DC MOTOR CHOICE

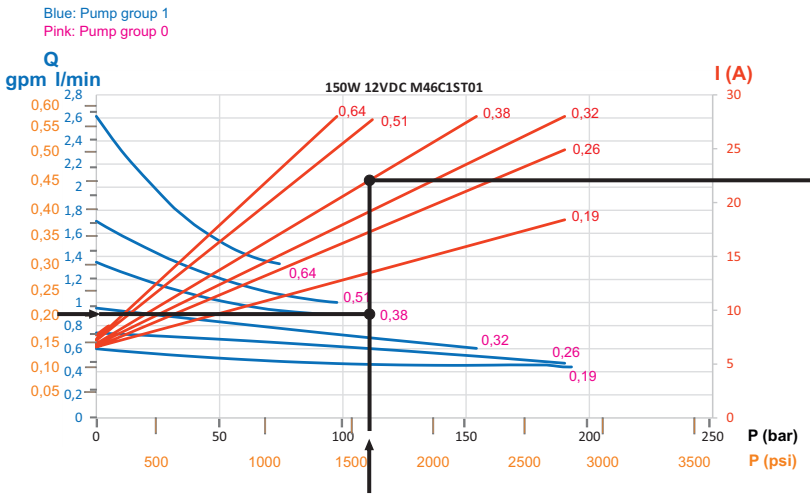
DC motors selection

DC motor selection is a critical step for the proper power pack definition. Required Pressure, Required Flow, Service Factor (or Duty Cycle) should be known before starting the motor selection. Please note that DC motors speed is **not** constant and depends on torque.
Once you choose a motor, look at Motor-Pump Performance diagram if a pump displacement (blue curve) is available at the **intersection** of required pressure and flow values. On the relevant "I" axis (red curve) you obtain the current drawn. When the intersection point is not exactly on a pump curve, select a smaller pump . On Motor Ratings diagram you can easily obtain the maximum allowed Service Factor: S2, Short Time Duty (min); S3, Intermittent Periodic Duty (% of total cycle). If the obtained Service values are not sufficient to meet required performances, choose a higher power or heavier duty motor and repeat the calculation on the new motor curves.

Example:

an application requires the following data: flow = 4 l/min, max pressure = 195 bar, duty cycle is unknown.
- check on 1,6 Kw 12V DC motor diagram: the 1,66 cc pump curve meet the intersection of 4 liters/minutes and 195 bar
- choose from curves a 1,66 cm^3/rev pump. the corresponding "I" curve declares 200 A drawn current at 195 bar.
- project horizontally the current drawn to the Motor Rating diagram: the DC motor can work for maximum 3 min (S2) and S3 is about 9% of the total cycle, i.e. after 3 min working, the motor should cool down for at least 30 min.
- The total cycle time is calculated by adding the working time and the idle time (9% working time plus 91% idle time), in this case 33 min. If this duty cycle is not adequate for our application, we must choose a higher power or higher duty DC motor and check the relevant diagram again.

Motor-Pump Performances



Motor Ratings



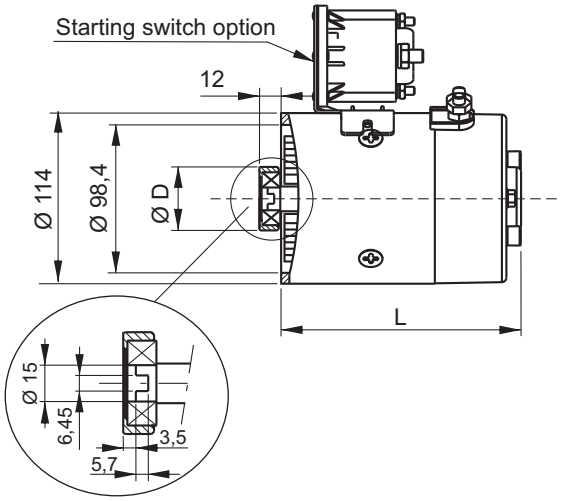
Other B14 DC motors for heavy duty or special applications

