



Hydraulic Power Units

108 Series

Catalogue HY17-1301/UK
March 2003



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Conversion factors

1 kg	2.20 lb
1 N	0.225 lbf
1 Nm	0.738 lbf ft
1 bar	14.5 psi
1 l	0.264 US gallon
1 cm ³	0.061 cu in
1 mm	0.039 in
1 kW	1.34 hp
$\frac{9}{5} \text{ }^\circ\text{C} + 32$	$^\circ\text{F}$

Parker Hannifin reserves the right to modify products without prior notice.

Even though the brochure is revised and updated continuously, there is always a possibility of errors.

For more detailed information about the products, please contact Parker Hannifin.

108 Series hydraulic power units**Flows to 2.8 l/min****Pressures to 240 bar**

Our compact 108 Series power units let you put the power where you need it. They're completely self-contained with an AC or DC motor, gearpump, reservoir, internal valving, load hold checks and relief valves.

The 108 Series models are designed for intermittent service and come in four standard pump sizes which produce flows of 0.16, 0.31, 0.40, and 0.53 cm³/rev. Locking check valves are available in all models. Performance will vary with the type of fluid used. Several hydraulic circuits are available.

108 Series units are available with single- or bi-directional rotation. Single units are commonly used to charge accumulators, power one-direction hydraulic motors and cylinders, provide pilot flow to servo valves, pressurize lube systems and supply multifunction circuits with external valving. Bi-directional, reversible units operate double-acting cylinders and two-way motors.

Typical applications**Positioning**

- Hydraulic door operators
- Conveyor belt tensioners
- Medical chairs, beds, and equipment

Clamping

- Tool fixtures and jigs
- Hydraulic brakes
- Crimping tools
- Arbor presses
- Truck restraints

Cycling

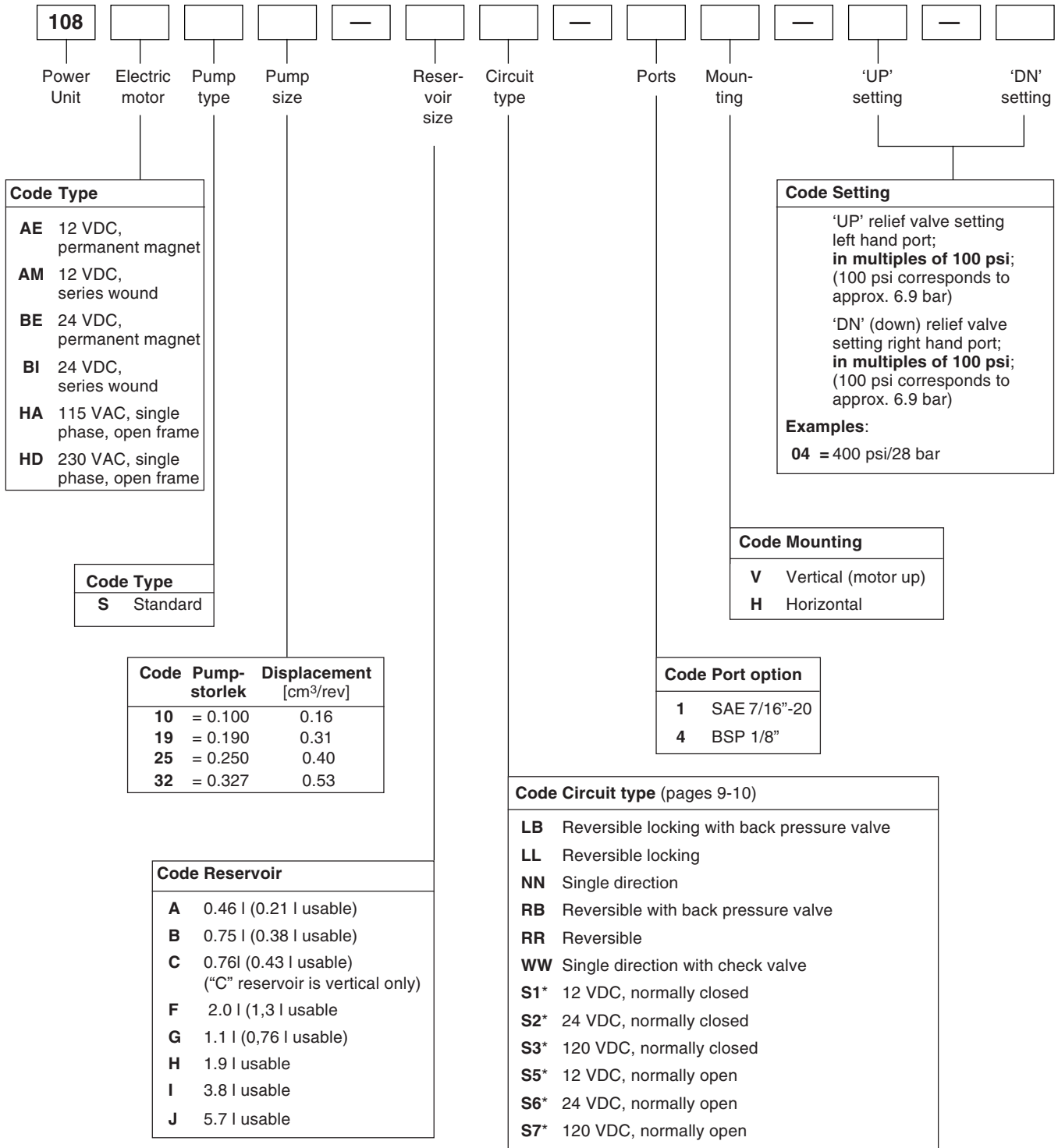
- Garbage compactors
- Valve operators
- Press controls
- Packing equipment
- Indexing tables

Lifting

- Handicap lifts
- Scissor lift tables
- Pallet movers.



Ordering code



* Circuit type WW with solenoid release valve

Ordering code instructions: Select the model code needed based on catalogue information. All boxes above must be filled in. If the power unit is a single direction unit, use '00' for the 'DN' (right hand) relief valve box.

