HANSA · TMP srl

HYDRAULIC COMPONENTS
HYDROSTATIC TRANSMISSIONS
GEARBOXES - ACCESSORIES

HT 38 / A /102 / 1004 / E

ELECTRO-HYDRAULIC PUMPS

Contents

General Information	pag.	3 - 11
EP - Electro Hydraulic Pumps for lifting	pag.	12
SE - Electro Hydraulic Pumps for steering	pag.	17

GENERAL INFORMATION

INTRODUCTION

-This catalogue is published by

HANSA-TMP srl
Via Martin Luther King, 6
I - 41100 MODENA Italy

Issue number : **HT 38 / A / 102 / 1004 / E**
Replace all previous edition

We design and manufacture :
- D.C. motors with winding :
  - series wound
  - compound wound
  - shunt wound
  - separetely excitated
- D.C. Permanent Magnet Motors
- Electro-hydraulic pumps for lifting
- Electro-hydraulic pumps for steering
- A.C. and D.C. geared motors
- A.C. and D.C. drive wheels

Our motors are manufactured with :
- High efficiency
- Protection from IP 20 up to IP 65
- Class H and F materials
- IEC and European Standards compliance
- Special models on request
- High efficiency armature core lamination
- they are available :
  - ventilated
  - not ventilated
  - with forced ventilation

All products are manufactured in compliance with IEC and European standards.

Permanent Magnet Motors
Simplicity in construction, high performances with optimum efficiency and long stable life are the most important features of our permanent magnet motors.

Wound Field Motors
During the wound field motor design and development we have taken into consideration all the technical and commercial aspects, wich are required to meet every kind of applications.
For this reason all of the important components used on our motors have been specifically selected, are of a very high quality and they are used on every models.
This philosophy enable us to provide reliable motors even when they are used in the heaviest conditions.

Electro-hydraulic pumps for steering
The hydrostatic steering system is used in vehicles where the driver has to control large loads with minimum effort and where confort and safety are essential.
We have designed and developed a range of electro-hydraulic pumps wich are suitable for this kind of application. When the steering wheel is turned the steering unit measures an oil volume , which is proportional to the steering-wheel rotation. The oil is supplied by the electro-hydraulic pump to the steering unit and from stering unit into the chamber of the steering cylinder.

Electro-hydraulic pumps for lifting and traction applications
The electro-hydraulic pumps consist of a permanent magnet motor or wound field motor of an integrated gear pump. Sometime different kinds of pumps or multiple-stage pumps are utilised to meet specific inquiries.
The type of winding determines the electro-hydraulic performance, in particular the idling and full load speed variations.
We are able to supply compound, series and shunt wound motors and consequently can provide customers with the best combinatioin to meet their specific requirement

GENERAL INFORMATION (continued)

DESIGN FEATURES

Type of winding - The motor range includes :
- Wound field motors
- Series wound
- Compound wound
- Shunt wound
- Permanent Magnet motor

Enclosure - Enclosure from IP 20 up to IP 56 can be supplied.

Insulation Class F - Achieved by class H insulated wire, in conjunction by epoxy paints and resins. This guarantees high strength and reliability at up to 155°C winding temperature.

Bearings - Selected quality ball bearings with double shield and internal lubrication. On request high temperature grease or C3 tolerance bearings can be supplied.

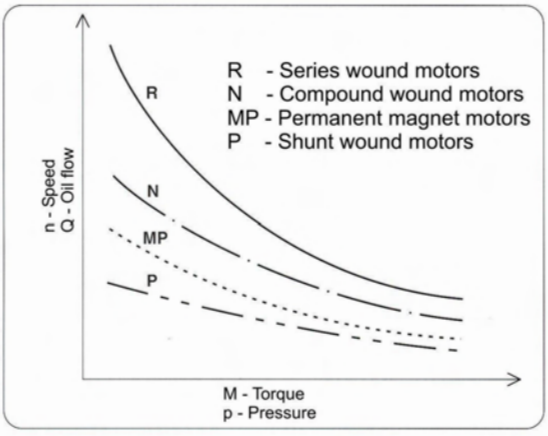
Brushes - Made of carbon or graphite-metal depending on the motor characteristic. Easy to reach and maintain or, if necessary replace.

Accessories - Available on request : electromagnetic brakes, start contactors, thermal protection and detectable wear system, worm and planetary gearboxes, tachogenerator or encoder, forced ventilation, foot mounting adapter.

Motor Characteristics - Speed and torque of a D.C. motor , and therefore also volumetric flow and pressure of the driven pumps, are interrelated as shown in the graphs. The type of winding determines the curve shape.

Series wound motors are characterized by excellent starting torque.
One should also note the high idle speed.
Shunt wound motors have the benefit of maintaining a practically constant speed irrespective of load variation; they have low starting torque and high starting current.

Permanent Magnet motors perform like shunt wound motors but in permanent magnet motors generally the variation in speed is greater as load changes.
As on see from the diagram, compound wound motors have intermediate features in comparison with series and shunt wound motors.



GENERAL INFORMATION (continued)

DUTY TYPES

The dimensioning of D.C. motors and electro-hydraulic pumps is based on the duty types.
In particular the output power (Pr) depends on the temperature (T) reached by the motor.

The most important are :

Continuous running duty type S1
Operation at constant load, the duration of which is sufficient to achieve thermal equilibrium.
This is the continuous duty condition equivalent to maximum performance of the motor.

Short time - duty type S2
Operation at constant load, of short duration, without thermal equilibrium being reached .
A no load period follows, sufficient for the motor to return to ambient temperature.

Example : S2 – 60 min.

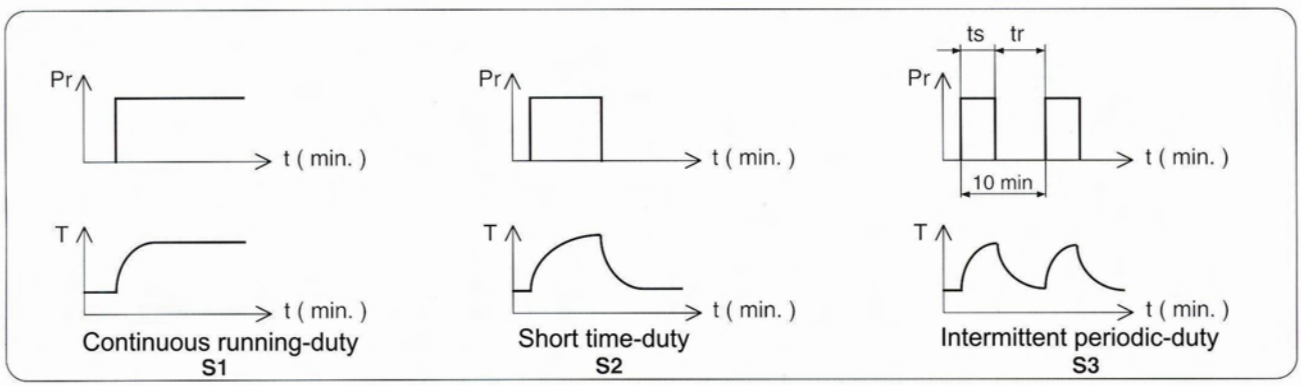
The motor runs continuously for 60 minutes, and stops a time sufficient to return to ambient temperature.

