

**MANNESMANN  
REXROTH****Variable Vane Pump  
Type V3 (Series 40)****RE  
10 404/10.81**

Size 25

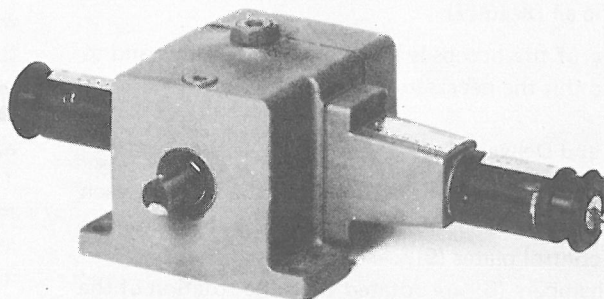
to 100 bar

to 19 cm<sup>3</sup>/rev

Replaces: 10 431

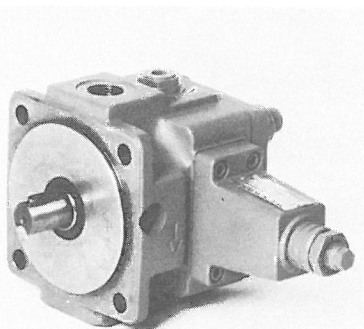
- easy commissioning due to automatic bleed facility
- low noise level
- high bearing life because of hydro-dynamically lubricated plain bearings
- bronze-faced starting and control plates, giving low friction characteristics during marginal lubrication conditions

K 3090/4

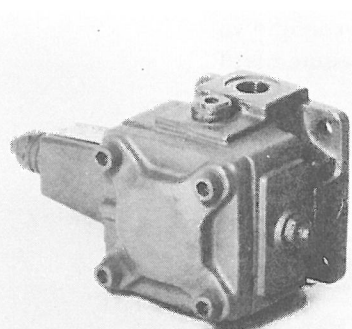


Type 1PV6 V3-40/25 RA08 MS 100 S1

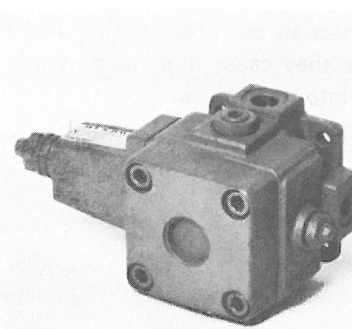
K 3089/3



K 3089/2



K 3090/3

Type 1PV2 V3-40/25 RA01 MC40 A1  
63Type 1PV2 V3-40/25 RA01 MC40 A1  
63

Type 1PV2 V3-40/25 RA01 MC100 A1

**Ordering Code** (Mounting bracket, foot mounted bell housing, subplate and handwheel must be ordered separately)

1 PV		V3	-40	/25								1	★
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Flange mounting = 2

Subplate mounting = 6

Series 40 = 40

(40 to 49 = installation and connection dimensions remain unchanged)

Clockwise rotation = R

Anti-clockwise rotation, only for subplate mounting pumps (viewed on the drive shaft) = L

Parallel shaft end = A

Through shaft (Parallel both ends) = D

(For further models see combination pumps)

BSP-ports = 01

Subplate mounting = 08

HLP-mineral oils = M

Phosphate-ester (Viton) = V

Further details  
in clear text

A = Adjustment screw

H = Adjustment screw with  
open square headS = Lockable adjustment  
screw

100 = 100 bar stall pressure

63 = 63 bar stall pressure

40 = 40 bar stall pressure

25 = 25 bar stall pressure

C = pressure regulator

H = pressure regulator with  
open square head

S = lockable pressure regulator

The pumps designed for 63 bar cannot be modified for higher pressures by changing the spring.  
Please note the differing dimensions of the different models.

**Description of Function, Section**

Hydraulic pumps type V3 are rotating vane pumps with simple vanes and adjustable output flow.

Pumps of this type basically consist of a housing (1), rotor (2) with simple vanes (3), stator (4), pressure regulator (5), volume adjustment screw (6) and the valve for automatic air bleed (7).

The duty of the pumps is to generate an oil flow, and to impart to this the necessary forces.

**Suction and Delivery**

The chambers (8) for the transport of the fluid are each formed by two vanes (3), the rotor (2), the stator (4) and the control plates (9).

These chambers (8) are rotated with the rotation of the rotor (2), and as they become larger are filled with fluid from the suction channel. On reaching the maximum volume, the chambers (8) are separated from the suction side. Further rotation of the rotor (2) causes them to connect to the pressure side, and as they reduce in volume they cause fluid to flow into the pressure port P and into the system.

Maximum volume screw (6) is used to limit the maximum flow of the pump.

