# A concentrate of power for any application.

## Air motors

**Reversible models** - Power: from 120W up to 645W
Idle speed: from 40 up to 16.500 rpm

**Non-reversible models** - Power: from 150W up to 800W
Idle speed: from 50 up to 20.000 rpm

FIAM®
PEOPLE AND SOLUTIONS

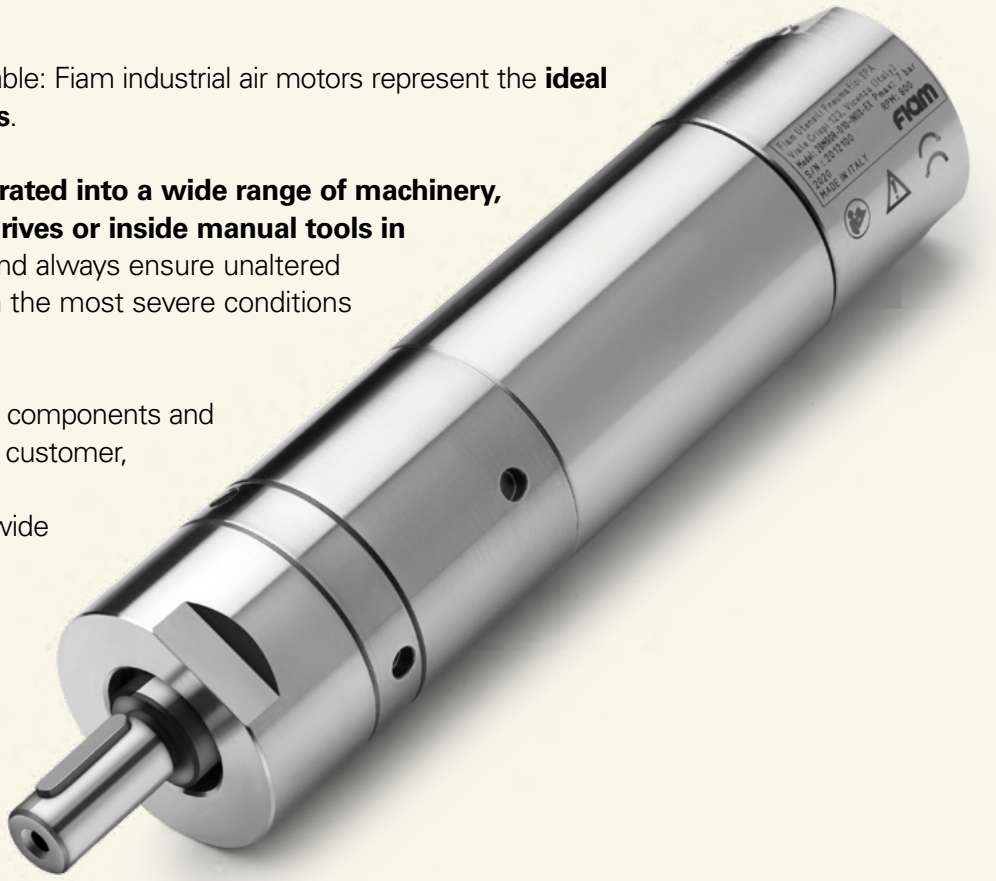
# Index



## An incomparable range

- Over 1000 off-the-shelf catalogue items to choose from
- One million machines built and operating around the globe, and more than 70 years' experience
- 100% designed and „Made in Italy“
- Solutions tested and inspected by our in-house certified laboratories
- Use of environmentally compatible packaging, with specific packaging made to order

# Fiam air motors: high-performance for every need.



Compact, performing, light, reliable: Fiam industrial air motors represent the **ideal solution for many applications**.

They were created **to be integrated into a wide range of machinery, in feed devices, mechanical drives or inside manual tools in various production sectors**, and always ensure unaltered performance over time, even in the most severe conditions of use.

Because of their small size, few components and thorough design jointly with the customer, Fiam motors can become **high-performance drives** in a wide range of pneumatic tools.

Available in **non-reversible or reversible** version, they can advantageously be used for mixing liquid substances, moving, drilling, milling, grinding, sawing and so on.

They are are **extremely sturdy** and they guarantee constant performances also in difficult working conditions. **Compact and light**, they are easy to use in every situation; moreover, thanks to their extremely **reduced dimensions**, they are a quarter of the equivalent electric motor.

The range also includes numerous ATEX certified stainless steel models.

# Why choose them.

**The motor Fiams last a life**

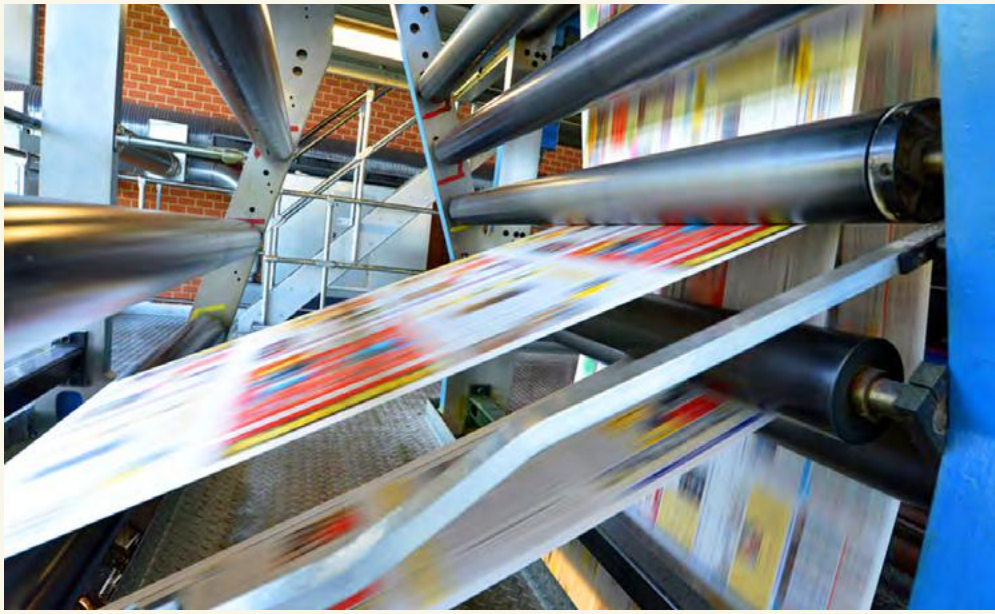
The design consolidated experience, the accuracy in the workmanships, the continuous investments in machineries to the state-of-the-art one **assure nonstop operations for thousand and thousand of cycles**. The pneumatic motors Fiam are assembled and coupled with tolerances in the order of the thousandth one of millimeter and this involves the **maximum optimization of the outputs**: there is no dispersion of compressed air and therefore consumptions of air extremely meeting places. For smaller costs of maintenance and reparation and functional and **highly and profitable investments**.

**An organised structure at your side**

A dedicated Production Manager is available as the sole reference through which you can interface with our design engineers, laboratory technicians, sales engineers and industrialisation and prototyping managers. This means you can count on **quick and certain answers about every stage of progress of the order** entrusted to Fiam.
A professional who can understand every technical need when implementing custom solutions.

**Completely Made in Italy**

Everything has been conceived, designed and produced in Fiam, which has **an area dedicated** solely to **producing** custom motors, including **small runs and prototypes**.
The benefit? An ability to handle small lots and fast delivery times. Our lean and highly flexible organisational structure can **calibrate deliveries** to meet customer schedules, and provide customised **eco-packaging**, **installations** and scheduled **maintenance plans**.



## Co-engineering

Customer support can begin from the product design stage right up to industrialisation. **In-house prototyping** ensures that Fiam can simulate integration of the motor in the final machine/ application and test the solution before production at no extra cost.

## An appropriate service available worldwide

The motors are **completely modular** for faster maintenance and replacement of the spare parts in case of wear. The use of many common components **favours the supplying and the management of the spare parts**. Our worldwide distributors take care of maintenance and provide original spare parts **quickly at controlled prices**.

## Naturally innovative

All the components are **easy to dispose of** because they are built using recyclable materials; therefore they do not represent any danger for environmental pollution. The use of oil separator filters for conveying the air exhaust guarantees the **absence of oil fog into the working environment**.

# All the technical benefits.

**Easy to set and to control**

- The main parameters as torque, speed and sense of rotation can be **modified and simply checked without the control unity**, as in case of the electric motor.
- Instant inversion of rotation.
- They run only when activated, assuring the **energy saving**.

**Simple methods to set the performances**

- The performances of pneumatic motor depend on the dynamic air pressure measured at the air inlet of the motor. Therefore with a simple regulation of the air pressure and flow, there will be obtained **proportional torque and speed variation**.
- With the pressure regulator installed at the air inlet, there can be **controlled the stalling torque**.
- With the air flow regulator installed at the air discharge, there can **be hold the static torque and set the motor's speed**.

**Running always guaranteed**

- High torque is available immediately at start, with fast acceleration and no wearing out.
- Immediate **start** is **guaranteed also at low air pressure**.
- High resistance materials ensure reliability also on **applications with high radial and axial loads**.
- Unlike the electric motors, they perform normally in environments with electric or magnetic interferences, **without of course affecting the nearby equipment**.

**Extremely safe**

- Compared to the electric motors with equal power, they perform in a **heavy working conditions** and support continuous starts and stops. When stalling, they will **not overheat: pneumatic motor actually cools off when running, thus preventing any risk of short circuit**.
- The constructive features of the motor prevent the explosive gases to reach the rotating parts - ATEX versions are available for particularly dangerous environments.

**Ideal for sterilized environments**

- Working at **high temperatures and humidity**, they fit sterilized environments such as those in the food sector where there are frequent cleaning and sterilization processes.
- Reliable even when **immersed in liquids**: actually, they work in water or any other fluid including the corrosive ones. It will be necessary to use suitable constituent materials in order to prevent corrosions.

**Low consumptions**

- Consumption is critical when the electric motors are used continuously and with frequent start-and-stop. An **electric motor in fact**, consumes **3 times more energy than a pneumatic** one when it stops and starts often during a shift.

**The right choice for machines builders**

- Their **size is one fourth of an equivalent electric motor**. This is a huge plus for engineers and designers who can benefit of great speed performances in less space.

# Endless applications.

These motors are very versatile; they can be **customized for particular applications** requiring specific motor design and construction. Fiam is able to develop these solutions with customized motors to satisfy customer's specific needs: a great competitive advantage, especially when the motor has to be integrated within a certain type of equipment or within a particular type of tool.

## FOOD SECTOR

Air motors are used for **mixing liquids, driving, closing, covering therefore can be installed within food treatment machineries**, bottling, food packing and wrapping, but also meat processing as for example **clipping** or sausage filler machines.
**Oil-free versions, food-grade materials and plastics** and resistance to damp environments make them suitable for this sector.

## PACKAGING INDUSTRY

Doing several **handling jobs**, they can be used for driving, lifting, dragging or in air tools like **strapping tools or others for the packing industry**.

## CHEMICAL AND PHARMACEUTICAL INDUSTRY

They can also be used as **mixers, paint stirrers** on chemical processing machines or on fluid pumps. Thanks to such customizations, they can be also used in explosive rate or radioactive environments.

## AGRICULTURAL AND ZOOTECHNICAL INDUSTRY

They are in the agricultural industry where they can be used within **air tools for the leather manufacturing, sheep shear or general machines maintenance**.

## OTHER INDUSTRIAL SECTORS

There are plenty of applications for pneumatic motors, either in the manufacturing and industrial maintenance. They are used in the bookbinding industry, in the woodworking and window construction industries, in plastic processing, assembly and sheet metal working.
Some example? **Mandrel machines, brushing machines, sanding machines, welding gun cleaner, special grinders, cutters, extruders, polishing machines, high-pressure cleaner**.

# Customisations.


Fiam can offer **numerous customisations designed and made to measure, even with small production runs.**
A **wide range of accessories** is also available for all motors.

**Very low rpm and guaranteed start, even at lower pressures of feeding**

**With different performance characteristics: torque, rpm and power**

**With various materials and/or coatings**

**With different degrees of IP Protection**

**For humid environments and in the presence of liquids**

**Oil free**

**Waterproof**

**With certification ATEX in compliance with the European standards**

**With different output shafts (example: tapered, morse taper, diameters, with gear)**

**With custom dimensions**

**Tested to radioactive environments**

**With customized mounting devices**

**For the use with not lubricated air**

# Features and performances of Fiam air motors

Performances of an air motor depend on the dynamic air inlet pressure measured at the intake of air motor; therefore by simply adjusting the air supply, using the techniques of throttling or pressure regulation, we can obtain the characteristic linear output torque/speed relationship. The performance data of the motors is valid for an air supply pressure of 6,3 bar (ISO 2787).

The main features of an air motor are:
- **Power** in Watt
- **Speed at point of maximum power**, rpm
- **Torque at maximum power**, Nm
- **Starting torque**, Nm
- **Idle speed**, rpm
- **Air consumption at maximum power**, l/s

## The power

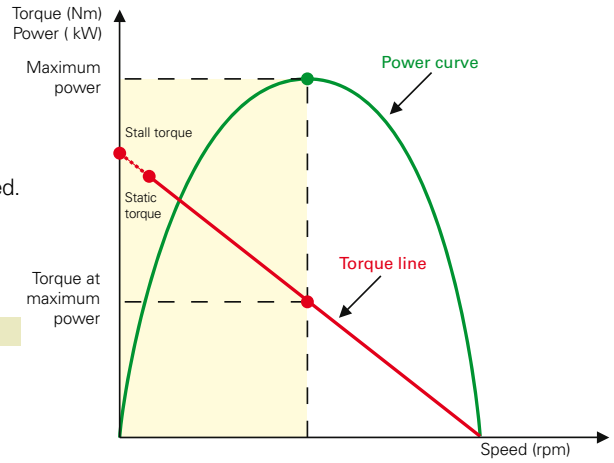
The power in Watt that an air motor produces is simply the product of torque and speed. Every motor produces a characteristic power curve, with maximum power occurring at around 50% of the idle speed. The torque produced at this point is referred to as torque at **maximum power.**

The power of an air motor is obtained with the following formula:

$$P = (\pi \times M \times n)/30$$

Legend
*P = Power in Watt*
*M = Torque in Nm*
*n = Speed (rpm)*

**Chart A**




## The speed

Every air motor has an idle speed which is obtained by inserting one or more reduction gears - depending on the reduction ratio - between the driving unit and the output shaft.
At the maximum speed ("idle speed") the torque (turning moment) as taken at the output shaft, is nil, while, as load is applied, the speed will decrease inversely proportional to the torque (see chart A).

## Torque at maximum power, starting torque and stall torque

The **torque at maximum power** is obtained at around 50% of idle speed that corresponds to maximum power of the motor (see chart A).
The **starting torque** is the torque that the motor gives to the output shaft under load and when you feed full air pressure into it (see chart A).
The **stall torque** is the torque that the motor gives at the output shaft when it is blocked during its rotation.
The stall torque is approximately double respect to the torque at maximum power.

# How to choose an air motor

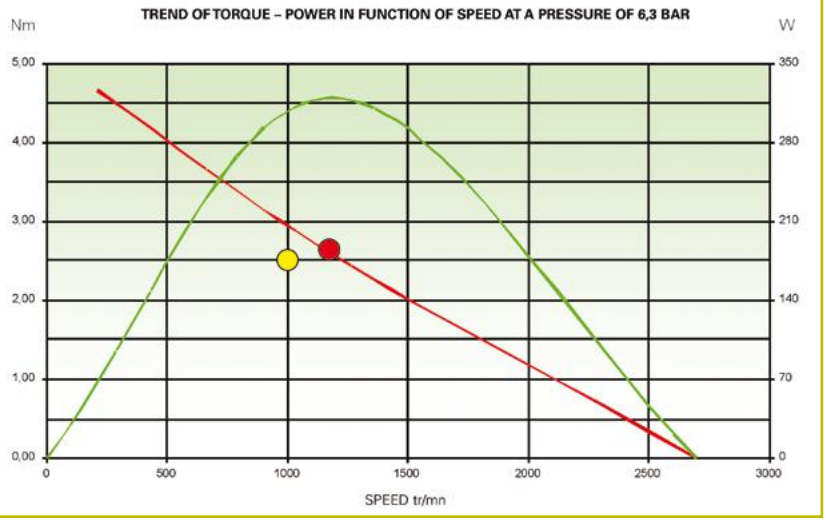
When selecting a motor, it is important to identify the **'working point'** appropriate for your application.
This 'working point' is given by under load operating speed required by motor and by torque necessary at that speed.

**FOR EXAMPLE**
A non-reversible solution to operate at 1000 r.p.m. and at 2,5 Nm is required.

It is necessary to **consider the performance curves of every model** and to identify the **'working point'** that for this example corresponds to the yellow coupon in the chart here beside.
The choice of the motor will be the one where the 'working point' is the nearest to the torque at the maximum power (indicated by the red coupon on the chart).

