MANNESMANN REXROTH

Variable Vane Pump Type V3 (Series 30)

RE 10435/8.81

Replaces: 2.80

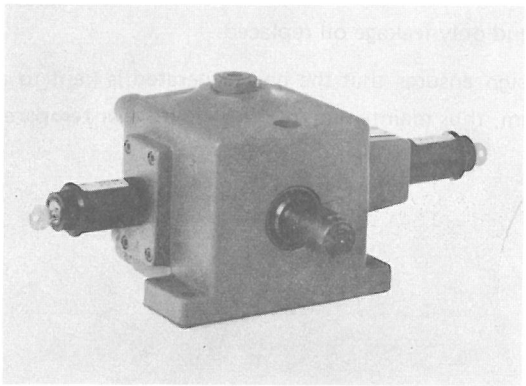
Size 40	up to 100 bar	up to 32 cm^3/rev.

B2

Special features:

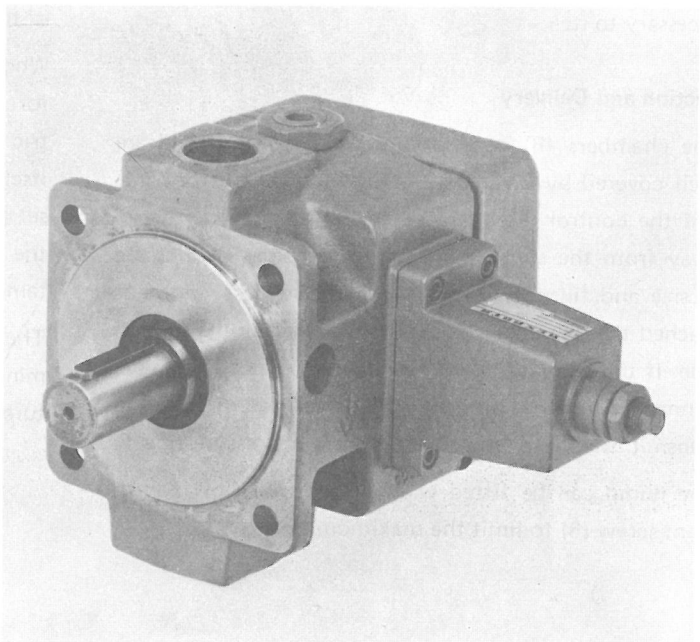
- automatic bleeding eases commissioning
- low noise level
- hydro-dynamically greased friction bearings give long bearing life.
- bronze coated discs and plate cams, therefore good sliding characteristcs if friction occurs

K3460/1



1PV 6 V3-30/40 RA 08 MS 63 S1

K3460/7



1PV 2 V3-30/40 RA 01 MC 100 A1

Ordering Code (foot mounting bracket, foot mounted bellhousing, subplate and hand wheel must be ordered separately)

1PV		V3 – 30 / 40								1	★

Flange mounting = 2

Subplate mounting = 6

Vane pump type = V3

Series 30 = 30
(30 - 39 ≙ installation and connection dimensions remain the same)

32 cm^3/rev. = size = 40

Clockwise rotation = RF

Anti-clockwise rotation = L
(subplate mounted models only)

Single shaft = A

Double shaft = D

(for other models, see combination pumps)

BSP threads = 01

Subplate = 08

Further details to be stated in text

1 = with bleed valve

A = adjustment screw

H = adjustment screw with square end

S = lockable adjustment screw

100 = 100 bar zero stroke pressure

63 = 63 bar zero stroke pressure

40 = 40 bar zero stroke pressure

25 = 25 bar zero stroke pressure

C = pressure controller with square end adjustment screw

H = pressure controller with square end

S = lockable pressure controller

M = mineral oils DIN 51 525

V = phosphate ester

Description of Function, Section

Hydraulic pumps type V3 are pumps of rotary vane design with single vanes and variable displacement.