Intermittent periodic-duty type S3
Operations which consist of a sequence of uniform cycles (duty-cycle 10 min.) consisting of a period at constant load (ts) and a no load period (tr)

Example : S3 – 30%

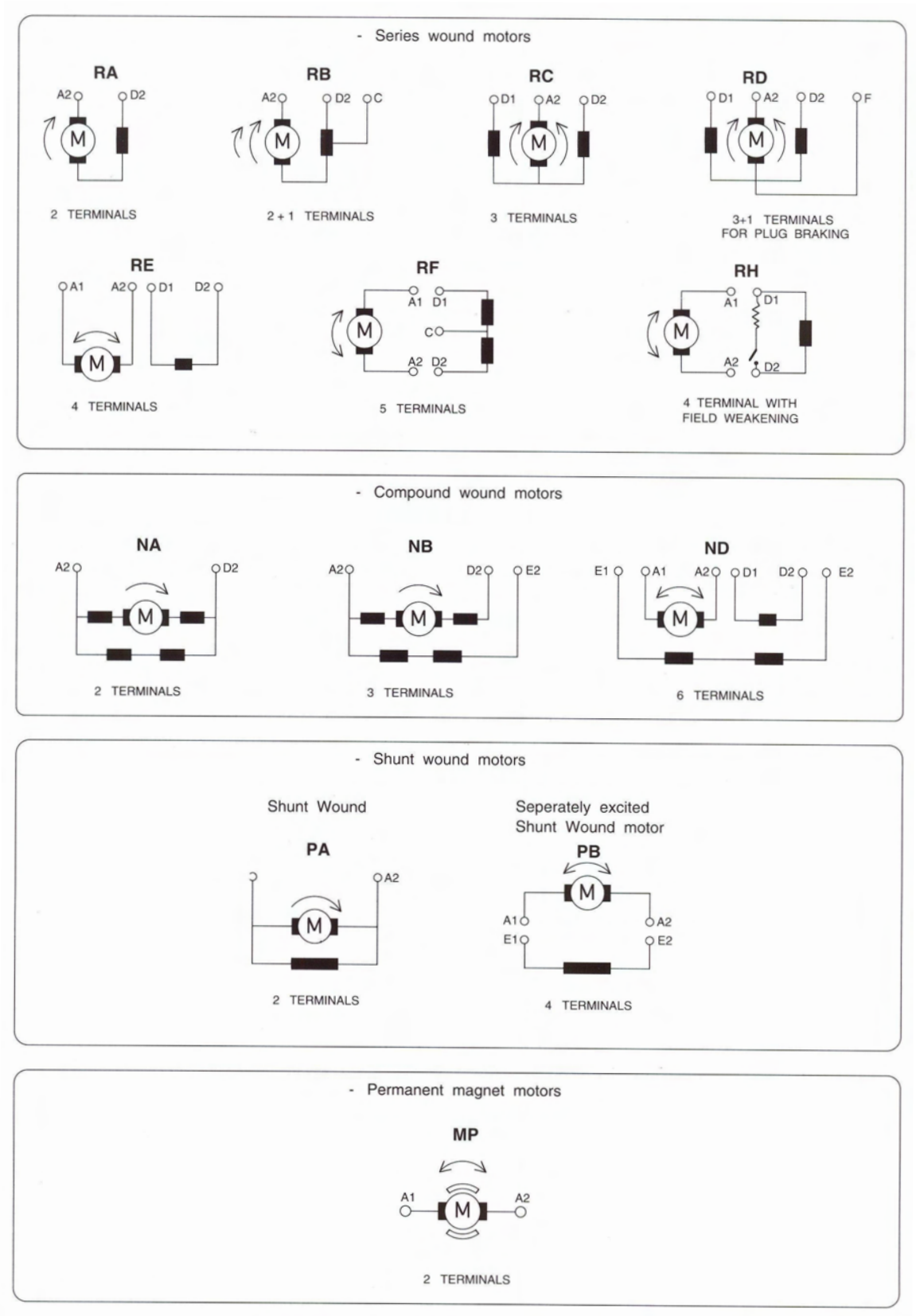
The motor runs 3 minutes and stops 7 minutes.

$$S3\ (\%) = \frac{ts}{ts + tr} \times 100$$



GENERAL INFORMATION (continued)

TIPICAL MOTOR CONNECTION



GENERAL INFORMATION (continued)

ENCLOSURE

Table I

0	No protection
1	Protected against solid bodies of size over 50 mm.
2	Protected against solid bodies of size over 12 mm.
3	Protected against solid bodies of size over 2,5 mm.
4	Protected against solid bodies of size over 1 mm.
5	Protected against dust
6	Totally protected against dust

Table II

0	No protection
1	Protected against dripping vertical water.
2	Protected against spraying water up to 15°
3	Protected against rain.
4	Protected against sprays of water.
5	Protected against jets of water.
6	Protected against waves of water.
7	Protected against immersion.
8	Protected against submersion.

The degree of protection of electric motor cover is expressed by the two letter IP followed by two numbers.
The first number (see table I) is the degree of protection against solid bodies as indicated
The second number (see table II) is the degree of protection against harmfull penetration of water.

Example : Protection IP 44 = Protected against 1mm. solid parts and water spray.

USEFUL FORMULAS

Pa = Input Power (kW)

Pr = Output power (kW)

U = Voltage (Volt)

I = Current (Ampere)

Q = Pump delivery (lt / min.)

p = Pressure (bar)

M = Torque (Nm)

n = Speed (n / min.)