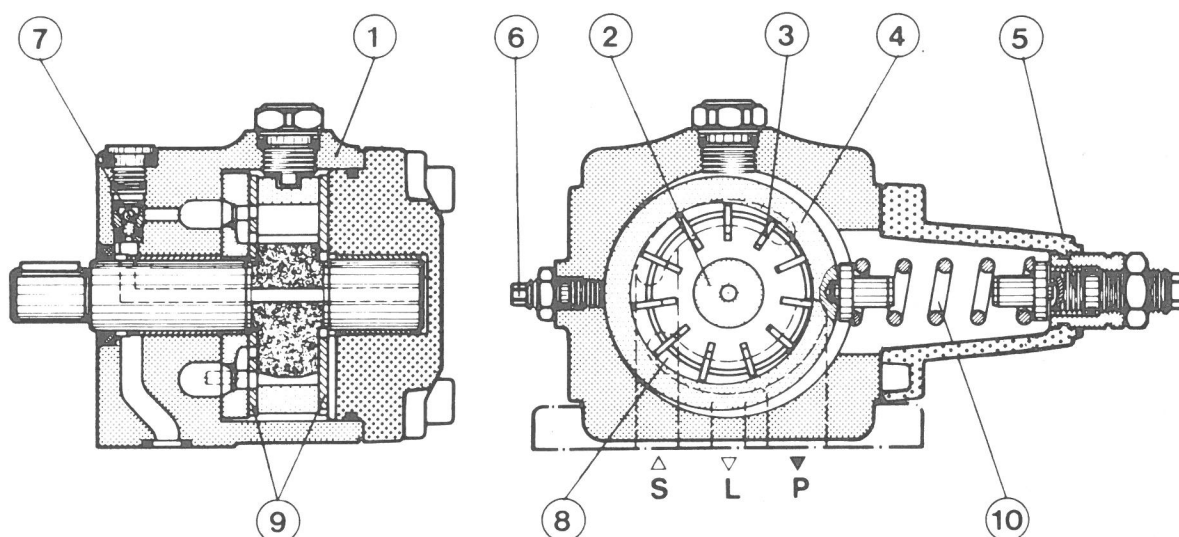
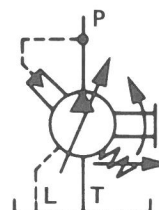
**Pressure Regulation**

The stator ring (4) is circular in form, and is held in an eccentric position by spring (10). The maximum working pressure of the system is set by the spring (10).

Any resistance to flow in the system creates a pressure within the pressure side of the pump, and thereby on to the internal running surface of the stator against the force of spring (10). As soon as the pressure force reaches the set spring force, the stator ring (4) is moved out of its eccentric position in the direction of zero flow.

The output flow then adjusts itself to a value which just maintains this condition. If the spring reaches its highest set pressure, the pump output becomes practically zero. The working pressure is maintained, and only the leakage oil is replaced.

By this means, power loss and heat input to the fluid is kept as low as possible.



## Technical Data

Nominal capacity	(cm <sup>3</sup> /rev)	19			
Nominal output flow	(l/min)	27,5 (at n = 1450 rpm; p = 10 bar; Q <sub>max</sub> = 29 l/min; production tolerances allow up to 30 l/min			
Speed range	(rpm)	1000 ... 1800			
Spring type		C 25	C 40	C 63	C 100
Pressure range	(bar)	12 ... 25	20 ... 40	30 ... 63	50 ... 100
Operating pressure	— Inlet	(bar)	— ... 0.2 ... + 5		
	— Outlet	(bar)	... 100 continuous		
	— case drain	(bar)	... 2		
max. permissible drive torque	(Nm)	61,8			
Shaft loading		radial or axial forces cannot be accepted			
Mounting		Flange or foot mounting			
Connection ports		Thru ports			
Rotation		clockwise (or anti-clockwise for model 1PV6)			
Fluid		HLP mineral oils phosphate ester			
Temperature range	(°C)	– 10 ... + 70			
Viscosity range	(mm <sup>2</sup> /s [cSt])	16 ... 160 at operating temp. and stall pressure < 63 bar 25 ... 160 at operating temp. and stall pressure > 63 bar max. 800 at start up (with offset rotor) max. 200 at start up (with pump at zero output)			
Filtration	(μm)	25			
We recommend 10 μm to ensure maximum life under heavy loading – continuous usage and low viscosity.					

For applications outside the above parameters, please consult us.

## Installation Notes

## Installation:

The pumps can be installed in any desired position.

## Drive:

The shaft ends of both pump and motor must be in line. Please note that no longitudinal or radial load may be applied to the pump shaft. The drive must therefore be transmitted via a flexible coupling. (Please observe the conditions laid down by the coupling manufacturer). In no case may the pump be connected rigidly to the driving unit.

## Oil Tank:

The contents of the tank must fall within the drive requirements, in that the working temperature must not exceed recommendations. If necessary, a cooler must be fitted.

## Pipelines and Connections:

The suction line should be fitted so that the given values are not exceeded.

All return and leakage lines should be arranged so that return oil may not, under any conditions, be immediately sucked back into the pump. All lines must finish sufficiently far below the minimum oil level in the tank (approx. 5 cm) in order to avoid the build-up of foam. The pipe ends should be cut at a 45° angle, and should not come within 5 cm of the tank bottom, so that any dirt lying there does not get sucked up. The case drain line should be arranged approx. 100 mm higher than the suction line, and should be turned through 90° so that the case drain oil cannot come in direct contact with the suction stream. If possible, both pipe openings should be at least 200 mm apart.

