

DC MOTORS CHOICE AND ELECTRIC CONNECTION SCHEMES

DC motors choice

Once required pressure and flow and available voltage (12 or 24V DC) are known, you can select the motor checking on each provided diagram if a pump displacement is available at the intersection of pressure and flow values. On the relevant "I" curve you obtain the absorbed current. When the intersection point is not exactly on a pump curve, choose the closer smaller pump.

On the right hand diagram, from the current value, you can easily obtain the maximum allowed S2 (min) and S3 (%) values. S2 gives the allowable motor continuous running time in minutes, S3 gives the allowable running time in % of the total cycle.

If obtained S2 and S3 values are not enough for required duty cycle, choose a higher power or heavier duty motor and repeat the calculation on the new motor curves.

Example:

For our application we have following data:

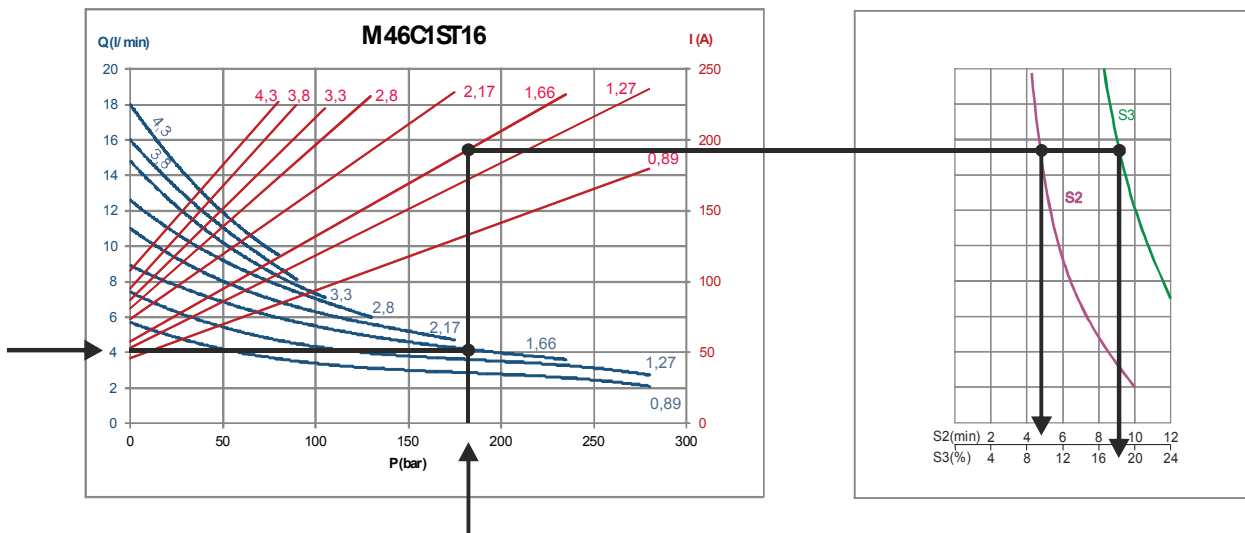
flow = 4 l/min, max pressure = 180 bar, not clearly defined duty cycle.

-We check on 1,6 Kw 12V DC motor diagram and see there is a pump available.