Information on fluids and temperature

Hydraulic fluids

ATF (automatic transmission fluid) or other suitable, clean hydraulic fluid with a viscosity of 32 to 65 mm²/s (cSt) is acceptable. If another type of fluid is considered, please consult Parker Hannifin.

Temperature range

Normal operating temperature range is -7 °C to +60 °C. Please contact Parker Hannifin if use below -7°C or above +60 °C is being considered.

Electric motor selection

DC motor applications

Most DC motors are intended for intermittent duty cycle. To prevent motor overheating (possible damage and loss of performance), use the following guidelines.

AM and BI series wound motors

Example 1. If the power unit must cycle (operate) once per minute, a maximum continuous 'on' time of 3 seconds is recommended.
- 3 sec's during 60 sec's equals 5%.

Example 2. If the power unit must operate once per hour, a maximum continuous 'on' time of 3 minutes is recommended.
- 3 min's during 60 min's equals 5%.

AC motor applications

The standard HD capacitor start motor for series 108 pumps has a rating of 0.25 kW. To prevent motor over-heating (possible damage and loss of performance) the 50% rule applies.

The motor can run, at its full (0.25 kW) rating, for 50% of a typical duty cycle, e.g. 30 seconds per minute or one minute in two minutes.

The maximum 'on' time is 30 minutes of continuous operation at full power.

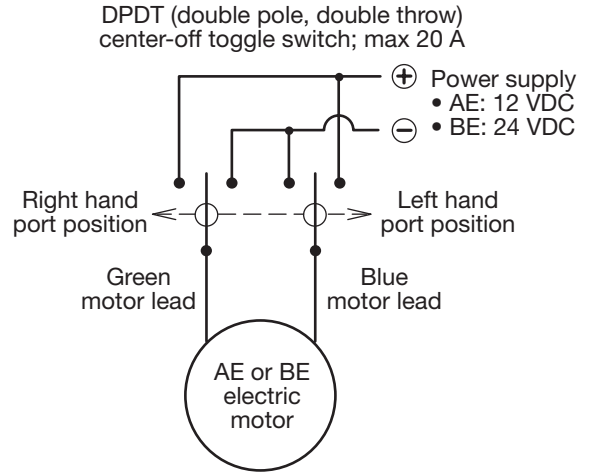
It can run indefinitely, 100% of the time, at 0.12 kW.

AE and BE permanent magnet motors

Applications of this motor should follow the same general guidelines as for the above series AM, but the AE motor can run continuously if the current draw is less than 20 A.

**Pumps with AE (12 VDC) or BE (24 VDC)
 permanent magnet electric motors**

For intermittent duty cycles; refer to page 4.



Pump assembly with AE or BE electric motor.

AE or BE wiring diagram.

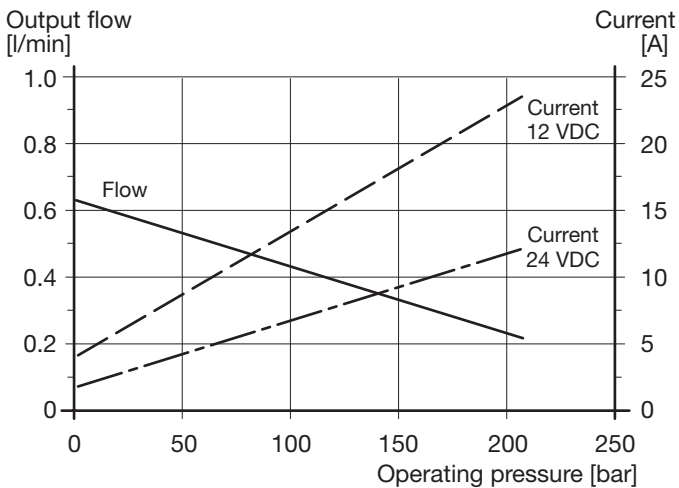


Diagram 1. Flow and current vs. pressure for 0.16 cm³/rev pump.

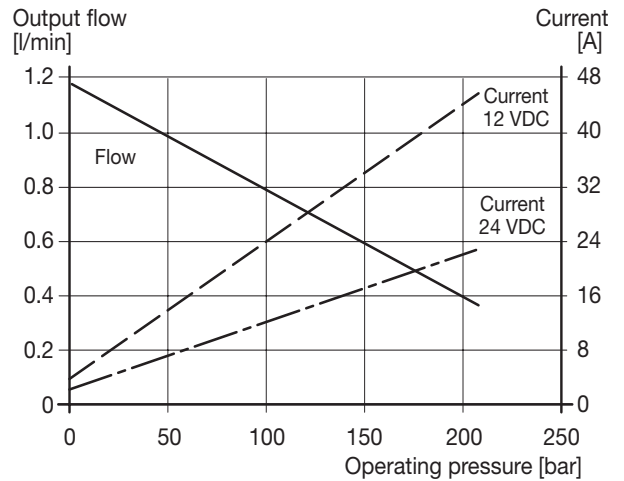


Diagram 2. Flow and current vs. pressure for 0.31 cm³/rev pump.

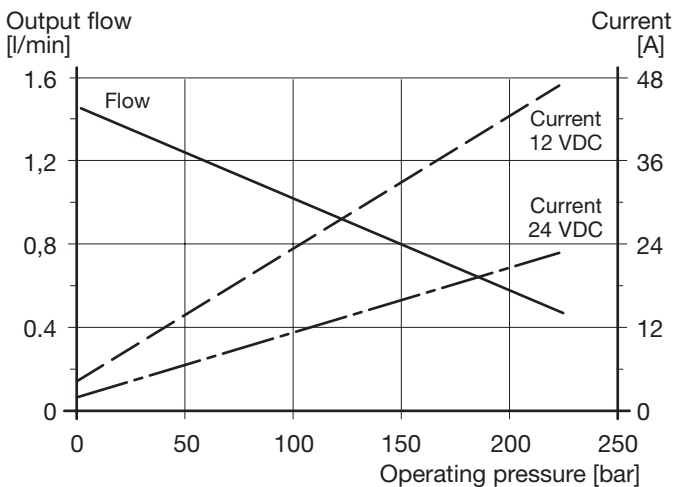


Diagram 3. Flow and current vs. pressure for 0.40 cm³/rev pump.