Vane pumps type V3 comprise housing (1), rotor (2) with single vanes (3), cam (4), pressure controller (5), flow adjustment screw (6) and the automatic bleed valve (7).

They serve to create a flow and to distribute the forces necessary to it.

Suction and Delivery

The chambers (8) necessary to transport the fluid are each covered by 2 vanes (3), the rotor (2), the cam (4) and the control discs (9). When the rotor (2) is turned away from the suction line, the chambers (8) increase in size and fill up with oil. When the highest volume is reached the chambers (8) are separated from the suction side. If the rotor (2) is turned further, the chambers are connected to the pressure side, decrease in size and transmit the fluid into the system via pressure line P.

The pump can be fitted with an optional flow adjustment screw (6) to limit the maximum flow.

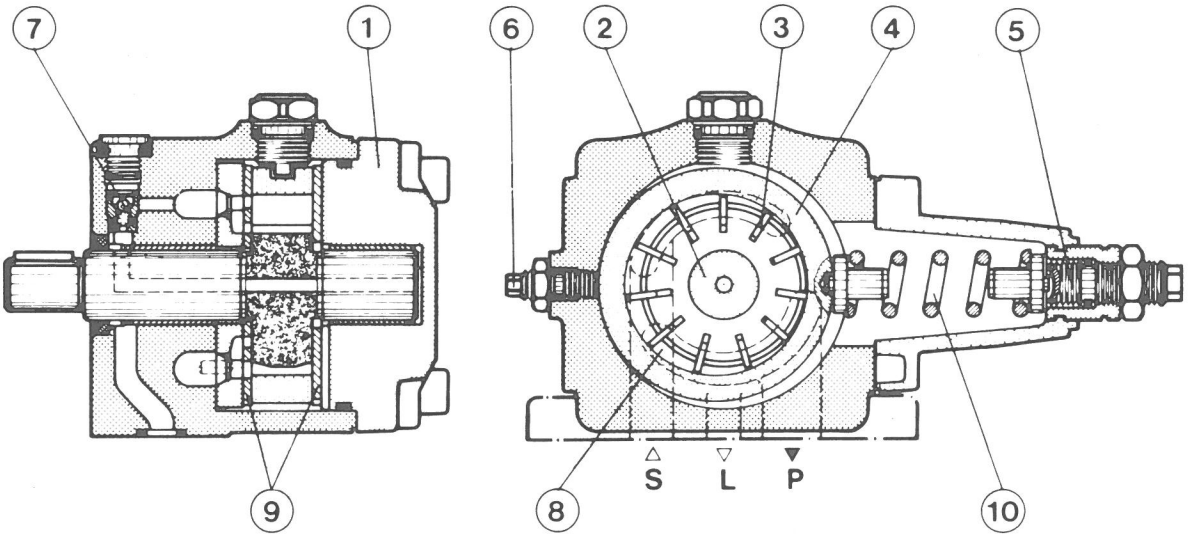
Pressure control

The cam ring (4) is of circular construction and is positioned at the most eccentric position by means of a spring (10). The maximum operating pressure required in the system is set at the spring (10).

On the pressure side, the pressure builds up because of working resistance and affects the inside contact surface of the cam against the force of the spring (10).

When the pressure force corresponding to the set spring force is reached, cam ring (4) is pushed out of its eccentric position towards zero position. The flow adjusts itself to the value which is removed. When the highest set pressure at spring (10) is reached, the pump regulates the flow to almost zero. Operating pressure is maintained and only leakage oil replaced.

The design ensures that the heat generated is kept to a minimum, thus maintaining the fluid at a lower temperature.