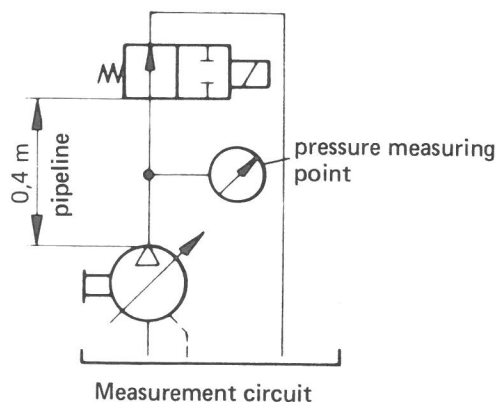
## Notes for Project Engineering:

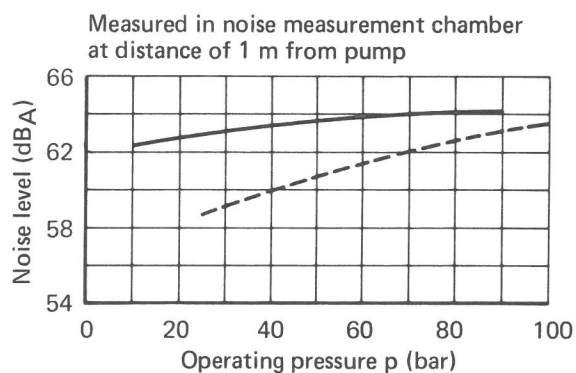
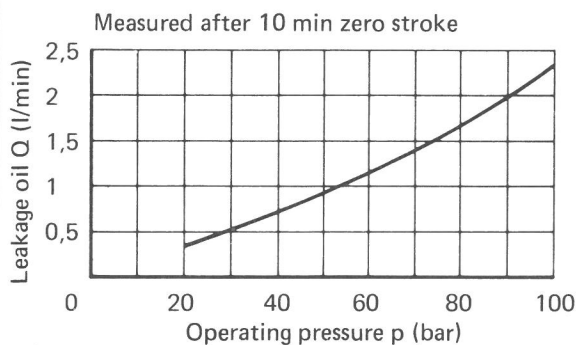
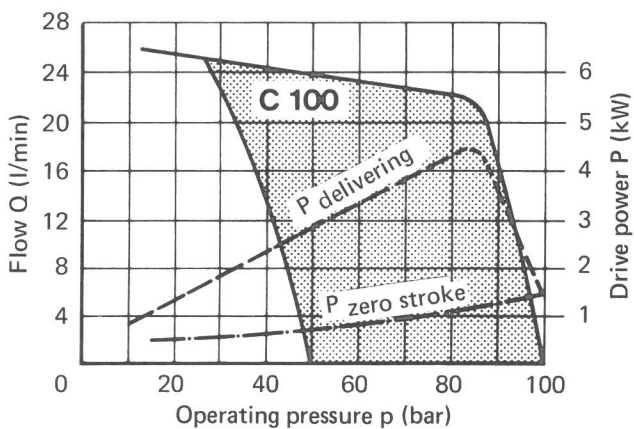
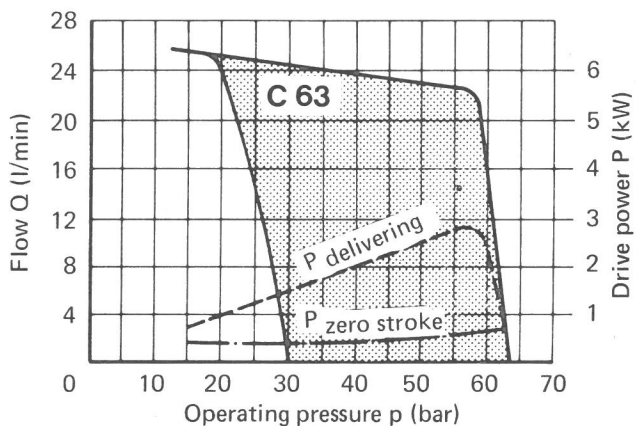
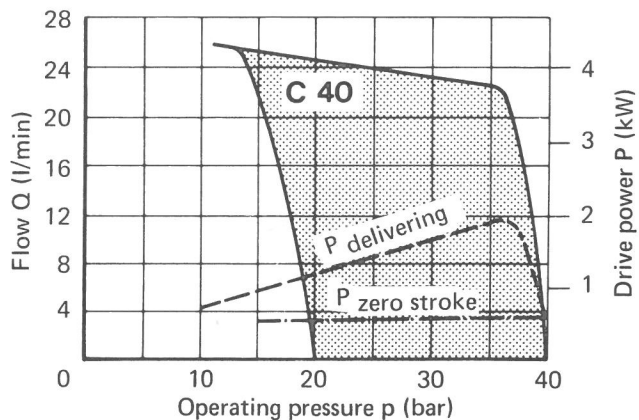
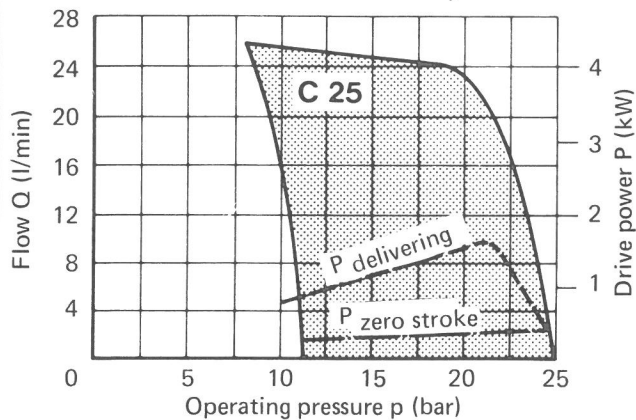
When the pump is reducing towards zero stroke position, pressure peaks can occur.

