | TFP-MFP-XFP-DFP | |
| 11 | Cuscinetto | <i>Bearing</i> | Lager | TFP-MFP-XFP-DFP | |
| 12 | Molla di precarico | <i>Preload spring</i> | Vorspannfeder | TFP-MFP-XFP-DFP | |
| 13 | Carcassa con statore avvolto | <i>Casing with wound stator</i> | Gehäuse mit umwickeltem Stator | TFP-MFP-XFP-DFP | |
| 14 | Flangia B5 | <i>Flange B5</i> | Flansch B5 | TFP-MFP-XFP-DFP | |
| 15 | Flangia B14 | <i>Flange B14</i> | Flansch B14 | TFP-MFP-XFP-DFP | |
| 16 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | TFP-MFP-XFP-DFP | |
| 17 | Piedi riportati | <i>Foot</i> | Fuß | TFP-MFP-XFP-DFP | 63 ÷ 180 SX=DX 200 SX≠DX |
| 18 | Carcassa con piedi integrali e statore avvolto | <i>Casing with integral feet and wound stator</i> | Gehäuse mit vollständigen Füßen und umwickeltem Stator | TFP-MFP-XFP-DFP | solo/only/nur 56 |
| 19 | Morsettiera | <i>Terminal board</i> | Klemmenbrett | TFP-MFP-XFP-DFP | |
| 20 | Guarnizione | <i>Gasket</i> | Dichtung | TFP-MFP-XFP-DFP | |
| 21 | Scatola morsettiera | <i>Terminal board box</i> | Klemmenkasten | TFP-MFP-XFP-DFP | |
| 22 | Morsettiera | <i>Terminal board</i> | Klemmenbrett | TFP-MFP-XFP-DFP | |
| 23 | Guarnizione | <i>Gasket</i> | Dichtung | TFP-MFP-XFP-DFP | |
| 24 | Coperchio morsettiera | <i>Terminal board cover</i> | Deckel Klemmenbrett | TFP-MFP-XFP-DFP | |
| 25 | Condensatore | <i>Capacitor</i> | Kondensator | MFP-XFP | |
| 26 | Pressacavo | <i>Cable gland</i> | Kabelverschraubung | TFP-MFP-XFP-DFP | |
| 27 | Linguetta | <i>Feather key</i> | Feder | TFP-MFP-XFP-DFP | |
| 28 | Linguetta lato freno | <i>Brake side feather key</i> | Feder Seite Bremse | TFP-MFP-XFP-DFP | |
| 29 | Raddrizzatore freno c.c. | <i>D.C. brake rectifier</i> | Gleichrichter Gleichstrombremse | TFP-MFP-XFP-DFP | c.c. / d.c. Gleichstrom |

DFS



| Taglia Size Größe | | 55 | 56 | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 |
|-------------------------|---|----|----|----------|----------|----------|----------|----------|----------|----------|----------|
| Cuscinetti Bearings | 6 | - | - | 6202-2RS | 6003-2RS | 6204-2RS | 6205-2RS | 6206-2RS | 6306-2RS | 6308-2RS | 6309-2RS |
| Lager | 8 | - | - | 6202-2Z | 6203-2Z | 6204-2Z | 6205-2Z | 6206-2Z | 6306-2Z | 6308-2Z | 6309-2Z |