Þ = Efficiency (%)

Power

$$Pa = U \times I$$

$$Pr = 0{,}105 \times M \times n$$

$$Pr = \frac{Q \times p}{600}$$

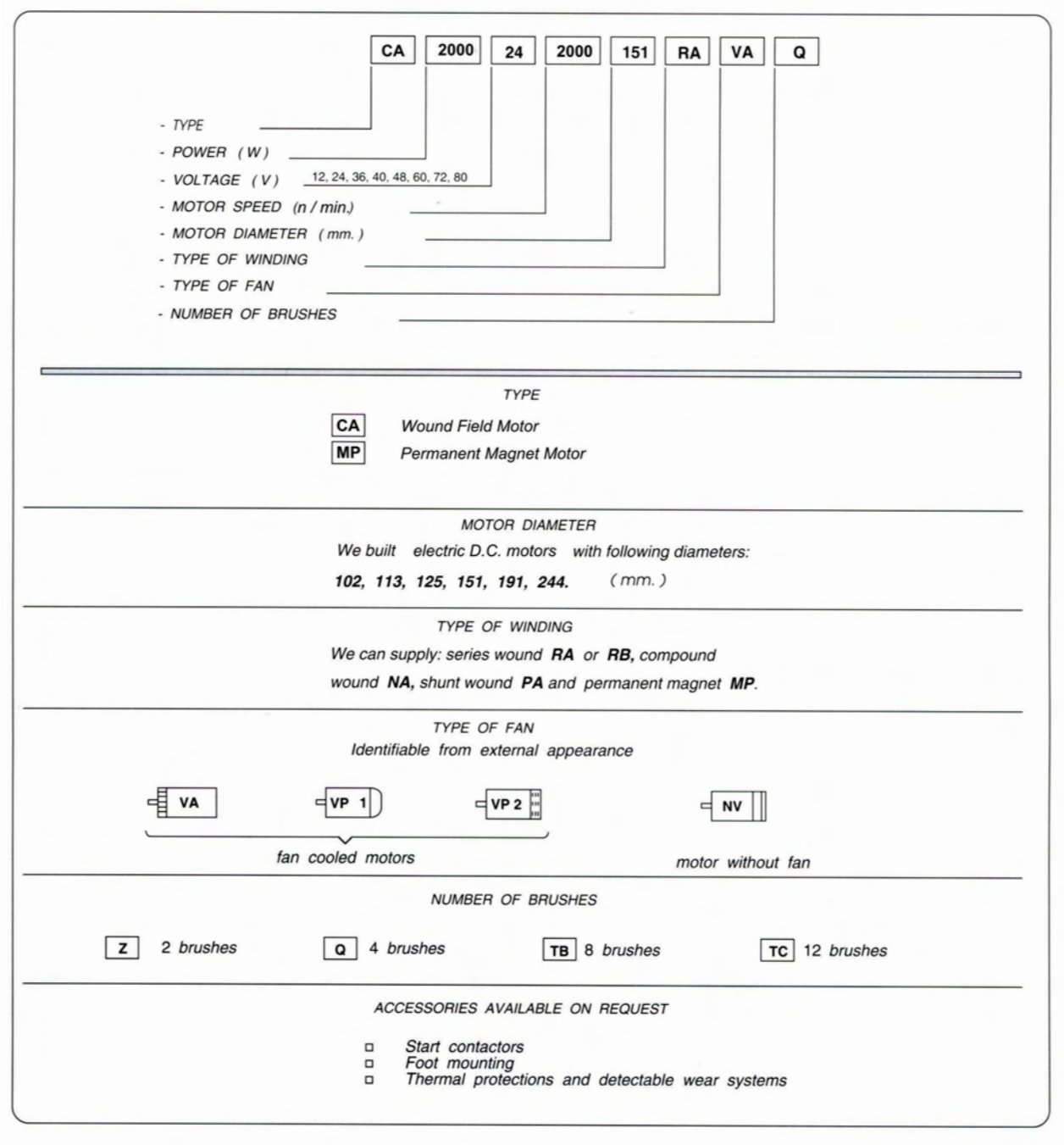
Torque

$$M = 9{,}55 \times \frac{Pr}{n}$$

Efficiency

$$Þ = \frac{Pr}{Pa}$$

ELECTRIC D:C: MOTORS ORDER CODE



ELECTRIC - HYDRAULIC PUMP ORDER CODE

EP	3000	24	1580	151	RA	VA	Q	+	4 GR2 S V

- TYPE
- POWER (W)
- VOLTAGE (V) 12, 24, 36, 40, 48, 60, 72, 80
- MOTOR SPEED (n / min.)
- MOTOR DIAMETER (mm.)
- TYPE OF WINDING
- TYPE OF FAN
- NUMBER OF BRUSHES
- TYPE OF PUMP

TYPE

EP	Electro-hydraulic pump for lifting application
SE	Electro-hydraulic pump for steering system
E	Electro - hydraulic pump special type

MOTOR DIAMETER

We built electro-hydraulicpumps with following diameters:

102, 113, 125, 151, 191, 244. (mm.)

TYPE OF WINDING

We can supply: series wound **RA** or **RB,** compound wound **NA,** shunt wound **PA** and permanent magnet **MP.**

TYPE OF FAN

Identifiable from external appearance

VA, VP 1, VP 2 — fan cooled motors

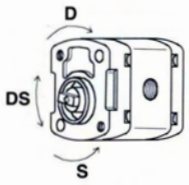
NV — motor without fan

NUMBER OF BRUSHES

Z	2 brushes	Q	4 brushes	TB	8 brushes	TC	12 brushes

TYPE OF PUMP: DISPLACEMENT, GROUP, ROTATION.

Displacements cm³/rev											Group	Rotation	
1,1	1,4	1,7	2,1	2,5	3,2	3,7	4,3	4,8	5		GR1	S	V
4	5,5	6,3	8	9.5	11,3	14	15,8	17	20,8	23,4	GR2	S	V
22,5	26,4	33,7	39,4	42,7	51,4	60					GR3	S	V



D Clockwise
S Anticlockwise
DS Reversible

V Gear pump with relief valve

ACCESSORIES AVAILABLE ON REQUEST

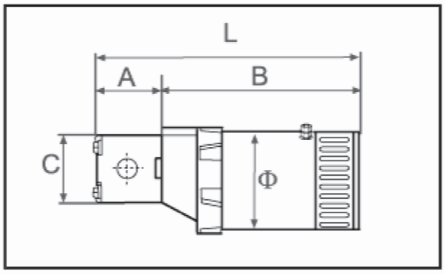
- Start contactors
- Foot mounting
- Thermal protections and detectable wear systems
- Multiple gear pumps

Company: Contact person:

Tel.: Fax: E-mail:

ELECTRO HYDRAULIC PUMPS ENQUIRY FORM

Dimesions of existing pumps:



A = mm.

B = mm

C = mm

L = mm

Diameter = mm

Electro Hydraulic Pump data :

○ FOR STEERING ○ FOR LIFTING

POWER: WATT

VOLTAGE: VOLT

SPEED: r.p.m.