The motor to be chosen is therefore model: **28M265D-D10.**

If necessary, one of the methods to reach your 'working point' **is to act on the feed pressure** by applying the coefficients of variation of the performances paramaters of the motor (see chart 1 on the page here beside).



## Regulation of the performances features of the motor

The performances features can be modified with continuity by means of a pressure or throttling regulator that reduces or increases the air quantity in the motor.
Consequently there is a decrease or an increase of the power, torque and speed values.
To calculate them the coefficients in chart 1 must be used.

There are **two methods to adjust** motor's performances:
- With an **air flow governor** installed before the air inlet coupling the **control of the stall torque is obtained**
- With an **air flow governor** installed on the air exhaust coupling the **stating torque is maintained and the motor's speed is adjusted;**

*Chart 1*

| Pressure (bar) | Power | Torque | Speed | Consumption |
|---|---|---|---|---|
| 7 | 1,21 | 1,17 | 1,03 | 1,15 |
| 6 | 1,00 | 1,00 | 1,00 | 1,00 |
| 5 | 0,77 | 0,83 | 0,95 | 0,82 |
| 4 | 0,55 | 0,67 | 0,87 | 0,65 |
| 3 | 0,37 | 0,50 | 0,74 | 0,47 |

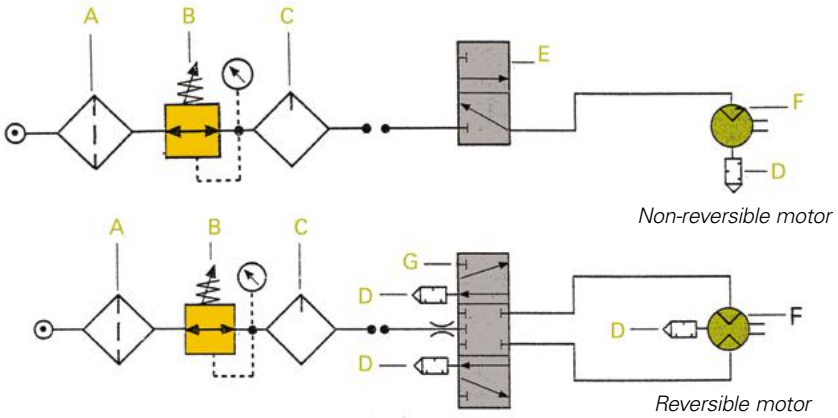
*Coefficients of variation of the performances parameters of an air motor in function of the feed pressure*

## Air feed and its consumption

The air consumption of the air motor is at **maximum** when the motor turns at **idle speed.**
To obtain the performances on catalogue it is necessary **to guarantee a correct air feeding** and air exhaust and to **follow these indications:**

- Respect always **recommended air hose bore** for air feed and exhaust hoses
- It is advisable that the **diameter of the exhaust hose** is greater than the air supply hose. In the case of reversible motor, two inlets have to permit alternatively the entrance and the exhaust of the air i.e. that the inlet which is not used is left free so that the exhaust air can flow
- **Avoid joints and quick couplings**; they reduce the air flow
- It is always advisable to **use a FRL group** (filter, pressure regulator, lubricator) appropriate to motor consumption
- It is advisable to connect the exhaust hoses to **oil separator filter with built-in silencing system** that reduces the noise level and **lubricates the motor** without the emission of air exhaust in working environments and permits the oil to be collected and reused

***Pneumatic circuit scheme (feed control of the motor)***




*A= Filter*
*B = Pressure regulator*
*C = Lubricator*
*D = Silencer*
*E = Valve 3/2*
*F = Air motor*
*G = Valve 5/3*

**Figure 1**

# Models with smooth output shaft

(with key UNI 6604 form A:
Ø 6 mm for 15M; Ø 10 mm for 20M and 28M
Ø 13 mm for MM; Ø 14 mm for MN;
Ø 24 mm for MO)



## Non-reversible models

| Model | Code | Type of motor / Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Type | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
| 15M1900D-D6 | 182711100 | ↻ | 150 | 9000 | 0,15 | 1.33 | 0,30 | 2.66 | 19000 | 4,4 | 0,32 | 0.71 |
| 15M550D-D6 | 182711500 | ↻ | 150 | 2500 | 0,60 | 5.31 | 0,95 | 8.41 | 5500 | 4,4 | 0,32 | 0.71 |
| 15M375D-D6 | 182711300 | ↻ | 150 | 1650 | 0,80 | 7.08 | 1,20 | 10.62 | 3750 | 4,4 | 0,32 | 0.71 |
| 15M260D-D6 | 182711200 | ↻ | 150 | 1250 | 1,10 | 9.74 | 1,60 | 14.16 | 2600 | 4,4 | 0,32 | 0.71 |
| 15M140D-D6 | 182712100 | ↻ | 150 | 600 | 2,20 | 19.47 | 2,90 | 25.67 | 1400 | 4,4 | 0,43 | 0.95 |
| 15M95D-D6 | 182712900 | ↻ | 150 | 500 | 2,60 | 23.01 | 4,00 | 35.40 | 950 | 4,4 | 0,43 | 0.95 |
| 15M70D-D6 | 182712700 | ↻ | 150 | 350 | 4,20* | 37.17* | 6,50* | 57.53* | 700 | 4,4 | 0,43 | 0.95 |
| 20M2000D-D10 | 183311200 | ↻ | 200 | 11000 | 0,20 | 1.77 | 0,30 | 2.66 | 20000 | 5,3 | 0,40 | 0.88 |
| 20M430D-D10 | 183311400 | ↻ | 200 | 2030 | 0,80 | 7.08 | 1,35 | 11.95 | 4300 | 5,3 | 0,40 | 0.88 |
| 20M260D-D10 | 183311210 | ↻ | 200 | 1350 | 1,25 | 11.06 | 2,10 | 18.59 | 2600 | 5,3 | 0,40 | 0.88 |
| 20M105D-D10 | 183312100 | ↻ | 200 | 530 | 3,10 | 27.44 | 5,40 | 47.79 | 1050 | 5,3 | 0,54 | 1.19 |
| 20M60D-D10 | 183312600 | ↻ | 200 | 305 | 5,30* | 46.91* | 8,80* | 77.88* | 600 | 5,3 | 0,54 | 1.19 |
| 28M1700D-D10 | 185611100 | ↻ | 280 | 8390 | 0,31 | 2.74 | 0,46 | 4.07 | 17000 | 6,3 | 0,58 | 1.28 |
| 28M600D-D10 | 185611600 | ↻ | 280 | 2900 | 1 | 8.85 | 1,5 | 13.28 | 6000 | 6,3 | 0,58 | 1.28 |
| 28M480D-D10 | 185611400 | ↻ | 280 | 2040 | 1,31 | 11.59 | 2 | 17.70 | 4800 | 6,3 | 0,58 | 1.28 |
| 28M330D-D10 | 185611300 | ↻ | 280 | 1510 | 2 | 17.70 | 2,9 | 25.67 | 3300 | 6,3 | 0,58 | 1.28 |
| 28M265D-D10 | 185611200 | ↻ | 280 | 1180 | 2,5 | 22.13 | 3,6 | 31.86 | 2650 | 6,3 | 0,58 | 1.28 |
| 28M155D-D10 | 185612100 | ↻ | 280 | 750 | 4,15 | 36.73 | 6 | 53.10 | 1550 | 6,3 | 0,78 | 1.72 |
| 28M120D-D10 | 185612110 | ↻ | 280 | 535 | 4,8 | 42.48 | 7,9 | 69.92 | 1200 | 6,3 | 0,78 | 1.72 |
| 28M100D-D10 | 185612120 | ↻ | 280 | 425 | 6,3 | 55.76 | 9 | 79.65 | 1000 | 6,3 | 0,78 | 1.72 |
| 28M55D-D10 | 185612500 | ↻ | 280 | 255 | 11,70* | 103.55* | 17,50* | 154.88* | 560 | 6,3 | 0,78 | 1.72 |
| MM45 | 185012401 | ↻ | 260 | 220 | 11,1 | 98.24 | 22,2 | 196.47 | 440 | 7 | 1,2 | 2.65 |
| MM32 | 185012301 | ↻ | 260 | 150 | 16,3 | 144.26 | 32,6 | 288.51 | 300 | 7 | 1,2 | 2.65 |
| MM25 | 185012201 | ↻ | 260 | 110 | 22,2 | 196.47 | 44,4 | 392.94 | 220 | 7 | 1,2 | 2.65 |
| MM13 | 185013101 | ↻ | 260 | 65 | 37,4 | 330.99 | 45 ③ | 398.25 | 130 | 7 | 1,48 | 3.26 |
| MM9 | 185013901 | ↻ | 260 | 35 | 45 ③ | 398.25 | 45 ③ | 398.25 | 70 | 7 | 1,48 | 3.26 |
| MM5 | 185013501 | ↻ | 260 | 25 | 45 ③ | 398.25 | 45 ③ | 398.25 | 50 | 7 | 1,48 | 3.26 |
| MN1600 | 186010112 | ↻ | 375 | 8000 | 0,5 | 4.43 | 0,9 | 7.97 | 16000 | 10 | 1,45 | 3.20 |
| MN480 | 186011412 | ↻ | 375 | 2400 | 1,6 | 14.16 | 3,1 | 27.44 | 4800 | 10 | 1,45 | 3.20 |
| MN270 | 186011212 | ↻ | 375 | 1350 | 2,8 | 24.78 | 5,7 | 50.45 | 2700 | 10 | 1,45 | 3.20 |
| MN190 | 186011112 | ↻ | 375 | 950 | 3,8 | 33.63 | 7,5 | 66.38 | 1900 | 10 | 1,45 | 3.20 |
| MN140 | 186012112 | ↻ | 375 | 700 | 5 | 44.25 | 10 | 88.5 | 1400 | 10 | 1,85 | 4.08 |
| MN85 | 186012812 | ↻ | 375 | 425 | 8,8 | 77.88 | 17,5 | 154.88 | 850 | 10 | 1,85 | 4.08 |
| MN45 | 186012412 | ↻ | 375 | 225 | 17,3 | 153.11 | 34,5 | 305.33 | 450 | 10 | 1,85 | 4.08 |
| MN32 | 186012313 | ↻ | 375 | 160 | 22 | 194.7 | 44,5 | 393.83 | 320 | 10 | 1,85 | 4.08 |
| MN22 | 186012212 | ↻ | 375 | 110 | 29 | 256.65 | 45 ③ | 398.25 | 220 | 10 | 1,85 | 4.08 |
| MO1550 | 187010102 | ↻ | 800 | 7750 | 1,6 | 14.16 | 3 | 26.55 | 15500 | 18 | 3,3 | 7.28 |
| MO450 | 187011402 | ↻ | 800 | 2250 | 5,2 | 46.02 | 10 | 88.5 | 4500 | 18 | 3,4 | 7.50 |
| MO280 | 187011202 | ↻ | 800 | 1400 | 9,3 | 82.31 | 18 | 159.3 | 2800 | 18 | 3,4 | 7.50 |
| MO130 | 187012102 | ↻ | 800 | 650 | 16 | 141.6 | 31 | 274.35 | 1300 | 18 | 4,1 | 9.04 |
| MO85 | 187012802 | ↻ | 800 | 425 | 26,5 | 234.53 | 52 | 460.2 | 850 | 18 | 4,1 | 9.04 |
| MO40 | 187013402 | ↻ | 800 | 200 | 50 | 442.5 | 90 ③ | 796.5 | 400 | 18 | 4,8 | 10.58 |
| MO25 | 187013202 | ↻ | 800 | 125 | 80 | 708 | 90 ③ | 796.5 | 250 | 18 | 4,8 | 10.58 |

*** The maximum torque permitted, for continuous use, is 4 Nm for 15M70D-D6, from 4 to 5 Nm for 20M60D-D10 and 8 Nm for 28M55D-D10**
**③ The torque indicated is the maximum at which the motor can be used in order to guarantee the life endurance of the internal gears**
**- See pages 18 and 19 for stainless steel motors, or see pages 21 and 22 for ATEX certified stainless steel motors.**


## Reversible models

| Model | Code | Type of motor | Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| **Model** | **Code** | **Type** | | **Watt** | **rpm** | **Nm** | **in lb** | **Nm** | **in lb** | **rpm** | **l/s** | **Kg** | **lb** |
| 15M1600R-D6 | 182911100 | | ↻ | 120 | 8300 | 0,15 | 1.33 | 0,20 | 1.77 | 16000 | 4,3 | 0,32 | 0,71 |
| 15M440R-D6 | 182911400 | | ↻ | 120 | 2200 | 0,60 | 5.31 | 0,80 | 7.08 | 4400 | 4,3 | 0,32 | 0,71 |
| 15M300R-D6 | 182911300 | | ↻ | 120 | 1490 | 0,75 | 6.64 | 1,00 | 8,85 | 3000 | 4,3 | 0,32 | 0,71 |
| 15M220R-D6 | 182911200 | | ↻ | 120 | 1100 | 1,05 | 9.29 | 1,50 | 13.28 | 2200 | 4,3 | 0,32 | 0,71 |
| 15M120R-D6 | 182912100 | | ↻ | 120 | 590 | 1,90 | 16.82 | 2,60 | 23.01 | 1200 | 4,3 | 0,43 | 0.95 |
| 15M80R-D6 | 182912800 | | ↻ | 120 | 410 | 2,50 | 22.13 | 3,60 | 31.86 | 800 | 4,3 | 0,43 | 0.95 |
| 15M58R-D6 | 182912500 | | ↻ | 120 | 300 | 4,00* | 35.40* | 5,50* | 48.68* | 580 | 4,3 | 0,43 | 0.95 |
| 20M1650R-D10 | 183511100 | | ↻ | 160 | 9000 | 0,15 | 1.33 | 0,25 | 2.21 | 16500 | 5,0 | 0,40 | 0.88 |
| 20M400R-D10 | 183511300 | | ↻ | 160 | 1950 | 0,80 | 7.08 | 1,20 | 10.62 | 4000 | 5,0 | 0,40 | 0.88 |
| 20M250R-D10 | 183511200 | | ↻ | 160 | 1330 | 1,40 | 12.39 | 2,20 | 19.47 | 2500 | 5,0 | 0,40 | 0.88 |
| 20M100R-D10 | 183512900 | | ↻ | 160 | 550 | 3,05 | 26.99 | 4,80 | 42.48 | 1000 | 5,0 | 0,54 | 1.19 |
| 20M58R-D10 | 183512500 | | ↻ | 160 | 300 | 5,70* | 50.45* | 7,50* | 66.38* | 580 | 5,0 | 0,54 | 1.19 |
| 28M1300R-D10 | 185811100 | | ↻ | 210 | 6200 | 0,27 | 2.39 | 0,45 | 3.98 | 13000 | 5,8 | 0,58 | 1.28 |
| 28M415R-D10 | 185811400 | | ↻ | 210 | 2075 | 0,85 | 7.52 | 1,2 | 10.62 | 4150 | 5,8 | 0,58 | 1.28 |
| 28M345R-D10 | 185811300 | | ↻ | 210 | 1675 | 1,25 | 11.06 | 1,65 | 14.60 | 3450 | 5,8 | 0,58 | 1.28 |
| 28M235R-D10 | 185811200 | | ↻ | 210 | 1230 | 1,8 | 15.93 | 2,4 | 21.24 | 2350 | 5,8 | 0,58 | 1.28 |
| 28M190R-D10 | 185811110 | | ↻ | 210 | 855 | 2,3 | 20.36 | 2,9 | 25.67 | 1850 | 5,8 | 0,58 | 1.28 |
| 28M110R-D10 | 185812100 | | ↻ | 210 | 500 | 3,9 | 34.52 | 5,1 | 45.14 | 1100 | 5,8 | 0,78 | 1.72 |
| 28M90R-D10 | 185812900 | | ↻ | 210 | 410 | 4,7 | 41.60 | 6,8 | 60.18 | 900 | 5,8 | 0,78 | 1.72 |
| 28M70R-D10 | 185812700 | | ↻ | 210 | 330 | 6,2 | 54.87 | 8 | 70.80 | 700 | 5,8 | 0,78 | 1.72 |
| 28M40R-D10 | 185812400 | | ↻ | 210 | 190 | 11,50* | 101.78* | 15,50* | 137.18* | 395 | 5,8 | 0,78 | 1.72 |
| MM45R/2 E | 185212401 | | ↻ | 240 | 210 | 10,5 | 92.93 | 21 | 185.85 | 420 | 7 | 1,22 | 2.69 |
| MM32R/2 E | 185212301 | | ↻ | 240 | 145 | 15,2 | 134.52 | 30,4 | 269.04 | 290 | 7 | 1,22 | 2.69 |
| MM25R/2 E | 185212201 | | ↻ | 240 | 105 | 20,9 | 184.97 | 41,8 | 369.93 | 210 | 7 | 1,22 | 2.69 |
| MM13R/2 E | 185213101 | | ↻ | 240 | 60 | 36,3 | 321.26 | 45 ③ | 398.25 | 120 | 7 | 1,50 | 3.3 |
| MM9R/2 E | 185213901 | | ↻ | 240 | 32 | 45 ③ | 398.25 | 45 ③ | 398.25 | 64 | 7 | 1,50 | 3.3 |
| MM5R/2 E | 185213501 | | ↻ | 240 | 22 | 45 ③ | 398.25 | 45 ③ | 398.25 | 44 | 7 | 1,50 | 3.3 |
| MN1500R | 186210112 | | ↻ | 375 | 7500 | 0,5 | 4.43 | 0,9 | 7.97 | 15000 | 10 | 1,45 | 3.20 |
| MN450R | 186211412 | | ↻ | 375 | 2250 | 1,6 | 14.16 | 3,1 | 27.44 | 4500 | 10 | 1,45 | 3.20 |
| MN250R | 186211212 | | ↻ | 375 | 1250 | 2,8 | 24.78 | 5,7 | 50.45 | 2500 | 10 | 1,45 | 3.20 |
| MN170R | 186211112 | | ↻ | 375 | 850 | 3,8 | 33.63 | 7,5 | 66.38 | 1700 | 10 | 1,45 | 3.20 |
| MN130R | 186212112 | | ↻ | 375 | 650 | 5 | 44.25 | 10 | 88.5 | 1300 | 10 | 1,85 | 4.08 |
| MN80R | 186212812 | | ↻ | 375 | 400 | 8,5 | 75.23 | 17 | 150.45 | 800 | 10 | 1,85 | 4.08 |
| MN40R | 186212412 | | ↻ | 375 | 200 | 16 | 141.6 | 32 | 283.2 | 400 | 10 | 1,85 | 4.08 |
| MN28R | 186212313 | | ↻ | 375 | 140 | 21 | 185.85 | 42 | 331.7 | 280 | 10 | 1,85 | 4.08 |
| MN20R | 186212212 | | ↻ | 375 | 100 | 28 | 247.8 | 45 ③ | 398.25 | 200 | 10 | 1,85 | 4.08 |
| MO1200R | 187210102 | | ↻ | 645 | 6000 | 1,3 | 11.51 | 2,5 | 22.13 | 12000 | 18 | 3,3 | 7.28 |
| MO360R | 187211302 | | ↻ | 645 | 1800 | 4,2 | 37.17 | 8 | 70.8 | 3600 | 18 | 3,4 | 7.50 |
| MO220R | 187211202 | | ↻ | 645 | 1100 | 7,7 | 68.15 | 15 | 132.75 | 2200 | 18 | 3,4 | 7.50 |
| MO110R | 187212102 | | ↻ | 645 | 550 | 14,3 | 126.56 | 28 | 247.8 | 1100 | 18 | 4,1 | 9.04 |
| MO70R | 187212702 | | ↻ | 645 | 350 | 25 | 221.25 | 49 | 433.65 | 700 | 18 | 4,1 | 9.04 |
| MO32R | 187213302 | | ↻ | 645 | 160 | 48 | 424.8 | 90 ③ | 796.5 | 320 | 18 | 4,8 | 10.58 |
| MO20R | 187213202 | | ↻ | 645 | 100 | 77 | 681.45 | 90 ③ | 796.5 | 200 | 18 | 4,8 | 10.58 |