Ricambi
Spare parts
Ersatzteile

| Nr. | Ricambio | Spare parts | Ersatzteile | Tipo motore Motor type Motortyp | Note Notes Anmerkungen |
|-----|------------------------------|---------------------------------|---------------------------------|---------------------------------------|------------------------------|
| 1 | Copriventola | <i>Fan cover</i> | Lüfterhaube | DFS | |
| 2 | Fissaggio ventola | <i>Fan fixing</i> | Lüfterbefestigung | DFS | |
| 3 | Ventola | <i>Fan</i> | Lüfter | DFS | |
| 4 | Gruppo freno "FS" | <i>"FS" Brake unit</i> | Bremsaggregat „FS“ | DFS | |
| 5 | Scudo posteriore | <i>Rear shield</i> | Hinteres Schild | DFS | |
| 6 | Cuscinetto | <i>Bearing</i> | Lager | DFS | |
| 7 | Rotore | <i>Rotor</i> | Rotor | DFS | |
| 8 | Cuscinetto | <i>Bearing</i> | Lager | DFS | |
| 9 | Molla precarico | <i>Preload spring</i> | Feder Vorspannung | DFS | |
| 10 | Carcassa con statore avvolto | <i>Casing with wound stator</i> | Gehäuse mit umwickeltem Stator | DFS | |
| 11 | Flangia B14 | <i>Flange B14</i> | Flansch B14 | DFS | |
| 12 | Anello di tenuta | <i>Sealing ring</i> | Dichtungsring | DFS | |
| 13 | Guarnizione | <i>Gasket</i> | Dichtung | DFS | |
| 14 | Coperchio morsettiera | <i>Terminal board cover</i> | Deckel Klemmenbrett | DFS | |
| 15 | Pressacavo | <i>Cable gland</i> | Kabelverschraubung | DFS | |
| 16 | Linguetta | <i>Feather key</i> | Feder | DFS | |
| 17 | Linuetta lato freno | <i>Brake side feather key</i> | Feder Seite Bremse | DFS | |
| 18 | Raddrizzatore freno c.c. | <i>D.C. brake rectifier</i> | Gleichrichter Gleichstrombremse | DFS | c.c. / d.c. Gleichstrom |



Installazione e manutenzione

I motori elettrici di **MT** sono progettati e costruiti per funzionare, in accordo con i dati di targa, in

- in ambienti con una temperatura compresa tra -20 °C e $+40\text{ °C}$;
- ad altitudine massima di 1000 m sul livello del mare;
- con tolleranza per tensione di alimentazione $\pm 5\%$ e per frequenza $\pm 2\%$ (EN 60034-1).

Utilizzare il motore solo per le applicazioni per cui è stato progettato. Rispettare quanto indicato sulla targa.

L'inosservanza delle istruzioni del presente documento e delle norme di riferimento potrebbe rendere il motore non idoneo all'utilizzo previsto.

Rispettare sempre le prescrizioni al fine di non compromettere la sicurezza. Per qualunque altro utilizzo in ambienti che presentino temperature differenti, o siano situati ad altitudini superiori ai 1000 m s.l.m. contattare l'ufficio tecnico **MT**. In caso di utilizzo in ambienti potenzialmente esplosivi per la presenza di polveri o gas, rifarsi alla 2014/34/UE (Direttiva ATEX) e richiedere motori elettrici progettati, costruiti e testati secondo tale direttiva, eventuali aggiornamenti e successive emanazioni.

AVVERTENZE DI SICUREZZA

L'installazione, la manutenzione e lo smaltimento del motore elettrico devono essere eseguiti da personale qualificato, previa lettura del manuale d'uso e manutenzione. **MT** mette a disposizione questo documento nel sito internet www.electricmotorsmt.com, sezione Download, sottosezione Manuali d'uso e manutenzione.

ATTENZIONE: il motore elettrico è una macchina elettrica rotante e pertanto presenta parti sotto tensione e in movimento e può raggiungere temperature elevate. Il motore è destinato a essere incorporato in altri apparecchi o macchinari e non deve essere messo in funzione prima che l'apparecchio o il macchinario sia conforme alle direttive 2006/95/CE (Direttiva bassa tensione); 2006/42/CE (Direttiva macchine); 2004/108/CE (Direttiva compatibilità elettromagnetica).

È necessario rispettare tali direttive ed eventuali aggiornamenti, oltre che attenersi scrupolosamente alle normative vigenti applicabili. Eseguire ogni intervento sul motore elettrico a macchina ferma e scollegata dalla rete elettrica. Contattare l'ufficio tecnico della **MT** qualora siano necessari chiarimenti o comunque in caso di dubbio.