Pump displacement: cm3/rev. ☐ with relief valve

Max Working Pressure: bar

Max Oil Delivery: L/min

Type of winding:
○ series wound
○ compound wound
○ shunt wound
○ permanent magnet

Number of terminals ○ 2 (1 speed) ○ 3 (2 speed)

Duty Cycle:
☐ continuous S1
☐ Short time S2 min.
☐ intermittent periodic S3 %

Enclosure: ○ IP 20 ○ IP

ACCESSORIES:

☐ Thermal protection ☐ 90°C ☐ 110°C ☐ 130°C

☐ Brush detectable wear system

NOTES:

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Company: Contact person:

Tel.: Fax: E-mail:

D.C.- MOTOR ENQUIRY FORM

Many years of experience have indicated that for optimum cost, performance and reliability, a great many details are very important. Therefore before offering equipment we would ask you to complete the following details, and return the complete questionary to our Technical Dpt. at your earliest convenience.

POWER: WATT

VOLTAGE: VOLT

SPEED: r.p.m.

Type of winding:
- ○ series wound
- ○ compound wound
- ○ shunt wound
- ○ permanent magnet

Number of terminals
- ○ 2 (1 speed)
- ○ 3 (2 speed)

Duty Cycle:
- ☐ continuous S1
- ☐ Short time S2 min.
- ☐ intermittent periodic S3 %

Enclosure:
- ○ IP 20
- ○ IP

ACCESSORIES:

- ☐ Thermal protection ☐ 90°C ☐ 110°C ☐ 130°C
- ☐ Brush detectable wear system

NOTES:

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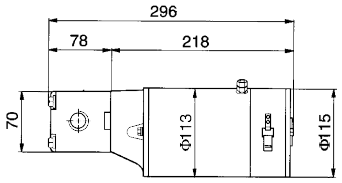
Contents

EP d = 113 - Electro-Hydraulic Pump	1.500 - 2.000 W	pag.	13
EP d = 125 - Electro-Hydraulic Pump	2.500 - 3.000 W	pag.	13
EP d = 151 - Electro-Hydraulic Pump	2.400 - 5.000 W	pag.	14 - 15
EP d = 191 - Electro-Hydraulic Pump	3.000 - 12.000 W	pag.	15 - 16
EP d = 244 - Electro-Hydraulic Pump	8.000 - 14.000 W	pag.	16

EP 101) EP - 1500 - 12 - 2100 - 113 - NA - NV - Q +... GR 1...
EP 102) EP - 2000 - 24 - 2250 - 113 - NA - NV - Q +... GR 1...
EP 103) EP - 2000 - 36 - 2100 - 113 - NA - NV - Q +... GR 1...
EP 104) EP - 2000 - 48 - 2100 - 113 - NA - NV - Q +... GR 1...
EP 105) EP - 2000 - 72 - 2100 - 113 - NA - NV - Q +... GR 1...
EP 106) EP - 2000 - 80 - 2200 - 113 - NA - NV - Q +... GR 1...



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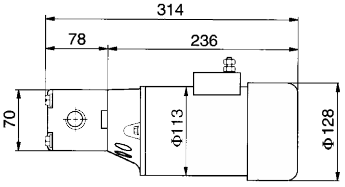
EP 108) EP - 2000 - 24 - 2100 - 113 - NA - VP1 - Q +... GR 1...
EP 109) EP - 2000 - 36 - 2100 - 113 - NA - VP1 - Q +... GR 1...
EP 110) EP - 2000 - 48 - 2100 - 113 - NA - VP1 - Q +... GR 1...
EP 111) EP - 2000 - 72 - 2100 - 113 - NA - VP1 - Q +... GR 1...
EP 112) EP - 2000 - 80 - 2200 - 113 - NA - VP1 - Q +... GR 1...



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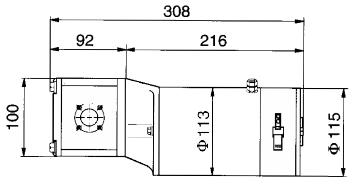
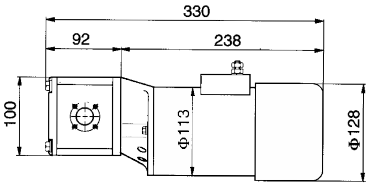
EP 114) EP - 2000 - 36 - 2100 - 113 - NA - NV - Q +... GR 2...
EP 115) EP - 2000 - 48 - 2100 - 113 - NA - NV - Q +... GR 2...
EP 116) EP - 2000 - 72 - 2100 - 113 - NA - NV - Q +... GR 2...
EP 117) EP - 2000 - 80 - 2200 - 113 - NA - NV - Q +... GR 2...



EP 118) EP - 2000 - 24 - 2100 - 113 - NA - VP1 - Q +... GR 2...
EP 119) EP - 2000 - 36 - 2100 - 113 - NA - VP1 - Q +... GR 2...
EP 120) EP - 2000 - 48 - 2100 - 113 - NA - VP1 - Q +... GR 2...
EP 121) EP - 2000 - 72 - 2100 - 113 - NA - VP1 - Q +... GR 2...
EP 122) EP - 2000 - 80 - 2200 - 113 - NA - VP1 - Q +... GR 2...



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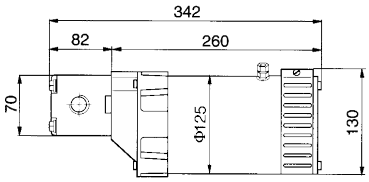
EP 124) EP - 3000 - 24 - 1500 - 125 - NA - VA - Q +... GR 1...
EP 125) EP - 3000 - 36 - 1500 - 125 - NA - VA - Q +... GR 1...
EP 126) EP - 3000 - 48 - 1500 - 125 - NA - VA - Q +... GR 1...
EP 127) EP - 3000 - 72 - 1500 - 125 - NA - VA - Q +... GR 1...
EP 128) EP - 3000 - 80 - 1600 - 125 - NA - VA - Q +... GR 1...



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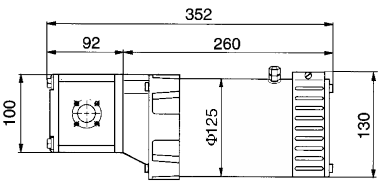
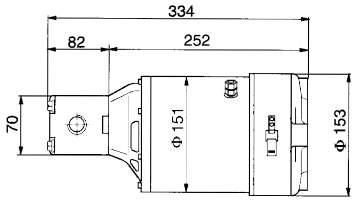
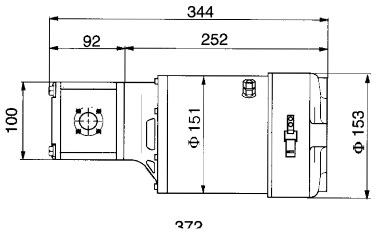
EP 131) EP - 3000 - 36 - 1500 - 125 - NA - VA - Q +... GR 2...
EP 132) EP - 3000 - 48 - 1500 - 125 - NA - VA - Q +... GR 2...
EP 133) EP - 3000 - 72 - 1500 - 125 - NA - VA - Q +... GR 2...
EP 134) EP - 3000 - 80 - 1600 - 125 - NA - VA - Q +... GR 2...



