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
$^9/_5$ °C + 32 .... °F

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 cm^3/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.

108				—			—			—		—	
Power Unit	Electric motor	Pump type	Pump size		Reser-voir size	Circuit type		Ports	Moun-ting		'UP' setting		'DN' setting

Code	Type
AE	12 VDC, permanent magnet
AM	12 VDC, series wound
BE	24 VDC, permanent magnet
BI	24 VDC, series wound
HA	115 VAC, single phase, open frame
HD	230 VAC, single phase, open frame

Code	Type
S	Standard

Code	Pump-storlek	Displacement [cm³/rev]
10	= 0.100	0.16
19	= 0.190	0.31
25	= 0.250	0.40
32	= 0.327	0.53

Code	Reservoir
A	0.46 l (0.21 l usable)
B	0.75 l (0.38 l usable)
C	0.76l (0.43 l usable) ("C" reservoir is vertical only)
F	2.0 l (1,3 l usable
G	1.1 l (0,76 l usable)
H	1.9 l usable
I	3.8 l usable
J	5.7 l usable

Code	Circuit type (pages 9-10)
LB	Reversible locking with back pressure valve
LL	Reversible locking
NN	Single direction
RB	Reversible with back pressure valve
RR	Reversible
WW	Single direction with check valve
S1*	12 VDC, normally closed
S2*	24 VDC, normally closed
S3*	120 VDC, normally closed
S5*	12 VDC, normally open
S6*	24 VDC, normally open
S7*	120 VDC, normally open

* Circuit type WW with solenoid release valve

Code	Port option
1	SAE 7/16"-20
4	BSP 1/8"

Code	Mounting
V	Vertical (motor up)
H	Horizontal

Code Setting

'UP' relief valve setting left hand port; **in multiples of 100 psi**; (100 psi corresponds to approx. 6.9 bar)

'DN' (down) relief valve setting right hand port; **in multiples of 100 psi**; (100 psi corresponds to approx. 6.9 bar)

Examples:

04 = 400 psi/28 bar

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 mm^2/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%.

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.

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.

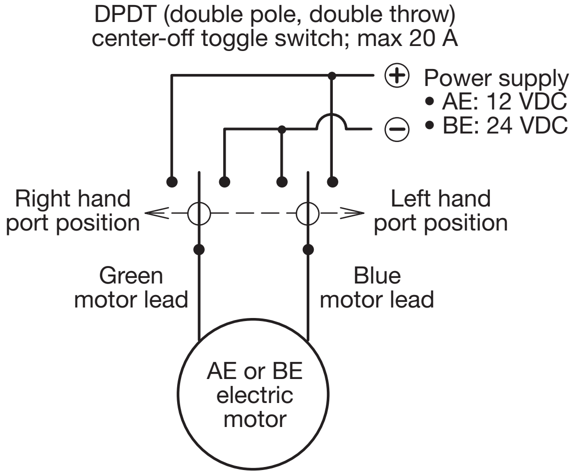
The maximum ‘on’ time is 30 minutes of continuous operation at full power.

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

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.

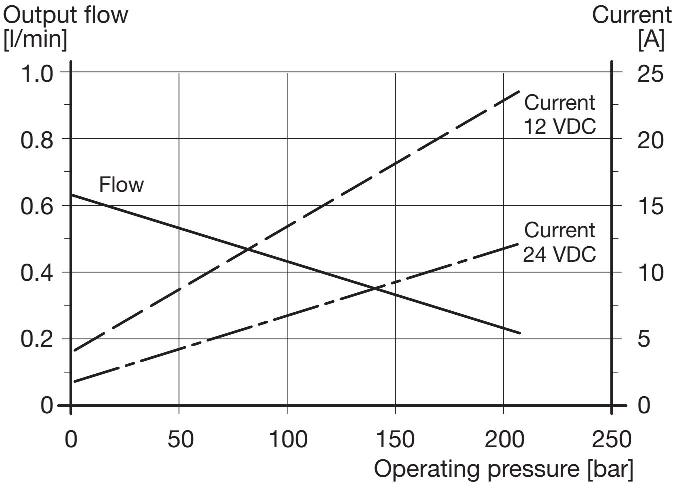


Diagram 1. Flow and current vs. pressure for 0.16 cm³/rev pump.