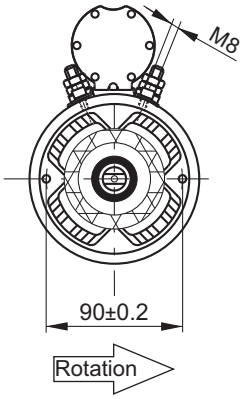
They are available in sizes Ø125, Ø151 or Ø191 in multiple executions, engineered to perform heavy duty cycles and tailor made to suit each specific application, with or without cooling fan and thermal protection. They are normally mounted on the central manifold with B14 standard mounting kits.
To properly select these motors, the following minimum information must be provided: 1) motor power and voltage, 2) application type, 3) duty factors: S2 [min] - continuous running time and S3 [%] - percentage of running time on total cycle time, 4) required motor speed, 5) quantity to be supplied.
For environment with humidity over 80%, motors with optional IP67 protection index are available and recommended. Please ask our sales office. The thermal switch is set at 120°C.
The motors indicated above in particular operating cycles can reach temperatures of 100-110 °C on the outher part of the housing, it is recommended to use the special protective cover (MACVH00003) to prevent the motor from burning up.

INTEGRAL DC MOTORS Ø114



Compound wound
Protection degree: IP54
Insulation class: F
Weight: 8,15 kg (without starting switch)
UL motors available on request





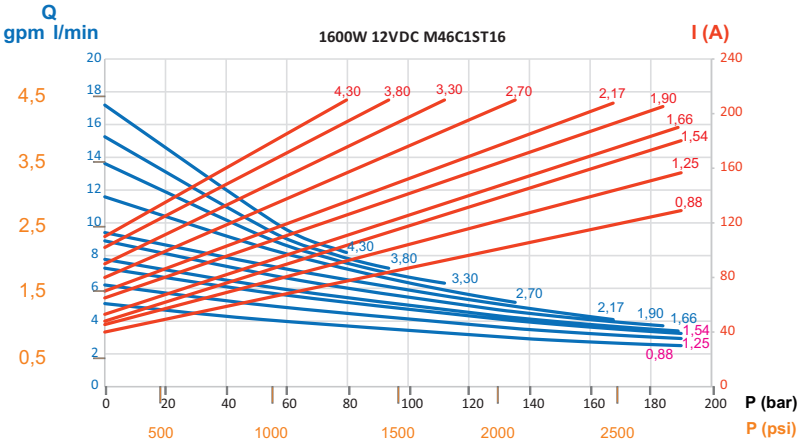
Code for PPC/SPU/EPB

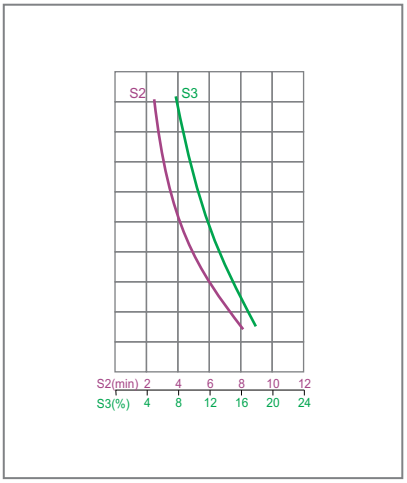
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC + thermal protection	**1,6 12DC_T**	**M46C1ST16**	S2: 3 min S3: 10% ED	2800 rpm	210 A	165 mm	42 mm
2100W 12V DC + thermal protection	**2,1 12DC_T**	**M46C1ST21**	S2: 2,5 min S3: 10% ED	2400 rpm	300 A	182 mm	42 mm
2200W 24V DC + thermal protection	**2,2 24DC_T**	**M46C2ST22**	S2: 2,5 min S3: 10% ED	2400 rpm	130 A	165 mm	42 mm
2200W 48V DC + thermal protection	**2,2 48DC_T**	**M46C4ST22**	S2: 3 min S3: 15% ED	3000 rpm	65 A	163 mm	42 mm
3000W 24V DC + thermal protection	**3 24DC_T**	**MCDCH00020**	S2: 5 min S3: 13% ED	3000 rpm	140 A	206 mm	42 mm
3000W 48V DC + thermal protection	**3 48DC_T**	**MCDCH00021**	S2: 6 min S3: 10% ED	3800 rpm	70 A	206 mm	42 mm