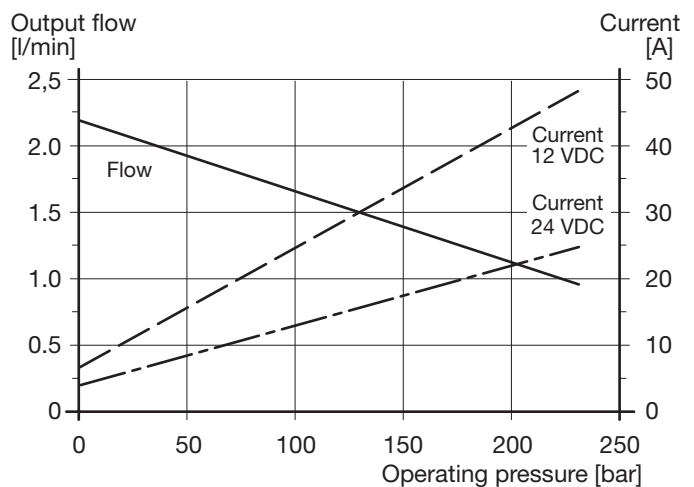


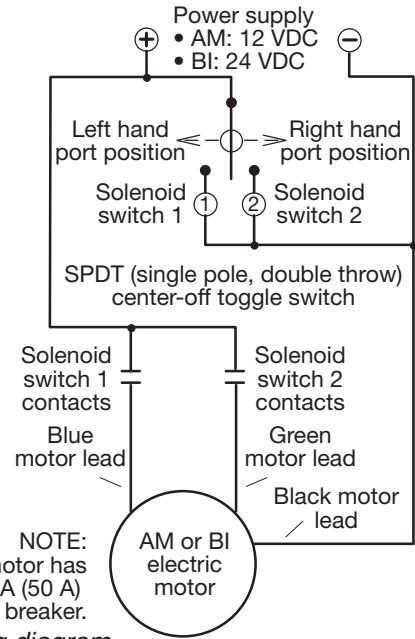
Diagram 4. Flow and current vs. pressure for 0.53 cm³/rev pump.

**Pumps with AM (12 VDC) or BI (24 VDC)
 series wound electric motors**

For intermittent
 duty cycles;
 refer to page 4.



Pump assembly with AM or BI electric motor.



AM or BI wiring diagram.

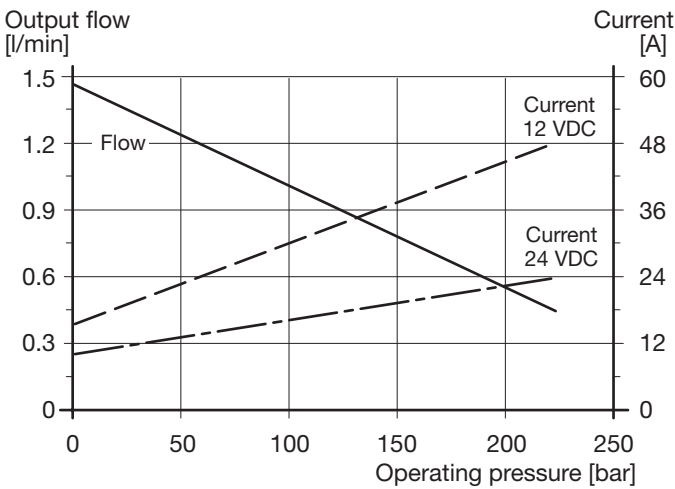


Diagram 5. Flow and current vs. pressure for the 0.16 cm³/rev pump.

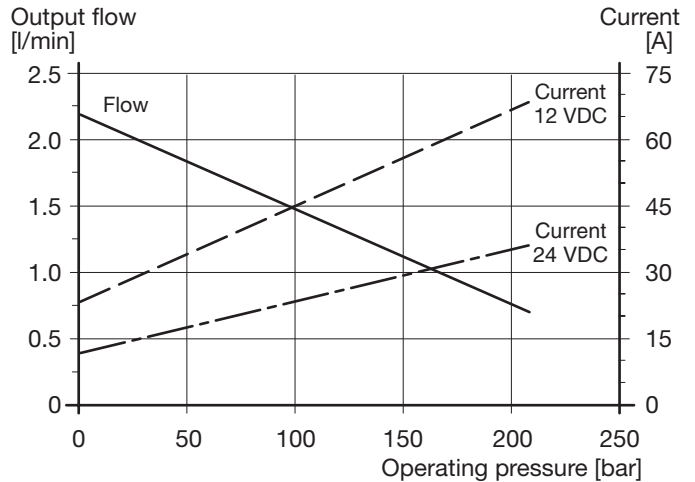


Diagram 6. Flow and current vs. pressure for the 0.31 cm³/rev pump.

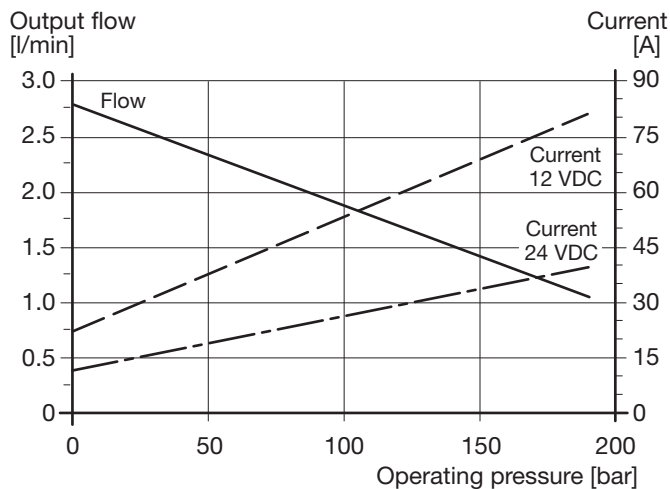


Diagram 7. Flow and current vs. pressure for the 0.40 cm³/rev pump.