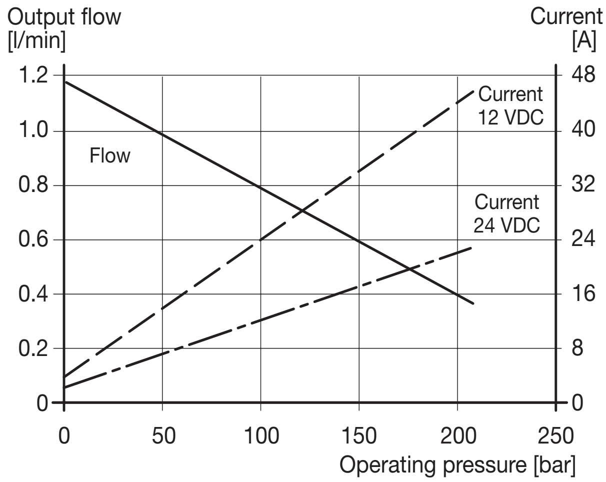


Diagram 2. Flow and current vs. pressure for 0.31 cm³/rev pump.

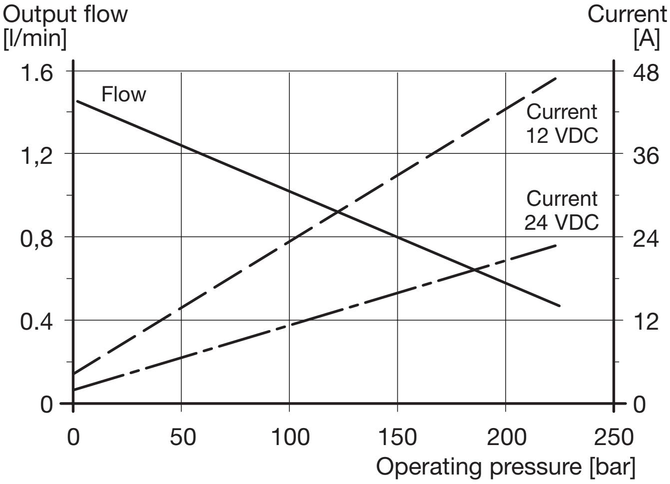


Diagram 3. Flow and current vs. pressure for 0.40 cm³/rev pump.

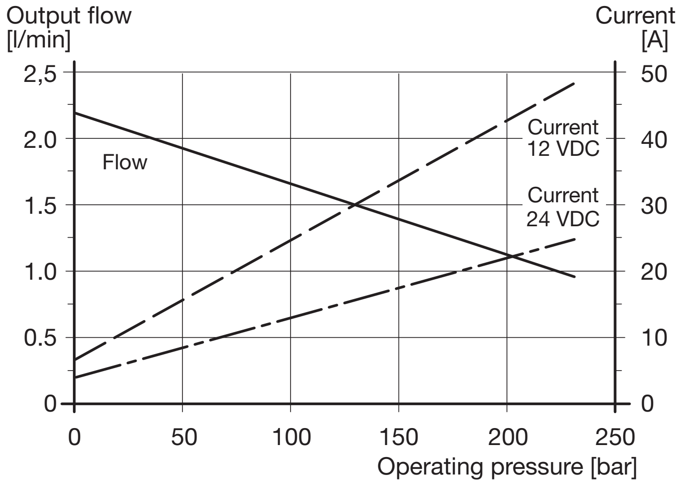
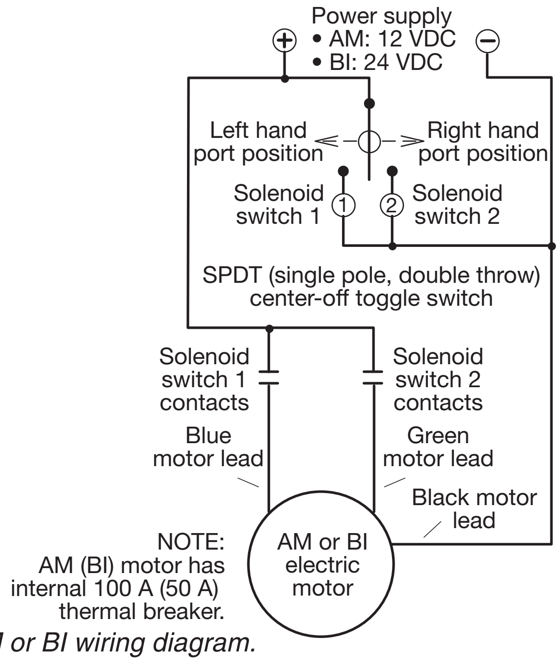


Diagram 4. Flow and current vs. pressure for 0.53 cm³/rev pump.

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.