Installation and maintenance

*The **MT** electric motors are designed and built to operate, in accordance with the plate data, in*

- *environments with temperature between -20 °C and $+40\text{ °C}$;*
- *maximum altitude of 1000 m above sea level;*
- *tolerance for power supply voltage $\pm 5\%$ and for frequency $\pm 2\%$ (EN 60034-1).*

Only use the motor for the applications for which it was designed. Respect what is indicated on the plate.

Failure to follow the instructions in this document and the reference standards could make the motor unsuitable for the intended use.

*Always comply with the requirements in order not to compromise safety. For any other use in environments with different temperature or located at altitudes above 1000 m a.s.l., contact the **MT** technical department.*

In case of use in potentially explosive environments for the presence of dust or gas, refer to 2014/34/EU (ATEX Directive) and request electric motors designed, built and tested according to this directive, any updates and subsequent issues.

SAFETY WARNINGS

*The electric motor installation, maintenance and disposal must be carried out by qualified personnel, after reading the user's and maintenance manual. **MT** provides this manual on the website www.electricmotorsmt.com, Download section, Operating Instructions and User's manual subsection.*

WARNING: *the electric motor is an electric rotating machine and it is therefore supplied with live and moving parts and can reach high temperatures. The motor is designed to be combined with other devices or machinery and it should never be operated if the device or the machinery does not comply with 2006/95/EE (Low voltage directive); 2006/42/EC (Machinery directive); 2004/108/EC (electromagnetic compatibility directive).*

It is necessary to comply with the aforementioned directives and following updates, and with the current regulations.

*Operations on the electric motor must be carried out when the machine is not operating nor connected to the power network. Contact the **MT** technical department should clarifications be necessary or, in any event, in case of doubt.*

Installation und Wartung

Die **MT** Elektromotoren wurden, entsprechend den Typenschildangaben, für die Verwendung unter folgenden Bedingungen entwickelt und hergestellt:

- Umgebungen mit einer Temperatur zwischen -20 °C und $+40\text{ °C}$;
- maximale Höhe von 1000 m über dem Meeresspiegel;
- Toleranz für Versorgungsspannung $\pm 5\%$ und für Frequenz $\pm 2\%$ (EN 60034-1).

Den Motor nur für die Anwendungen verwenden, für die er entwickelt wurde. Die Angaben auf dem Typenschild beachten.

Die Nichtbeachtung der im vorliegenden Handbuch aufgeführten Anweisungen und der Bezugsnormen könnte den Motor ungeeignet für die vorgesehene Verwendung machen.

Die Vorschriften immer beachten, um die Sicherheit nicht zu beeinträchtigen. Für jede andere Verwendung in Umgebungen mit anderen Temperaturen oder in Umgebungen, die höher als 1000 m über dem Meeresspiegel liegen, die technische Abteilung von **MT** kontaktieren.

Bei Verwendung in potentiell explosionsfähigen Umgebungen aufgrund des Vorhandenseins von Stäuben oder Gasen auf die Norm 2014/34/EU (Richtlinie ATEX) Bezug nehmen und Elektromotoren anfordern, die gemäß dieser Richtlinie, eventuellen Aktualisierungen und späteren Erlassen entwickelt, hergestellt und getestet wurden.

SICHERHEITSHINWEISE

Die Installation, Wartung und Entsorgung des Elektromotors müssen von qualifiziertem Personal durchgeführt werden, das zuvor das Bedienungs- und Wartungshandbuch gelesen hat. **MT** stellt dieses Handbuch auf der Webseite www.electricmotorsmt.com, Bereich Download, Unterbereich Bedienungs- und Wartungshandbücher, zur Verfügung.

ACHTUNG: Der Elektromotor ist eine drehende Elektromaschine, deshalb stehen einige Maschinenteile unter Spannung, sind in Bewegung und können hohe Temperaturen erreichen. Der Motor ist für den Einbau in andere Geräte oder Maschinen bestimmt und darf nicht in Betrieb gesetzt werden, bevor das Gerät oder die Maschine den Richtlinien 2006/95/CE (Niederspannungsrichtlinie); 2006/42/CE (Maschinenrichtlinie); 2004/108/CE (Richtlinie über die elektromagnetische Verträglichkeit) entspricht.