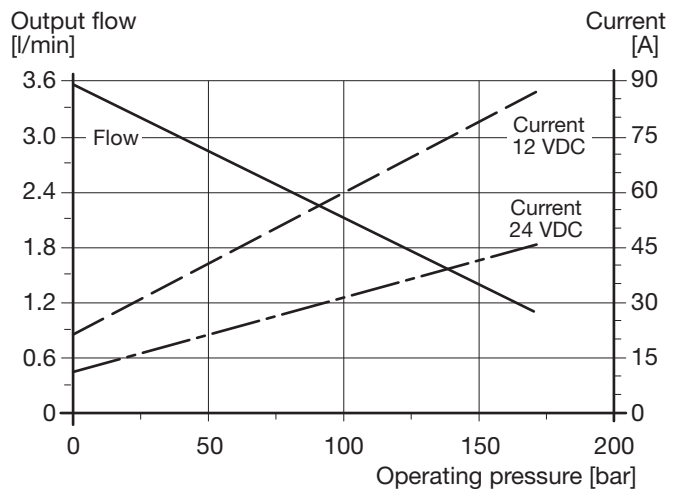
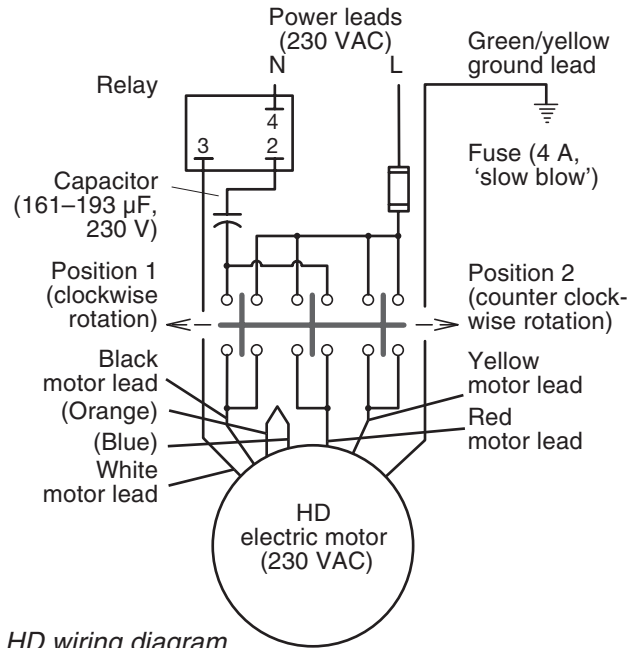


Diagram 8. Flow and current vs. pressure for the 0.53 cm³/rev pump.

Pump with HA (115 VAC) or HD (230 VAC) capacitor start electric motor

HA (115 VAC)
 Contact Parker Hannifin for information on pump with type HA, 115 VAC, motor.

HD (230 VAC)
 0,25 kW, 50 Hz, 2850 rpm, intermittent duty, single phase, open frame; capacitor and relay included.



Pump assembly with HD electric motor.

HD wiring diagram.

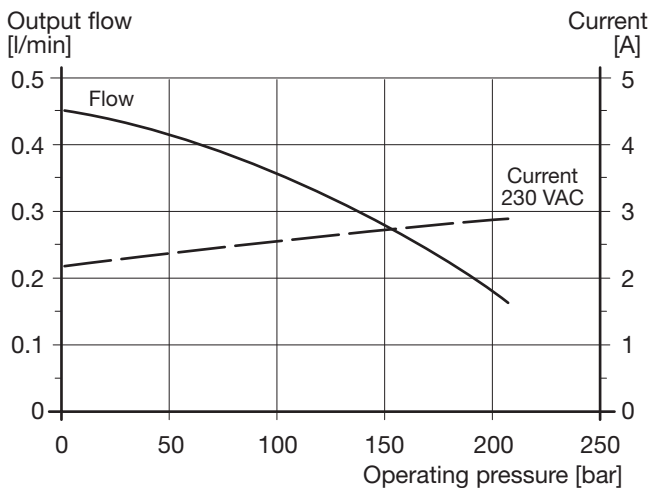


Diagram 9. Flow and current vs. pressure for the 0.16 cm³/rev pump (HD motor).

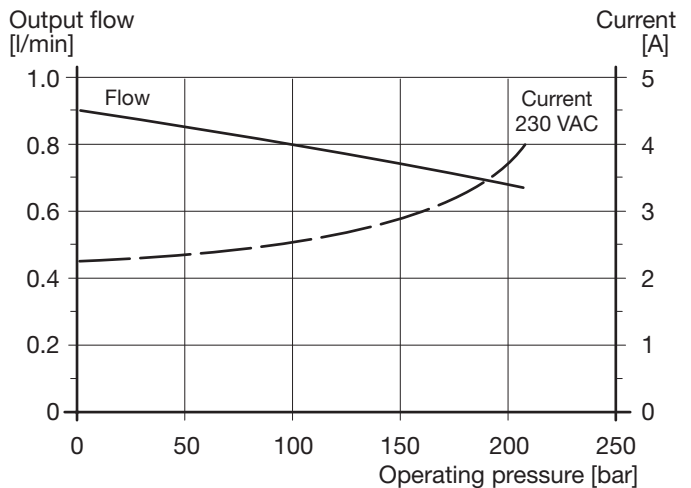


Diagram 10. Flow and current vs. pressure for the 0.31 cm³/rev pump (HD motor).