*** The maximum torque permitted, for continuous use, is 4 Nm for 15M58R-D6, from 4 to 5 Nm for 20M58R-D10 and 8 Nm for 28M40R-D10**
**③ The torque indicated is the maximum at which the motor can be used in order to guarantee the life endurance of the internal gears**
**- See pages 18 and 19 for stainless steel motors, or see pages 21 and 22 for ATEX certified stainless steel motors.**

# Models with threaded output shaft

(5/16"x24UNF for 15M;
3/8"x24UNF for 28M and 20M)

Ideal to use the motors in drilling, burring, etc. operations.
Available only for version with clockwise rotation.


## Non-reversible models

| Model | Code | Reversibility: Type | Power: Watt | Speed at the max power: rpm | Torque at the max power: Nm | Torque at the max power: in lb | Static Torque: Nm | Static Torque: in lb | Idle speed: rpm | Air consumption at the max power: l/s | Weight: Kg | Weight: lb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15M1900D-5/16x24UNF | 182741100 | ↻ | 150 | 9000 | 0,15 | 1.33 | 0,30 | 2.66 | 19000 | 4,4 | 0,32 | 0.71 |
| 15M550D-5/16x24UNF | 182741500 | ↻ | 150 | 2500 | 0,60 | 5.31 | 0,95 | 8.41 | 5500 | 4,4 | 0,32 | 0.71 |
| 15M375D-5/16x24UNF | 182741300 | ↻ | 150 | 1650 | 0,80 | 7.08 | 1,20 | 10.62 | 3750 | 4,4 | 0,32 | 0.71 |
| 15M260D-5/16x24UNF | 182741200 | ↻ | 150 | 1250 | 1,10 | 9.74 | 1,60 | 14.16 | 2600 | 4,4 | 0,32 | 0.71 |
| 15M140D-5/16x24UNF | 182742100 | ↻ | 150 | 600 | 2,20 | 19.47 | 2,90 | 25.67 | 1400 | 4,4 | 0,43 | 0.95 |
| 15M95D-5/16x24UNF | 182742900 | ↻ | 150 | 500 | 2,60 | 23.01 | 4,00 | 35.40 | 950 | 4,4 | 0,43 | 0.95 |
| 15M70D-5/16x24UNF | 182742700 | ↻ | 150 | 350 | 4,20* | 37.17* | 6,50* | 57.53* | 700 | 4,4 | 0,43 | 0.95 |
| 20M2000D-3/8x24UNF | 183341200 | ↻ | 200 | 11000 | 0,20 | 1.77 | 0,30 | 2.66 | 20000 | 5,3 | 0,40 | 0.88 |
| 20M430D-3/8x24UNF | 183341400 | ↻ | 200 | 2030 | 0,80 | 7.08 | 1,35 | 11.95 | 4300 | 5,3 | 0,40 | 0.88 |
| 20M260D-3/8x24UNF | 183341210 | ↻ | 200 | 1350 | 1,25 | 11.06 | 2,10 | 18.59 | 2600 | 5,3 | 0,40 | 0.88 |
| 20M105D-3/8x24UNF | 183342100 | ↻ | 200 | 530 | 3,10 | 27.44 | 5,40 | 47.79 | 1050 | 5,3 | 0,54 | 1.19 |
| 20M60D-3/8x24UNF | 183342600 | ↻ | 200 | 305 | 5,30* | 46.91* | 8,80* | 77.88* | 600 | 5,3 | 0,54 | 1.19 |
| 28M1700D-3/8x 24UNF | 185609001 | ↻ | 280 | 8390 | 0,31 | 2.74 | 0,46 | 4.07 | 17000 | 6,3 | 0,58 | 1.28 |
| 28M600D-3/8x24UNF | 185609002 | ↻ | 280 | 2900 | 1 | 8.85 | 1,5 | 13.28 | 6000 | 6,3 | 0,58 | 1.28 |
| 28M480D-3/8x24UNF | 185609003 | ↻ | 280 | 2040 | 1,31 | 11.59 | 2 | 17.70 | 4800 | 6,3 | 0,58 | 1.28 |
| 28M330D-3/8x24UNF | 185609004 | ↻ | 280 | 1510 | 2 | 17.70 | 2,9 | 25.67 | 3300 | 6,3 | 0,58 | 1.28 |
| 28M265D-3/8x24UNF | 185609005 | ↻ | 280 | 1180 | 2,5 | 22.13 | 3,6 | 31.86 | 2650 | 6,3 | 0,58 | 1.28 |
| 28M155D-3/8x24UNF | 185609006 | ↻ | 280 | 750 | 4,15 | 36.73 | 6 | 53.10 | 1550 | 6,3 | 0,78 | 1.72 |
| 28M120D-3/8x24UNF | 185609007 | ↻ | 280 | 535 | 4,8 | 42.48 | 7,9 | 69.92 | 1200 | 6,3 | 0,78 | 1.72 |
| 28M100D-3/8x24UNF | 185609008 | ↻ | 280 | 425 | 6,3 | 55.76 | 9 | 79.65 | 1000 | 6,3 | 0,78 | 1.72 |
| 28M55D-3/8x24UNF | 185609009 | ↻ | 280 | 255 | 11,70* | 103.55* | 17,50* | 154.88* | 560 | 6,3 | 0,78 | 1.72 |

*** The maximum torque permitted, for continuous use, is 4 Nm for 15M70D-5/16x24UNF, from 4 to 5 Nm for 20M60D-3/8x24UNF and 8 Nm for 28M55D-3/8x24UNF**
**- See pages 18 and 19 for stainless steel motors, or see pages 21 and 22 for ATEX certified stainless steel motors.**

**Version available also for MM, MN, MO air motors. For further information please contact Fiam Technical Consultancy Service**

# Models with collet shaft

(collet chuck included:
ER11 for 20M; ER16 for 28M)

They are indispensable when the use of collets reduces the dimensions of encumbrance of the head of the drilling unit thus ensuring more accuracy in drilling.
Available only for version with clockwise rotation.
The collet is excluded, see Accessories available upon request.


20M


28M

## Non-reversible models

| Model | Code | Type of motor / Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
| 20M2000D-ER11 | 183331200 | ↻ | 200 | 11000 | 0,20 | 1.77 | 0,30 | 2.66 | 20000 | 5,3 | 0,40 | 0.88 |
| 20M430D-ER11 | 183331400 | ↻ | 200 | 2030 | 0,80 | 7.08 | 1,35 | 11.95 | 4300 | 5,3 | 0,40 | 0.88 |
| 20M260D-ER11 | 183331210 | ↻ | 200 | 1350 | 1,25 | 11.06 | 2,10 | 18.59 | 2600 | 5,3 | 0,40 | 0.88 |
| 20M105D-ER11 | 183332100 | ↻ | 200 | 530 | 3,10 | 27.44 | 5,40 | 47.79 | 1050 | 5,3 | 0,54 | 1.19 |
| 20M60D-ER11 | 183332600 | ↻ | 200 | 305 | 5,30* | 46.91* | 8,80* | 77.88* | 600 | 5,3 | 0,54 | 1.19 |
| 28M1700D-ER16 | 185609012 | ↻ | 280 | 8390 | 0,31 | 2.74 | 0,46 | 4.07 | 17000 | 6,3 | 0,67 | 1.48 |
| 28M600D-ER16 | 185609013 | ↻ | 280 | 2900 | 1 | 8.85 | 1,5 | 13.28 | 6000 | 6,3 | 0,67 | 1.48 |
| 28M480D-ER16 | 185609014 | ↻ | 280 | 2040 | 1,31 | 11.59 | 2 | 17.70 | 4800 | 6,3 | 0,67 | 1.48 |
| 28M330D-ER16 | 185609015 | ↻ | 280 | 1510 | 2 | 17.70 | 2,9 | 25.67 | 3300 | 6,3 | 0,67 | 1.48 |
| 28M265D-ER16 | 185609016 | ↻ | 280 | 1180 | 2,5 | 22.13 | 3,6 | 31.86 | 2650 | 6,3 | 0,67 | 1.48 |
| 28M155D-ER16 | 185609017 | ↻ | 280 | 750 | 4,15 | 36.73 | 6 | 53.10 | 1550 | 6,3 | 0,87 | 1.92 |
| 28M120D-ER16 | 185609018 | ↻ | 280 | 535 | 4,8 | 42.48 | 7,9 | 69.92 | 1200 | 6,3 | 0,87 | 1.92 |
| 28M100D-ER16 | 185609019 | ↻ | 280 | 425 | 6,3 | 55.76 | 9 | 79.65 | 1000 | 6,3 | 0,87 | 1.92 |
| 28M55D-ER16 | 185609020 | ↻ | 280 | 255 | 11,70* | 103.55* | 17,50* | 154.88* | 560 | 6,3 | 0,87 | 1.92 |

*** The maximum torque permitted, for continuous use, is from 4 to 5 Nm for 20M60D-ER11 and 8 Nm for 28M55D-ER16**
**- See pages 18 and 19 for stainless steel motors, or see pages 21 and 22 for ATEX certified stainless steel motors.**

**Version available also for MM, MN, MO air motors. For further information please contact Fiam Technical Consultancy Service**

### Legend

**15/20/28M...** = Power of the motor in Watt/10 • **M** = Air motor • **1700** = Revolutions/10 • **D** = Right (non-reversible) • **D10** = Smooth output shaft ø 10 mm with key UNI 6604 form A • **D6** = Smooth output shaft ø 6 mm with key UNI 6604 form A • **3/8" x 24UNF** = Threaded output shaft 3/8" x 24UNF • **5/16"x 24UNF** = Threaded output shaft 5/16" x 24UNF • **ER16** = Collet shaft ER16 • **ER11** = Collet shaft ER11

### Legend

↻ reversibility: right and left

↻ reversibility: right (clockwise) the direction in which the output shaft turns in considered to be in function of the delivery air input

- The figures shown are measured at a pressure of 6,3 bar (ISO 2787), the recommended operating pressure
- Working air pressure: max 7 bar.
- The code number must be used when ordering.

The above figures should be used as a guide only and could be changed without notice. For all further details, please apply to the **Fiam Technical Consultancy Service.**

**N.B.** The noise level in the motors is generated by the air exhaust. The level increases as the speed increases and it is at the maximum when the motor rotates at idle speed. All the motors are supplied with a threaded connection which is needed to connect, with a suitable coupling, a hose conveyor in order to take the exhaust air away from the working environment. Fiam recommends to convey the exhaust air to an oil separator filter with built-in silencing system which also permits to give an adequate lubrication to the motors without polluting the working environment.

*** The maximum torque permitted, for continuous use, is 8 Nm for 28M, from 4 to 5 Nm for 20M and 4 Nm for 15M.**

***Other technical features***

| Model | Air inlet | Recommended hose bore |
|---|---|---|
| MM | 1/4'' gas | Ø 6 mm |
| MN | 1/4'' gas | Ø 8 mm |
| MO | 3/8'' gas | Ø 13 mm |
| 28M...D/R | 1/8'' gas | Ø 6 mm |
| 20M...D/R | 1/8'' gas | Ø 6 mm |
| 15M...D/R | 1/8'' gas | Ø 6 mm |

**Stainless steel models**
All Fiam motors are available in stainless steel. See pages 18 and 19 for 20M and 28M models, or contact the Fiam Technical Assistance Service for other models.

**ATEX certified models**
ATEX certified versions of all 15M, 20M and 28M models are available.
See pages 21 and 22 for ATEX certified stainless steel 20M and 28M models, or contact the Fiam Technical Assistance Service for other models.

### Models available upon request

- Models with different output shafts: tapered, morse taper, with gear, shafts with different diameter
- Models with only anti clockwise rotation (except models with threaded shaft)
- Models with flanged sleeves
- Special models customised for client
- Models with housing and output shaft made of different materials (e.g.: stainless steel, plastic…)

# Models with low rotations with smooth output shaft

(ø 10 mm with key UNI 6604 form A)
maximum torque permitted:
4-5 Nm (for 20M); 8 Nm (for 28M)



These motors are suitable for many applications: mixing, moving, components positioning, various movements, etc. and they are used in many industrial applications.
The leading technical factor for the choice is the low rotation speed; it isn't the working torque as for standard industrial motors.
The use of these motors is particular. **They must not be used according to torque range,** otherwise on stall they could reach very high torques and compromise the inner kinematic gears of the motor. Therefore the load must be regulated in such way that the torque does not exceed the 4-5 Nm for 20M, 8Nm for 28M.

## Non-reversible models

| Model | Code | Type | Watt | rpm | l/s | Kg | lb |
|---|---|---|---|---|---|---|---|
| 20M35D-D10 | 183312300 | ↻ | 200 | 350 | 5,3 | 0,54 | 1.19 |
| 20M14D-D10 | 183313100 | ↻ | 200 | 140 | 5,3 | 0,70 | 1.54 |
| 20M8D-D10 | 183313800 | ↻ | 200 | 80 | 5,3 | 0,70 | 1.54 |
| 20M5D-D10 | 183313500 | ↻ | 200 | 50 | 5,3 | 0,70 | 1.54 |
| 28M20D-D10 | 185613200 | ↻ | 280 | 215 | 6 | 0,97 | 2.14 |
| 28M10D-D10 | 185613100 | ↻ | 280 | 100 | 6 | 0,97 | 2.14 |

## Reversible models

| Model | Code | Type | Watt | rpm | l/s | Kg | lb |
|---|---|---|---|---|---|---|---|
| 20M30R-D10 | 183512300 | ↻ | 160 | 300 | 5,0 | 0,54 | 1.19 |
| 20M13R-D10 | 183513100 | ↻ | 160 | 130 | 5,0 | 0,70 | 1.54 |
| 20M7R-D10 | 183513800 | ↻ | 160 | 70 | 5,0 | 0,70 | 1.54 |
| 20M4R-D10 | 183513500 | ↻ | 160 | 40 | 5,0 | 0,70 | 1.54 |
| 28M15R-D10 | 185813100 | ↻ | 210 | 150 | 5,8 | 0,97 | 2.14 |
| 28M8R-D10 | 185813800 | ↻ | 210 | 75 | 5,8 | 0,97 | 2.14 |

**Legend**

28 = Power of the motor in Watt/10 • M = Air motor • 10 = Revolutions/10 • D = Right (non-reversible) • R = Reversible • D10 = Smooth output shaft ø 10 mm with key UNI 6604 form A

**Legend**

↻ reversibility: right and left

↻ reversibility: right (clockwise) the direction in which the output shaft turns in considered to be in function of the delivery air input

- The figures shown are measured at a pressure of 6,3 bar (ISO 2787), the recommended operating pressure
- Working air pressure: max 7 bar.
- The code number must be used when ordering.