Diese Richtlinien und die jeweiligen Aktualisierungen müssen beachtet werden, weiterhin sind die anwendbaren geltenden Vorschriften sorgfältig einzuhalten.

Jeder Eingriff am Elektromotor darf nur bei stillstehender und vom Stromnetz getrennter Maschine durchgeführt werden. Für weitere Erklärungen und bei Zweifeln die technische Abteilung von **MT** kontaktieren.

Installazione e manutenzione

Installation and maintenance

Installation und Wartung

RICEZIONE E IMMAGAZZINAMENTO

Verificare sempre le informazioni riportate nella documentazione tecnica e accertarne la rispondenza con le caratteristiche proprie dell'ambiente in cui il motore deve essere installato. MT Motori Elettrici fornisce motori collaudati e pronti per l'installazione.

Al momento della ricezione si raccomanda di esaminare il motore per controllare che non abbia subito danni durante il trasporto. Non mettere in servizio motori che appaiano danneggiati o non si ritengano idonei all'uso previsto.

In caso di dubbio contattare MT Motori Elettrici.

Controllare attentamente i dati di targa del motore per accertarsi che risponda ai requisiti richiesti in fase di ordine e che sia correttamente dimensionato per l'applicazione richiesta. Verificare in particolare che le diciture riguardanti l'uso in atmosfere potenzialmente esplosive siano corrette per l'utilizzo desiderato.

Se il motore non viene posto immediatamente in servizio, dovrà essere immagazzinato in luogo coperto, asciutto, privo di polvere, di vibrazioni e di agenti corrosivi.

Prima della messa in servizio, dopo lunghi periodi di inattività o di immagazzinamento, è consigliabile verificare l'isolamento verso massa provandolo con apposito strumento per la prova di rigidità dielettrica.

Effettuare tale verifica in assenza di atmosfera potenzialmente esplosiva.

INSTALLAZIONE

Non operare sul motore se è sotto tensione. Effettuare le operazioni di installazione in assenza di atmosfera potenzialmente esplosiva. Controllare sempre le certificazioni e i dati tecnici. Accertarsi che vi sia compatibilità tra motore, atmosfera e zona. Installare il motore nel rispetto delle norme:

- EN 1127-1 (Atmosfere esplosive - Prevenzione dell'esplosione e protezione contro l'esplosione - Concetti fondamentali e metodologia)
- IEC/EN 60079-14 (Costruzioni elettriche per atmosfere esplosive per la presenza di gas Parte 14): Impianti elettrici nei luoghi con pericolo di esplosione per la presenza di gas (diversi dalle miniere);
- IEC/EN 60079-17 (Verifica e manutenzione degli impianti elettrici);
- IEC/EN 61241-14 (Costruzioni elettriche destinate ad essere utilizzate in presenza di polveri combustibili Parte 14: Scelta ed installazione).

RECEPTION AND STORAGE

Always check the information in the technical documentation and make sure it matches the characteristics of the environment in which the motor must be installed. MT Motori Elettrici supplies tested motors, ready for installation.

Upon receipt, it is recommended to examine the motor to check that it has not been damaged during transport. Do not start motors that appear damaged or are not deemed suitable for the intended use.

In case of doubt, contact MT Motori Elettrici. Carefully check the motor plate data to ensure that the motor meets the order requirements and that it is correctly

sized for the required application. In particular, check that the wording regarding use in potentially explosive atmospheres is correct for the desired use.

If the motor is not immediately put into service, it must be stored indoors, in a dry place, free of dust, vibrations and corrosive agents.

Before starting the motor, after long periods of inactivity or storage, it is advisable to check the earthing insulation by testing it with a specific tool for dielectric strength test.

Perform this check in the absence of a potentially explosive atmosphere.