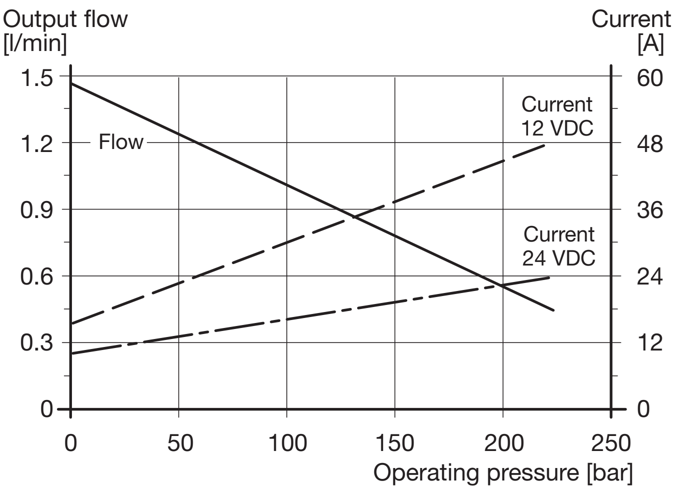


Diagram 5. Flow and current vs. pressure for the 0.16 cm³/rev pump.

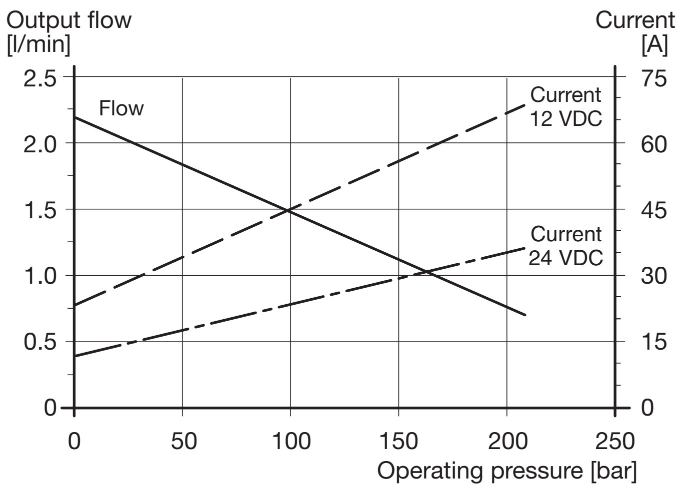


Diagram 6. Flow and current vs. pressure for the 0.31 cm³/rev pump.

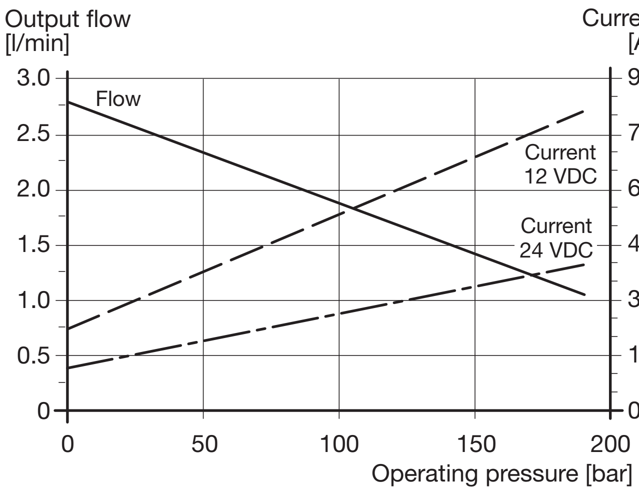


Diagram 7. Flow and current vs. pressure for the 0.40 cm³/rev pump.