The above figures should be used as a guide only and could be changed without notice. For all further details, please apply to the **Fiam Technical Consultancy Service.**

**N.B.** The noise level in the motors is generated by the air exhaust. The level increases as the speed increases and it is at the maximum when the motor rotates at idle speed. All the motors are supplied with a threaded connection which is needed to connect, with a suitable coupling, a hose conveyor in order to take the exhaust air away from the working environment. Fiam recommends to convey the exhaust air to an oil separator filter with built-in silencing system which also permits to give an adequate lubrication to the motors without polluting the working environment.

***Other technical features***

| Model | Air inlet | Recommended hose bore | Output shaft |
|---|---|---|---|
| 20M...D/R<br>28M...D/R | 1/8'' gas | Ø 6 mm | Smooth shaft ø 10 mm with key (UNI 6604 form A) |

**- See pages 18 and 19 for stainless steel motors, or see pages 21 and 22 for ATEX certified stainless steel motors.**

**Models available upon request**

- Models with rotations lower than those indicated in chart
- Models with different output shafts: threaded 3/8 x 24 UNF, tapered, morse taper, with gear, shafts with different diameter
- Models with only anti clockwise rotation
- Models with flanged sleeves
- Special models customised for client
- Models with housing and output shaft made of different materials (e.g.: stainless steel, plastic…)

# Stainless steel air motors: resistant to corrosion, water and humidity.

All Fiam air motors are available with numerous customisations on request, including **stainless steel versions or with IP67 certification**. The most popular ranges, the 20M and 28M air motors, are available with these features in the Fiam catalogue.
These motors are **resistant to water and corrosive materials or atmospheres**, and work safely in **very high-temperature environments**. Their specific build characteristics satisfy the requirements of many production sectors such as food and chemicals.

Entirely designed and manufactured by Fiam, they offer many benefits:

- **specific galvanic treatments** applied not only to the internal mechanisms, but also to exterior surfaces for high corrosion resistance
- **made from high-quality steels** that meet ISO standards
- gears **lubricated** with food-grade grease, **making them suitable** for use on food processing machinery
- **surfaces with 40% less roughness** that, together with the absence of corners or cavities, reduces dirt and dust adhesion
- easy to **clean and sterilise**: they are highly resistant to aggressive detergents
- **internal linings with special treatments to reduce** vane friction and increase motor service life with little or no lubrication.

## IP67 protection

The sealants and gaskets used in 20M and 28M (and 15M on request) stainless steel motors **are also IP67 certified**: an important condition that not only prevents liquids from entering the motors and allows them to be submersed briefly to a depth of 1 meter, but also makes them completely hermetic to the ingress of dust and fumes.

# Stainless steel/IP67 models

## Non-reversible models

| | Model | Code | Type of motor | Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
| Models with smooth output shaft | 20M2000D-D10-AI | 183309094 | | | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-D10-AI | 183309096 | | | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-D10-AI | 183309095 | | | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-D10-AI | 183309097 | | | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-D10-AI | 183309098 | | | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 20M35D-D10-AI | 183309099 | | | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 350 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-D10-AI | 185609105 | | | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,58 | 1,28 |
| | 28M600D-D10-AI | 185609106 | | | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,58 | 1,28 |
| | 28M480D-D10-AI | 185609107 | | | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,58 | 1,28 |
| | 28M330D-D10-AI | 185609108 | | | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,58 | 1,28 |
| | 28M265D-D10-AI | 185609109 | | | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,58 | 1,28 |
| | 28M155D-D10-AI | 185609110 | | | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,78 | 1,72 |
| | 28M120D-D10-AI | 185609111 | | | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,78 | 1,72 |
| | 28M100D-D10-AI | 185609112 | | | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,78 | 1,72 |
| | 28M55D-D10-AI | 185609113 | | | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,78 | 1,72 |
| Low-speed models with smooth output shaft | 20M14D-D10-AI | 183309100 | | | 200 | ** | ** | ** | ** | ** | 140 | 5,3 | 0,70 | 1,54 |
| | 20M8D-D10-AI | 183309102 | | | 200 | ** | ** | ** | ** | ** | 80 | 5,3 | 0,70 | 1,54 |
| | 20M5D-D10-AI | 183309101 | | | 200 | ** | ** | ** | ** | ** | 50 | 5,3 | 0,70 | 1,54 |
| | 28M20D-D10-AI | 185609114 | | | 280 | ** | ** | ** | ** | ** | 215 | 6 | 0,97 | 2,14 |
| | 28M10D-D10-AI | 185609115 | | | 280 | ** | ** | ** | ** | ** | 100 | 6 | 0,97 | 2,14 |
| Models with threaded output shaft | 20M2000D-3/8X24UNF-AI | 183309103 | | | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-3/8X24UNF-AI | 183309105 | | | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-3/8X24UNF-AI | 183309104 | | | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-3/8X24UNF-AI | 183309106 | | | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-3/8X24UNF-AI | 183309107 | | | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-3/8X24UNF-AI | 185609116 | | | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,58 | 1,28 |
| | 28M600D-3/8X24UNF-AI | 185609117 | | | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,58 | 1,28 |
| | 28M480D-3/8X24UNF-AI | 185609118 | | | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,58 | 1,28 |
| | 28M330D-3/8X24UNF-AI | 185609119 | | | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,58 | 1,28 |
| | 28M265D-3/8X24UNF-AI | 185609120 | | | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,58 | 1,28 |
| | 28M155D-3/8X24UNF-AI | 185609121 | | | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,78 | 1,72 |
| | 28M120D-3/8X24UNF-AI | 185609122 | | | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,78 | 1,72 |
| | 28M100D-3/8X24UNF-AI | 185609123 | | | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,78 | 1,72 |
| | 28M55D-3/8X24UNF-AI | 185609124 | | | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,78 | 1,72 |
| Models with collet shaft | 20M2000D-ER11-AI | 183309108 | | | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-ER11-AI | 183309110 | | | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-ER11-AI | 183309109 | | | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-ER11-AI | 183309111 | | | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-ER11-AI | 183309112 | | | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-ER16-AI | 185609125 | | | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,67 | 1,48 |
| | 28M600D-ER16-AI | 185609126 | | | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,67 | 1,48 |
| | 28M480D-ER16-AI | 185609127 | | | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,67 | 1,48 |
| | 28M330D-ER16-AI | 185609128 | | | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,67 | 1,48 |
| | 28M265D-ER16-AI | 185609129 | | | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,67 | 1,48 |
| | 28M155D-ER16-AI | 185609130 | | | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,87 | 1,92 |
| | 28M120D-ER16-AI | 185609131 | | | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,87 | 1,92 |
| | 28M100D-ER16-AI | 185609132 | | | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,87 | 1,92 |
| | 28M55D-ER16-AI | 185609133 | | | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,87 | 1,92 |

**Models available on request**

- Output shafts with different diameters
- Lozenge fixing flange that allows easy interchangeability with the solutions in use
- Left rotation

**The use of these motors is particular. **They must not be used according to torque range**, otherwise on stall they could reach very high torques and compromise the inner kinematic gears of the motor. Therefore the load must be regulated in such way that the torque does not exceed the 4-5 Nm for 20M, 8Nm for 28M.

**Other technical specifications**

For all other specifications, refer to the corresponding models shown on pages 12 - 14 - 15 and 16.

*The maximum torque permitted, for continuous use, is 4-5 Nm for 20M...D-... and 8 Nm for 28M...D-...

# Stainless steel/IP67 models

## Reversible models

| | Model | Code | Type | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
| Models with smooth output shaft | 20M1650R-D10-AI | 183509060 | ↻ | 160 | 9000 | 0,15 | 1,33 | 0,25 | 2,21 | 16500 | 5,0 | 0,40 | 0,88 |
| | 20M400R-D10-AI | 183509062 | ↻ | 160 | 1950 | 0,80 | 7,08 | 1,20 | 10,62 | 4000 | 5,0 | 0,40 | 0,88 |
| | 20M250R-D10-AI | 183509061 | ↻ | 160 | 1330 | 1,40 | 12,39 | 2,20 | 19,47 | 2500 | 5,0 | 0,40 | 0,88 |
| | 20M100R-D10-AI | 183509063 | ↻ | 160 | 550 | 3,05 | 26,99 | 4,80 | 42,48 | 1000 | 5,0 | 0,54 | 1,19 |
| | 20M58R-D10-AI | 183509064 | ↻ | 160 | 300 | 5,70* | 50,45* | 7,50* | 66,38* | 580 | 5,0 | 0,54 | 1,19 |
| | 28M1300R-D10-AI | 185809064 | ↻ | 210 | 6200 | 0,27 | 2,39 | 0,45 | 3,98 | 13000 | 5,8 | 0,58 | 1,28 |
| | 28M415R-D10-AI | 185809065 | ↻ | 210 | 2075 | 0,85 | 7,52 | 1,2 | 10,62 | 4150 | 5,8 | 0,58 | 1,28 |
| | 28M345R-D10-AI | 185809066 | ↻ | 210 | 1675 | 1,25 | 11,06 | 1,65 | 14,60 | 3450 | 5,8 | 0,58 | 1,28 |
| | 28M235R-D10-AI | 185809067 | ↻ | 210 | 1230 | 1,8 | 15,93 | 2,4 | 21,24 | 2350 | 5,8 | 0,58 | 1,28 |
| | 28M190R-D10-AI | 185809068 | ↻ | 210 | 855 | 2,3 | 20,36 | 2,9 | 25,67 | 1850 | 5,8 | 0,58 | 1,28 |
| | 28M110R-D10-AI | 185809069 | ↻ | 210 | 500 | 3,9 | 34,52 | 5,1 | 45,14 | 1100 | 5,8 | 0,78 | 1,72 |
| | 28M90R-D10-AI | 185809070 | ↻ | 210 | 410 | 4,7 | 41,60 | 6,8 | 60,18 | 900 | 5,8 | 0,78 | 1,72 |
| | 28M70R-D10-AI | 185809071 | ↻ | 210 | 330 | 6,2 | 54,87 | 8 | 70,80 | 700 | 5,8 | 0,78 | 1,72 |
| | 28M40R-D10-AI | 185809072 | ↻ | 210 | 190 | 11,50* | 101,78* | 15,50* | 137,18* | 395 | 5,8 | 0,78 | 1,72 |
| Low-speed models with smooth output shaft | 20M30R-D10-AI | 183509065 | ↻ | 160 | ** | ** | ** | ** | ** | 300 | 5,0 | 0,54 | 1,19 |
| | 20M13R-D10-AI | 183509066 | ↻ | 160 | ** | ** | ** | ** | ** | 130 | 5,0 | 0,70 | 1,54 |
| | 20M7R-D10-AI | 183509068 | ↻ | 160 | ** | ** | ** | ** | ** | 70 | 5,0 | 0,70 | 1,54 |
| | 20M4R-D10-AI | 183509067 | ↻ | 160 | ** | ** | ** | ** | ** | 40 | 5,0 | 0,70 | 1,54 |
| | 28M15R-D10-AI | 185809073 | ↻ | 210 | ** | ** | ** | ** | ** | 150 | 5,8 | 0,97 | 2,14 |
| | 28M8R-D10-AI | 185809074 | ↻ | 210 | ** | ** | ** | ** | ** | 75 | 5,8 | 0,97 | 2,14 |

**Models available on request**

- Output shafts with different diameters
- Lozenge fixing flange that allows easy interchangeability with the solutions in use
- Left rotation

**The use of these motors is particular. **They must not be used according to torque range**, otherwise on stall they could reach very high torques and compromise the inner kinematic gears of the motor. Therefore the load must be regulated in such way that the torque does not exceed the 4-5 Nm for 20M, 8Nm for 28M.

**Other technical specifications**

For all other specifications, refer to the corresponding models shown on pages 13 and 16.

*The maximum torque permitted, for continuous use, is 4-5 Nm for 20M58R-D10... and 8 Nm for 28M40R-D10...

# ATEX air motors: certified safety.

ATEX certified 20M and 28M air motors are available in the Fiam catalogue in accordance with the European Union directives on equipment for potentially explosive atmospheres.
Made from stainless steel, they are corrosion-free and can be used safely in working environments containing **flammable** or **explosive substances** or where there are **high temperatures**.
Each motor is tested separately to ensure that it meets the following classifications:
- Ex II 2G Ex h IIC T5 Gb
- Ex II 2D Ex h IIIC T5 Db.

ATEX certification is also available on request for the 15M motor range: contact the Fiam Technical Service Department.

## IP67 protection

All ATEX air motors are made of stainless steel and the sealants and gaskets used ensure that they are **also IP67 certified**: an important condition that means they can be used where they need to be hermetic to the ingress of dust and fumes.

# Stainless steel/IP67/ATEX certified models

## Non-reversible models

| | Model | Code | Type | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tipe of motor | Reversibility | Power | Speed at the max power | Torque at the max power | | Static Torque | Idle speed | Air consumption at the max power | Weight | |
| Models with smooth output shaft | 20M2000D-D10-AI-EX | 183309075 | ↻ | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-D10-AI-EX | 183309077 | ↻ | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-D10-AI-EX | 183309076 | ↻ | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-D10-AI-EX | 183309078 | ↻ | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-D10-AI-EX | 183309079 | ↻ | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 20M35D-D10-AI-EX | 183309080 | ↻ | 200 | ** | ** | ** | ** | ** | 350 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-D10-AI-EX | 185609075 | ↻ | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,58 | 1,28 |
| | 28M600D-D10-AI-EX | 185609076 | ↻ | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,58 | 1,28 |
| | 28M480D-D10-AI-EX | 185609077 | ↻ | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,58 | 1,28 |
| | 28M330D-D10-AI-EX | 185609078 | ↻ | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,58 | 1,28 |
| | 28M265D-D10-AI-EX | 185609079 | ↻ | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,58 | 1,28 |
| | 28M155D-D10-AI-EX | 185609080 | ↻ | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,78 | 1,72 |
| | 28M120D-D10-AI-EX | 185609081 | ↻ | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,78 | 1,72 |
| | 28M100D-D10-AI-EX | 185609082 | ↻ | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,78 | 1,72 |
| | 28M55D-D10-AI-EX | 185609083 | ↻ | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,78 | 1,72 |
| Low-speed models with smooth output shaft | 20M14D-D10-AI-EX | 183309081 | ↻ | 200 | ** | ** | ** | ** | ** | 140 | 5,3 | 0,70 | 1,54 |
| | 20M8D-D10-AI-EX | 183309083 | ↻ | 200 | ** | ** | ** | ** | ** | 80 | 5,3 | 0,70 | 1,54 |
| | 20M5D-D10-AI-EX | 183309082 | ↻ | 200 | ** | ** | ** | ** | ** | 50 | 5,3 | 0,70 | 1,54 |
| | 28M20D-D10-AI-EX | 185609084 | ↻ | 280 | ** | ** | ** | ** | ** | 215 | 6 | 0,97 | 2,14 |
| | 28M10D-D10-AI-EX | 185609085 | ↻ | 280 | ** | ** | ** | ** | ** | 100 | 6 | 0,97 | 2,14 |
| Models with threaded output shaft | 20M2000D-3/8X24UNF-AI-EX | 183309084 | ↻ | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-3/8X24UNF-AI-EX | 183309086 | ↻ | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-3/8X24UNF-AI-EX | 183309085 | ↻ | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-3/8X24UNF-AI-EX | 183309087 | ↻ | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-3/8X24UNF-AI-EX | 183309088 | ↻ | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-3/8X24UNF-AI-EX | 185609086 | ↻ | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,58 | 1,28 |
| | 28M600D-3/8X24UNF-AI-EX | 185609087 | ↻ | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,58 | 1,28 |
| | 28M480D-3/8X24UNF-AI-EX | 185609088 | ↻ | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,58 | 1,28 |
| | 28M330D-3/8X24UNF-AI-EX | 185609089 | ↻ | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,58 | 1,28 |
| | 28M265D-3/8X24UNF-AI-EX | 185609090 | ↻ | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,58 | 1,28 |
| | 28M155D-3/8X24UNF-AI-EX | 185609091 | ↻ | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,78 | 1,72 |
| | 28M120D-3/8X24UNF-AI-EX | 185609092 | ↻ | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,78 | 1,72 |
| | 28M100D-3/8X24UNF-AI-EX | 185609093 | ↻ | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,78 | 1,72 |
| | 28M55D-3/8X24UNF-AI-EX | 185609094 | ↻ | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,78 | 1,72 |
| Models with collet shaft | 20M2000D-ER11-AI-EX | 183309089 | ↻ | 200 | 11000 | 0,20 | 1,77 | 0,30 | 2,66 | 20000 | 5,3 | 0,40 | 0,88 |
| | 20M430D-ER11-AI-EX | 183309091 | ↻ | 200 | 2030 | 0,80 | 7,08 | 1,35 | 11,95 | 4300 | 5,3 | 0,40 | 0,88 |
| | 20M260D-ER11-AI-EX | 183309090 | ↻ | 200 | 1350 | 1,25 | 11,06 | 2,10 | 18,59 | 2600 | 5,3 | 0,40 | 0,88 |
| | 20M105D-ER11-AI-EX | 183309092 | ↻ | 200 | 530 | 3,10 | 27,44 | 5,40 | 47,79 | 1050 | 5,3 | 0,54 | 1,19 |
| | 20M60D-ER11-AI-EX | 183309093 | ↻ | 200 | 305 | 5,30* | 46,91* | 8,80* | 77,88* | 600 | 5,3 | 0,54 | 1,19 |
| | 28M1700D-ER16-AI-EX | 185609095 | ↻ | 280 | 8390 | 0,31 | 2,74 | 0,46 | 4,07 | 17000 | 6,3 | 0,67 | 1,48 |
| | 28M600D-ER16-AI-EX | 185609096 | ↻ | 280 | 2900 | 1 | 8,85 | 1,5 | 13,28 | 6000 | 6,3 | 0,67 | 1,48 |
| | 28M480D-ER16-AI-EX | 185609097 | ↻ | 280 | 2040 | 1,31 | 11,59 | 2 | 17,70 | 4800 | 6,3 | 0,67 | 1,48 |
| | 28M330D-ER16-AI-EX | 185609098 | ↻ | 280 | 1510 | 2 | 17,70 | 2,9 | 25,67 | 3300 | 6,3 | 0,67 | 1,48 |
| | 28M265D-ER16-AI-EX | 185609099 | ↻ | 280 | 1180 | 2,5 | 22,13 | 3,6 | 31,86 | 2650 | 6,3 | 0,67 | 1,48 |
| | 28M155D-ER16-AI-EX | 185609100 | ↻ | 280 | 750 | 4,15 | 36,73 | 6 | 53,10 | 1550 | 6,3 | 0,87 | 1,92 |
| | 28M120D-ER16-AI-EX | 185609101 | ↻ | 280 | 535 | 4,8 | 42,48 | 7,9 | 69,92 | 1200 | 6,3 | 0,87 | 1,92 |
| | 28M100D-ER16-AI-EX | 185609102 | ↻ | 280 | 425 | 6,3 | 55,76 | 9 | 79,65 | 1000 | 6,3 | 0,87 | 1,92 |
| | 28M55D-ER16-AI-EX | 185609103 | ↻ | 280 | 255 | 11,70* | 103,55* | 17,50* | 154,88* | 560 | 6,3 | 0,87 | 1,92 |