Technical Details

Nominal displacement		(cm^3/rev.)	32		
Nominal flow		(l/min)	47 (at n = 1450 rpm; p = 10 bar Qmax = 50 l/min; max. 52 l/min)		
Speed range		(min^{-1})	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 (neg.) ... 5 (pos.)			
	– outlet	(bar)	... 100 continuous op. pressure			
	– leakage port	(bar)	... 2			
Max. torque (drive shaft)		(Nm)	235			
Shaft loading			radial and axial forces cannot be transmitted			
Mounting method			flange or subplate mounting			
Pipe connections			threaded connections			
Direction of rotation			clockwise or anti-clockwise			
Direction of flow			inlet and outlet are related to direction of rotation			
Hydraulic medium			mineral oils HLP			
Temperature range		(°C)	–10 ... +70			
Viscosity range			16 – 160 cSt at op. temp. and zero stroke pressure < 63 bar 25 – 160 cSt at op. temp. and zero stroke pressure > 63 bar max. 800 cSt when starting up when the pump is delivering max. 200 cSt when starting up at zero stroke			
Filtration		(µm)	25			
We recommed 10 µm in order to achieve long working life with heavy loading, high ED and low viscosity						

For applications to other specifications, please consult us.

Notes on Installation

Installation:

The pumps can be fitted in any position.

Drive:

The pump and motor shaft ends must be aligned. Please ensure that neither longitudinal or cross forces act on the pump shaft. Drive should therefore be by means of flexible coupling (note manufacturer's instructions).

The pump must never be rigidly fixed to the drive unit.

Oil Tank:

The contents of the tank must correspond to the operating conditions, so that the operating temperature does not become excessive; if necessary, a cooler should be provided.

Lines and Ports:

The design of the suction line must not allow the values stated to be exceeded.

Return and leakage lines must be arranged so that the pump does not immediately suck up the leakage and return oil. Even at the lowest oil level permitted in the tank, all lines must penetrate the oil far enough to avoid foaming (approx. 5 cm). The ends should be cut less than 45°, and should be no nearer than 5 cm from the tank base, so that any dirt on the base is not sucked up. The leakage line should be 100 mm above the suction line and deflected to the side, so that leakage oil does not come into direct contact with the suction flow; if possible, these should be at least 200 mm from one another.

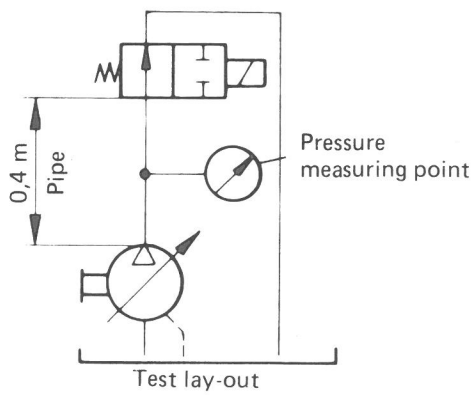
Project Notes:

Depending on design, various pressure peaks may occur during regulation to zero stroke.

The following values were measured with the test layout shown below:

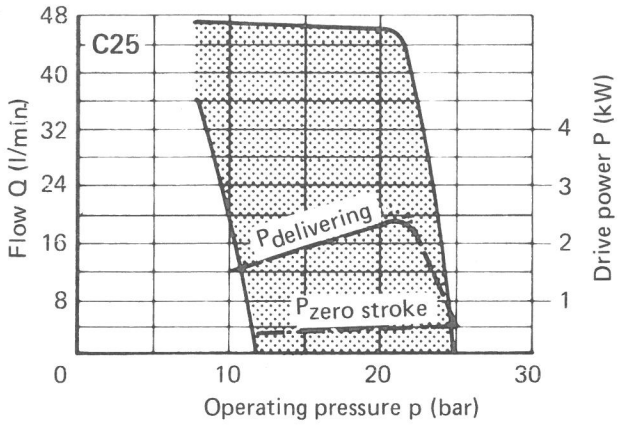
Zero stroke pressure	Pressure peak
100 bar	190 bar
63 bar	140 bar
40 bar	120 bar
25 bar	80 bar