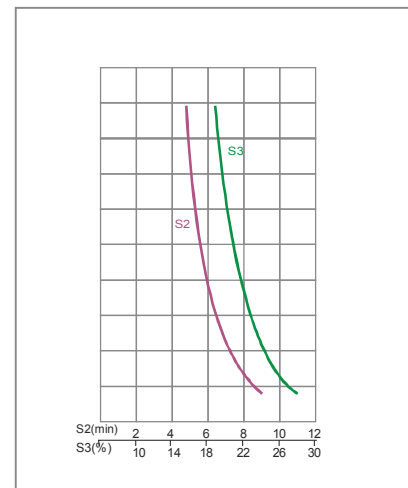
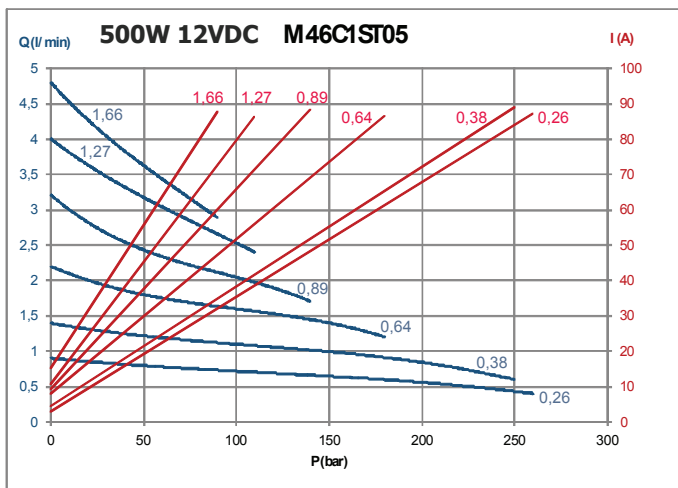
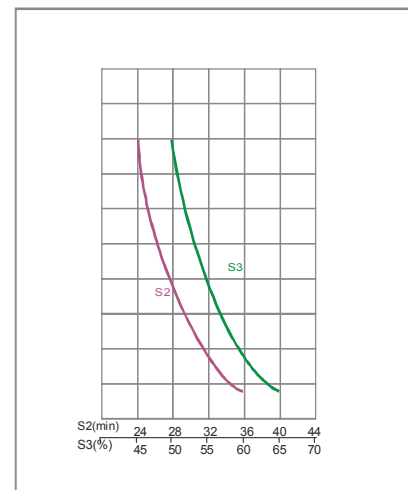
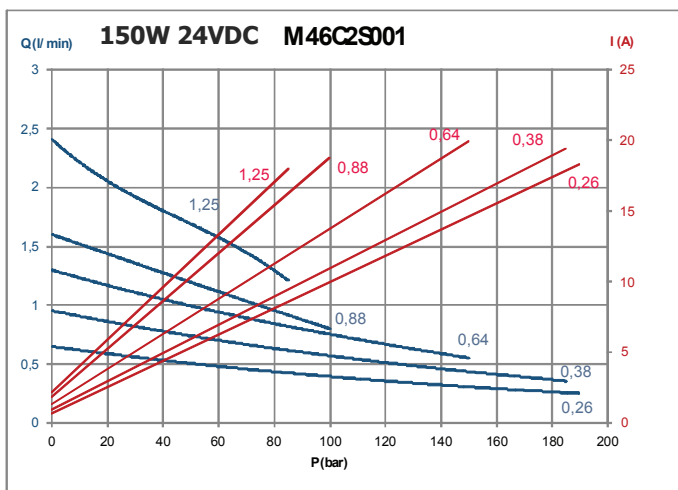
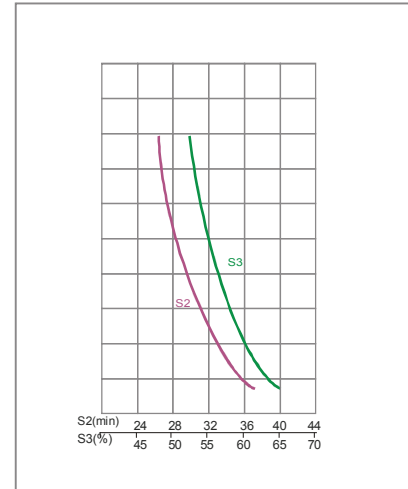
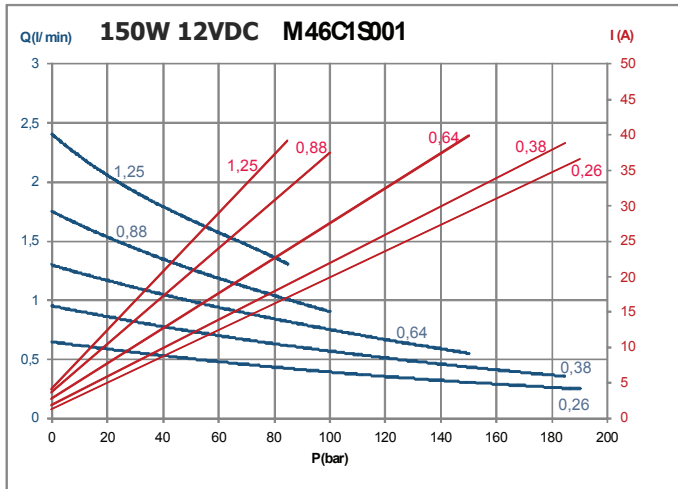
-We choose from curves 1,66 pump: a 1,66 cm³/rev pump. On the corresponding "I" curve we read 195 A absorbed current.