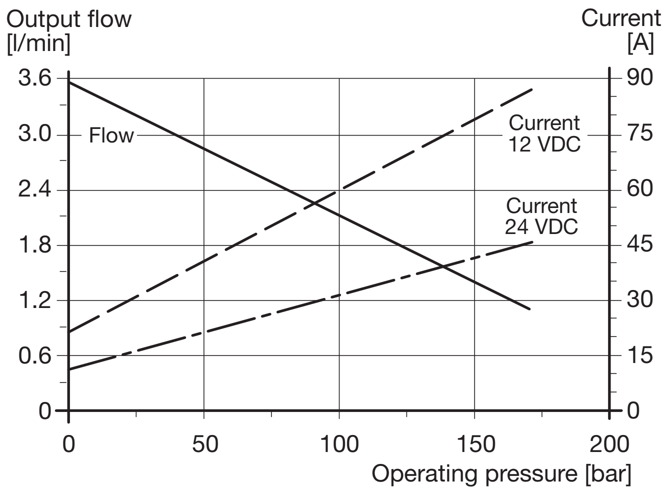


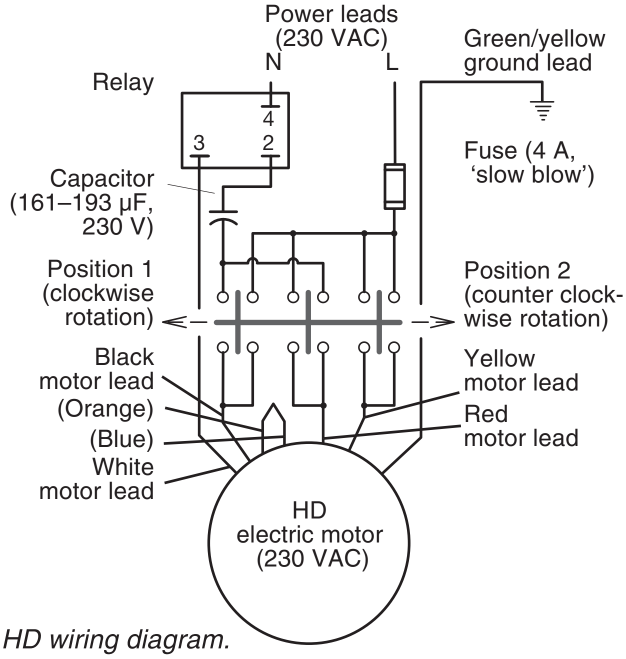
Diagram 8. Flow and current vs. pressure for the 0.53 cm³/rev pump.

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.

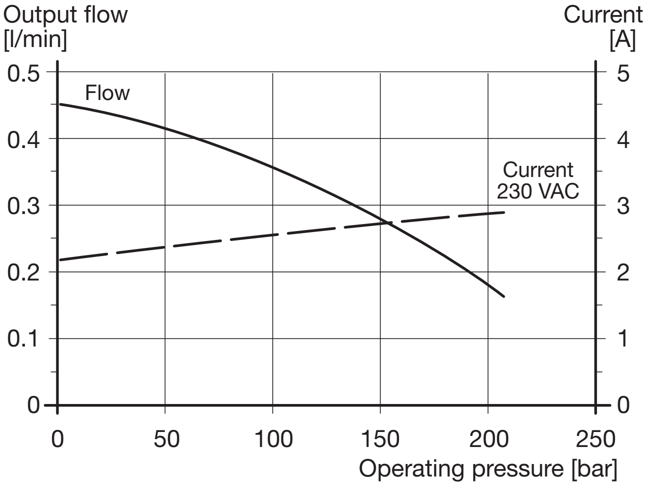


Diagram 9. Flow and current vs. pressure for the 0.16 cm³/rev pump (HD motor).

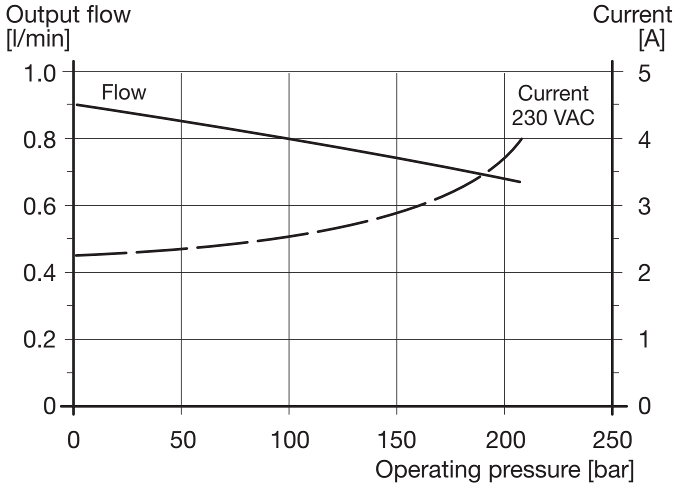


Diagram 10. Flow and current vs. pressure for the 0.31 cm³/rev pump (HD motor).

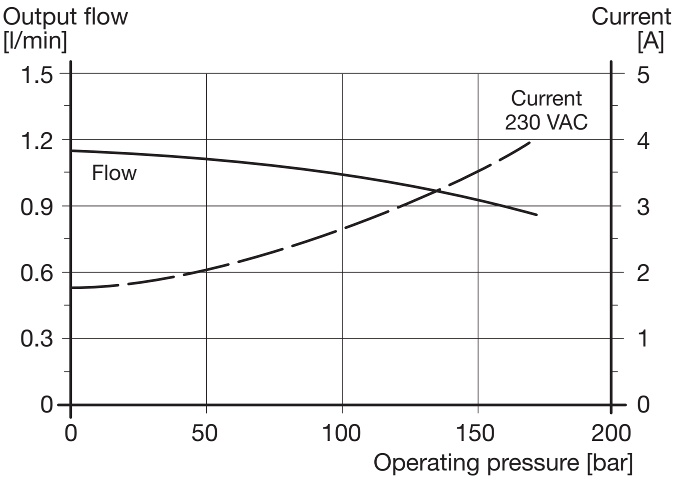


Diagram 11. Flow and current vs. pressure for the 0.40 cm³/rev pump (HD motor).