**Models available on request**

- Output shafts with different diameters
- Lozenge fixing flange that allows easy interchangeability with the solutions in use
- Left rotation

**The use of these motors is particular. **They must not be used according to torque range**, otherwise on stall they could reach very high torques and compromise the inner kinematic gears of the motor. Therefore the load must be regulated in such way that the torque does not exceed the 4-5 Nm for 20M, 8Nm for 28M.

**Other technical specifications**

For all other specifications, refer to the corresponding models shown on pages 12 - 14 - 15 and 16.

*The maximum torque permitted, for continuous use, is 4-5 Nm for 20M...D-... and 8 Nm for 28M...D-...

Motor earthing cable not included.

# Stainless steel/IP67/ATEX certified models

## Reversible models

| | Model | Code | Type | Watt | rpm | Nm | in lb | Nm | in lb | rpm | l/s | Kg | lb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tipe of motor | | Speed at the max power | Torque at the max power | | Static Torque | | Idle speed | Air consumption at the max power | Weight | |
| Models with smooth output shaft | 20M1650R-D10-AI-EX | 183509051 | ↻ | 160 | 9000 | 0,15 | 1,33 | 0,25 | 2,21 | 16500 | 5,0 | 0,40 | 0,88 |
| | 20M400R-D10-AI-EX | 183509053 | ↻ | 160 | 1950 | 0,80 | 7,08 | 1,20 | 10,62 | 4000 | 5,0 | 0,40 | 0,88 |
| | 20M250R-D10-AI-EX | 183509052 | ↻ | 160 | 1330 | 1,40 | 12,39 | 2,20 | 19,47 | 2500 | 5,0 | 0,40 | 0,88 |
| | 20M100R-D10-AI-EX | 183509054 | ↻ | 160 | 550 | 3,05 | 26,99 | 4,80 | 42,48 | 1000 | 5,0 | 0,54 | 1,19 |
| | 20M58R-D10-AI-EX | 183509055 | ↻ | 160 | 300 | 5,70* | 50,45* | 7,50* | 66,38* | 580 | 5,0 | 0,54 | 1,19 |
| | 28M1300R-D10-AI-EX | 185809052 | ↻ | 210 | 6200 | 0,27 | 2,39 | 0,45 | 3,98 | 13000 | 5,8 | 0,58 | 1,28 |
| | 28M415R-D10-AI-EX | 185809053 | ↻ | 210 | 2075 | 0,85 | 7,52 | 1,2 | 10,62 | 4150 | 5,8 | 0,58 | 1,28 |
| | 28M345R-D10-AI-EX | 185809054 | ↻ | 210 | 1675 | 1,25 | 11,06 | 1,65 | 14,60 | 3450 | 5,8 | 0,58 | 1,28 |
| | 28M235R-D10-AI-EX | 185809055 | ↻ | 210 | 1230 | 1,8 | 15,93 | 2,4 | 21,24 | 2350 | 5,8 | 0,58 | 1,28 |
| | 28M190R-D10-AI-EX | 185809056 | ↻ | 210 | 855 | 2,3 | 20,36 | 2,9 | 25,67 | 1850 | 5,8 | 0,58 | 1,28 |
| | 28M110R-D10-AI-EX | 185809057 | ↻ | 210 | 500 | 3,9 | 34,52 | 5,1 | 45,14 | 1100 | 5,8 | 0,78 | 1,72 |
| | 28M90R-D10-AI-EX | 185809058 | ↻ | 210 | 410 | 4,7 | 41,60 | 6,8 | 60,18 | 900 | 5,8 | 0,78 | 1,72 |
| | 28M70R-D10-AI-EX | 185809059 | ↻ | 210 | 330 | 6,2 | 54,87 | 8 | 70,80 | 700 | 5,8 | 0,78 | 1,72 |
| | 28M40R-D10-AI-EX | 185809060 | ↻ | 210 | 190 | 11,50* | 101,78 | 15,50* | 137,18* | 395 | 5,8 | 0,78 | 1,72 |
| Low-speed models with smooth output shaft | 20M30R-D10-AI-EX | 183509056 | ↻ | 160 | ** | ** | ** | ** | ** | 300 | 5,0 | 0,54 | 1,19 |
| | 20M13R-D10-AI-EX | 183509057 | ↻ | 160 | ** | ** | ** | ** | ** | 130 | 5,0 | 0,70 | 1,54 |
| | 20M7R-D10-AI-EX | 183509059 | ↻ | 160 | ** | ** | ** | ** | ** | 70 | 5,0 | 0,70 | 1,54 |
| | 20M4R-D10-AI-EX | 183509058 | ↻ | 160 | ** | ** | ** | ** | ** | 40 | 5,0 | 0,70 | 1,54 |
| | 28M15R-D10-AI-EX | 185809061 | ↻ | 210 | ** | ** | ** | ** | ** | 150 | 5,8 | 0,97 | 2,14 |
| | 28M8R-D10-AI-EX | 185809062 | ↻ | 210 | ** | ** | ** | ** | ** | 75 | 5,8 | 0,97 | 2,14 |

**Models available on request**

- Output shafts with different diameters
- Lozenge fixing flange that allows easy interchangeability with the solutions in use
- Left rotation

**The use of these motors is particular. **They must not be used according to torque range**, otherwise on stall they could reach very high torques and compromise the inner kinematic gears of the motor. Therefore the load must be regulated in such way that the torque does not exceed the 4-5 Nm for 20M, 8Nm for 28M.

**Other technical specifications**

For all other specifications, refer to the corresponding models shown on pages 13 and 16.

*The maximum torque permitted, for continuous use, is 4-5 Nm for 20M58R-D10... and 8 Nm for 28M40R-D10...

Motor earthing cable not included.

## ATEX Certification

The ATEX version models comply with all relevant provisions contained in Directive 2006/42/ EC and Directive 2014/34/EU.
The motors are certified according to the classification:
- Ex II 2G Ex h IIC T5 Gb
- Ex II 2D Ex h IIIC T5 Db.

Can be installed in equipment of group II (surface industries) category 2 (can be used in zones 1/21 and 2/22). Zone 1 and zone 21 are areas where the explosive atmosphere is likely to occur, but not continuously or for long periods. The temperature class is T5 and the gas group is IIC.
All ATEX version models are equipped with a hole for housing the grounding cable (cable not included).

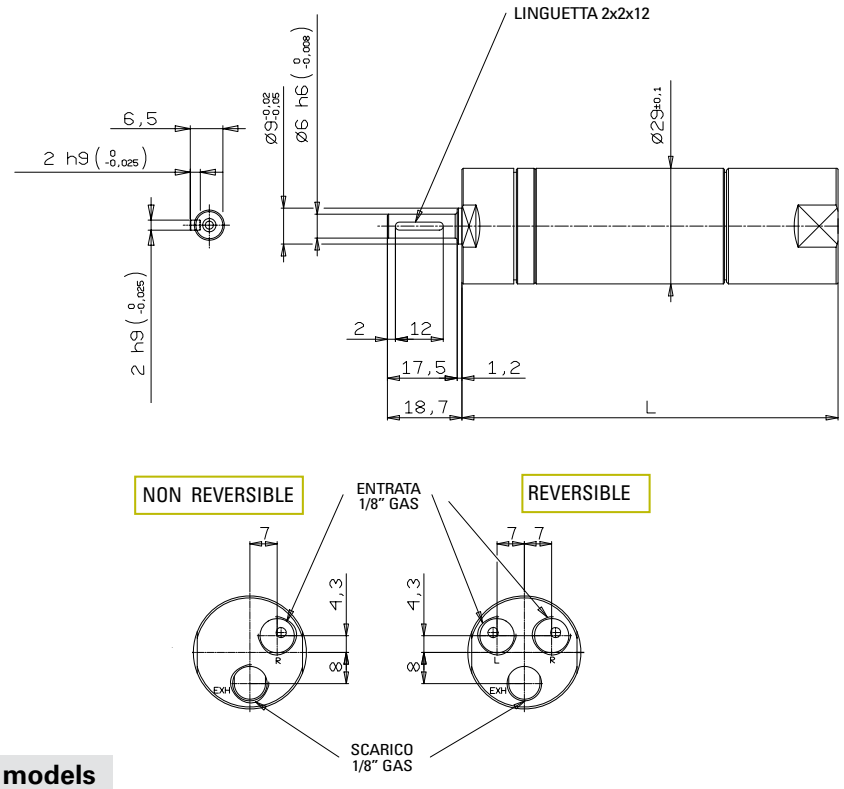
# Dimensions

## Models with smooth output shaft

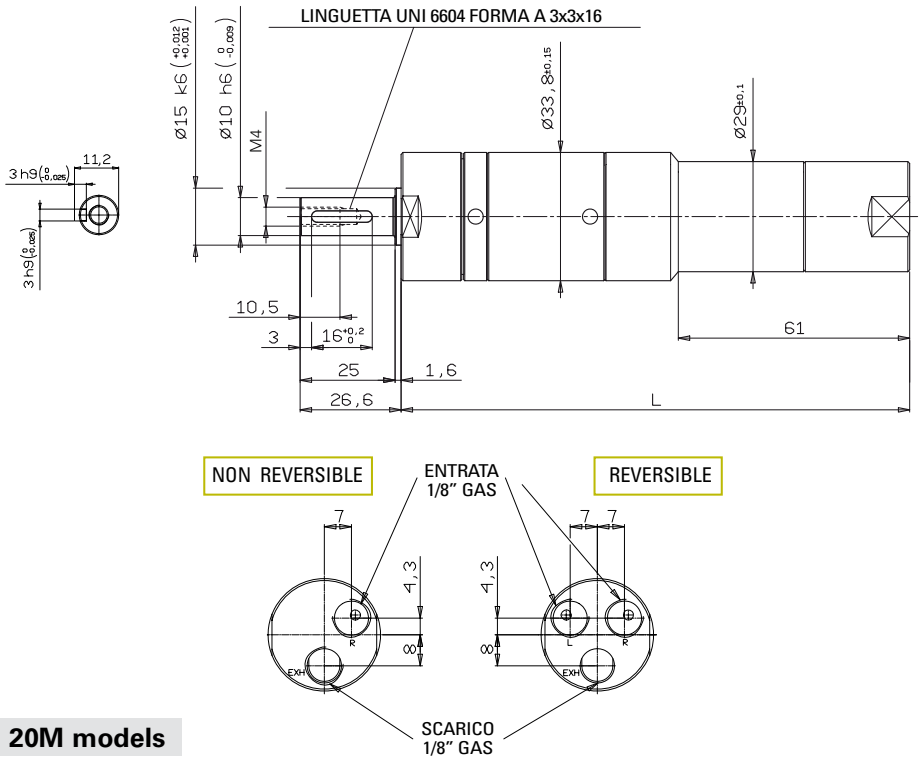
(with key UNI 6604 form A: Ø 6 mm for 15M; Ø 10 mm for 20M and 28M;
Ø 13 mm for MM; Ø 14 mm for MN; Ø 24 mm for MO)

*Dimensions (mm)*

| Model | L | L1 |
|---|---|---|
| 15M1900D-D6 | 94,5 | - |
| 15M550D-D6 | 94,5 | - |
| 15M375D-D6 | 94,5 | - |
| 15M260D-D6 | 94,5 | - |
| 15M140D-D6 | 120 | - |
| 15M95D-D6 | 120 | - |
| 15M70D-D6 | 120 | - |
| 15M1600R-D6 | 94,5 | - |
| 15M440R-D6 | 94,5 | - |
| 15M300R-D6 | 94,5 | - |
| 15M220R-D6 | 94,5 | - |
| 15M120R-D6 | 120 | - |
| 15M80R-D6 | 120 | - |
| 15M58R-D6 | 120 | - |
| 20M2000D - D10 | 103 | - |
| 20M430D - D10 | 103 | - |
| 20M260D - D10 | 103 | - |
| 20M105D - D10 | 134 | - |
| 20M60D - D10 | 134 | - |
| 20M1650R - D10 | 103 | - |
| 20M400R - D10 | 103 | - |
| 20M250R - D10 | 103 | - |
| 20M100R - D10 | 134 | - |
| 20M58R - D10 | 134 | - |
| 28M1700D-D10 | 134,5 | 111 |
| 28M600D-D10 | 134,5 | 111 |
| 28M480D-D10 | 134,5 | 111 |
| 28M330D-D10 | 134,5 | 111 |
| 28M265D-D10 | 134,5 | 111 |
| 28M155D-D10 | 165,5 | 142 |
| 28M120D-D10 | 165,5 | 142 |
| 28M100D-D10 | 165,5 | 142 |
| 28M55D-D10 | 165,5 | 142 |
| 28M1300R-D10 | 134,5 | 111 |
| 28M415R-D10 | 134,5 | 111 |
| 28M345R-D10 | 134,5 | 111 |
| 28M235R-D10 | 134,5 | 111 |
| 28M190R-D10 | 134,5 | 111 |
| 28M110R-D10 | 165,5 | 142 |
| 28M90R-D10 | 165,5 | 142 |
| 28M70R-D10 | 165,5 | 142 |
| 28M40R-D10 | 165,5 | 142 |
| MM45 - MM45R/2E | 133,5 | - |
| MM32 - MM32R/2E | 133,5 | - |
| MM25 - MM25R/2E | 133,5 | - |
| MM13 - MM13R/2E | 167,5 | - |
| MM9 - MM9R/2E | 167,5 | - |
| MM5 - MM5R/2E | 167,5 | - |
| MN1600 - MN1500R | 149 | - |
| MN480 - MN450R | 149 | - |
| MN270 . MN250R | 149 | - |
| MN190 - MN170R | 149 | - |
| MN140 - MN130R | 183 | - |
| MN85 - MN80R | 183 | - |
| MN45 - MN40R | 183 | - |
| MN32 - MN28R | 183 | - |
| MN22 - MN20R | 183 | - |
| MO1550 - MO1200R | 177,5 | - |
| MO450 - MO360R | 187 | - |
| MO280 - MO220R | 187 | - |
| MO130 - MO110R | 222 | - |
| MO85 - MO70R | 222 | - |
| MO40 - MO32R | 257 | - |
| MO25 - MO20R | 257 | - |