In these conditions on the S2 / S3 diagram we read that the DC motor can work for maximum 5 min (S2), that is 18% (S3) of the total cycle, i.e. after 5 min working, the motor should cool down for at least 23 min.

-The total cycle time is calculated adding the working time and the idle time (17% working time plus 83% idle time), in this case 28 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.

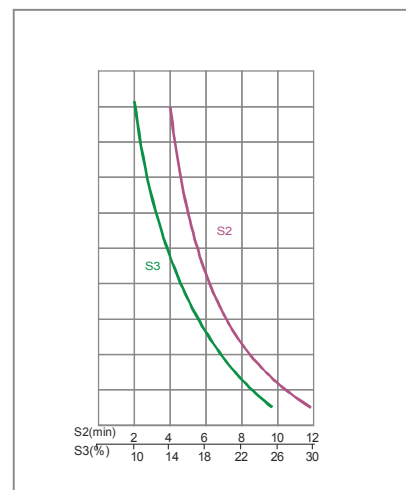
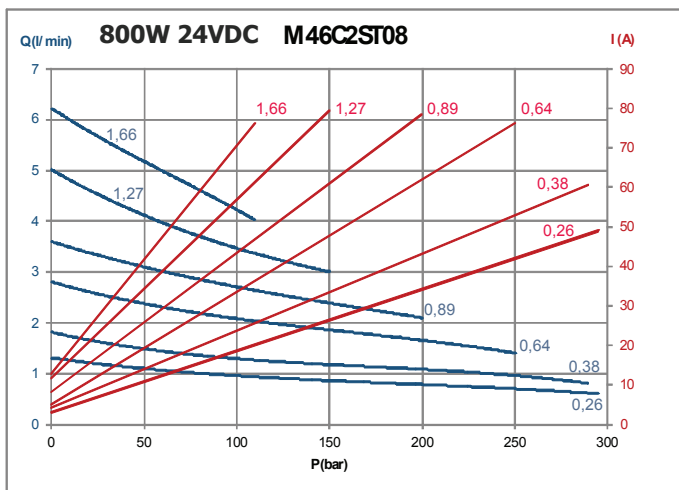
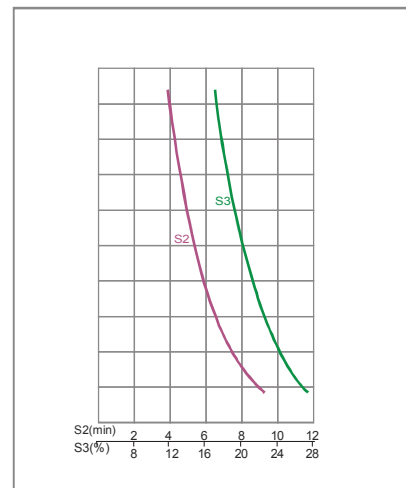
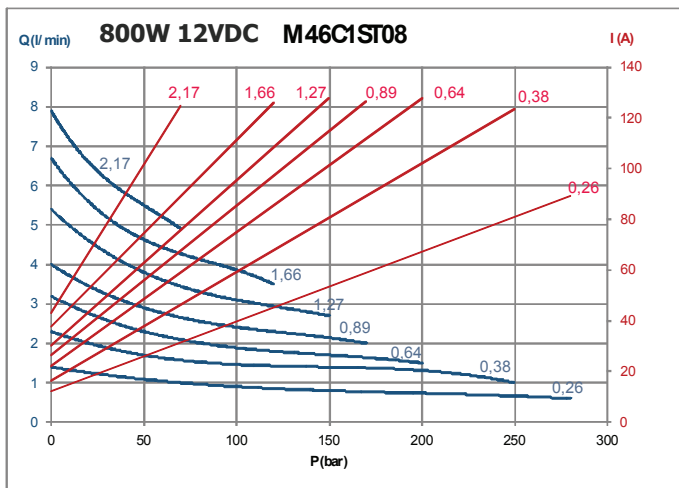
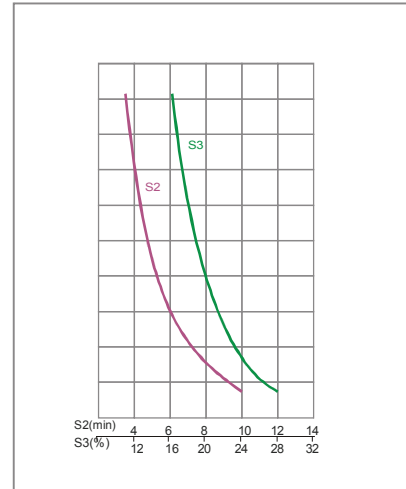
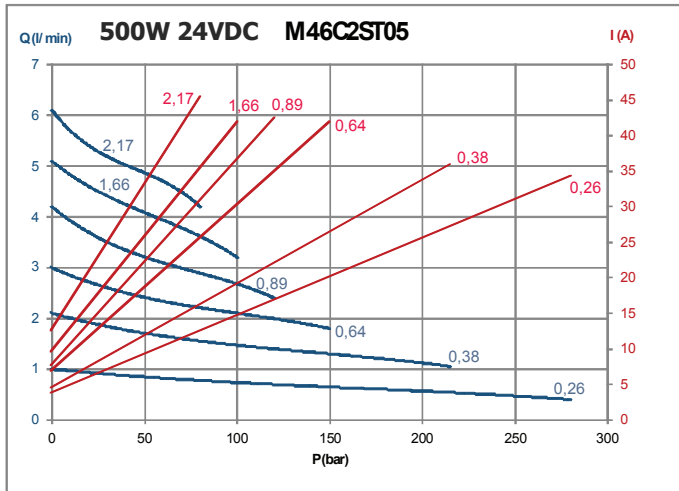