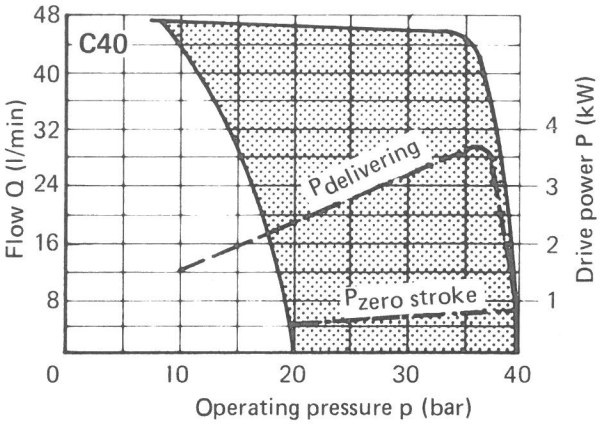
Please take into consideration possible effects when designing units.

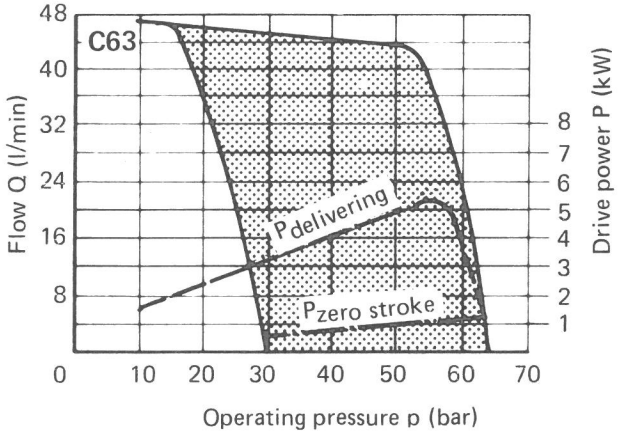


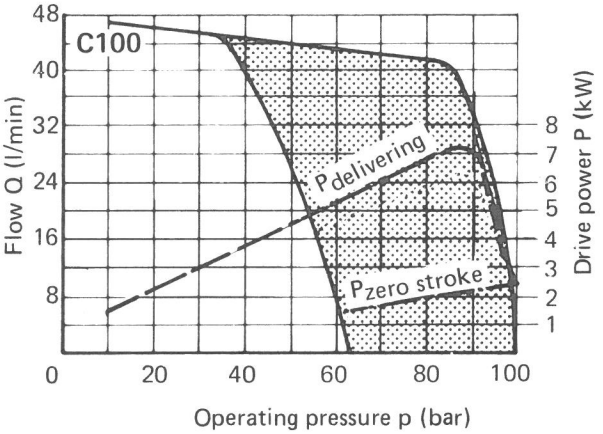
B2

Performance Curves



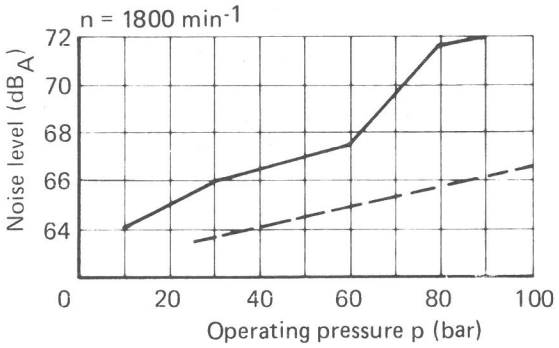