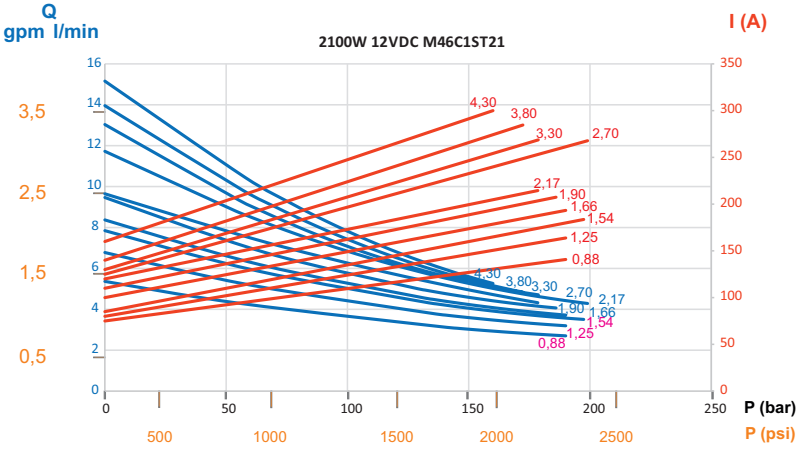
Code for PPM

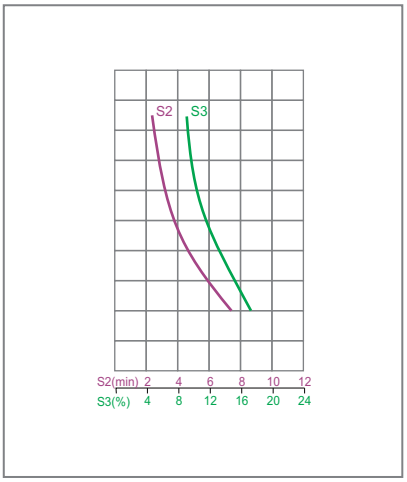
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC + thermal protection	**1,6 12DC_TM**	**M46C1ST16M**	S2: 3 min S3: 10% ED	2800 rpm	210 A	165 mm	28 mm
2100W 12V DC + thermal protection	**2,1 12DC_TM**	**M46C1ST21M**	S2: 2,5 min S3: 10% ED	2400 rpm	300 A	182 mm	28 mm
2200W 24V DC + thermal protection	**2,2 24DC_TM**	**M46C2ST22M**	S2: 2,5 min S3: 10% ED	2400 rpm	130 A	165 mm	28 mm
2200W 48V DC + thermal protection	**2,2 48DC_TM**	**M46C4ST22M**	S2: 3 min S3: 15% ED	3000 rpm	65 A	163 mm	28 mm