**15M models**

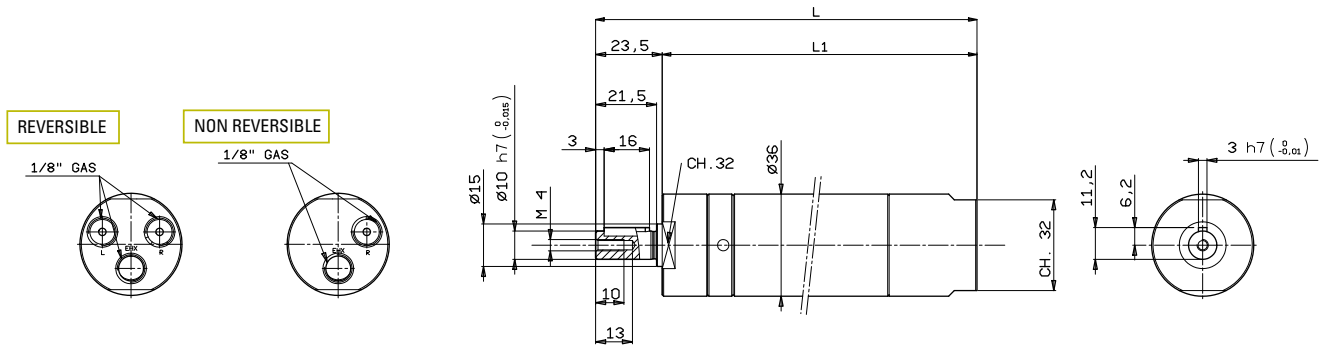



**20M models**

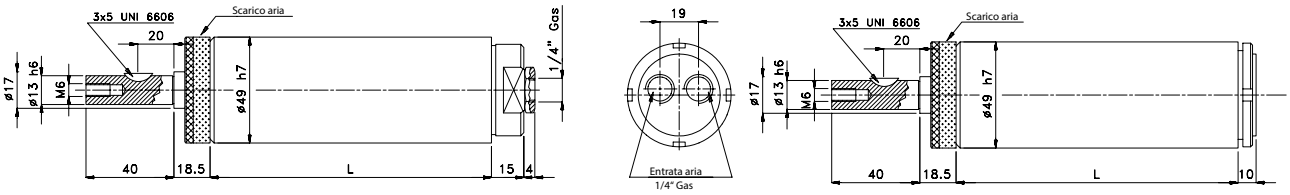
*** Dimensions also apply to stainless steel/IP67 and stainless steel/ATEX/IP67 versions.**

## Models with smooth output shaft

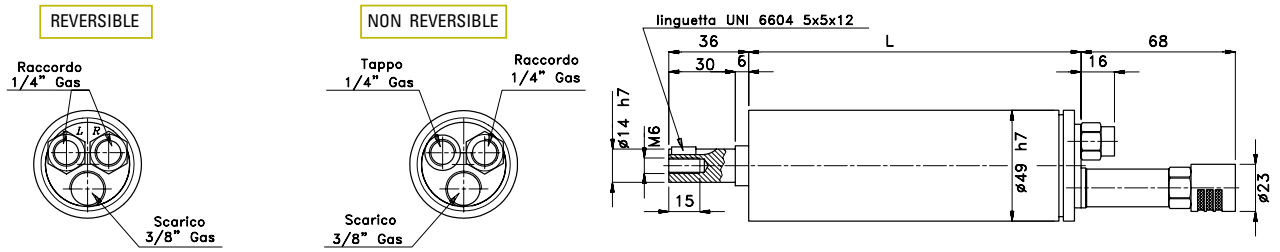
(with key UNI 6604 form A: Ø 6 mm for 15M; Ø 10 mm for 20M and 28M;
Ø 13 mm forr MM; Ø 14 mm for MN; Ø 24 mm for MO)



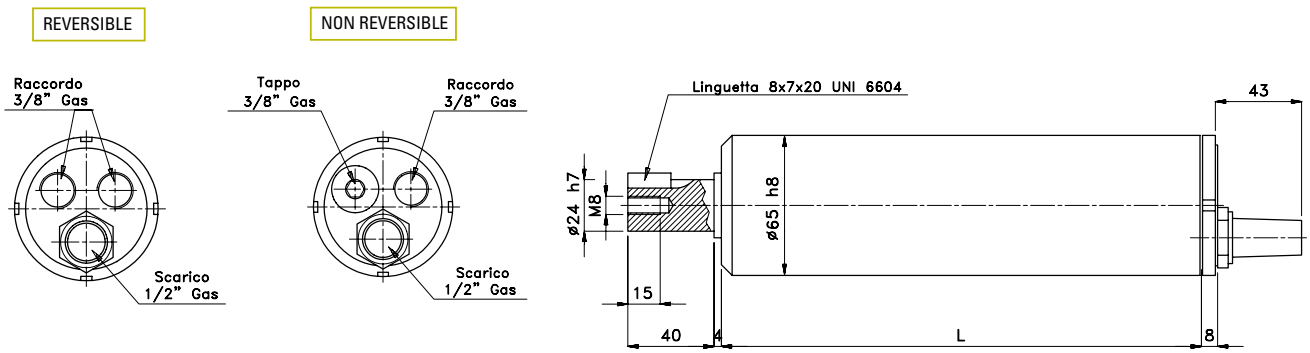

### 28M models




### MM models




### MN models




### MO models

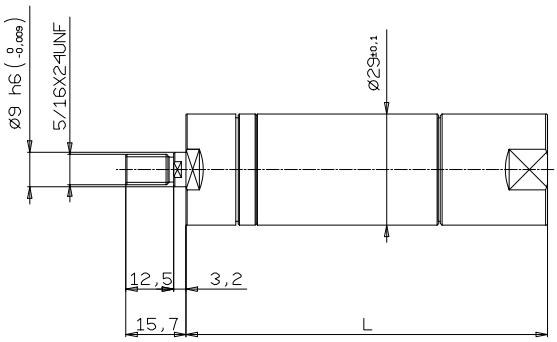
## Models with threaded output shaft

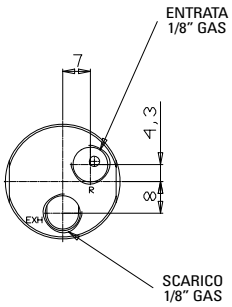
(5/16"x24UNF for 15M; 3/8"x24UNF for 28M and 20M)

*Dimensions (mm)*

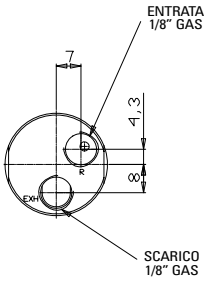
| Model | L | L1 |
|---|---|---|
| 15M1900D-5/16x24UNF | 94,5 | - |
| 15M550D-5/16x24UNF | 94,5 | - |
| 15M375D-5/16x24UNF | 94,5 | - |
| 15M260D-5/16x24UNF | 94,5 | - |
| 15M140D-5/16x24UNF | 120 | - |
| 15M95D-5/16x24UNF | 120 | - |
| 15M75D-5/16x24UNF | 120 | - |
| 20M2000D-3/8x24UNF | 103 | - |
| 20M430D-3/8x24UNF | 103 | - |
| 20M260D-3/8x24UNF | 103 | - |
| 20M105D-3/8x24UNF | 134 | - |
| 20M60D-3/8x24UNF | 134 | - |
| 28M1700D - 3/8x24UNF | 126,5 | 107 |
| 28M600D - 3/8x24UNF | 126,5 | 107 |
| 28M480D - 3/8x24UNF | 126,5 | 107 |
| 28M330D - 3/8x24UNF | 126,5 | 107 |
| 28M265D - 3/8x24UNF | 126,5 | 107 |
| 28M155D - 3/8x24UNF | 157,5 | 138 |
| 28M120D - 3/8x24UNF | 157,5 | 138 |
| 28M100D - 3/8x24UNF | 157,5 | 138 |
| 28M55D - 3/8x24UNF | 157,5 | 138 |

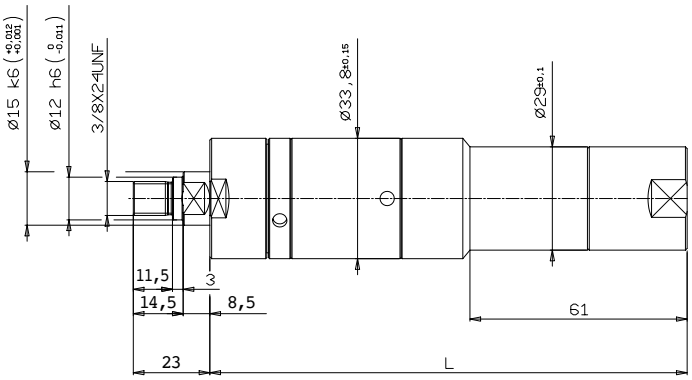
*** Dimensions also apply to stainless steel/IP67 and stainless steel/ATEX/IP67 versions.**



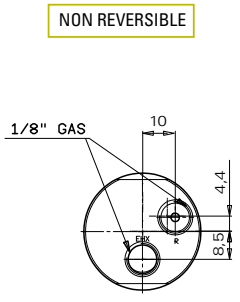



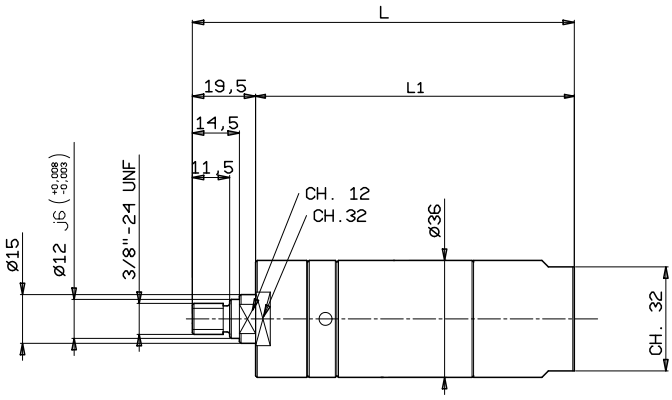

### 15M models




### 20M models




### 28M models

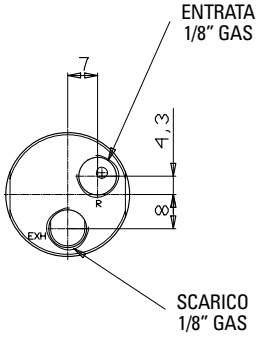
## Models with collet shaft

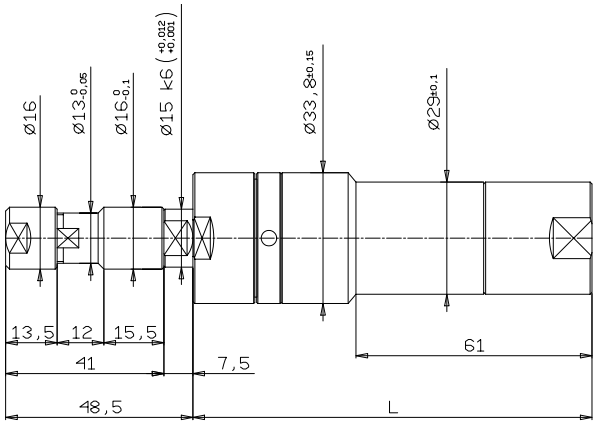
(collet chuck included: ER11 for 20M; ER16 for 28M)

*Dimensions (mm)*

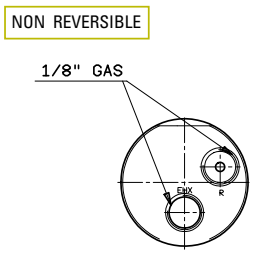
| Model | L | L1 |
|---|---|---|
| 20M2000D-ER11 | 103 | - |
| 20M430D-ER11 | 103 | - |
| 20M260D-ER11 | 103 | - |
| 20M105D-ER11 | 134 | - |
| 20M60D-ER11 | 134 | |
| 28M1700D - ER16 | 162 | 107 |
| 28M600D - ER16 | 162 | 107 |
| 28M480D - ER16 | 162 | 107 |
| 28M330D - ER16 | 162 | 107 |
| 28M265D - ER16 | 162 | 107 |
| 28M155D - ER16 | 193 | 138 |
| 28M120D - ER16 | 193 | 138 |
| 28M100D - ER16 | 193 | 138 |
| 28M55D - ER16 | 193 | 138 |

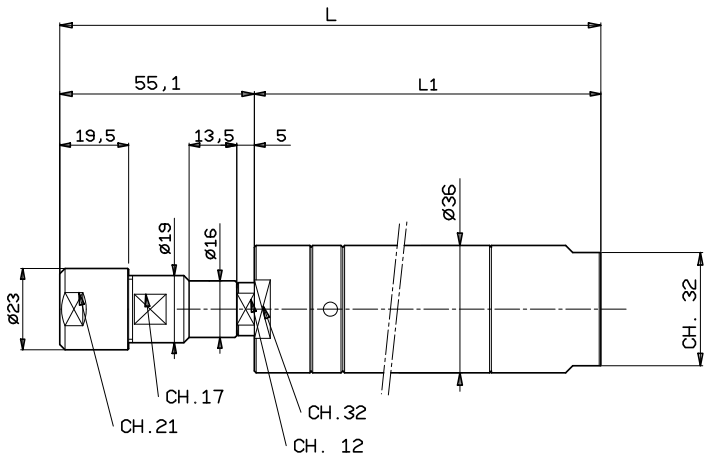
*** Dimensions also apply to stainless steel/IP67 and stainless steel/ATEX/IP67 versions.**




### 20M models




### 28M models

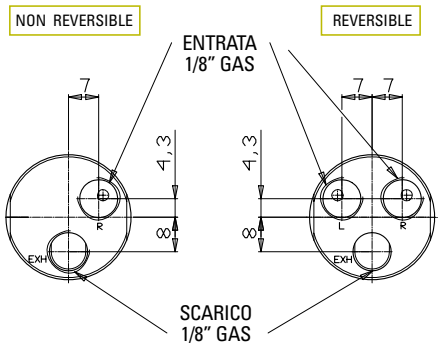
# Models with low rotations with smooth output shaft

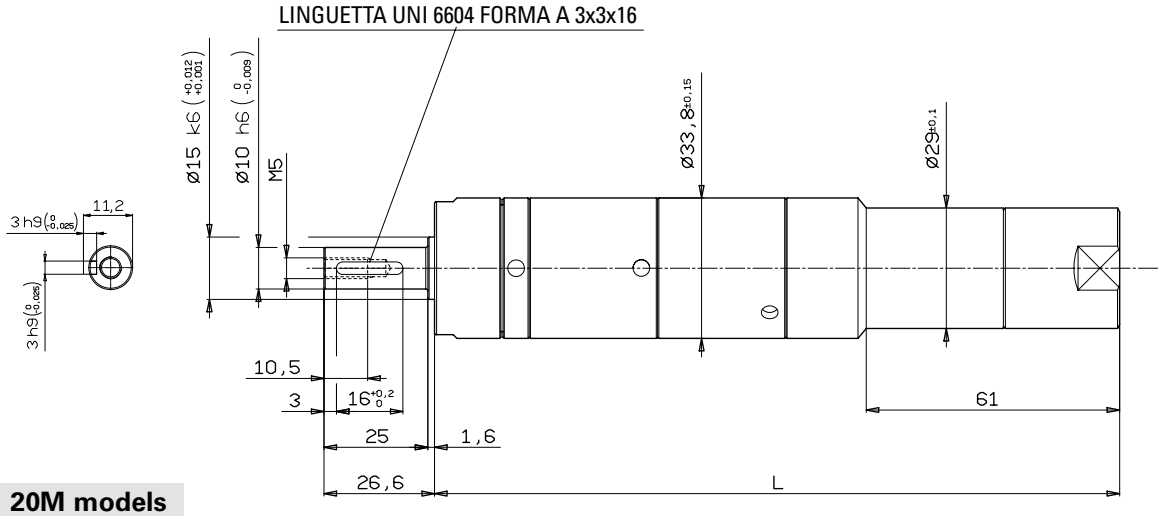
(with key UNI 6604 form A: Ø 6 mm for 20M; Ø 10 mm for 28M)