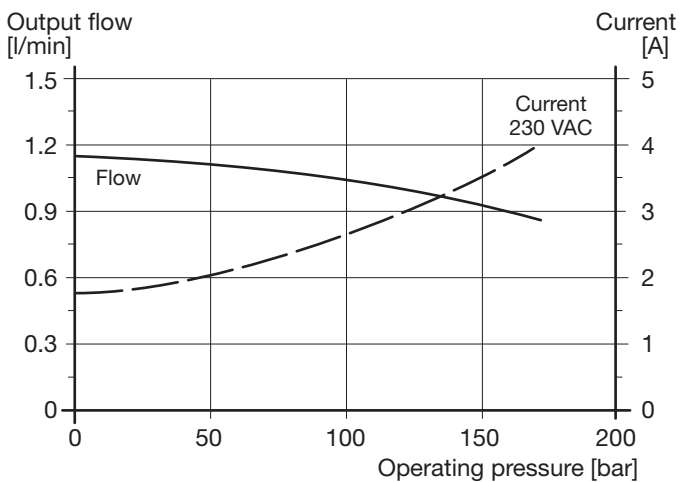


Diagram 11. Flow and current vs. pressure for the 0.40 cm³/rev pump (HD motor).

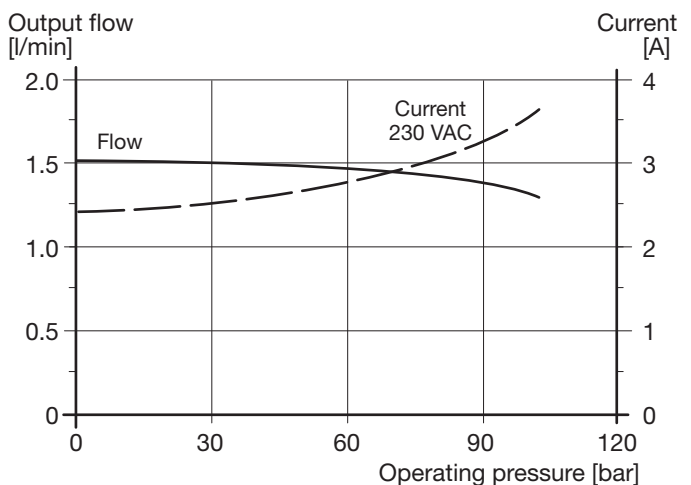


Diagram 12. Flow and current vs. pressure for the 0.53 cm³/rev pump (HD motor).

The thermal (pressure) relief valve's purpose is to allow a bleed-off of built up pressure due to thermal expansion of the fluid or to act as a (limited) shock load protection, should a cylinder in the system get bumped.

The thermal relief valve is included in circuits using a pilot operated check valve. The single direction units get one; the reversing units get two.

It is located between the check valve and the 108 series pump outlet port. It is a fixed relief valve with a pressure setting, approximately 100-140 bar above the system relief valve pressure setting.

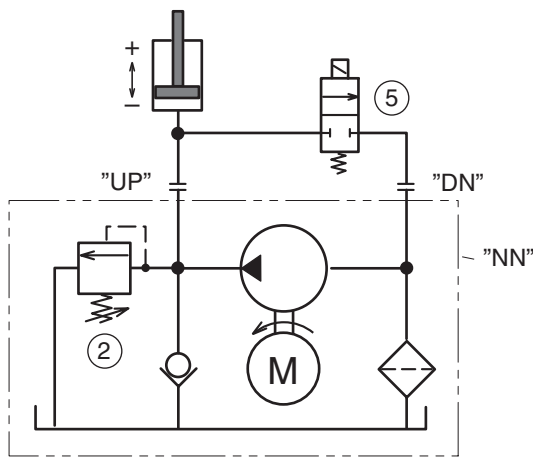


Fig. 1. 'NN' circuit (single direction).

Legend (valid for fig. 1 - 7):

- ① Thermal relief valve
- ② Pressure relief valve (pump protection)
- ③ High pressure relief valve
- ④ Back pressure circuit
- ⑤ Solenoid release valve.
- ⑥ Check valve
- ⑦ Pilote operated check valves.

NOTE: 'UP' (up) and 'DN' (down) is cast into the power unit aluminium adapter section, close to the corresponding port.

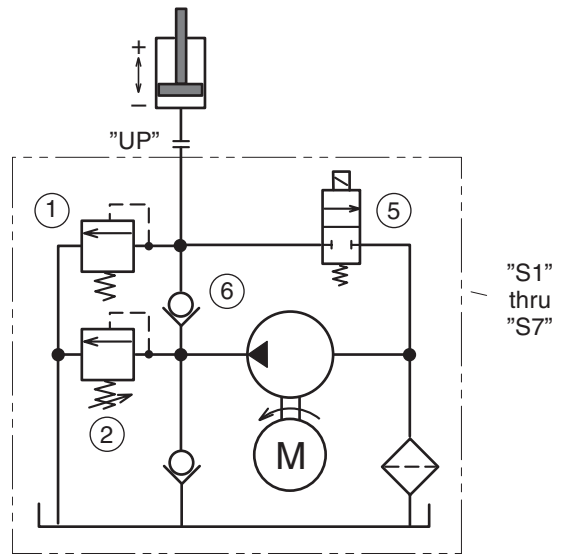


Fig. 2. 'S1' thru 'S7' circuit (single direction with check valve and solenoid release valve).

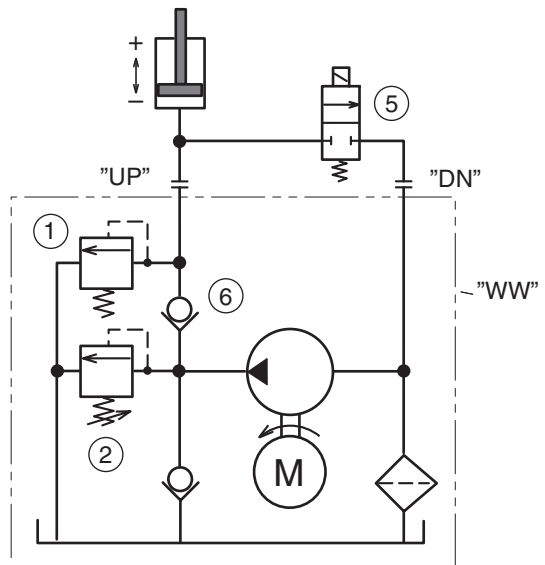


Fig. 3. 'WW' circuit (single direction with check valve).