EP 135) EP - 2400 - 24 - 1850 - 151 - RA - NV - Q +... GR 1 ...
EP 136) EP - 2400 - 36 - 1850 - 151 - RA - NV - Q +... GR 1 ...
EP 137) EP - 2400 - 48 - 1900 - 151 - RA - NV - Q +... GR 1 ...
EP 138) EP - 2400 - 72 - 1900 - 151 - RA - NV - Q +... GR 1 ...
EP 139) EP - 2400 - 80 - 2000 - 151 - RA - NV - Q +... GR 1 ...



EP 140) EP - 2400 - 24 - 1850 - 151 - RA - NV - Q +... GR 2...
EP 141) EP - 2400 - 36 - 1850 - 151 - RA - NV - Q +... GR 2...
EP 142) EP - 2400 - 48 - 1900 - 151 - RA - NV - Q +... GR 2...
EP 143) EP - 2400 - 72 - 1900 - 151 - RA - NV - Q +... GR 2...
EP 144) EP - 2400 - 80 - 2000 - 151 - RA - NV - Q +... GR 2...



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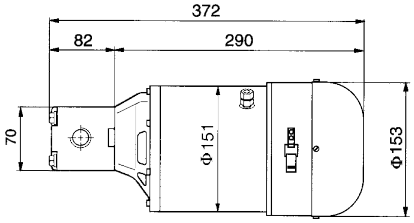
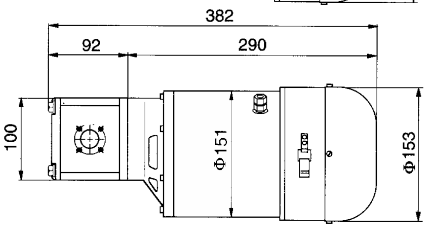
EP 146) EP - 2400 - 36 - 1850 - 151 - RA - VP1 - Q +... GR 1 ...
EP 147) EP - 2400 - 48 - 1900 - 151 - RA - VP1 - Q +... GR 1 ...
EP 148) EP - 2400 - 72 - 1900 - 151 - RA - VP1 - Q +... GR 1 ...
EP 149) EP - 2400 - 80 - 2000 - 151 - RA - VP1 - Q +... GR 1 ...

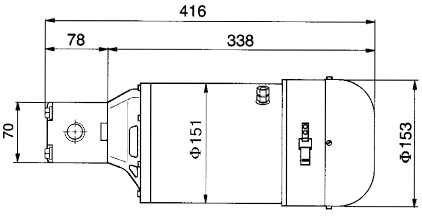


EP 150) EP - 2400 - 24 - 1850 - 151 - RA - VP1 - Q +... GR 2...
EP 151) EP - 2400 - 36 - 1850 - 151 - RA - VP1 - Q +... GR 2...
EP 152) EP - 2400 - 48 - 1900 - 151 - RA - VP1 - Q +... GR 2...
EP 153) EP - 2400 - 72 - 1900 - 151 - RA - VP1 - Q +... GR 2...
EP 154) EP - 2400 - 80 - 2000 - 151 - RA - VP1 - Q +... GR 2...



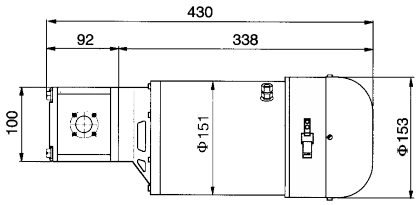
EP 155) EP - 2000 - 12 - 1600 - 151 - RA - VP1 - Q +... GR 1...
EP 156) EP - 2500 - 24 - 1380 - 151 - RA - VP1 - Q +... GR 1...
EP 157) EP - 2500 - 36 - 1400 - 151 - RA - VP1 - Q +... GR 1...
EP 158) EP - 2500 - 48 - 1450 - 151 - RA - VP1 - Q +... GR 1...
EP 159) EP - 2500 - 72 - 1450 - 151 - RA - VP1 - Q +... GR 1...
EP 160) EP - 2500 - 80 - 1500 - 151 - RA - VP1 - Q +... GR 1...

EP 161) EP - 3000 - 24 - 1600 - 151 - RA - VP1 - Q +... GR 1...
EP 162) EP - 3000 - 36 - 1600 - 151 - RA - VP1 - Q +... GR 1...
EP 163) EP - 3000 - 48 - 1700 - 151 - RA - VP1 - Q +... GR 1...
EP 164) EP - 3000 - 72 - 1900 - 151 - RA - VP1 - Q +... GR 1...
EP 165) EP - 3000 - 80 - 2000 - 151 - RA - VP1 - Q +... GR 1...



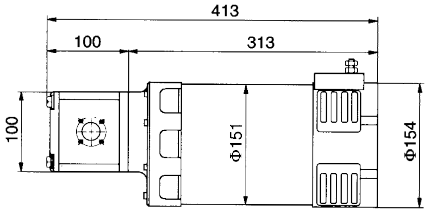
EP 166) EP - 2000 - 12 - 1600 - 151 - RA - VP1 - Q +... GR 2...
EP 167) EP - 2500 - 24 - 1380 - 151 - RA - VP1 - Q +... GR 2...
EP 168) EP - 2500 - 36 - 1400 - 151 - RA - VP1 - Q +... GR 2...
EP 169) EP - 2500 - 48 - 1450 - 151 - RA - VP1 - Q +... GR 2...
EP 170) EP - 2500 - 72 - 1450 - 151 - RA - VP1 - Q +... GR 2...
EP 171) EP - 2500 - 80 - 1500 - 151 - RA - VP1 - Q +... GR 2...

EP 172) EP - 3000 - 24 - 1600 - 151 - RA - VP1 - Q +... GR 2...
EP 173) EP - 3000 - 36 - 1490 - 151 - RA - VP1 - Q +... GR 2...
EP 174) EP - 3000 - 48 - 1700 - 151 - RA - VP1 - Q +... GR 2...
EP 175) EP - 3000 - 72 - 1900 - 151 - RA - VP1 - Q +... GR 2...
EP 176) EP - 3000 - 80 - 2000 - 151 - RA - VP1 - Q +... GR 2...