INSTALLATION

Do not work on the motor if energized. Perform all installation operations in the absence of potentially explosive atmosphere. Always check certificates and technical data. Ensure compatibility between motor, atmosphere and zone. Install the motor in compliance with:

- EN 1127-1 (Explosive atmospheres - Explosion prevention and explosion protection - Main notions and methods)
- IEC/EN 60079-14 (Electric constructions for explosive atmospheres due to the presence of gas Part 14): Electric systems in environments with explosion hazard due to the presence of gas (other than mines);
- IEC/EN 60079-17 (Check and maintenance of electric systems);
- IEC/EN 61241-14 (Electric constructions to be used in presence of combustible dust Part 14: Selection and installation).

ERHALT UND LAGERUNG

Die in den technischen Unterlagen aufgeführten Informationen immer überprüfen und ihre Übereinstimmung mit den Merkmalen der Umgebung sicherstellen, in der der Motor installiert werden muss. MT Elektromotoren liefert getestete, installationsfertige Motoren.

Bei Erhalt der Ware sollte der Motor überprüft werden, um sicherzustellen, dass er während des Transports nicht beschädigt wurde. Keine Motoren in Betrieb setzen, die beschädigt oder für die vorgesehene Verwendung ungeeignet sind.

Bei Zweifeln MT Elektromotoren kontaktieren.

Die Daten auf dem Typenschild des Motors sorgfältig überprüfen, um sicherzustellen, dass letzterer den bei der Bestellung gewünschten Anforderungen entspricht und für die jeweilige Anwendung korrekt dimensioniert ist.

Insbesondere überprüfen, ob die Beschriftungen in Bezug auf die Verwendung in explosionsfähigen Atmosphären für die gewünschte Benutzung korrekt sind.

Wird der Motor nicht sofort in Betrieb gesetzt, muss er an einem geschützten, trockenen Ort gelagert werden, der frei von Staub, Vibrationen und ätzenden Stoffen ist.

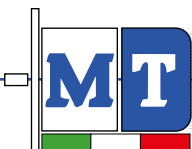
Vor der Inbetriebnahme nach längeren Stillstandszeiten oder Lagerungen sollte die Isolierung gegen Erde mittels eines geeigneten Geräts zur Durchschlagprüfung überprüft werden.

Die Prüfung muss in einer nicht explosionsfähigen Atmosphäre erfolgen.

INSTALLATION

Am Motor nicht arbeiten, wenn dieser unter Spannung steht. Die Installationsverfahren müssen in einer nicht explosionsfähigen Atmosphäre vorgenommen werden. Zertifizierungen und technische Daten immer überprüfen. Sicherstellen, dass Motor, Atmosphäre und Bereich kompatibel sind. Den Motor unter Beachtung der folgenden Normen installieren:

- EN 1127-1 (Explosionsfähige Atmosphären Explosionsschutz - Grundlagen und Methodik)
- IEC/EN 60079-14 (Elektrische Betriebsmittel für gasexplosionsgefährdete Bereiche - Teil 14): Errichtung elektrischer Anlagen in gasexplosionsgefährdeten Bereichen (keine Bergwerke);
- IEC/EN 60079-17 (Prüfung und Wartung von elektrischen Anlagen);
- IEC/EN 61241-14 (Elektrische Betriebsmittel zur Verwendung in Bereichen mit brennbarem Staub - Teil 14: Auswahl und Installation).



Installazione e manutenzione

Installare il motore in un locale ben ventilato, evitando che le vicinanze di pareti o di altre macchine impediscano il passaggio dell'aria. Evitare accuratamente le situazioni che compromettano lo scambio termico tra il motore e l'ambiente circostante (fonti di calore nelle vicinanze; strozzature nei passaggi dell'aria, ecc.).

Per installazioni all'aperto, proteggere il motore dalle intemperie e dall'irraggiamento solare. Per installazione ad asse verticale con la calotta copriventola verso l'alto, prevedere adeguati sistemi di protezione che impediscano l'ingresso di liquidi o oggetti attraverso i fori della calotta stessa.

Prevedere la possibilità di ispezioni e manutenzioni durante il funzionamento.