The basic reversible circuit is essentially a closed loop. The oil returning from the system is fed back into the pump inlet. When a cylinder is being retracted, more oil is being returned to the power unit than is leaving it due to the rod volume. This results in the 'down side' relief valve cracking open, allowing the rod volume of oil to go back to the tank. The larger the rod volume, the more open the relief valve will be. In many applications this is not a problem.

However, if work is being done on the retract stroke, or if a pressure switch is used to signal that the cylinder is fully retracted, the back pressure circuit is required. This circuit allows the rod volume of oil to return to the reservoir through a special shuttle spool at a relatively low pressure, before it reaches the pump.

Full relief valve pressure is then available to retract the cylinder, also preventing a pressure switch from tripping before the full retract position is achieved.

Recommended uses:

- In systems where work is being done on the retract stroke
- Where a pressure switch is used to signal the full retract position
- In systems requiring a faster retract than extend speed.

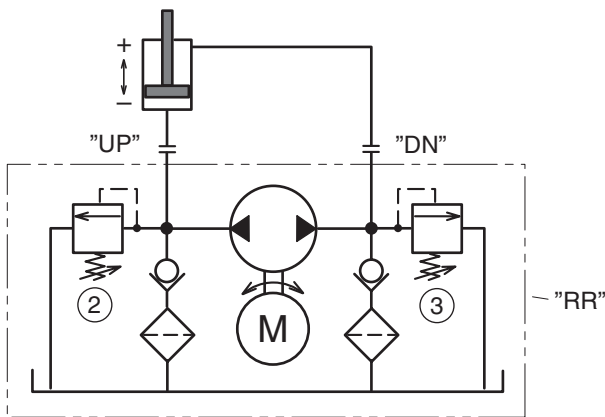


Fig. 4. 'RR' circuit (reversible).

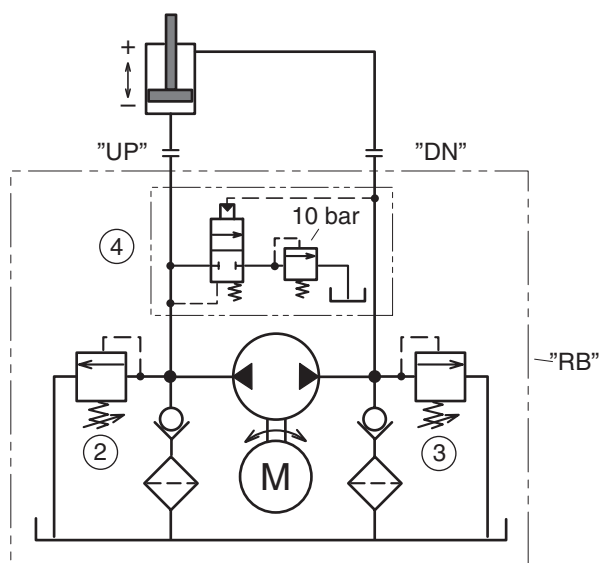


Fig. 5. 'RB' circuit (reversible with back pressure valve).

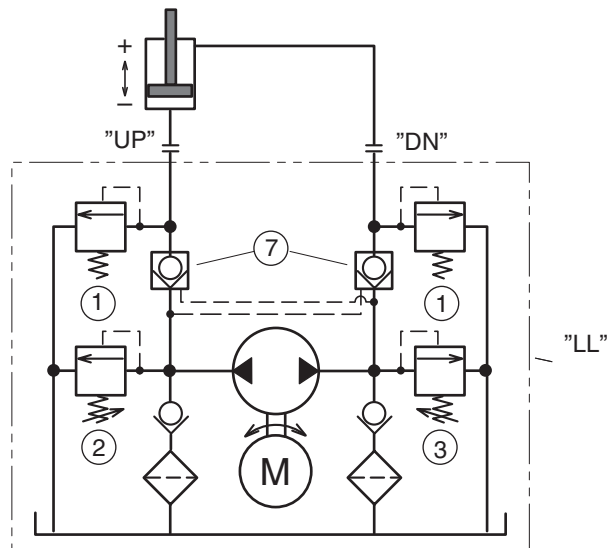


Fig. 6. 'LL' circuit (reversible locking).