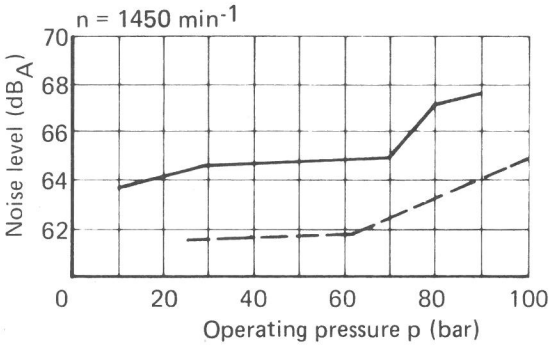


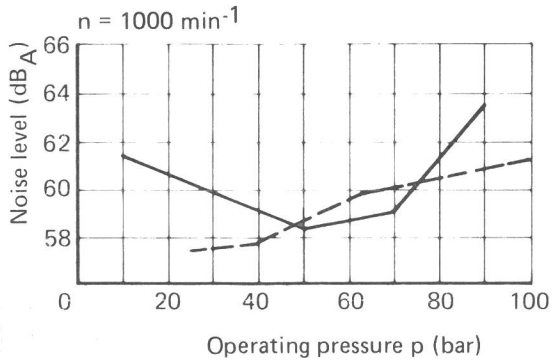


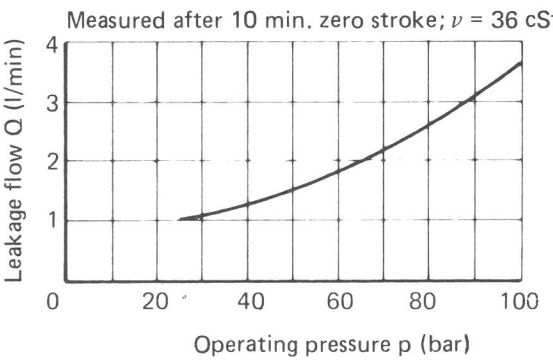
Measured in noise measurement chamber according to DIN 43 635, sheet 1, at a distance of 1 m from the pump.