For the circuit illustrated, the following values were measured:

Stall Pressure	Pressure Peak
100 bar	180 bar
63 bar	130 bar
40 bar	110 bar
25 bar	70 bar

Please note the possible effect on the installation when doing project work on these pumps.

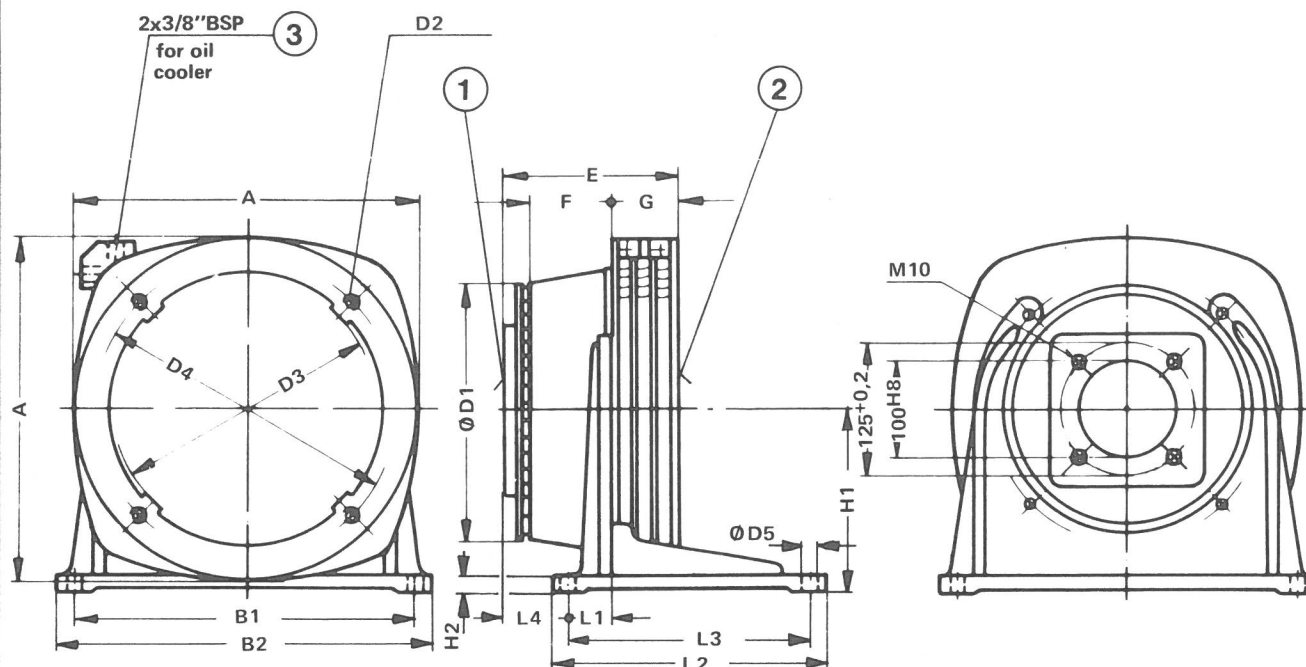


Performance Curves (measured at  $n = 1450 \text{ rpm}$  and  $\nu = 36 \text{ mm}^2/\text{s}$  (cSt) and  $t = 50 \text{ }^\circ\text{C}$ )

— noise level when pump is delivering fluid  
 - - - noise level at zero stroke



## Foot Mounted Bell Housing, with and without Oil Cooler, and with Flexible Mounting Ring (Dimensions in mm)



1 pump flange

2 motor flange

3 connection for oil cooler, 3/8\"/&gt;

The part no. includes the foot mounted bell housing and the mounting screws for both pump and motor.

Foot Mounted Bell Housing	Part Number Bell Housing with Oil Cooler	Electric Motor P (kW)	Size	A	B1	B2	D1	D2
011 472	—	0,55 ... 1,5	80/90	200	230	260	180	M10
011 473	011 478	2,2 ... 4	100/112	250	285	320	180	M12
011 474	011 479	5,5 ... 7,5	132	300	335	370	228	M12

D3	D4	Ø D5	E	F	G	H1	H2	L1	L2	L3	L4
130	165	12	92,5	61	20	125	12	30	180	150	42,5
180	215	14	114,5	42	61	155	15	25	220	182	28,5
230	265	14	141,5	69	61	185	18	40	275	240	40,5