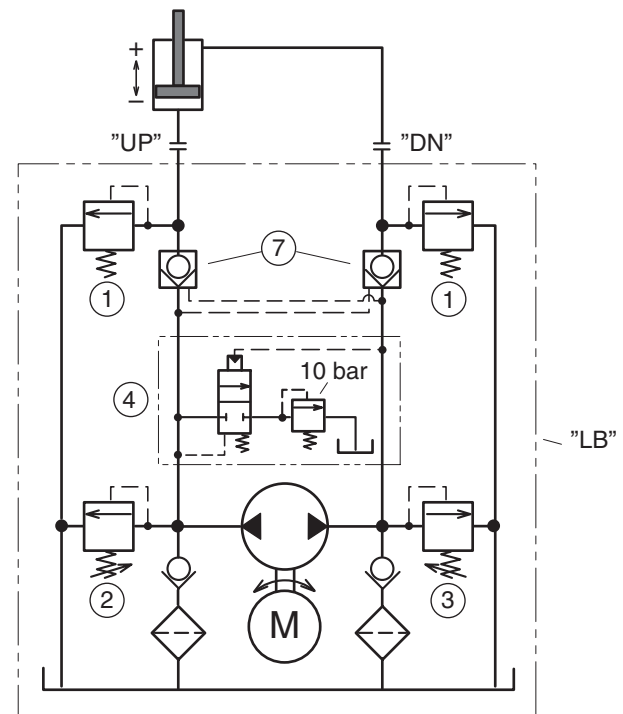
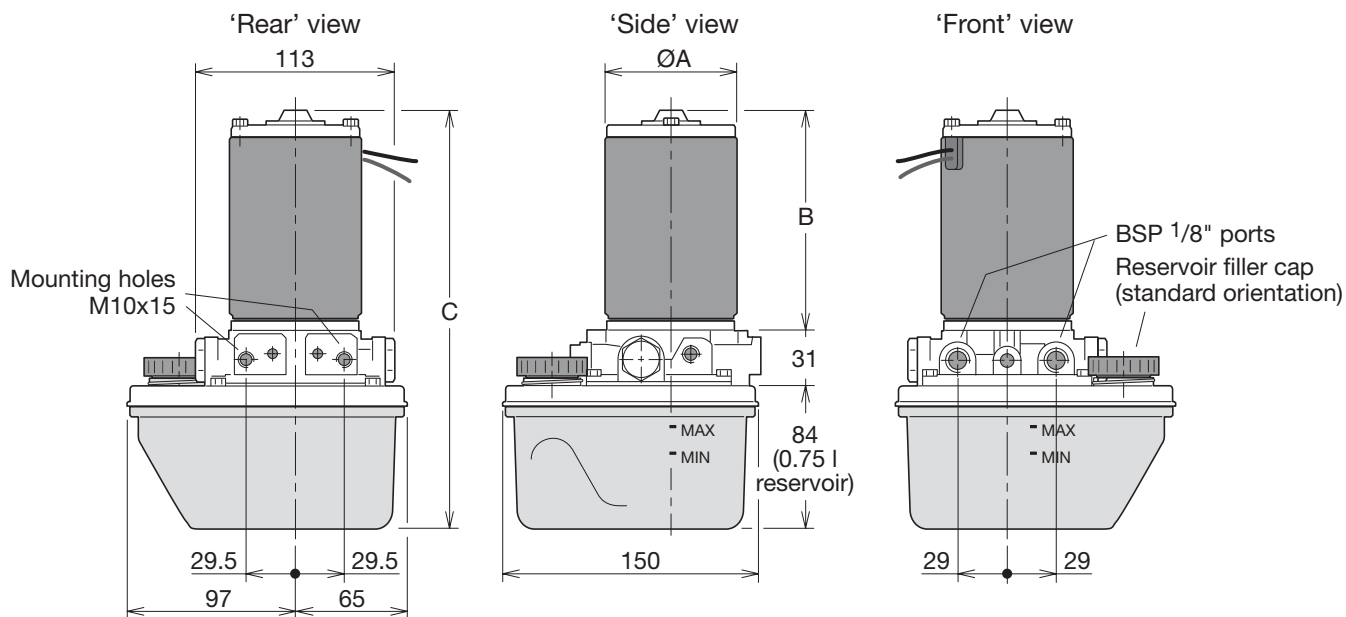


Fig. 7. 'LB' circuit (reversible locking with back pressure valve).

Pump assembly installation

Pump assembly with AE/BE, AM/BI or HA/HD motor



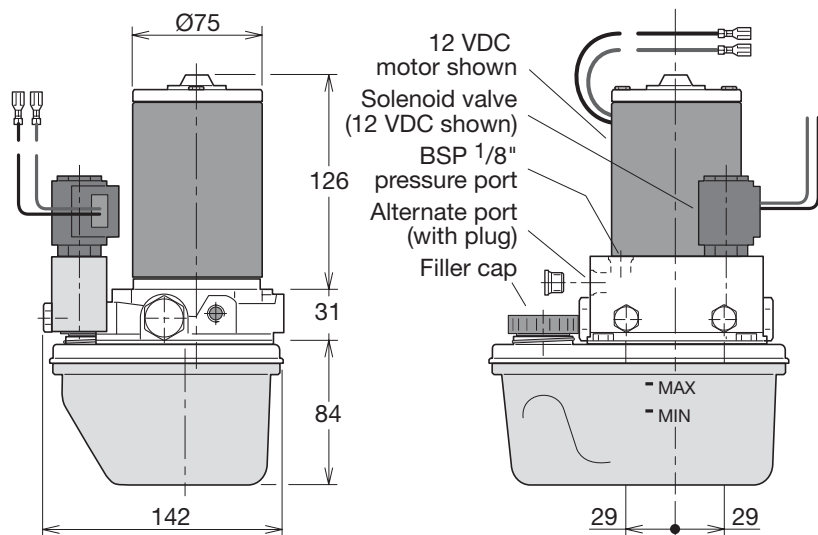
Motor dimensions (tol. ± 1 mm)

Motor type	A	B	C
AE or BE	75	126	241
AM or BI	96	151	266
HA or HD	100	161	276

NOTE: Standard reservoir orientation shown.

Pump assembly with solenoid release valve

(S1 thru S7)



Reservoir installation

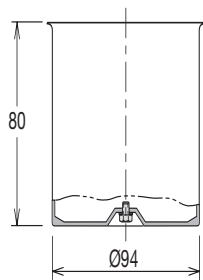


Fig. 1. Reservoir 'A'; 0.46 l (0.21 l usable); aluminium.

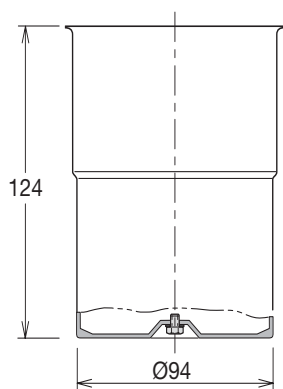


Fig. 2. Reservoir 'B'; 0.75 l (0.38 l usable); aluminium.

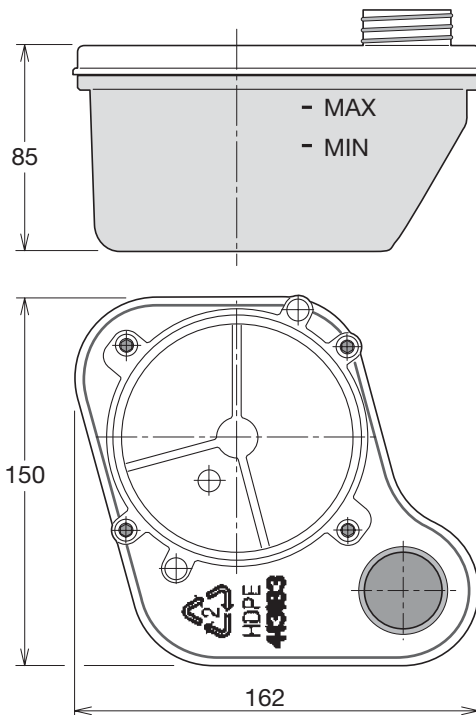


Fig. 3. Reservoir 'C'; 0.75 l (0.46 l usable), standard; high density polyethylene with UV additive.