——— noise when delivering
— — — noise at zero stroke





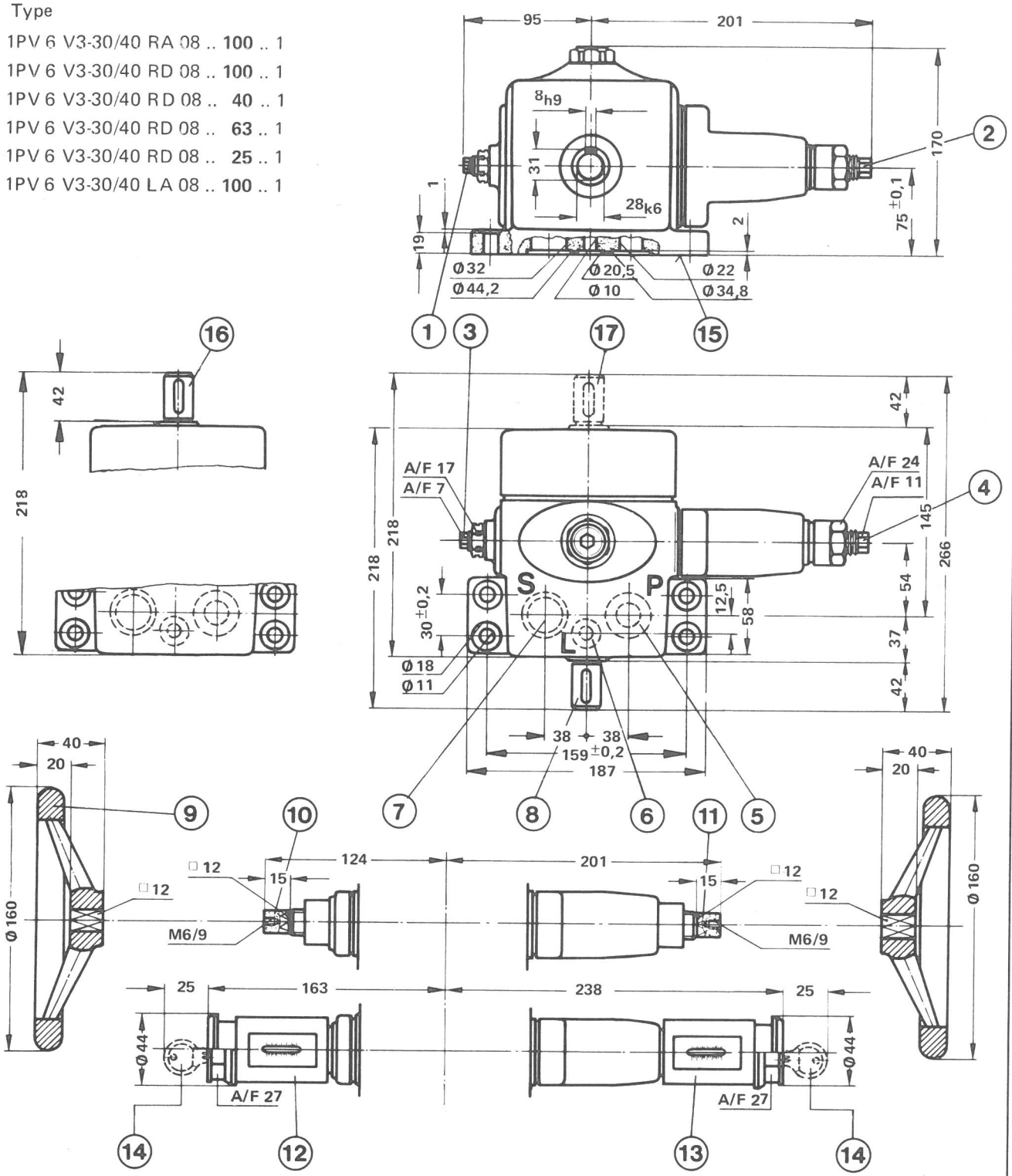




Unit Dimensions: Pump for Subplate Mounting up to 100 bar zero stroke pressure (dimensions in mm) Weight: 26.5 kg

Type

1PV 6 V3-30/40 RA 08 .. **100** .. 1
1PV 6 V3-30/40 RD 08 .. **100** .. 1
1PV 6 V3-30/40 RD 08 .. **40** .. 1
1PV 6 V3-30/40 RD 08 .. **63** .. 1
1PV 6 V3-30/40 RD 08 .. **25** .. 1
1PV 6 V3-30/40 LA 08 .. **100** .. 1



1 Adjustment
Clockwise rotation reduces flow;
Anti-clockwise rotation increases flow

2 Adjustment
Clockwise rotation increases operating pressure;
Anti-clockwise rotation reduces operating pressure

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

4 Pressure adjustment
(by means of adjustment 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. 303 792
(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 Connection surface