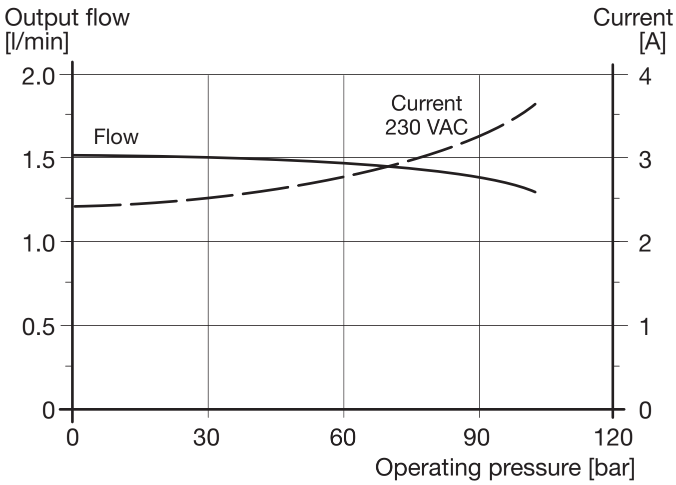


Diagram 12. Flow and current vs. pressure for the 0.53 cm³/rev pump (HD motor).

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.

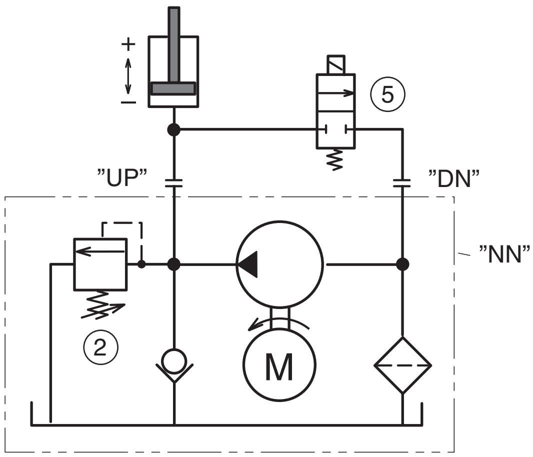


Fig. 1. 'NN' circuit (single direction).

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.

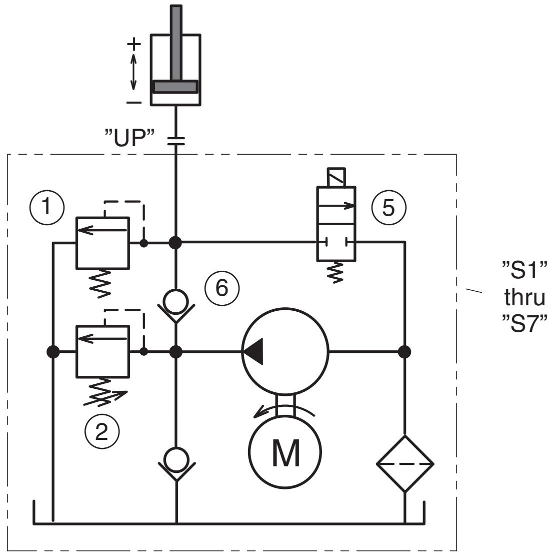


Fig. 2. 'S1' thru 'S7' circuit (single direction with check valve and solenoid release valve).

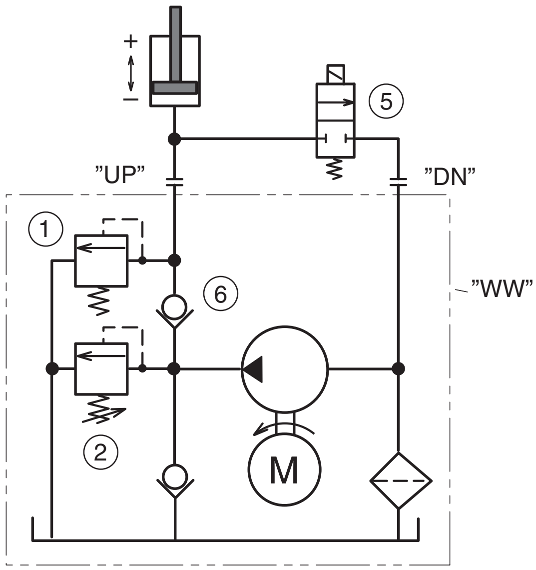


Fig. 3. 'WW' circuit (single direction with check valve).

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.