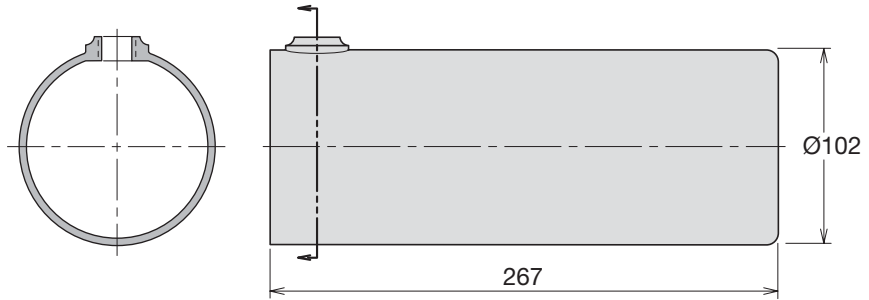


Fig. 4. Reservoir 'F'; 2.00 l
 (1.35 l usable); steel.

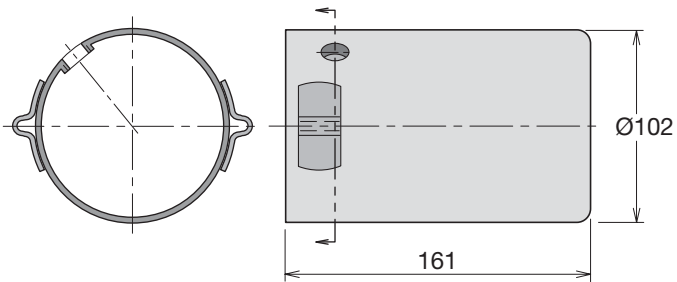


Fig. 5. Reservoir 'G'; 1.13 l
 (0.75 l usable); extruded aluminium.

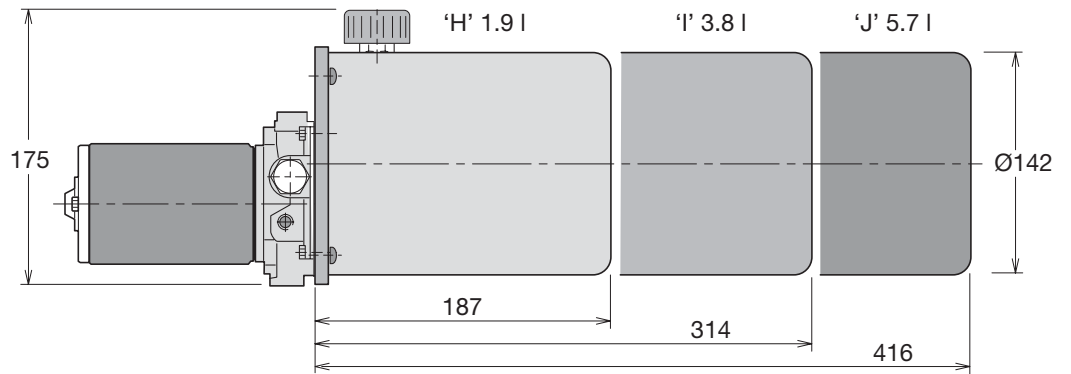


Fig. 6. Reservoirs 'H' (1.9 l), 'I' (3.8 l), standard,
 and 'J' (5.7 l); all steel.

Hydraulics Group Sales Offices

Europe

Austria

Wiener Neustadt

Tel: +43 (0)2622 23501 970

Fax: +43 (0)2622 23501 977

Belgium

Nivelles

Parc Industriel Sud-Zone II

Tel: +32 (0)67 280 900

Fax: +32 (0)67 280 999

Czech Republic

Prague

Tel: +420 2 830 85 221

Fax: +420 2 830 85 360

Denmark

Ishøj

Tel: +45 4356 0400

Fax: +45 4373 8431

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Fax: +358 (0)9 4767 3200

France

Contamine-sur-Arve

Tel: +33 (0)450 25 80 25

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Portugal

Leca da Palmeira

Tel: +351 22 9997 360

Fax: +351 22 9961 527

Slovakia

Ref. Czech Republic

Spain

Madrid

Tel: +34 91 675 73 00

Fax: +34 91 675 77 11

Sweden

Spånga

Tel: +46 (0)8 597 950 00

Fax: +46 (0)8 597 951 10

United Kingdom

Watford (industrial)

Tel: +44 (0)1923 492 000

Fax: +44 (0)1923 256 059

Ossett (mobile)

Tel: +44 (0)1924 282 200

Fax: +44 (0)1924 282 299

International

Australia

Castle Hill

Tel: +61 (0)2-9634 7777

Fax: +61 (0)2-9899 6184

Canada

Milton, Ontario

Tel: +1 905-693-3000

Fax: +1 905-876-0788

China

Beijing

Tel: +86 10 6561 0520

Fax: +86 10 6561 0526

Asia Pacific Group

Hong Kong, Kowloon

Tel: +852 2428 8008

Fax: +852 2425 6896

India

Mumbai

Tel: +91 22 7907081

Fax: +91 22 7907080

Japan

Tokyo

Tel: +(81) 3 6408 3900

Fax: +(81) 3 5449 7201

Latin America Group

Brazil

Tel: +55 12 3954-5100

Fax: +55 12 3954-5266

South Africa

Kempton Park

Tel: +27 (0)11-392 7280

Fax: +27 (0)11-392 7213

USA

Cleveland (industrial)

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