Il motore deve essere sempre ben allineato: accertarsi che l'accoppiamento sia ben saldo e non presenti vibrazioni che possano arrecare danno ai cuscinetti. Gli accoppiamenti e le pulegge applicati al motore devono essere accuratamente bilanciati e montati con particolare attenzione onde evitare danneggiamenti ai cuscinetti.

Effettuare montaggio e smontaggio del motore avendo cura di evitare urti e colpi che potrebbero danneggiare sia le parti esterne visibili del motore sia quelle interne non visibili come, ad esempio, i cuscinetti.

In caso di accoppiamento diretto curare l'allineamento dell'albero motore con quello della macchina accoppiata (es. riduttore); in caso di trasmissione a cinghia, mantenere lo sbalzo quanto più piccolo possibile ed evitare tensioni eccessive al fine di non indurre carichi radiali eccessivi sui cuscinetti.

MANUTENZIONE E RICAMBI

Revisioni e riparazioni devono essere effettuate solo da personale qualificato in ottemperanza alle normative vigenti.

Solo il personale qualificato e a conoscenza di tutte le normative relative al collegamento e all'uso di apparecchiature elettriche è autorizzato a operare sui motori di MT Motori Elettrici.

Non aprire il motore né la scatola morsettieria quando il motore è alimentato e quando è presente un'atmosfera esplosiva. È necessario che il motore e gli eventuali accessori siano sempre tenuti puliti e non presentino tracce di polvere, olio, sporcizia e altre impurità.

Verificare sempre che il passaggio dell'aria per il raffreddamento non sia ostruito al fine di evitare possibili surriscaldamenti. Ispezionare il motore a intervalli regolari. Verificare che il motore funzioni senza vibrazioni o rumori anomali.

Installation and maintenance

Install the motor in a well-ventilated environment, avoiding installing it close to walls or other machines preventing air to flow. Accurately avoid every situation that can compromise thermal exchange between motor and surrounding environment (heat sources nearby; air channels bottlenecks, etc.).

For outdoor installations, protect the motor against weather events and sunlight. For vertical axis installation with fan cover on top, provide adequate protection systems that prevent fluid infiltrations or object infiltrations through the fan cover holes.

Plan regular inspections and maintenance during operation.

The motor must always be perfectly aligned: make sure the coupling joint is stable and has no vibrations which may damage the bearings.

Couplings and pulleys applied to the motor must be carefully balanced and mounted with particular care in order to avoid bearing damages.

Assemble and disassemble the motor avoiding impacts and shocks, which may damage both visible external and non-visible internal parts of the motor, such as, for example, the bearings.

In case of direct coupling, make sure the crankshaft is aligned with the coupled machine shaft (e.g. gearbox); in case of belt drive, keep the smallest clearance possible and avoid excessive tensions in order not to apply excessive radial loads onto the bearings.

MAINTENANCE AND SPARE PARTS

Overhaul and repair operations can only be carried out by qualified personnel in compliance with current regulations.

Only qualified personnel knowing all of the regulations on connection and use of electric devices is authorised to operate MT Motori Elettrici motors.

Do not open the motor nor the terminal board box while the motor is being energized and in an explosive atmosphere. It is necessary to keep the motor and any possible accessories clean and with no traces of dust, oil, dirt or other impurities.

Always make sure the air channel for cooling is not obstructed in order to avoid overheating. Inspect the motor on a regular basis. Check that the motor works without abnormal vibrations or noise.

Installation und Wartung

Den Motor in einem gut belüfteten Raum installieren und vermeiden, dass die Nähe von Wänden oder anderen Maschinen den Luftstrom verhindert. Situationen, die den Wärmeaustausch zwischen dem Motor und der Umgebung beeinträchtigen, müssen sorgfältig vermieden werden (Nähe von Wärmequellen; Verengungen der Luftdurchgänge, etc.).

Bei Installationen im Freien muss der Motor vor Unwetter und Sonnenstrahlung geschützt werden. Bei vertikalem Einbau mit nach oben gerichteter Lüfterhaubenkappe sind entsprechende Schutzsysteme einzuplanen, die ein Eindringen von Flüssigkeiten oder Gegenständen durch die Öffnungen der Kappe verhindern.