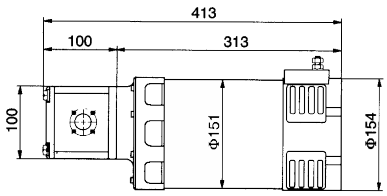


EP 177) EP - 2500 - 24 - 1400 - 151 - RA - VA - Q +... GR 2...
EP 178) EP - 2500 - 36 - 1400 - 151 - RA - VA - Q +... GR 2...
EP 179) EP - 2500 - 48 - 1450 - 151 - RA - VA - Q +... GR 2...
EP 180) EP - 2500 - 72 - 1450 - 151 - RA - VA - Q +... GR 2...
EP 181) EP - 2500 - 80 - 1500 - 151 - RA - VA - Q +... GR 2...

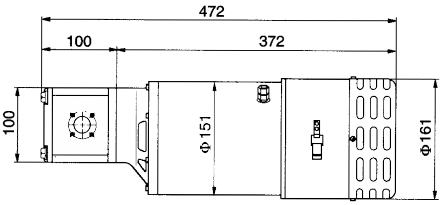
EP 182) EP - 3000 - 24 - 1600 - 151 - RA -V A - Q +... GR 2...
EP 183) EP - 3000 - 36 - 1490 - 151 - RA - VA - Q +... GR 2...
EP 184) EP - 3000 - 48 - 1700 - 151 - RA - VA - Q +... GR 2...
EP 185) EP - 3000 - 72 - 1900 - 151 - RA - VA - Q +... GR 2...
EP 186) EP - 3000 - 80 - 2000 - 151 - RA - VA - Q +... GR 2...



EP 187) EP - 4000 - 24 - 2000 - 151- RA - VA - Q +... GR 2...
EP 188) EP - 4000 - 36 - 1900 - 151 - RA - VA - Q +... GR 2...
EP 189) EP - 4000 - 48 - 2000 - 151 - RA - VA - Q +... GR 2...
EP 190) EP - 4000 - 72 - 1800 - 151 - RA - VA - Q +... GR 2...



EP 191) EP - 4000 - 80 - 1850 - 151 - RA - VA - Q +... GR 2...
EP 192) EP - 4500 - 24 - 2100 - 151 - RA - VP2 - TB +... GR 2...
EP 193) EP - 4500 - 36 - 1900 - 151 - RA - VP2 - TB +... GR 2...
EP 194) EP - 5000 - 48 - 1250 - 151 - RA - VP2 - TB +... GR 2...
EP 195) EP - 5000 - 80 - 1800 - 151 - RA - VP2 - TB +... GR 2...



EP 196) EP - 3000 - 24 - 1800 - 191 - RA - VP2 - Q +... GR 2...
EP 197) EP - 5000 - 36 - 2000 - 191 - RA - VP2 - Q +... GR 2...
EP 198) EP - 5000 - 48 - 1900 - 191 - RA - VP2 - Q +... GR 2...
EP 199) EP - 5000 - 72 - 1950 - 191 - RA - VP2 - Q +... GR 2...
EP 200) EP - 5000 - 80 - 2100 - 191 - RA - VP2 - Q +... GR 2...
EP 201) EP - 6000 - 72 - 1950 - 191 - RA - VP2 - Q +... GR 2...
EP 202) EP - 6000 - 80 - 2200 - 191 - RA - VP2 - Q +... GR 2...
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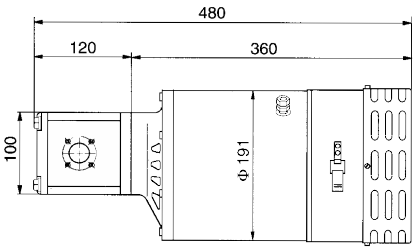
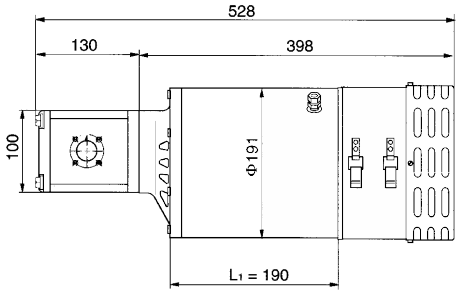
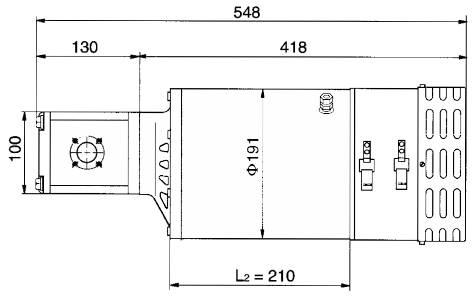
EP 204) EP - 8000 - 80 - 2000 - 191 - RA - VP2 - Q +... GR 2...

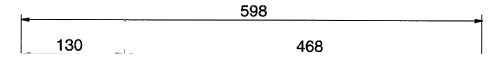


EP 206) EP - 5000 - 36 - 1900 - 191 - RA - VP2 - TB +... GR 2...
EP 207) EP - 5000 - 48 - 1900 - 191 - RA - VP2 - TB +... GR 2...
EP 208) EP - 5000 - 72 - 1950 - 191 - RA - VP2 - TB +... GR 2...
EP 209) EP - 5000 - 80 - 2100 - 191 - RA - VP2 - TB +... GR 2...
EP 210) EP - 6000 - 24 - 1500 - 191 - RA - VP2 - TB +... GR 2...
EP 211) EP - 6000 - 36 - 1700 - 191 - RA - VP2 - TB +... GR 2...
EP 212) EP - 6000 - 48 - 2080 - 191 - RA - VP2 - TB +... GR 2...
EP 213) EP - 6000 - 72 - 1950 - 191 - RA - VP2 - TB +... GR 2...
EP 214) EP - 6000 - 80 - 2200 - 191 - RA - VP2 - TB +... GR 2...
EP 215) EP - 8000 - 48 - 1780 - 191 - RA - VP2 - TB +... GR 2...
EP 216) EP - 8000 - 72 - 1900 - 191 - RA - VP2 - TB +... GR 2...
EP 217) EP - 8000 - 80 - 2000 - 191 - RA - VP2 - TB +... GR 2...