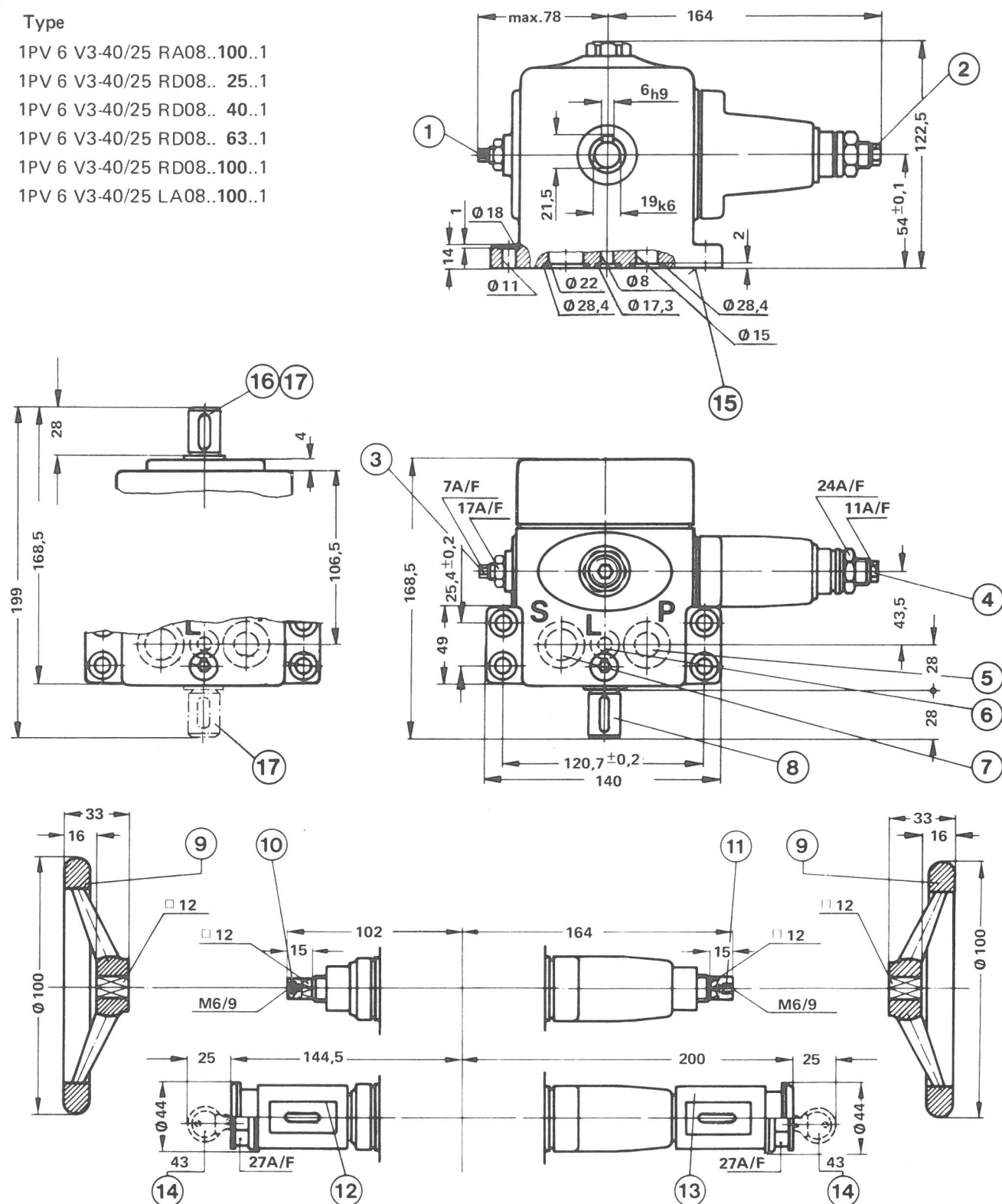
For technical data of oil-air cooler see data sheet RE 32 100



Unit Dimensions: Pump for subplate mounting up to 100 bar stall pressure (Dimensions in mm) weight approx. 11 kg

## Type

1PV 6 V3-40/25 RA08..100..1  
 1PV 6 V3-40/25 RD08.. 25..1  
 1PV 6 V3-40/25 RD08.. 40..1  
 1PV 6 V3-40/25 RD08.. 63..1  
 1PV 6 V3-40/25 RD08..100..1  
 1PV 6 V3-40/25 LA08..100..1