16 Drive shaft for anti-clockwise rotation model

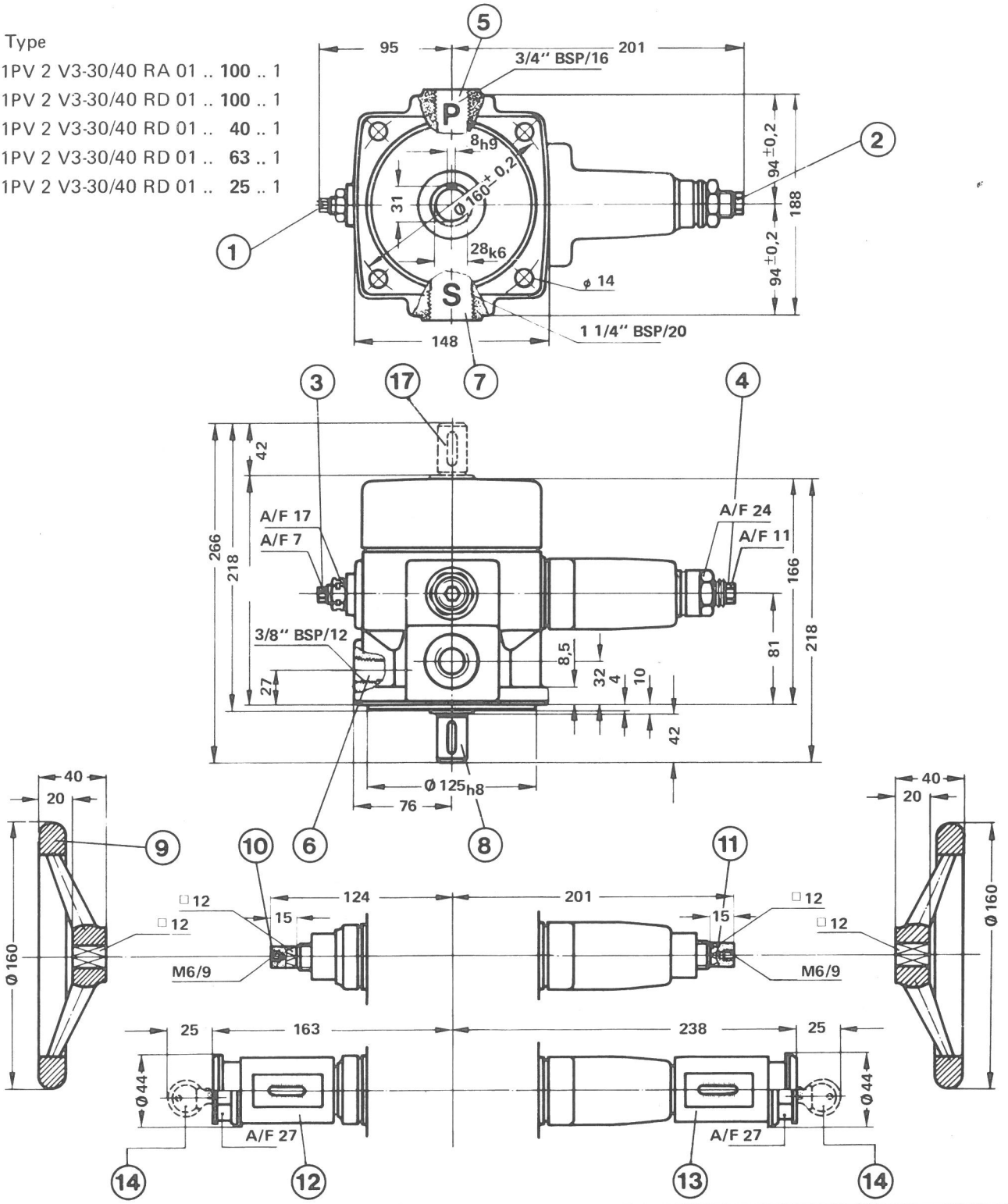
17 2nd shaft extension

Unit Dimensions: Pump for Flange Mounting up to 100 bar zero stroke pressure (dimensions in mm) Weight: 26.5 kg

B2

Type

1PV 2 V3-30/40 RA 01 .. **100** .. 1
1PV 2 V3-30/40 RD 01 .. **100** .. 1
1PV 2 V3-30/40 RD 01 .. **40** .. 1
1PV 2 V3-30/40 RD 01 .. **63** .. 1
1PV 2 V3-30/40 RD 01 .. **25** .. 1



1 Adjustment
Clockwise rotation reduces flow;
Anti-clockwise rotation increases flow

2 Adjustment
Clockwise rotation increases operating pressure;
Anti-clockwise rotation reduces operating pressure

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

4 Pressure adjustment
(by means of adjustment 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. 303 792
(includes handwheel, shim and retaining screw)