DC MOTORS Ø80 DIAGRAMS



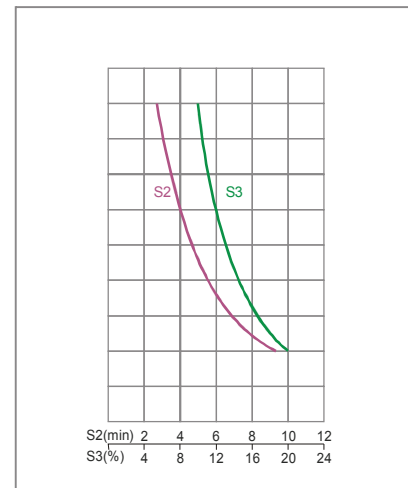
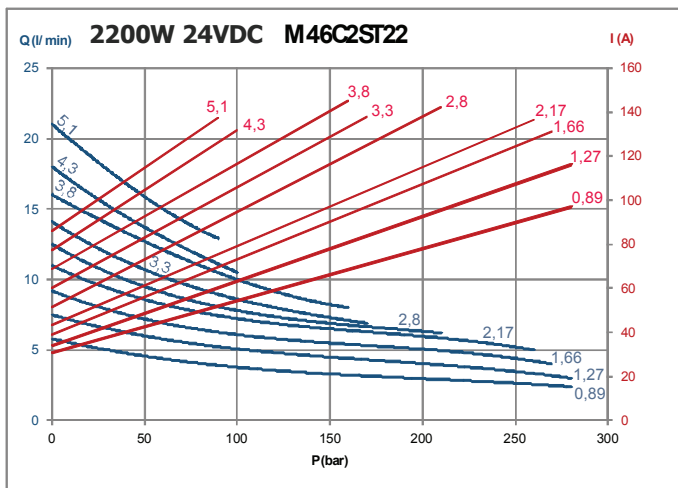
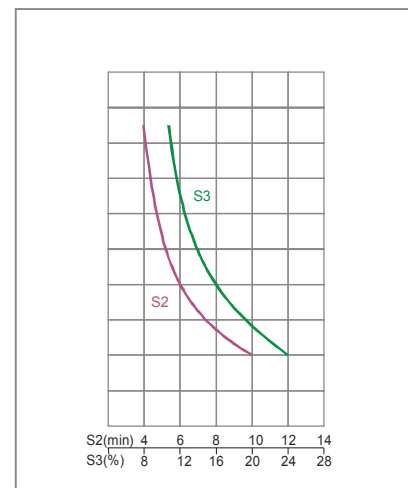
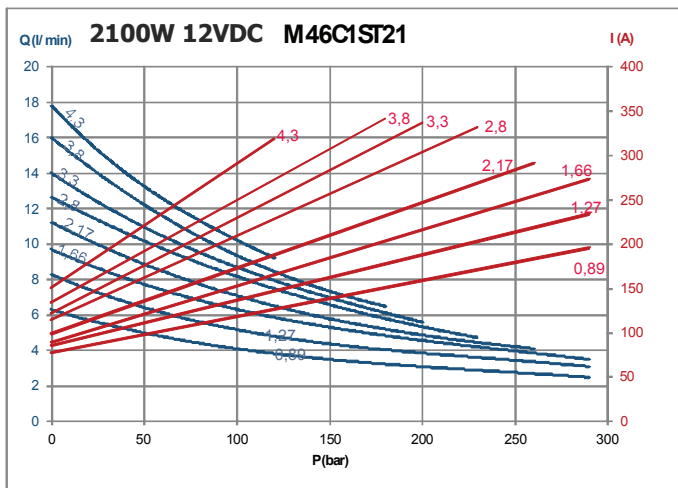
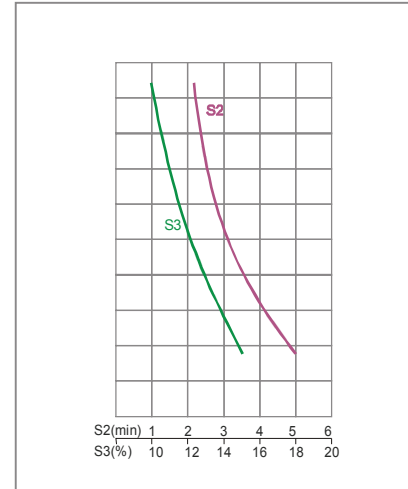
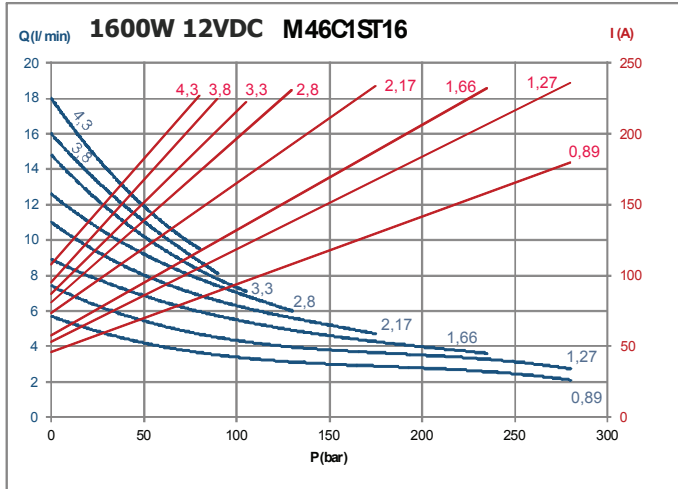
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø80 DIAGRAMS