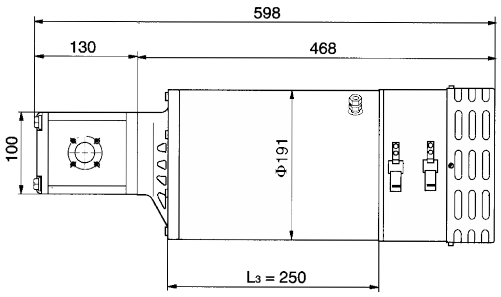


EP 218) EP - 5000 - 36 - 1800 - 191 - RA - VP2 - TB +... GR 2...
EP 219) EP - 5000 - 48 - 1800 - 191 - RA - VP2 - TB +... GR 2...
EP 220) EP - 5000 - 72 - 1850 - 191 - RA - VP2 - TB +... GR 2...
EP 221) EP - 5000 - 80 - 1900 - 191 - RA - VP2 - TB +... GR 2...
EP 222) EP - 6000 - 36 - 1650 - 191 - RA - VP2 - TB +... GR 2...
EP 223) EP - 6000 - 48 - 1800 - 191 - RA - VP2 - TB +... GR 2...
EP 224) EP - 6000 - 72 - 1850 - 191 - RA - VP2 - TB +... GR 2...
EP 225) EP - 6000 - 80 - 2000 - 191 - RA - VP2 - TB +... GR 2...
EP 226) EP - 8000 - 48 - 1500 - 191 - RA - VP2 - TB +... GR 2...
EP 227) EP - 8000 - 72 - 1550 - 191 - RA - VP2 - TB +... GR 2...
EP 228) EP - 8000 - 80 - 1700 - 191 - RA - VP2 - TB +... GR 2...
EP 229) EP - 10000 - 48 - 1350 - 191 - RA - VP2 - TB +... GR 2...
EP 230) EP - 10000 - 72 - 1300 - 191 - RA - VP2 - TB +... GR 2...
EP 231) EP - 10000 - 80 - 1500 - 191 - RA - VP2 - TB +... GR 2...

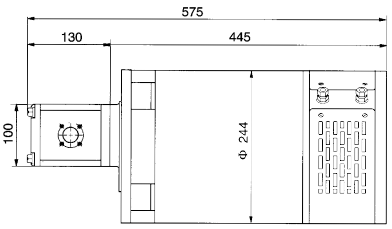




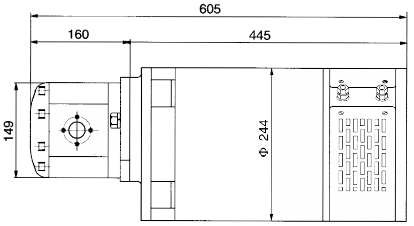
EP 232) EP - 10000 - 48 - 1600 - 191 - RA - VP2 - TB +... GR 2...
EP 233) EP - 12000 - 72 - 1900 - 191 - RA - VP2 - TB +... GR 2...
EP 234) EP - 12000 - 80 - 2200 - 191 - RA - VP2 - TB +... GR 2...



EP 238) EP - 8000 - 80 - 2000 - 244 - RA - VA - TB +... GR 2...
EP 239) EP - 10000 - 48 - 1400 - 244 - RA - VA - TC +... GR 2...
EP 240) EP - 10000 - 72 - 1550 - 244 - RA - VA - TC +... GR 2...
EP 241) EP - 10000 - 80 - 1900 - 244 - RA - VA - TC +... GR 2...
EP 242) EP - 14000 - 72 - 1300 - 244 - RA - VA - TC +... GR 2...
EP 243) EP - 14000 - 80 - 1400 - 244 - RA - VA - TC +... GR 2...
EP 244) EP - 14000 - 80 - 2000 - 244 - RA - VA - TC +... GR 2...



EP 245) EP - 8000 - 80 - 2000 - 244 - RA - VA - TB +... GR 3...
EP 246) EP - 10000 - 48 - 1400 - 244 - RA - VA - TC +... GR 3...
EP 247) EP - 10000 - 72 - 1550 - 244 - RA - VA - TC +... GR 3...
EP 248) EP - 10000 - 80 - 1900 - 244 - RA - VA - TC +... GR 3...
EP 249) EP - 14000 - 72 - 1300 - 244 - RA - VA - TC +... GR 3...
EP 250) EP - 14000 - 80 - 1400 - 244 - RA - VA - TC +... GR 3...
EP 251) EP - 14000 - 80 - 2000 - 244 - RA - VA - TC +... GR 3...

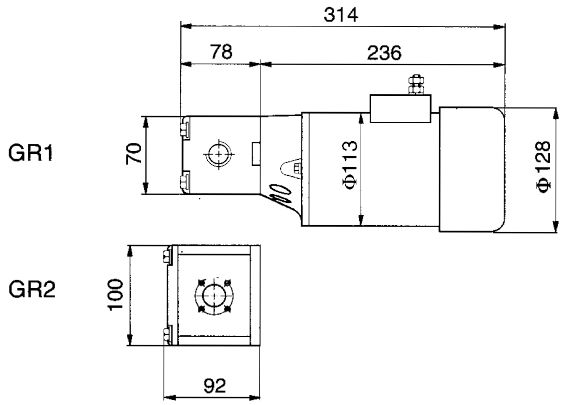


Contents

SE d = 113 - Electro-Hydraulic Pump 500 W	pag.	18
SE d = 125 - Electro-Hydraulic Pump 800 W	pag.	18
SE d = 151 - Electro-Hydraulic Pump 900 - 1.000 W	pag.	18 - 19
SE d = 151 - Electro-Hydraulic Pump 2.000 W	pag.	19
SE d = 191 - Electro-Hydraulic Pump 3.000 W	pag.	19

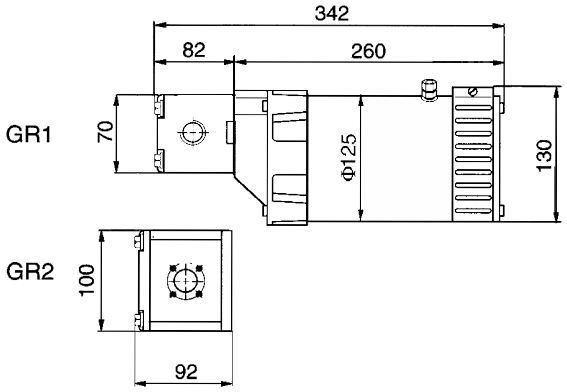
SE 000) SE - 500 - 12 - 2200 - 113 - MP - VP1 - Q +... GR 1...
SE 001) SE - 500 - 24 - 2300 - 113 - MP - VP1 - Q +... GR 1...
SE 002) SE - 500 - 36 - 2350 - 113 - MP - VP1 - Q +... GR 1...
SE 003) SE - 500 - 48 - 2000 - 113 - MP - VP1 - Q +... GR 1...
SE 004) SE - 500 - 60 - 2250 - 113 - MP - VP1 - Q +... GR 1...
SE 005) SE - 500 - 72 - 2300 - 113 - MP - VP1 - Q +... GR 1...
SE 006) SE - 500 - 80 - 2400 - 113 - MP - VP1 - Q +... GR 1...