Die Möglichkeit von Inspektionen und Wartungen während des Betriebs einplanen.

Der Motor muss immer gut ausgerichtet sein: sicherstellen, dass die Koppelung stabil ist und keine Vibrationen aufweist, die die Lager beschädigen können. Die am Motor angebrachten Koppelungen und Riemenscheiben müssen sorgfältig ausgeglichen und mit besonderer Aufmerksamkeit installiert werden, um Beschädigungen der Lager zu vermeiden.

Bei der Montage und Demontage des Motors Stöße und Schläge vermeiden, die die sichtbaren Außenteile und die nicht sichtbaren Innenteile des Motors, wie zum Beispiel die Lager, beschädigen könnten.

Bei direkter Koppelung muss die Ausrichtung der Motorwelle mit der gekoppelten Maschine (z.B. Getriebe) sorgfältig vorgenommen werden; bei Riemenantrieb müssen der Überhang so klein wie möglich gehalten und übermäßige Spannungen vermieden werden, um keine übermäßigen Radiallasten auf die Lager zu lenken.

WARTUNG UND ERSATZTEILE

Überholungen und Reparaturen müssen von qualifiziertem Personal unter Beachtung der geltenden Bestimmungen durchgeführt werden.

Nur qualifiziertes Personal, das alle Bestimmungen in Bezug auf den Anschluss und die Verwendung von elektrischen Geräten kennt, ist autorisiert, an den Motoren von MT Elektromotoren zu arbeiten.

Den Motor oder den Klemmenkasten nicht öffnen, wenn der Motor versorgt wird und eine explosionsfähige Atmosphäre vorliegt. Der Motor und das eventuelle Zubehör müssen immer sauber gehalten werden und keine Spuren von Staub, Öl, Schmutz und anderen Verunreinigungen aufweisen.

Stets überprüfen, ob der Durchgang der Kühlluft verstopft ist, um mögliche Überhitzungen zu vermeiden. Den Motor in regelmäßigen Zeitabständen überprüfen. Sicherstellen, dass der Motor ohne Vibrationen oder abweichende Geräusche läuft.

Installazione e manutenzione

Installation and maintenance

Installation und Wartung

Controllare che la tensione di eventuali cinghie di trasmissione sia corretta.

Verificare che gli organi di fissaggio del motore siano serrati correttamente.

Controllare le condizioni delle tenute dell'albero e se necessario sostituirle. Le parti di ricambio devono essere originali, provviste di certificazione adeguata e approvate da MT Motori.

In caso di dubbio rivolgersi all'ufficio tecnico MT Motori Elettrici.

Make sure the tension of any possible drive belts is correct.

Make sure the motor fastening elements are fastened correctly.

Check the shaft seal conditions and, if necessary, replace the seals. Spare parts must be original, with suitable certificate and approved by MT Motori Elettrici.

In case of doubt, contact the technical department of MT Motori Elettrici.

Überprüfen, ob die Spannung von eventuellen Antriebsriemen korrekt ist.

Überprüfen, ob die Befestigungselemente des Motors korrekt festgezogen sind.

Den Zustand der Dichtungen der Welle überprüfen, wenn nötig austauschen. Nur von MT Motoren zugelassene Originalersatzteile mit entsprechender Zertifizierung verwenden.

Bei Zweifeln die technische Abteilung von MT Elektromotoren kontaktieren.

SMALTIMENTO

Smaltire il motore elettrico in base alla natura del materiale e tenendo conto delle normative vigenti nel paese di installazione.

Contattare MT Motori Elettrici per maggiori delucidazioni sui materiali utilizzati.

DISPOSAL

The motor must be disposed of according to the material used and in compliance with current regulations in the country of installation.

For further information regarding the materials used, contact MT Motori Elettrici.

ENTSORGUNG

Den Elektromotor abhängig von der Beschaffenheit des Materials und unter Berücksichtigung der im Installationsland geltenden Bestimmungen entsorgen.

Für detailliertere Erklärungen in Bezug auf die verwendeten Materialien MT Elektromotoren kontaktieren.

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