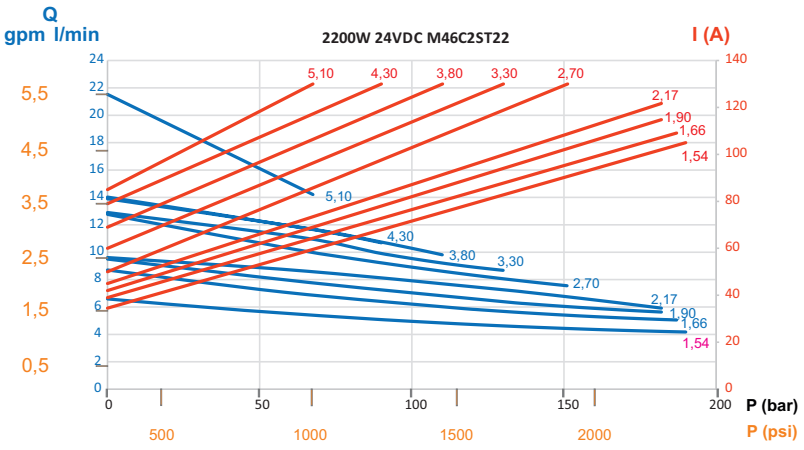
DC MOTORS Ø114 DIAGRAMS

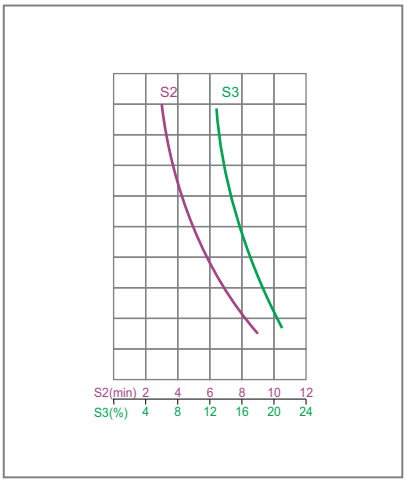






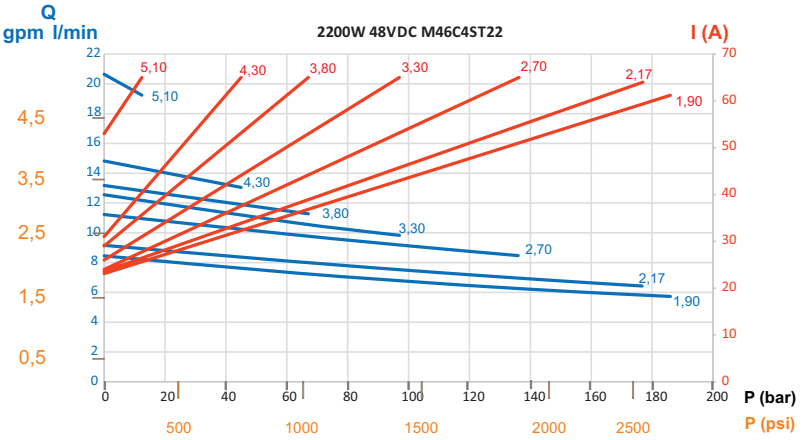


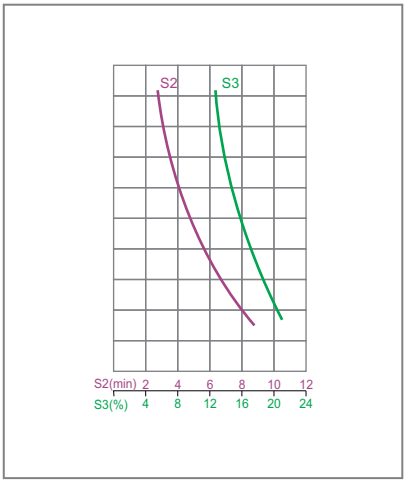




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø114 DIAGRAMS

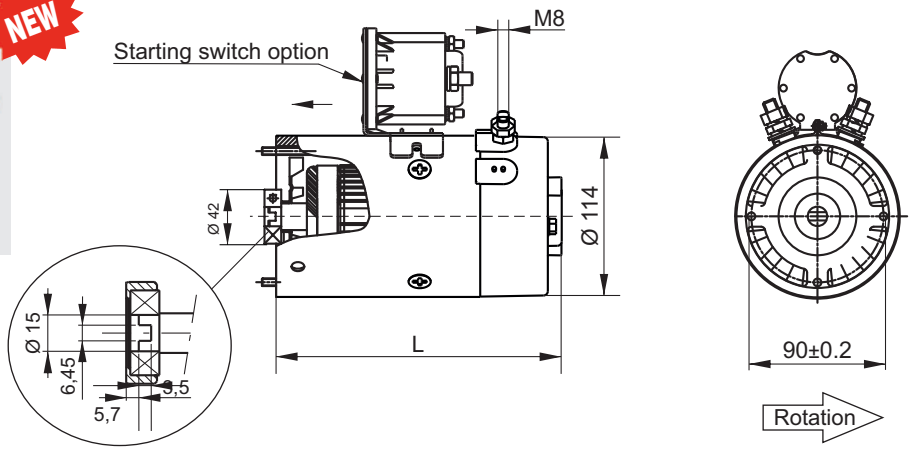




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

INTEGRAL DC MOTORS Ø114 WITH INTEGRATED COOLING FAN





Compound wound
Protection degree: IP20
Insulation class: F
Weight: 8,0 kg (without starting switch)
UL motors available on request