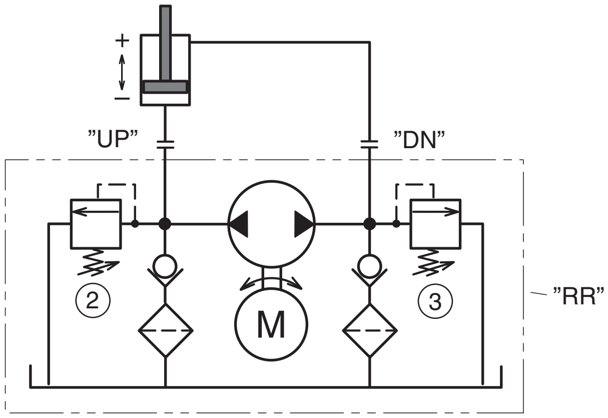


Fig.4. 'RR' circuit (reversible).

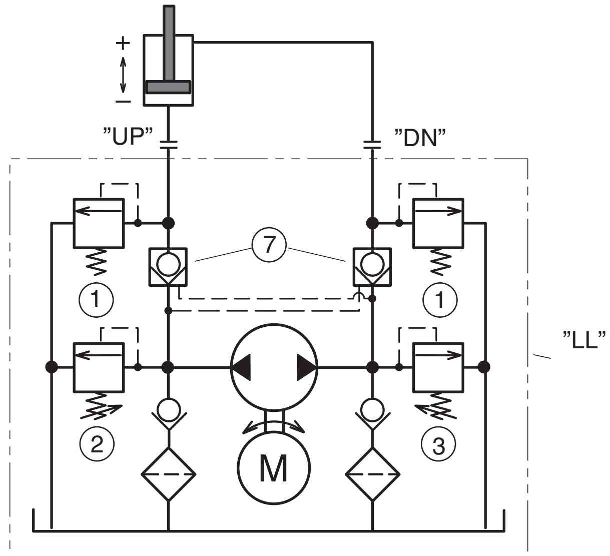


Fig.6. 'LL' circuit (reversible locking).

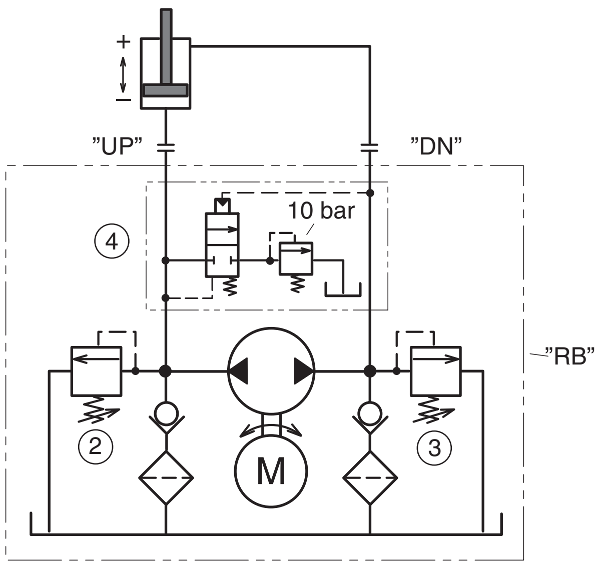


Fig.5. 'RB' circuit (reversible with back pressure valve).