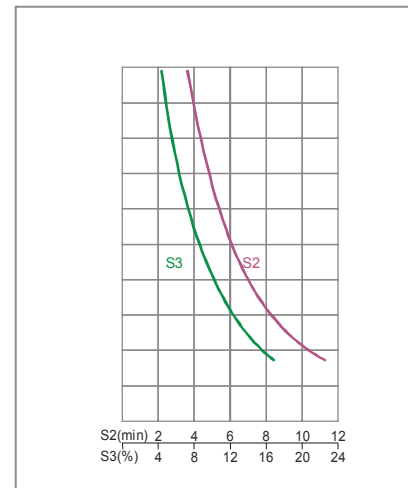
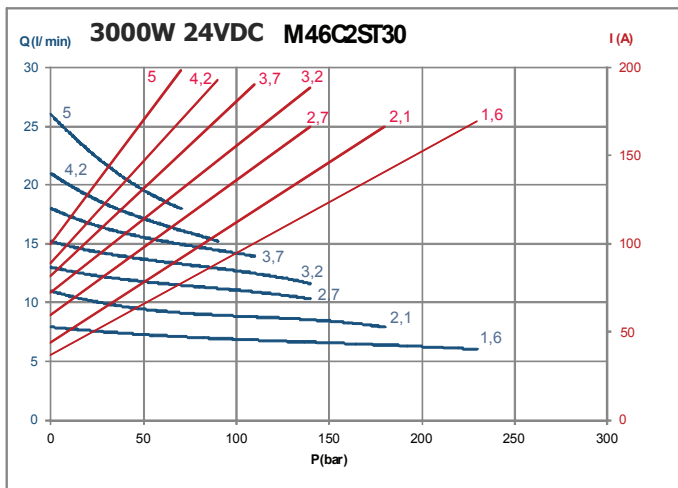
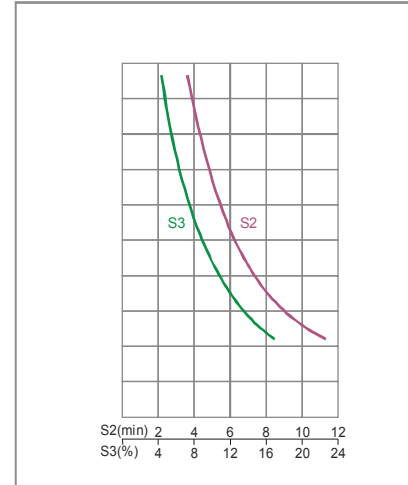
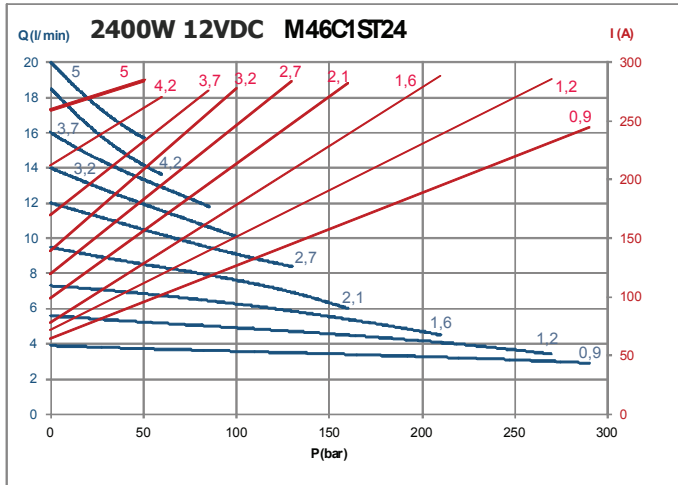
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 35°C