*Dimensions (mm)*

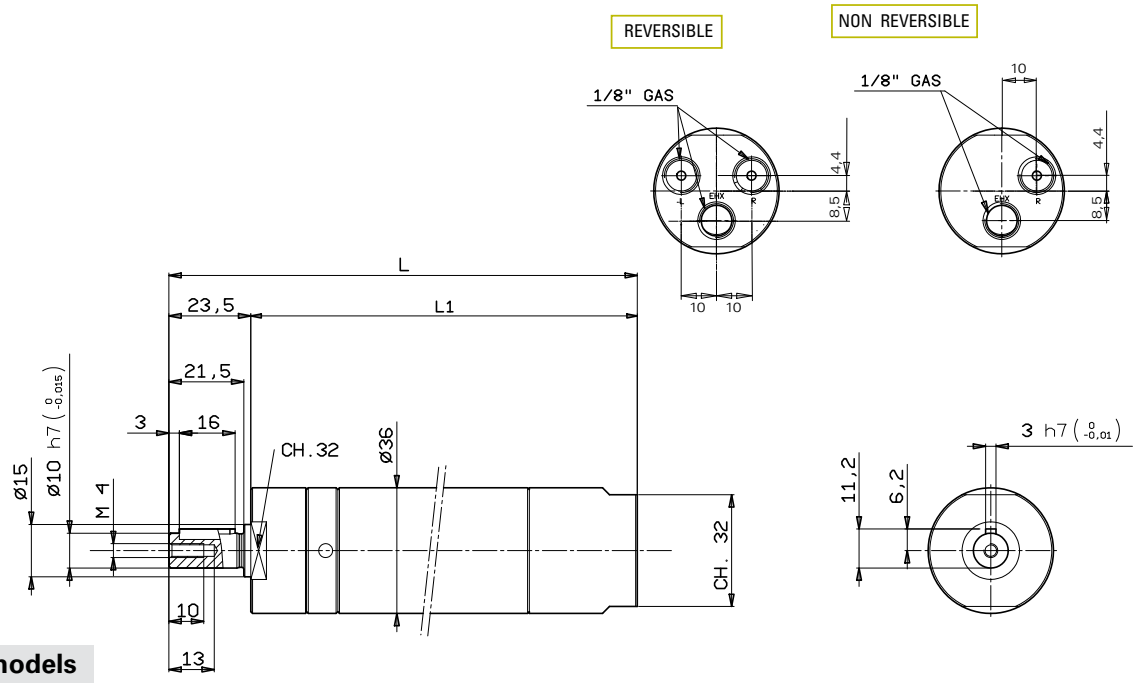
| Model | L | L1 |
|---|---|---|
| 20M35D-D10 | 134 | - |
| 20M14D-D10 | 165 | - |
| 20M8D-D10 | 165 | - |
| 20M5D-D10 | 165 | - |
| | | - |
| 20M30R-D10 | 134 | - |
| 20M13R-D10 | 165 | - |
| 20M7R-D10 | 165 | - |
| 20M4R-D10 | 165 | - |
| 28M20D | 196,5 | 173 |
| 28M10D | 196,5 | 173 |
| 28M15R | 196,5 | 173 |
| 28M8R | 196,5 | 173 |

*** Dimensions also apply to stainless steel/IP67 and stainless steel/ATEX/IP67 versions.**




## 20M models



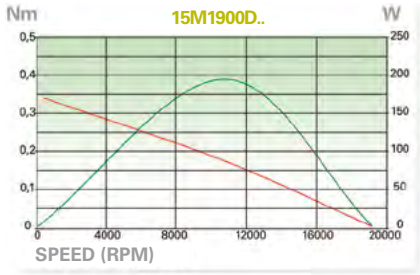

## 28M models

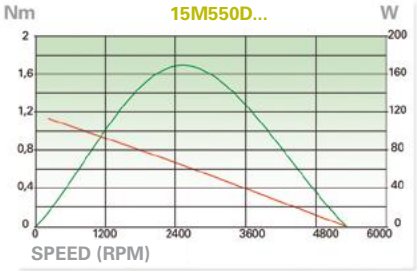
## Performances diagrams of torque, power and speed

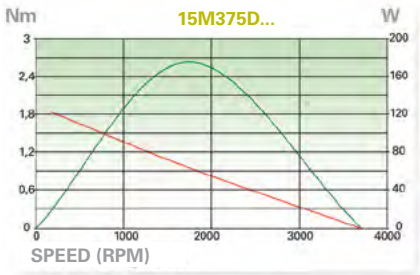
The diagrams show the curves for torque and power in function of number of revolutions: torque _____ power _____
Trend of torque - power in function of speed (at a pressure of 6,3 bar)

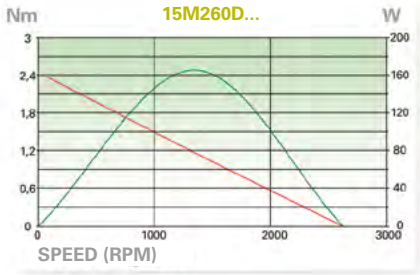
## Non-reversible models

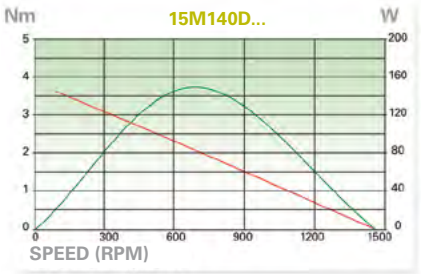
### Models 15M...

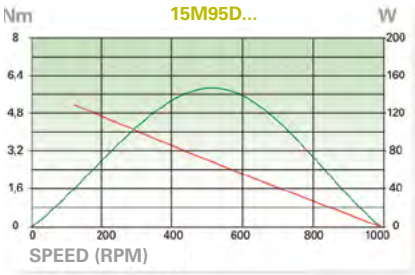


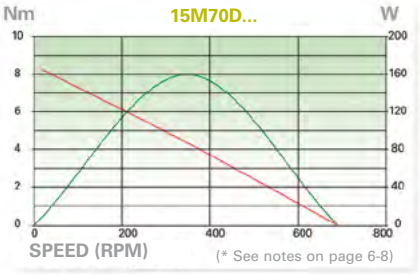



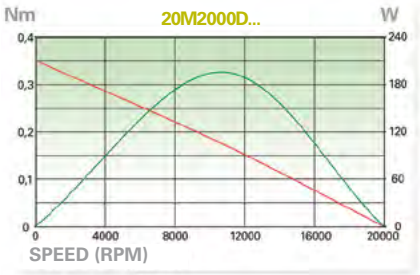



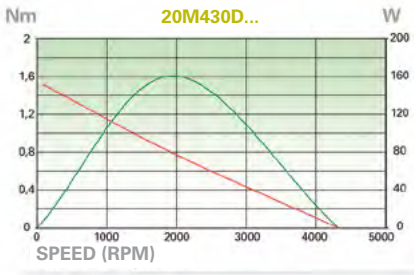



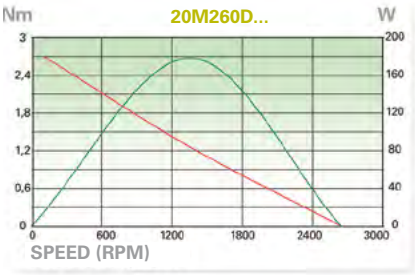



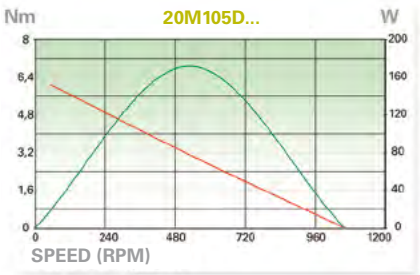

(* See notes on page 6-8)

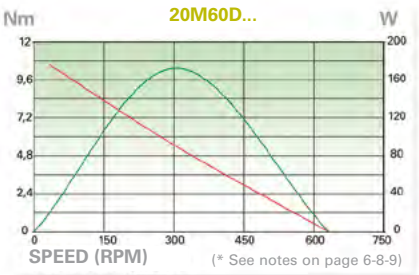
### Models 20M...



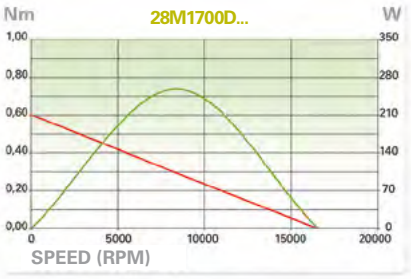



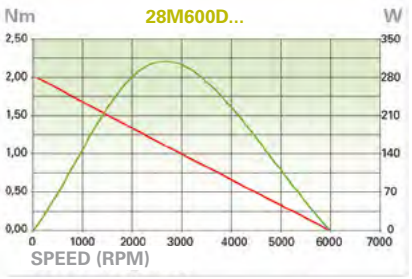



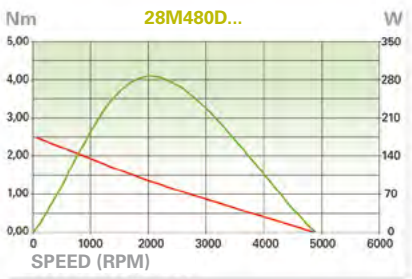



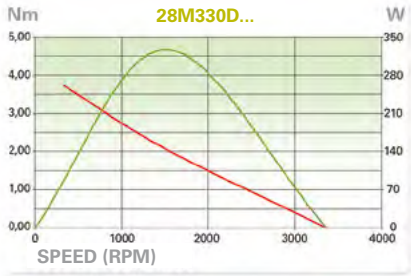

(* See notes on page 6-8-9)

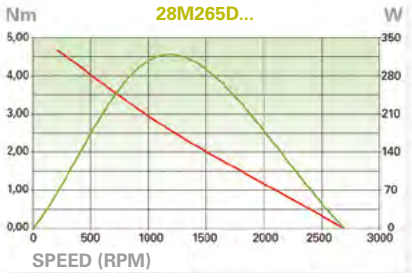
## Models 28M...

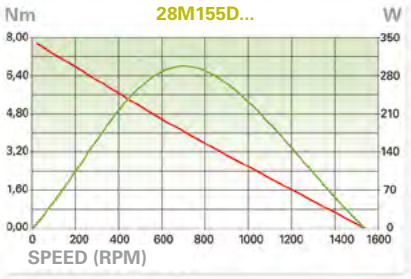


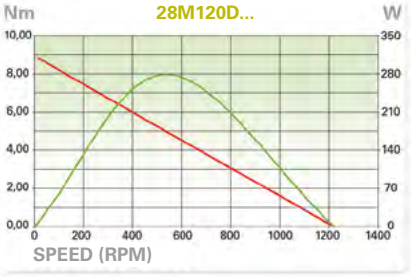



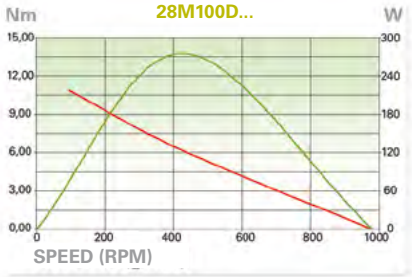



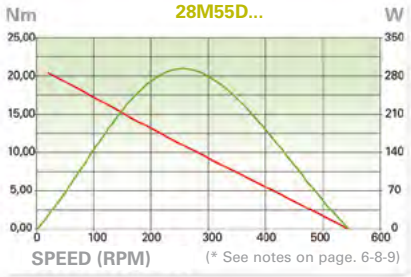



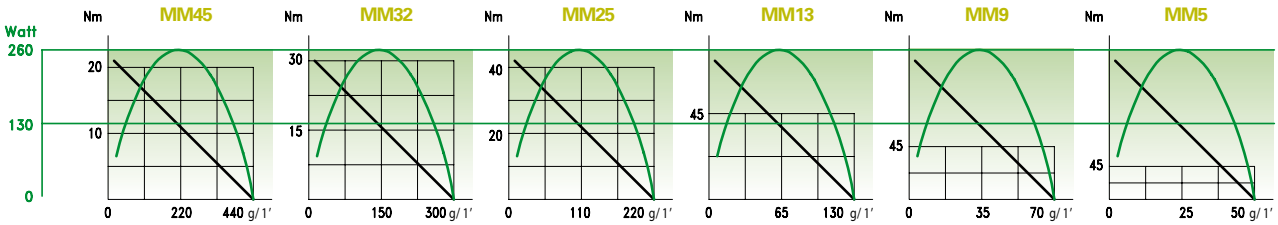



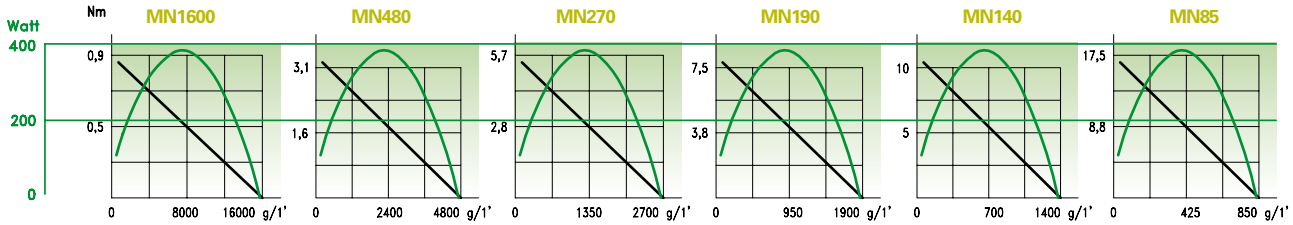



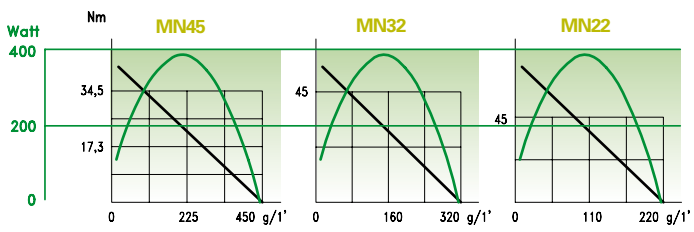

(* See notes on page. 6-8-9)

## Models MM...

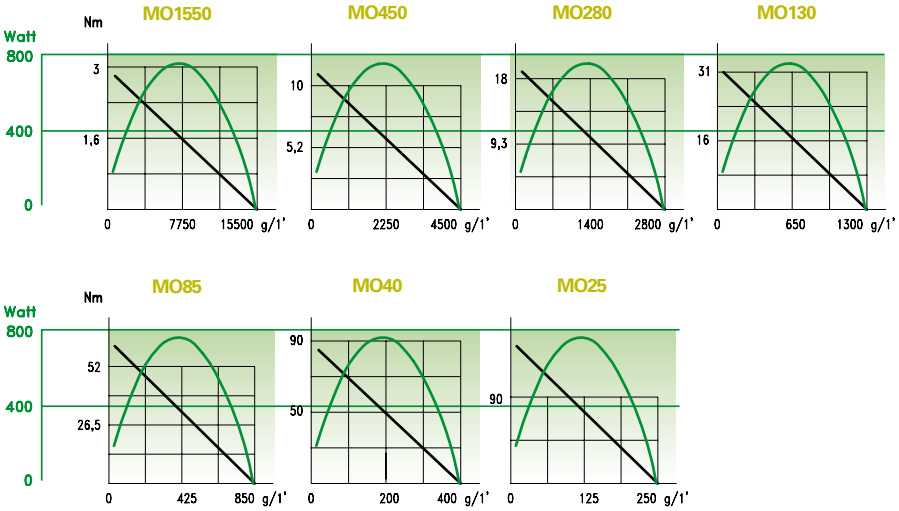



## Models MN...



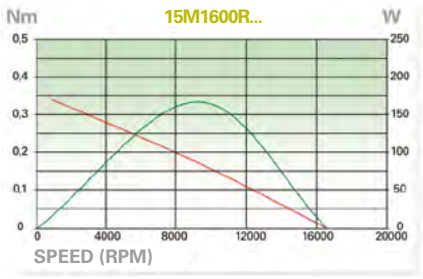
## Models MO...

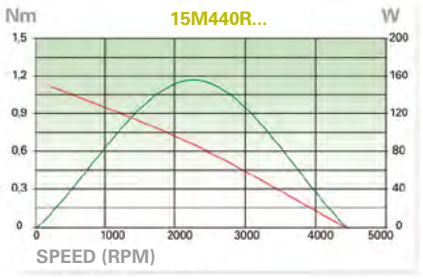

MO1550
MO450
MO280
MO130
Nm
Watt
800
400
0
3
1,6
10
5,2
18
9,3
31
16
0
7750
15500 g/1'
0
2250
4500 g/1'
0
1400
2800 g/1'
0
650
1300 g/1'

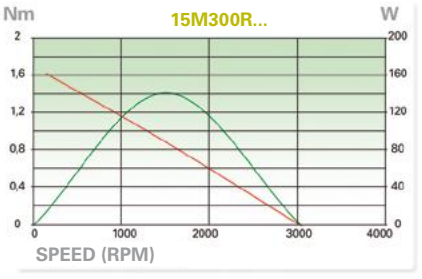

MO85
MO40
MO25
Nm
Watt
800
400
0
52
26,5
90
50
90
0
425
850 g/1'
0
200
400 g/1'
0
125
250 g/1'

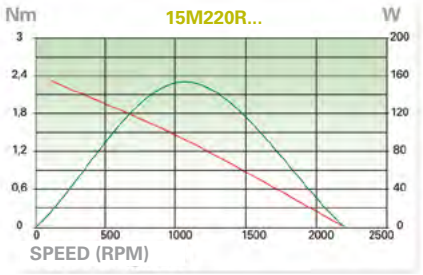
# Reversible models

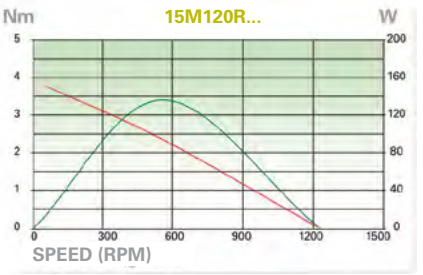
## Models 15M...