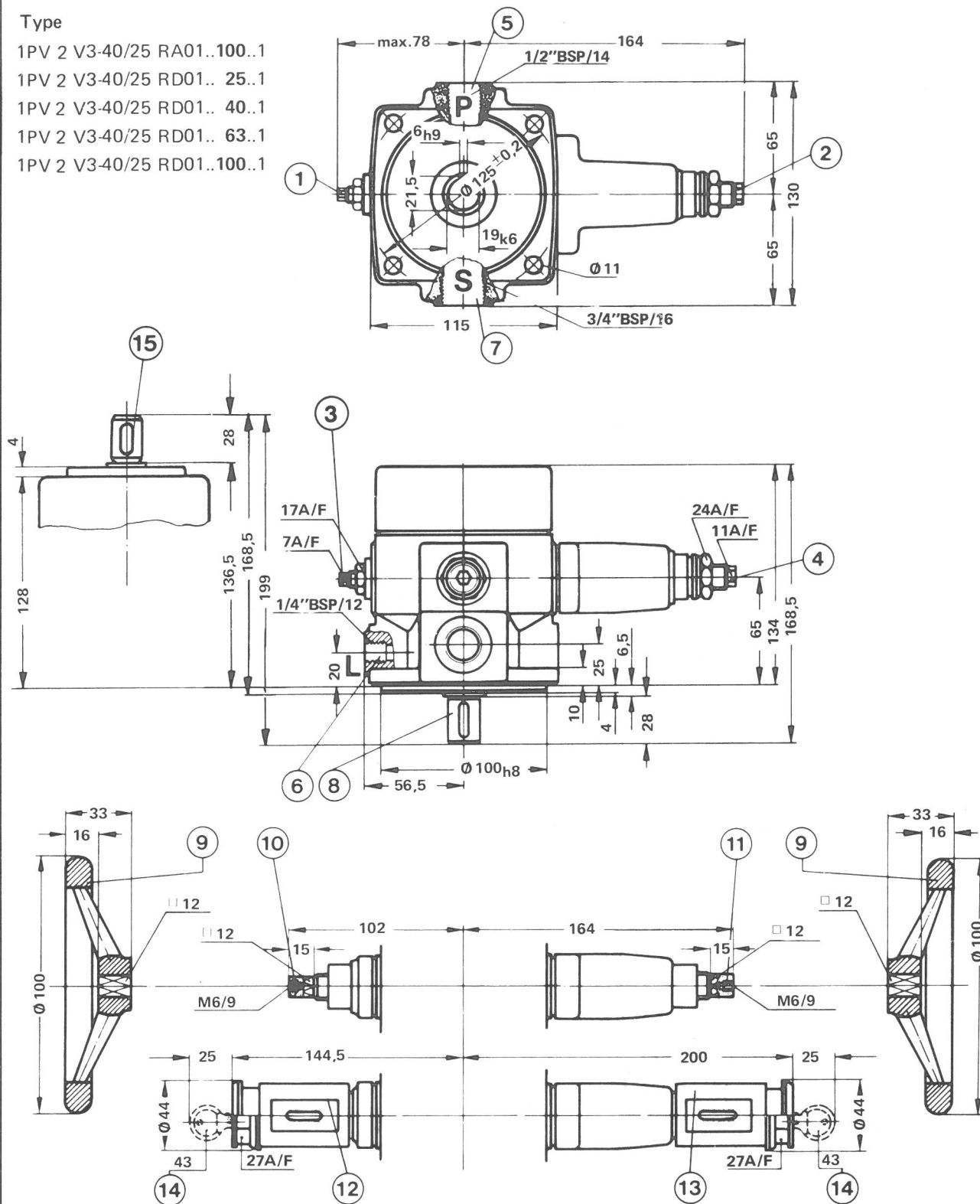


- |   |   |   |
|---|---|---|
| 1 Adjustment<br>Clockwise rotation:<br>reduces flow<br>Anti-clockwise rotation:<br>increase flow                              | 5 Pressure port   | 11 Square end pressure<br>adjustment (H)    |
| 2 Adjustment<br>Clockwise rotation:<br>increases operating pressure<br>Anti-clockwise rotation:<br>reduces operating pressure | 6 Leakage port  | 12 Lockable flow<br>adjustment (S)          |
| 3 Flow adjustment<br>by means of screw (A)  | 7 Suction port  | 13 Lockable pressure<br>adjustment (S)      |
| 4 Pressure adjustment<br>by means of screw (C)  | 8 Drive shaft for clockwise<br>rotation model   | 14 Key length 43                            |
|   | 9 Optional accessory:<br>Handwheel adjustment, for<br>fitting on square end adjustment<br>part no. 305 799 (includes<br>handwheel, shim and<br>retaining screw) | 15 Connection surface                       |
|   | 10 Square end flow<br>adjustment (H)  | 16 Drive shaft for anti-<br>clockwise model |
|   |   | 17 Second shaft extension                   |

Unit Dimensions: Pump for flange mounting up to 100 bar stall pressure (Dimensions in mm) Weight approx. 11.1 kg

## Type

1PV 2 V3-40/25 RA01..100..1  
 1PV 2 V3-40/25 RD01.. 25..1  
 1PV 2 V3-40/25 RD01.. 40..1  
 1PV 2 V3-40/25 RD01.. 63..1  
 1PV 2 V3-40/25 RD01..100..1



- |   |   |  |
|---|---|--|
| 1 Adjustment<br>Clockwise rotation:<br>reduces flow<br>Anti-clockwise rotation:<br>increase flow                              | 5 Pressure port   | 11 Square end pressure<br>adjustment (H) |
| 2 Adjustment<br>Clockwise rotation:<br>increases operating pressure<br>Anti-clockwise rotation:<br>reduces operating pressure | 6 Leakage port  | 12 Lockable flow<br>adjustment (S)       |
| 3 Flow adjustment<br>by means of screw (A)  | 7 Suction port  | 13 Lockable pressure<br>adjustment (S)   |
| 4 Pressure adjustment<br>by means of screw (C)  | 8 Drive shaft for clockwise<br>rotation model   | 14 Key length 43                         |
|   | 9 Optional accessory:<br>Handwheel adjustment, for<br>fitting on square end adjustment<br>part no. 305 799 (includes<br>handwheel, shim and<br>retaining screw) | 15 2nd shaft extension                   |
|   | 10 Square end flow<br>adjustment (H)  |  |