DC MOTORS Ø114 DIAGRAMS



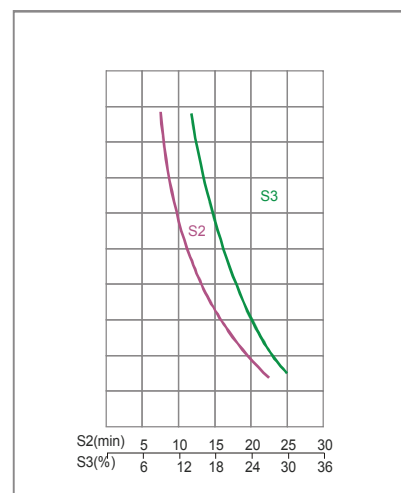
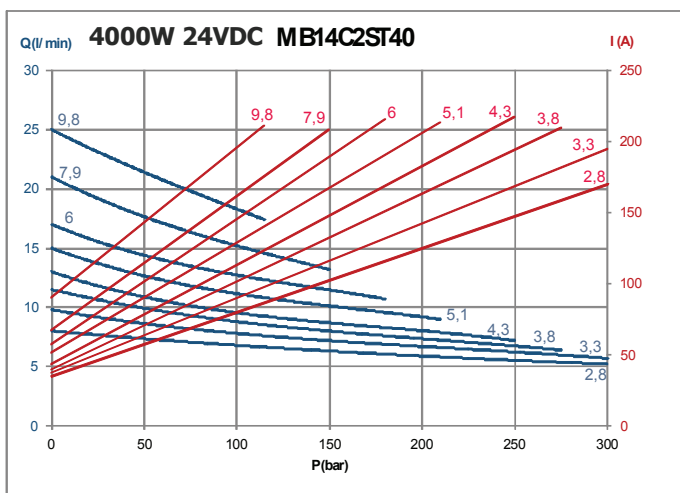
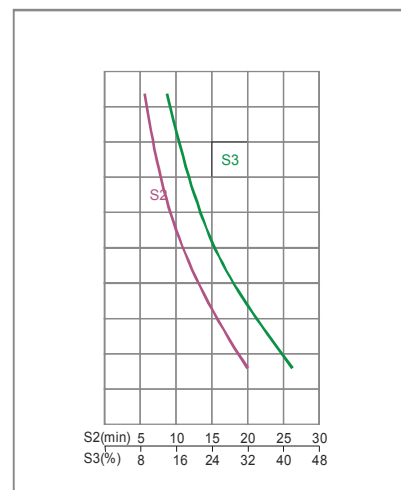
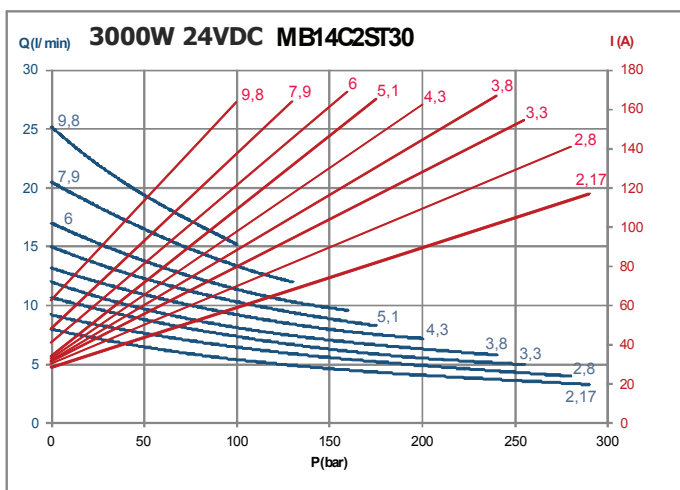
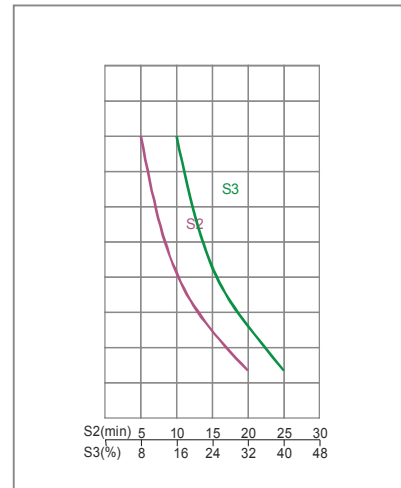
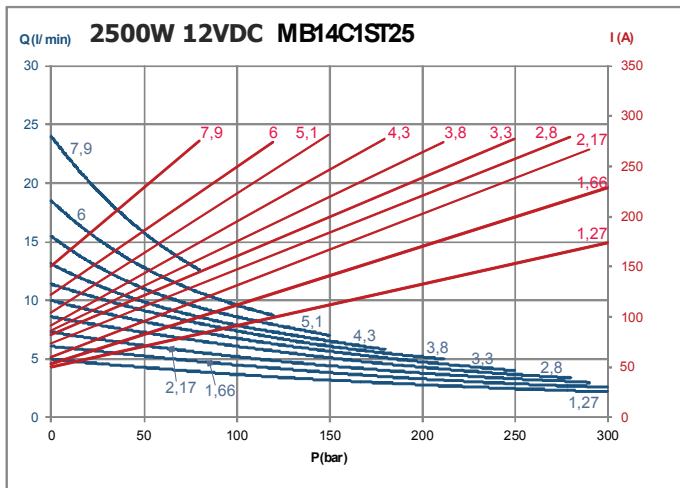
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 35°C

DC MOTORS Ø125 DIAGRAMS



Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 35°C

DC MOTORS Ø151 DIAGRAMS



Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 35°C