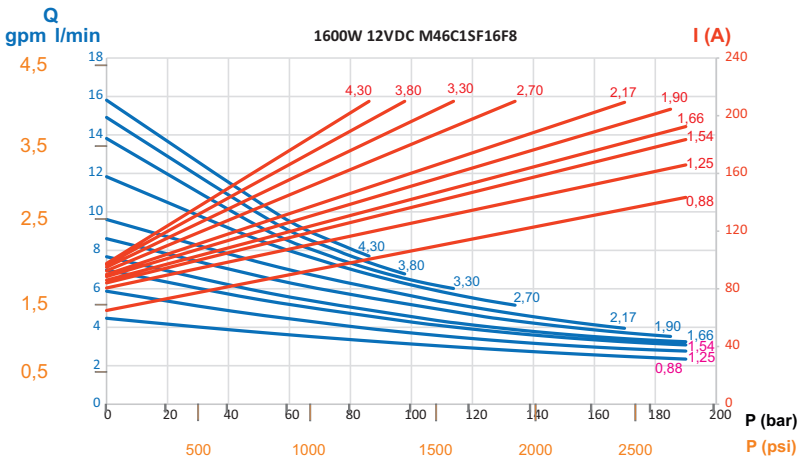
RoHS COMPLIANT 2011/65/EU

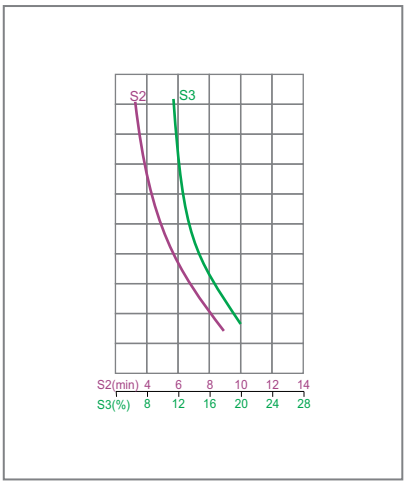
Code for PPC/SPU/EPB

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC fan cooled	**1,6 12DC_FC**	**M46C1SF16F8**	S2: 4 min S3: 10% ED	2800 rpm	210 A	188 mm	42 mm
2100W 12V DC fan cooled	**2,1 12DC_FC**	**M46C1SF21F8**	S2: 3,5 min S3: 10% ED	2400 rpm	300 A	204 mm	42 mm
2200W 24V DC fan cooled	**2,2 24DC_FC**	**M46C2SF22F8**	S2: 3,5 min S3: 10% ED	2400 rpm	130 A	188 mm	42 mm
2200W 48V DC fan cooled	**2,2 48DC_FC**	**M46C4SF22F8**	S2: 3,5 min S3: 15% ED	3000 rpm	65 A	188 mm	42 mm

Code for PPM

Description	Assembly code	Spare part code	Nominal duty cycle	Nomina l speed	Nominal current	L	D
1600W 12V DC fan cooled	**1,6 12DC_FCM**	**M46C1SF16MF8**	S2: 4 min S3: 10% ED	2800 rpm	210 A	188 mm	28 mm
2100W 12V DC fan cooled	**2,1 12DC_FCM**	**M46C1SF21MF8**	S2: 3,5 min S3: 10% ED	2400 rpm	300 A	204 mm	28 mm
2200W 24V DC fan cooled	**2,2 24DC_FCM**	**M46C2SF22MF8**	S2: 3,5 min S3: 10% ED	2400 rpm	130 A	188 mm	28 mm
2200W 48V DC fan cooled	**2,2 48DC_FCM**	**M46C4SF22MF8**	S2: 3,5 min S3: 15% ED	3000 rpm	65 A	188 mm	28 mm