## Unit Dimensions: Pump for subplate mounting up to 70 bar stall pressure (Dimensions in mm) Weight approx. 11 kg

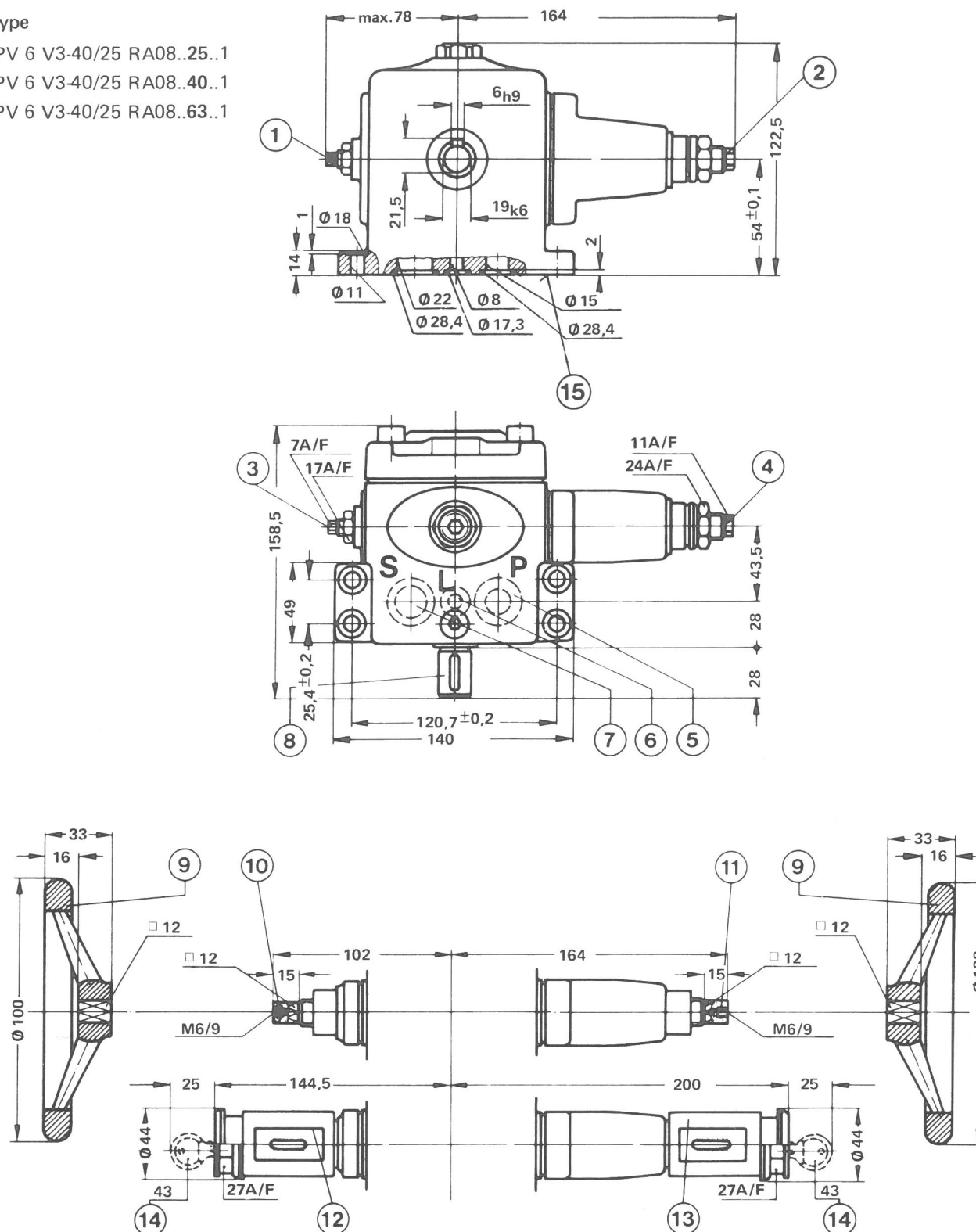
B2

## Type

1PV 6 V3-40/25 RA08..25..1

1PV 6 V3-40/25 RA08..40..1

1PV 6 V3-40/25 RA08..63..1



- 1** Adjustment  
Clockwise rotation:  
reduces flow  
Anti-clockwise rotation:  
increase flow

- 2** Adjustment  
Clockwise rotation:  
increases operating pressure  
Anti-clockwise rotation:  
reduces operating pressure

- 3** Flow adjustment  
by means of screw (A)

- 4** Pressure adjustment  
by means of screw (C)

- 5** Pressure port

- 6** Leakage port

- 7** Suction port

- 8** Drive shaft for clockwise  
rotation model

- 9** Optional accessory:  
Handwheel adjustment, for  
fitting on square end adjustment  
part no. 305 799 (includes  
handwheel, shim and  
retaining screw)

- 10** Square end flow  
adjustment (H)

- 11** Square end pressure  
adjustment (H)

- 12** Lockable flow  
adjustment (S)

- 13** Lockable pressure  
adjustment (S)