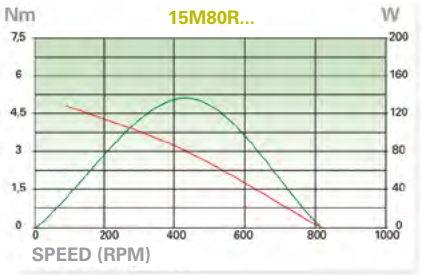


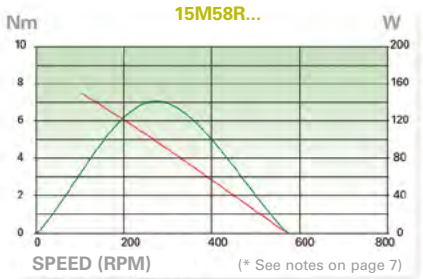



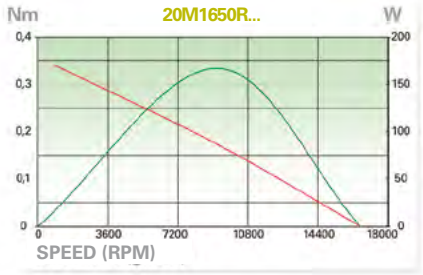



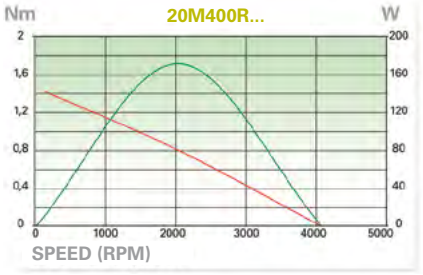



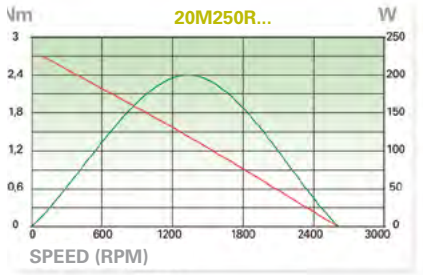



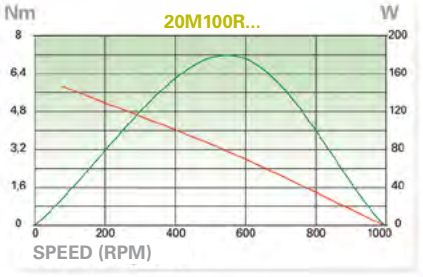



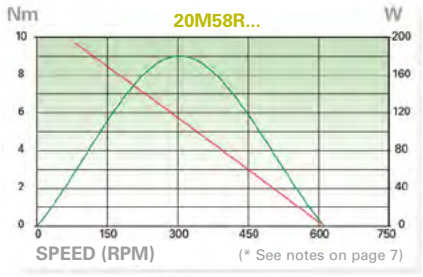

## Models 20M...



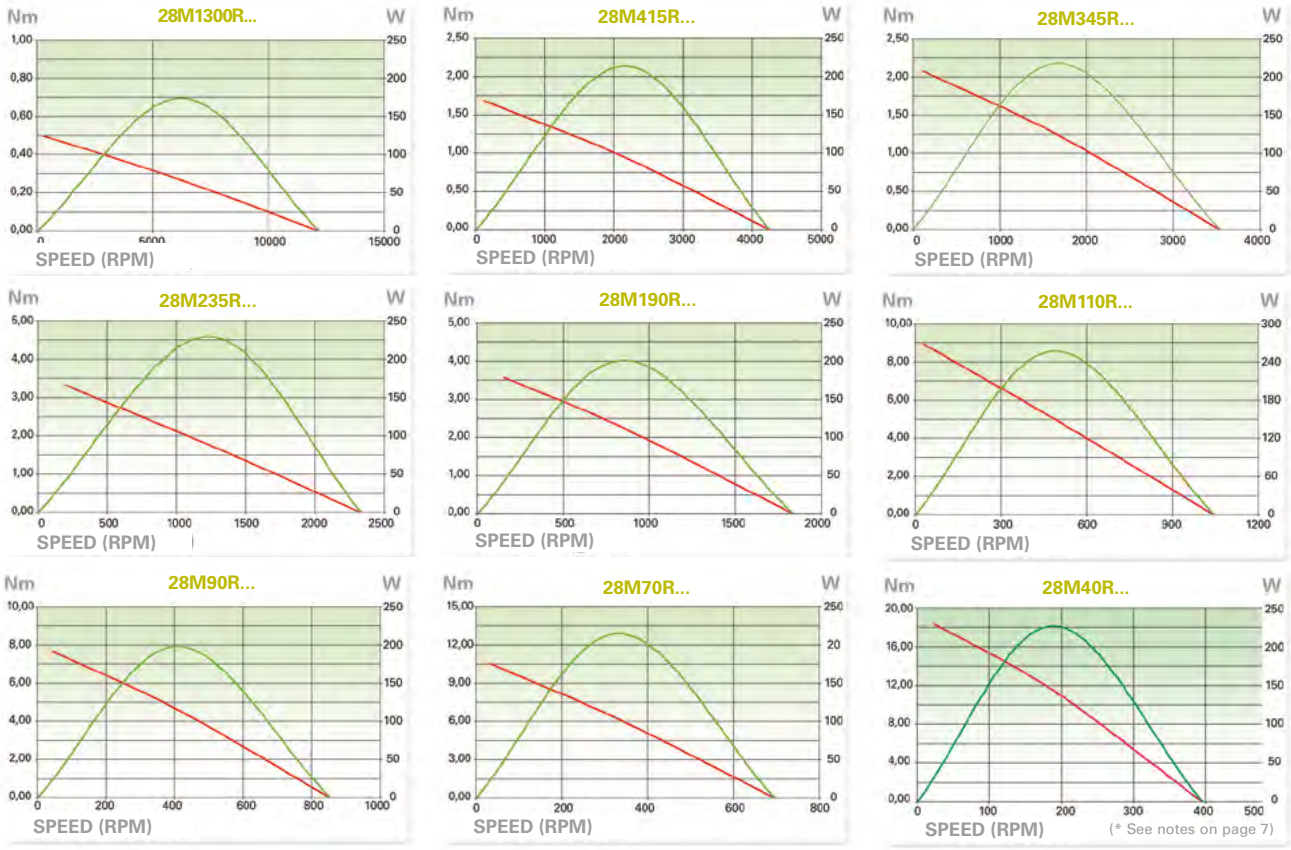



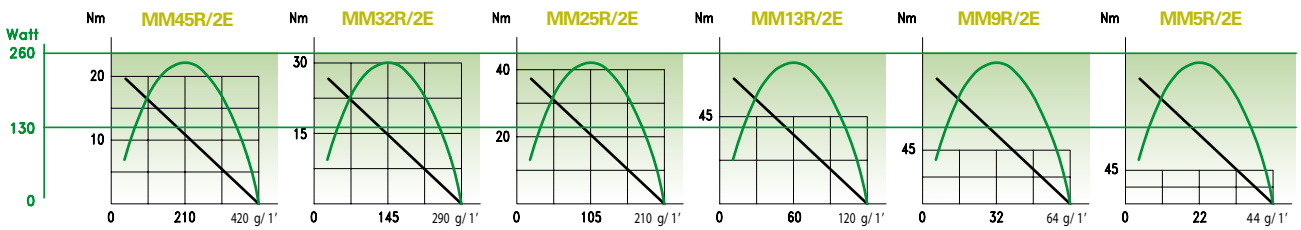



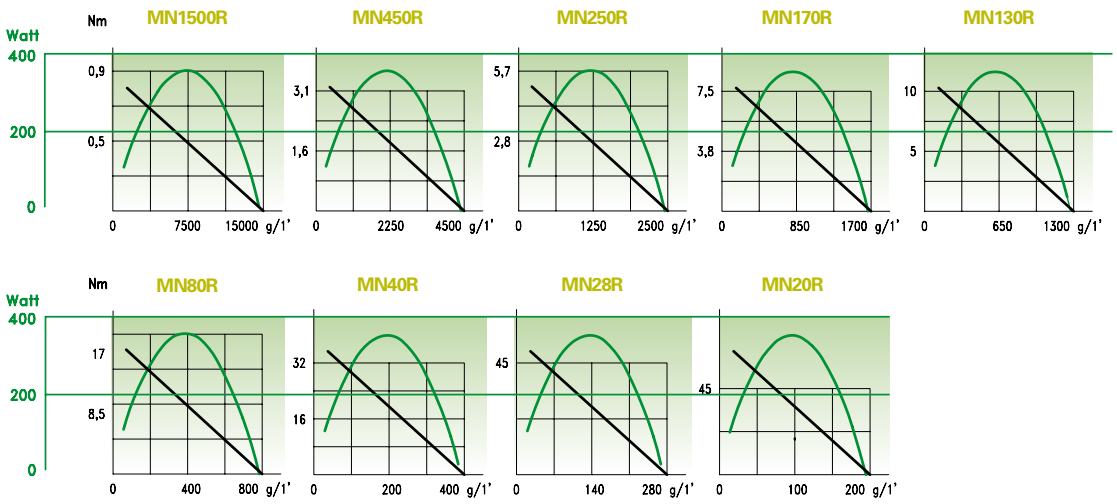
## Models 28M...



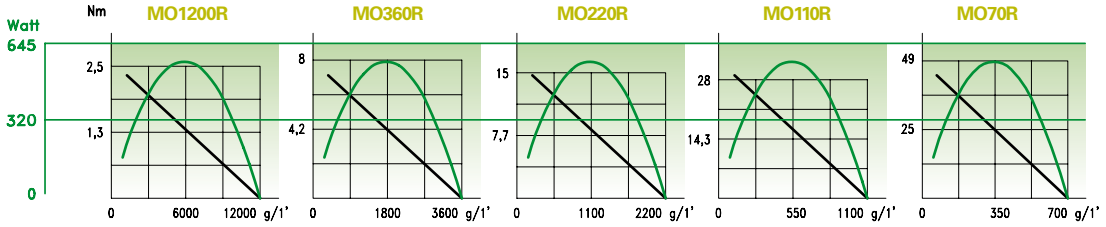

## Models MM...

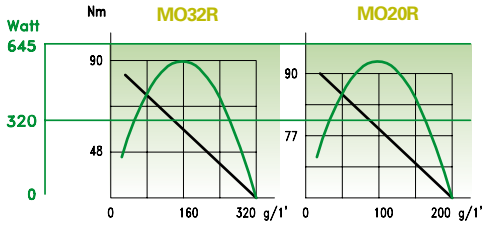



## Models MN...



## Models MO...


Nm
MO1200R
MO360R
MO220R
MO110R
MO70R
Watt
645
320
0
2,5
1,3
8
4,2
15
7,7
28
14,3
49
25
0
6000
12000 g/1'
0
1800
3600 g/1'
0
1100
2200 g/1'
0
550
1100 g/1'
0
350
700 g/1'


Nm
MO32R
MO20R
Watt
645
320
0
90
48
90
77
0
160
320 g/1'
0
100
200 g/1'

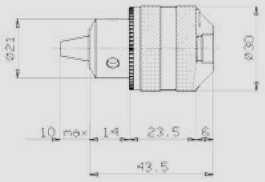
# Accessories for the use of air motors in drilling operations

- To use Fiam motors in drilling, burring, etc. operations it is necessary to order a motor with threaded output shaft 3/8"x24UNF (available only for motor with right hand rotation).

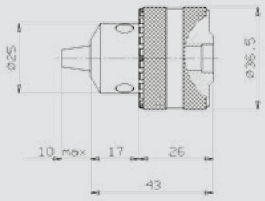
## • Keyed chucks

Sturdy chucks equipped with locking key to block the bit of the drill. The dimensions are expressed in millimeters (mm)

| Chuck capacity (mm) | Drive type | Code |
|---|---|---|
| 0 ÷ 6 | 3/8 x 24 UNF | 650381006 |
| 0 ÷ 8 | 3/8 x 24 UNF | 650381008 |



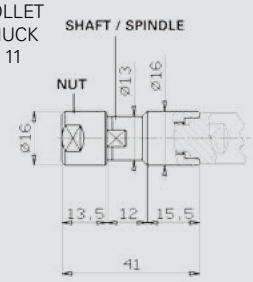

| Chuck capacity (mm)) | Drive type | Code |
|---|---|---|
| 1 ÷ 10 | 3/8 x 24 UNF | 650381010 |



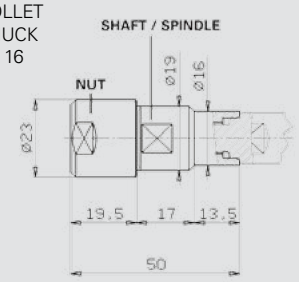

## • Collet chucks

The use of collets on motors with collet chuck permits to reduce the dimensions of encumbrance of the head of the drilling unit and to obtain the better accuracy in drilling.

COLLET CHUCK ER 11




COLLET CHUCK ER 16




| Collet chuck | Drive type | Code |
|---|---|---|
| ER 11 | 3/8x24 UNF | 660449011 |
| ER 16 | 3/8x24 UNF | 660449010 |

## • Collets

They are to be chosen according to the diameter of the bit

** The locking capacity of the collet is referred o the diameter of the male shank of the bit*

*ER 11*

*ER 16*

***Collets ER 11***

| Capacity ø (mm)* | Code |
|---|---|
| 1 | 660431010 |
| 1,5 | 660431015 |
| 2 | 660431020 |
| 2,5-3/32" | 660431025 |
| 3 | 660431030 |
| 3,5-1/8" | 660431035 |
| 4 | 660431040 |
| 4,5 | 660431045 |
| 5-3/16" | 660431050 |
| 5,5 | 660431055 |
| 6 | 660431060 |
| 6,5-1/4" | 660431065 |
| 7 | 660431070 |

| Locking capacity of the collects |
|---|
| 0,5 mm |

***Collets ER 16***

| Capacity ø (mm)* | Code |
|---|---|
| 1 | 660441010 |
| 1,5 | 660441015 |
| 2 | 660441020 |
| 2,5-3/32" | 660441025 |
| 3 | 660441030 |
| 4-1/8" | 660441040 |
| 5-3/16" | 660441050 |
| 6 | 660441060 |
| 7-1/4" | 660441070 |
| 8-5/16" | 660441080 |
| 9 | 660441090 |
| 10 | 660441100 |

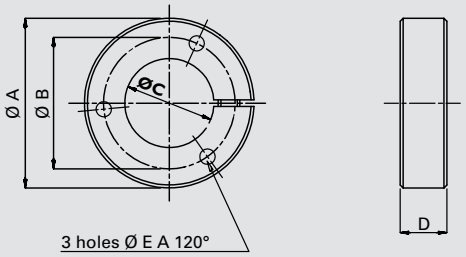
| Locking capacity of the collects |
|---|
| da 1 a 3 mm = 0,5 mm |
| oltre 3 mm = 1 mm |

# Accessories

## • Flange bracket

Recommended to fix the motors onto machines/units

| Code | Motor power | A mm | B mm | C mm | D mm | E mm |
|---|---|---|---|---|---|---|
| 684011009 | 15M... | 64,5 | 50 | 29 | 18 | 5,25 |
| 684011001 | 20M... | 64,5 | 50 | 33,8 | 18 | 5,25 |
| 684011007 | 28M... | 69,5 | 57 | 36 | 18 | 6,25 |
| 684011002 | MM-MN | 79,5 | 64 | 49 | 18 | 6,2 |
| 684011005 | MO | 129 | 105 | 65 | 35 | 10,2 |






www.fiamgroup.com info@fiamgroup.com Meet us on:

FIAM® PEOPLE AND SOLUTIONS

**Fiam Utensili Pneumatici Spa**
Viale Crispi 123
36100 Vicenza - Italy
Tel. +39.0444.385000
Fax +39.0444.385002

**Fiam France Succursale**
73, cours Albert Thomas
69003 Lyon - France
Tel. +33 (0)9 70 40 73 85

**Fiam España Sucursal**
Travessera de Gràcia, 11, 5ª planta
08021 Barcelona, España
Tel. +34.636808112

Quality Management System Certificate
Environmental Management System Certificate