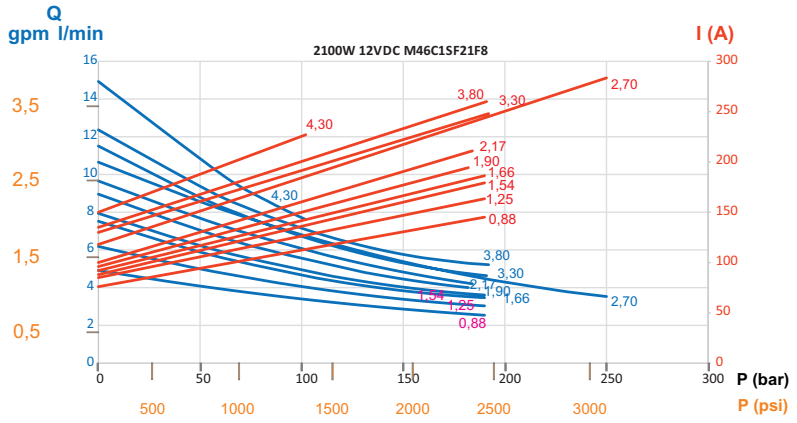


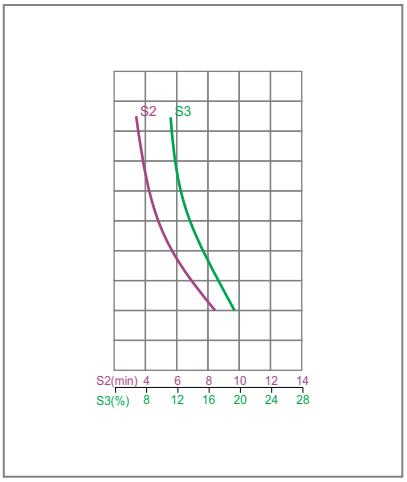


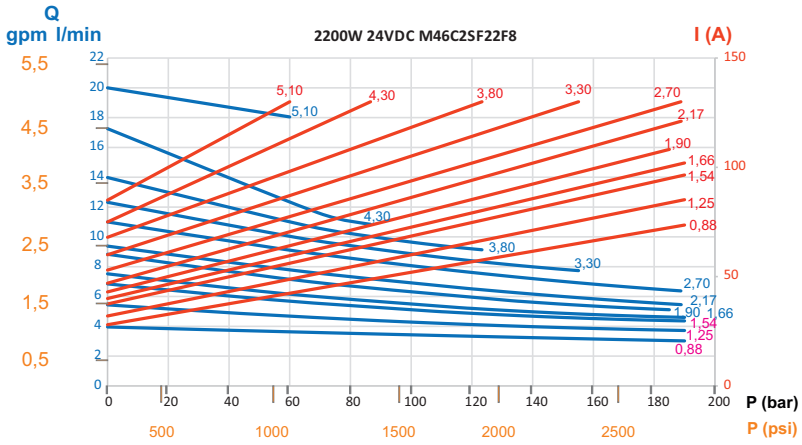
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

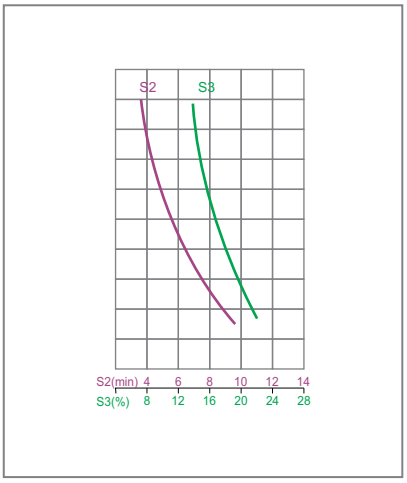
25-01

DC MOTORS Ø114 WITH COOLING FAN DIAGRAMS







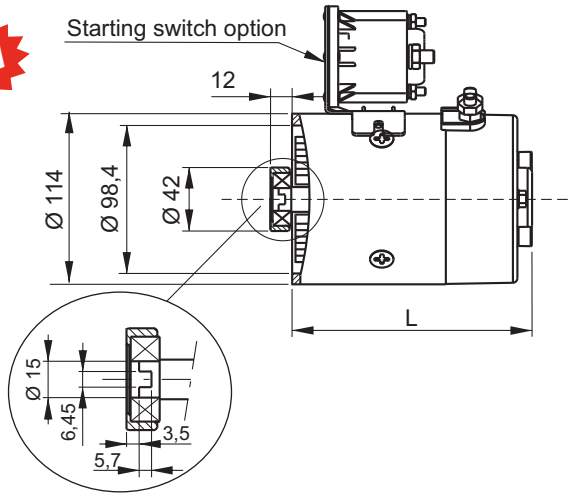


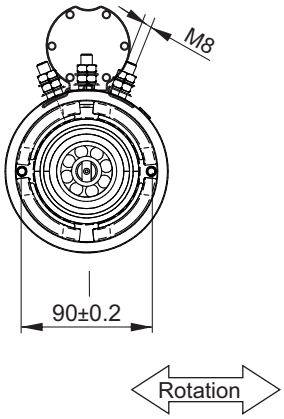
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