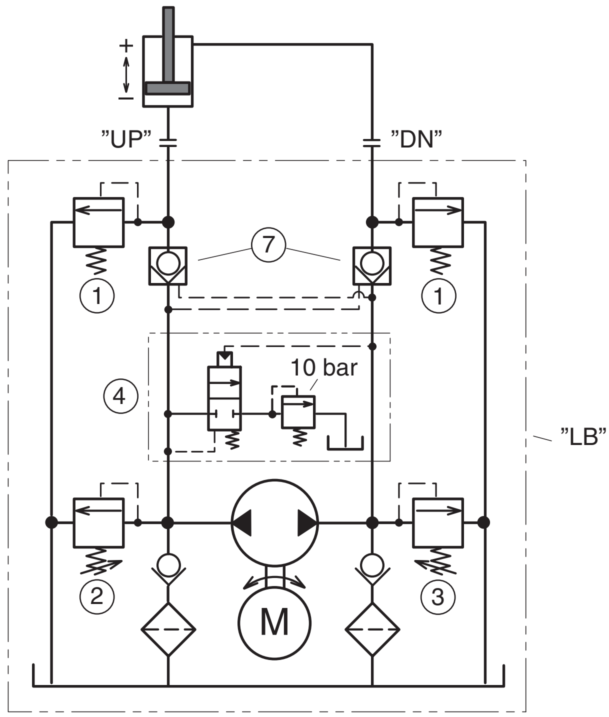
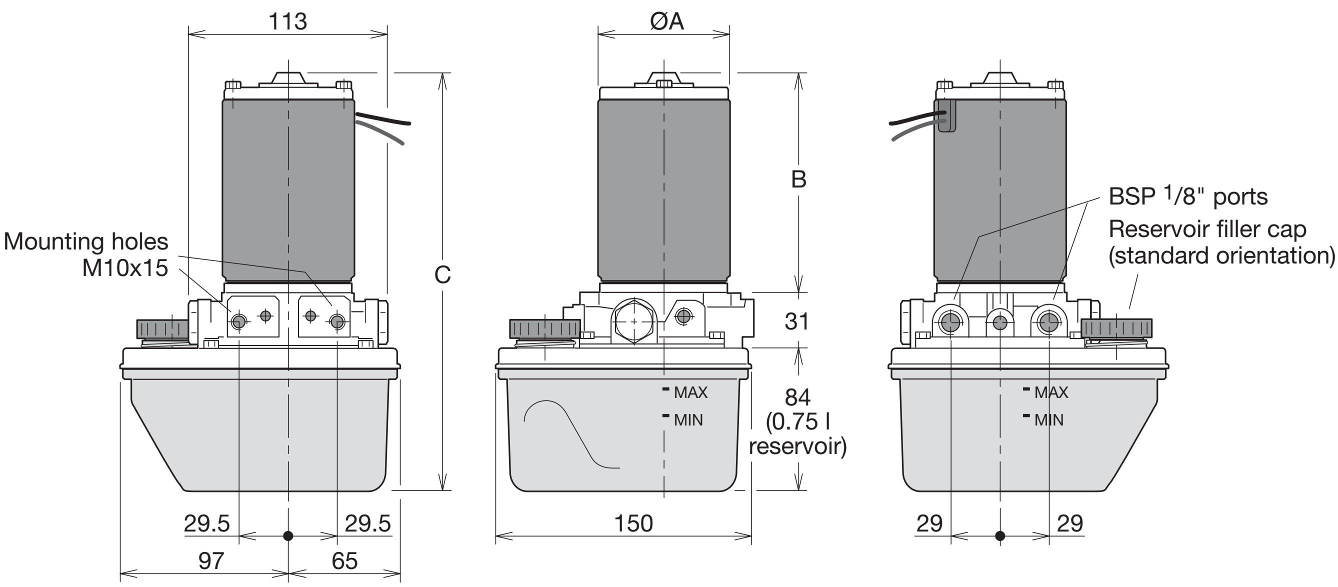


Fig.7. 'LB' circuit (reversible locking with back pressure valve).

Pump assembly installation

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



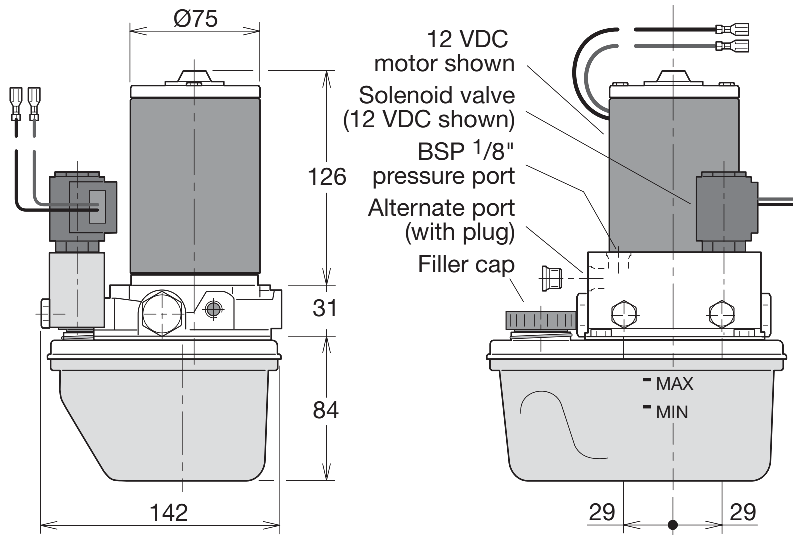
Motor dimensions (tol. ± 1 mm)

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

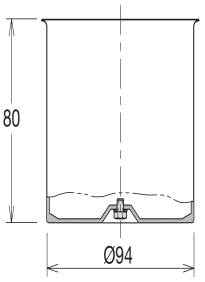


Fig. 1. Reservoir 'A'; 0.46 l (0.21 l usable); aluminium.

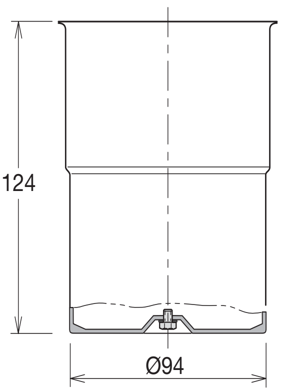


Fig. 2. Reservoir 'B'; 0.75 l (0.38 l usable); aluminium.