- 14** Key length 43

- 15** Mounting face

## Unit Dimensions : Pump for flange mounting up to 70 bar stall pressure

(Dimensions in mm)

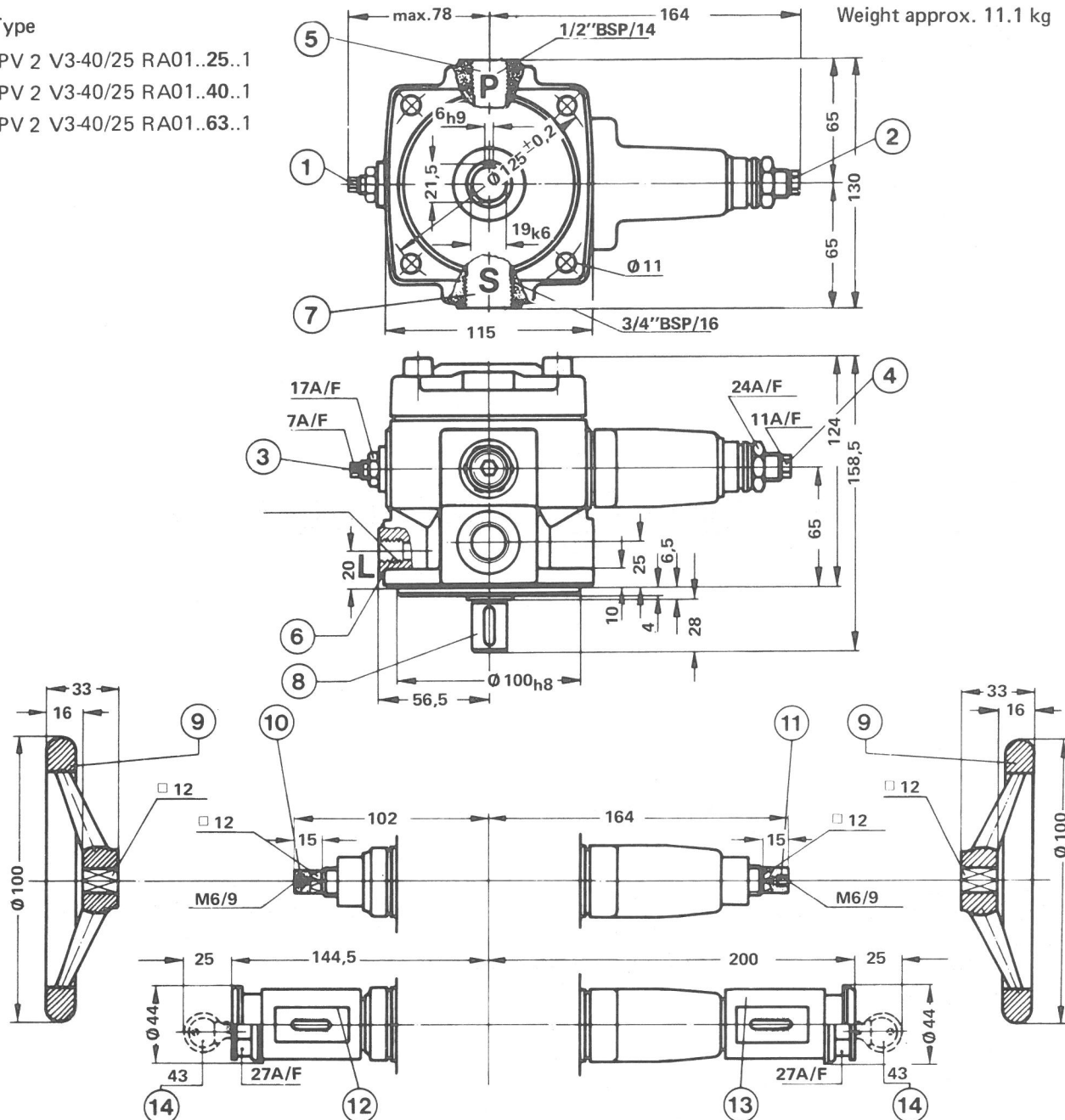
Type

1PV 2 V3-40/25 RA01..25..1

1PV 2 V3-40/25 RA01..40..1

1PV 2 V3-40/25 RA01..63..1

Weight approx. 11.1 kg



**1** Adjustment  
Clockwise rotation:  
reduces flow  
Anti-clockwise rotation:  
increase flow

**2** Adjustment  
Clockwise rotation:  
increases operating pressure  
Anti-clockwise rotation:  
reduces operating pressure

**3** Flow adjustment  
by means of screw (A)

**4** Pressure adjustment  
by means of screw (C)

**5** Pressure port  
**6** Leakage port  
**7** Suction port  
**8** Drive shaft for clockwise  
rotation model  
**9** Optional accessory:  
Handwheel adjustment, for  
fitting on square end adjustment  
part no. 305 799 (includes  
handwheel, shim and  
retaining screw)  
**10** Square end flow  
adjustment (H)

**11** Square end pressure  
adjustment (H)  
**12** Lockable flow  
adjustment (S)  
**13** Lockable pressure  
adjustment (S)  
**14** Key length 43

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Subject to revision

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