INTEGRAL REVERSIBLE DC MOTORS Ø114



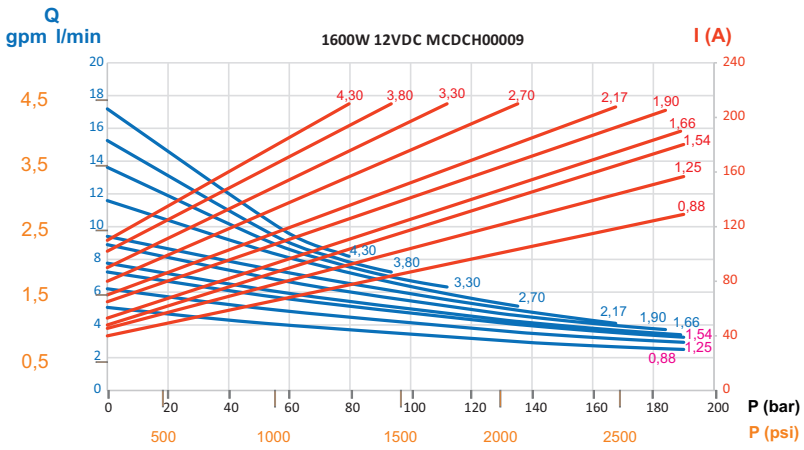
Compound wound
Protection degree: IP54
Insulation class: F
Weight: 8,15 kg (without starting switch)
UL motors available on request

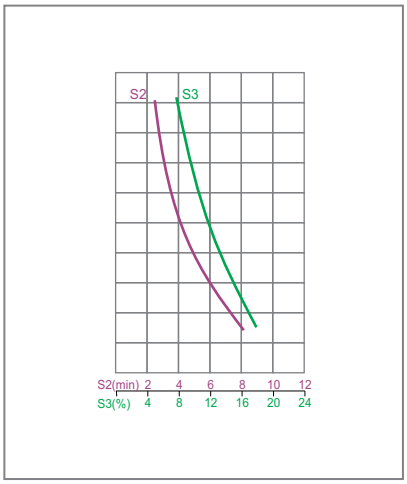


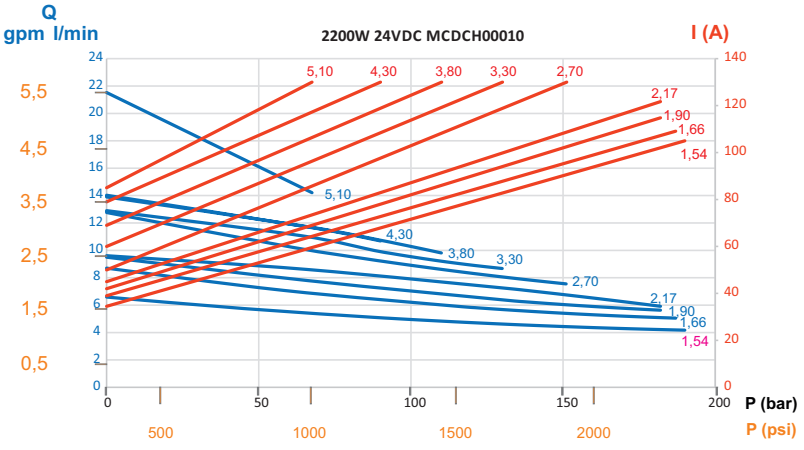


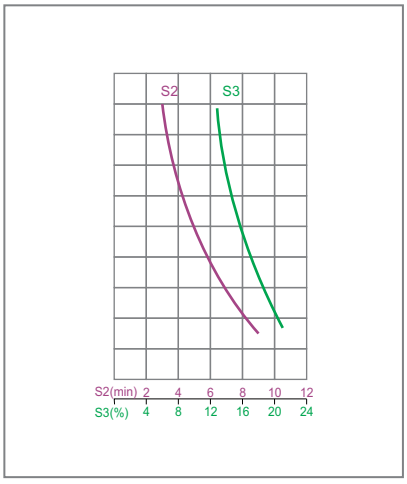
Code

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
1600W 12V DC 3 poles + thermal protection	**1,6 12DC_T_3**	**MCDCH00009**	S2: 2 min S3: 7.5% ED	2600 rpm	210 A	165 mm
2200W 24V DC 4 poles + thermal protection	**2,2 24DC_T_3**	**MCDCH00010**	S2: 2 min S3: 7.5% ED	2650 rpm	125 A	165 mm









Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C