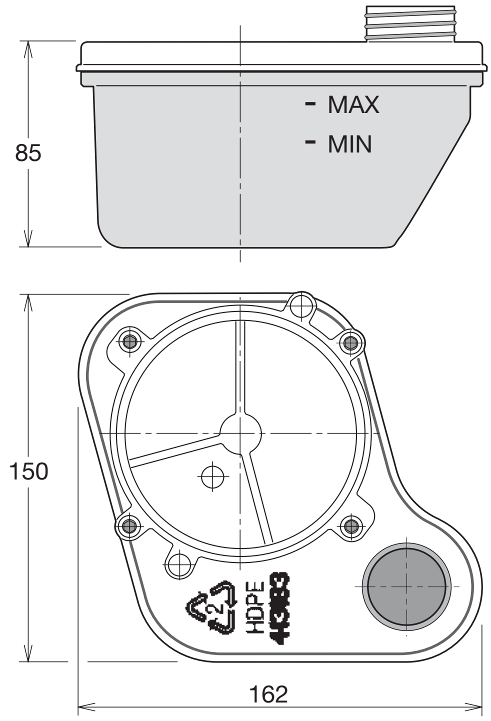


Fig. 3. Reservoir 'C'; 0.75 l (0.46 l usable), standard; high density polyethylene with UV additive.

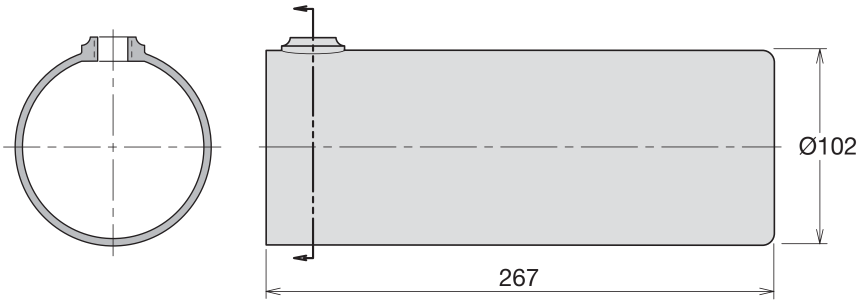


Fig. 4. Reservoir 'F'; 2.00 l (1.35 l usable); steel.

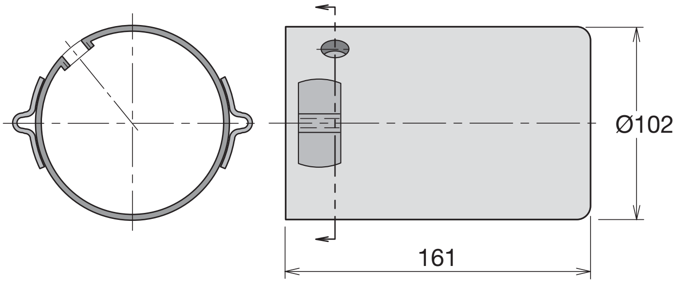


Fig. 5. Reservoir 'G'; 1.13 l (0.75 l usable); extruded aluminium.

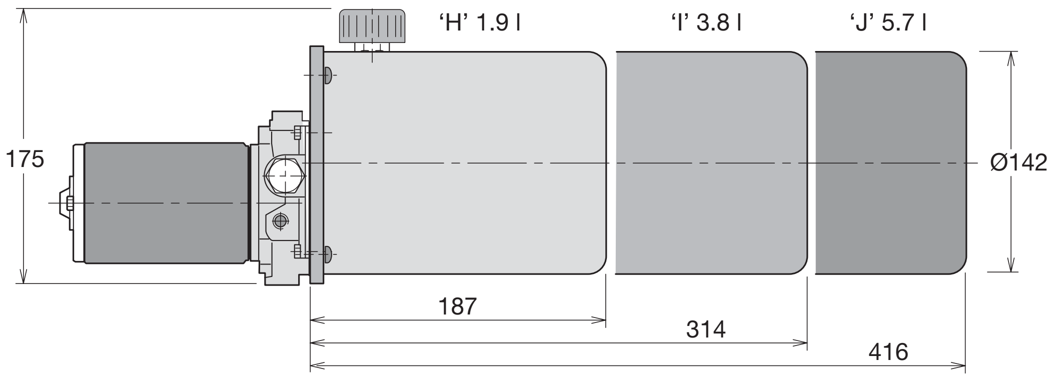


Fig. 6. Reservoirs 'H' (1.9 l), 'I' (3.8 l), standard, and 'J' (5.7 l); all steel.

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