SE 007) SE - 500 - 24 - 2300 - 113 - MP - VP1 -Q +... GR 2...
SE 008) SE - 500 - 36 - 2350 - 113 - MP - VP1 -Q +... GR 2...
SE 009) SE - 500 - 48 - 2000 - 113 - MP - VP1 -Q +... GR 2...
SE 010) SE - 500 - 60 - 2250 - 113 - MP - VP1 -Q +... GR 2...
SE 011) SE - 500 - 72 - 2300 - 113 - MP - VP1 -Q +... GR 2...
SE 012) SE - 500 - 80 - 2400 - 113 - MP - VP1 -Q +... GR 2...

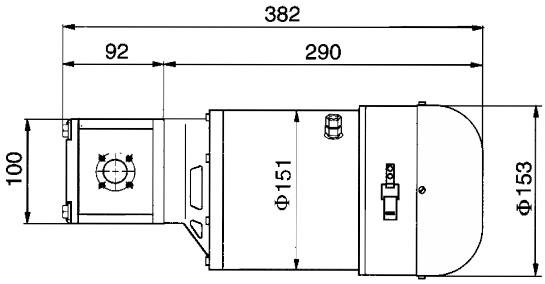


SE 013) SE - 800 - 24 - 1150 - 125 - NA - VA - Q +... GR 1...
SE 014) SE - 800 - 36 - 2000 - 125 - NA - VA - Q +... GR 1...
SE 015) SE - 800 - 48 - 1640 - 125 - NA - VA - Q +... GR 1...
SE 016) SE - 800 - 60 - 1580 - 125 - NA - VA - Q +... GR 1...
SE 017) SE - 800 - 72 - 1600 - 125 - NA - VA - Q +... GR 1...
SE 018) SE - 800 - 80 - 1700 - 125 - NA - VA - Q +... GR 1...

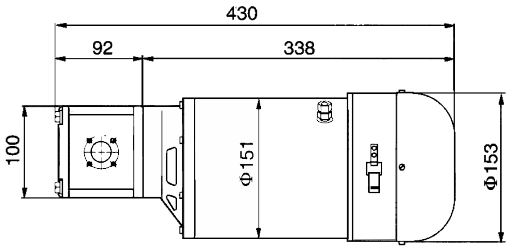
SE 019) SE - 800 - 24 - 1150 - 125 - NA - VA - Q +... GR 2...
SE 020) SE - 800 - 36 - 2000 - 125 - NA - VA - Q +... GR 2...
SE 021) SE - 800 - 48 - 1640 - 125 - NA - VA - Q +... GR 2...
SE 022) SE - 800 - 60 - 1580 - 125 - NA - VA - Q + ...GR 2...
SE 023) SE - 800 - 72 - 1600 - 125 - NA - VA - Q +... GR 2...
SE 024) SE - 800 - 80 - 1700 - 125 - NA - VA - Q +... GR 2...



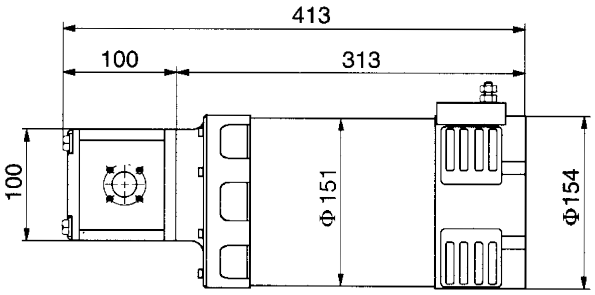
SE 025) SE - 900 - 24 - 1400 - 151 - PA - VP1 - Q +... GR 2...
SE 026) SE - 900 - 36 - 1400 - 151 - PA - VP1 - Q +... GR 2...
SE 027) SE - 900 - 48 - 1600 - 151 - PA - VP1 - Q +... GR 2...
SE 028) SE - 900 - 60 - 1400 - 151 - PA - VP1 - Q +... GR 2...
SE 029) SE - 900 - 72 - 1700 - 151 - PA - VP1 - Q +... GR 2...
SE 030) SE - 900 - 80 - 1800 - 151 - PA - VP1 - Q +... GR 2... .



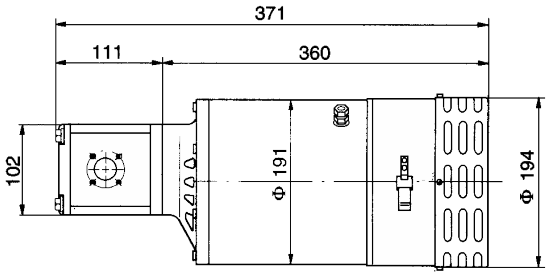
SE 031) SE - 1000 - 12 - 1600 - 151 - PA - VP1 -Q +... GR 2...
SE 032) SE - 1000 - 24 - 1200 - 151 - PA - VP1 -Q +... GR 2...
SE 033) SE - 1000 - 36 - 1500 - 151 - PA - VP1 -Q +... GR 2...
SE 034) SE - 1000 - 48 - 1500 - 151 - PA - VP1 -Q +... GR 2...
SE 035) SE - 1000 - 60 - 1800 - 151 - PA - VP1 -Q +... GR 2...
SE 036) SE - 1000 - 72 - 1400 - 151 - PA - VP1 -Q +... GR 2...
SE 037) SE - 1000 - 80 - 1500 - 151 - PA - VP1 -Q +... GR 2...



SE 038) SE - 2000 - 24 - 1700 - 151 - PA - VA - Q +... GR 2...
SE 039) SE - 2000 - 36 - 1700 - 151 - PA - VA - Q +... GR 2...
SE 040) SE - 2000 - 48 - 1700 - 151 - PA - VA - Q +... GR 2...
SE 041) SE - 2000 - 60 - 1700 - 151 - PA - VA - Q +... GR 2...
SE 042) SE - 2000 - 72 - 1700 - 151 - PA - VA - Q +... GR 2...
SE 043) SE - 2000 - 80 - 1800 - 151 - PA - VA - Q +... GR 2...



SE 050) SE - 3000 - 24 - 1500 - 191 - NA - VP2 - Q +... GR 2...
SE 051) SE - 3000 - 36 - 1700 - 191 - NA - VP2 - Q +... GR 2...
SE 052) SE - 3000 - 40 - 1600 - 191 - NA - VP2 - Q +... GR 2...
SE 053) SE - 3000 - 48 - 1470 - 191 - NA - VP2 - Q +... GR 2...
SE 054) SE - 3000 - 60 - 1800 - 191 - NA - VP2 - Q +... GR 2...
SE 055) SE - 3000 - 72 - 1000 - 191 - NA - VP2 - Q +... GR 2...
SE 056) SE - 3000 - 80 - 1300 - 191 - NA - VP2 - Q +... GR 2...



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