10 Square end flow adjustment (H)

11 Square end pressure adjustment (H)

12 Lockable flow adjustment (S)

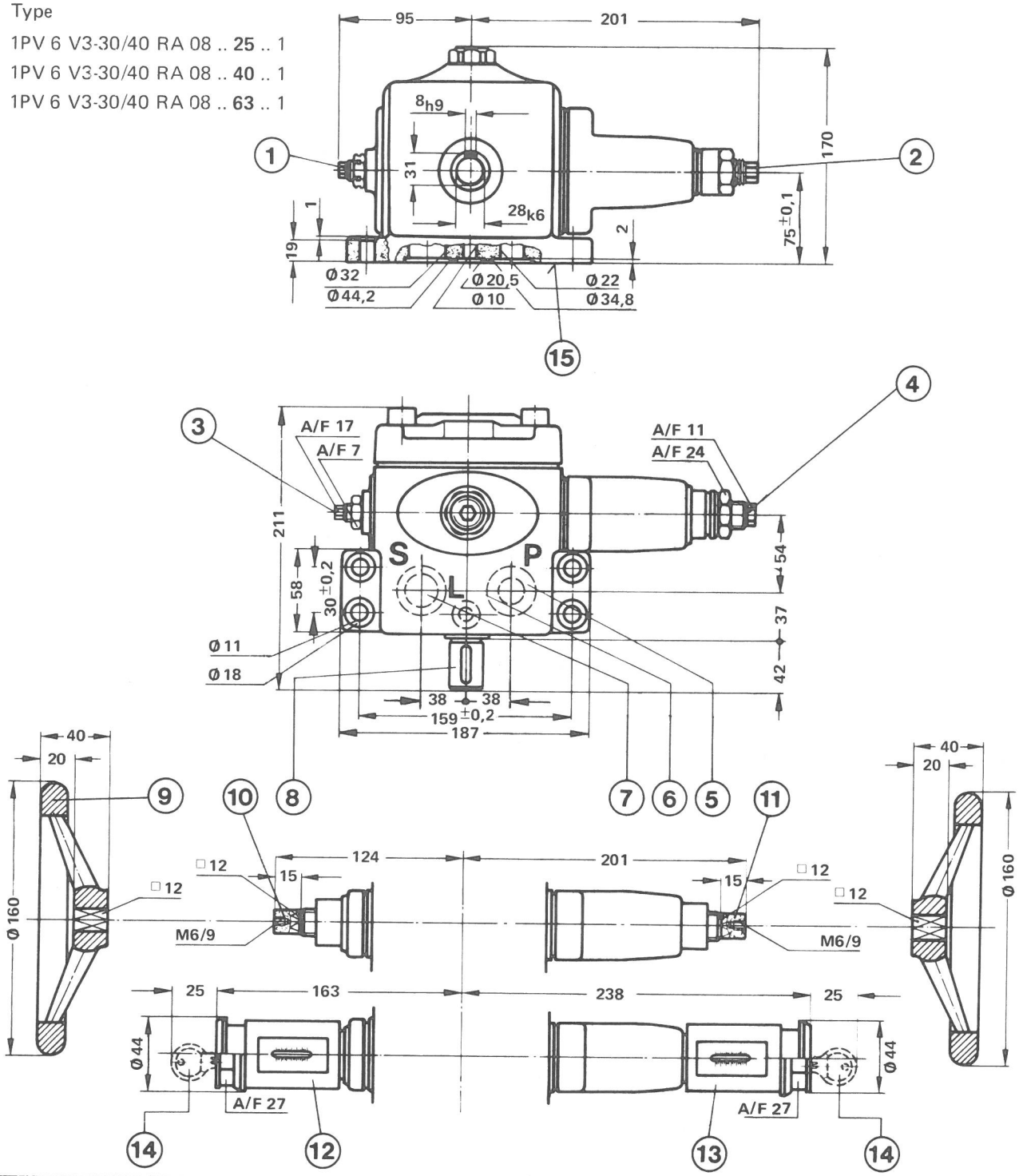
13 Lockable pressure adjustment (S)

14 Key length 43

17 2nd shaft extension

Unit Dimensions: Pump for Subplate Mounting up to 70 bar zero stroke pressure (dimensions in mm) Weight: 26.5 kg

Type
1PV 6 V3-30/40 RA 08 .. **25** .. 1
1PV 6 V3-30/40 RA 08 .. **40** .. 1
1PV 6 V3-30/40 RA 08 .. **63** .. 1



1 Adjustment
Clockwise rotation reduces flow;
Anti-clockwise rotation increases flow

2 Adjustment
Clockwise rotation increases operating pressure;
Anti-clockwise rotation reduces operating pressure

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

4 Pressure adjustment
(by means of adjustment 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. 303 792
(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)

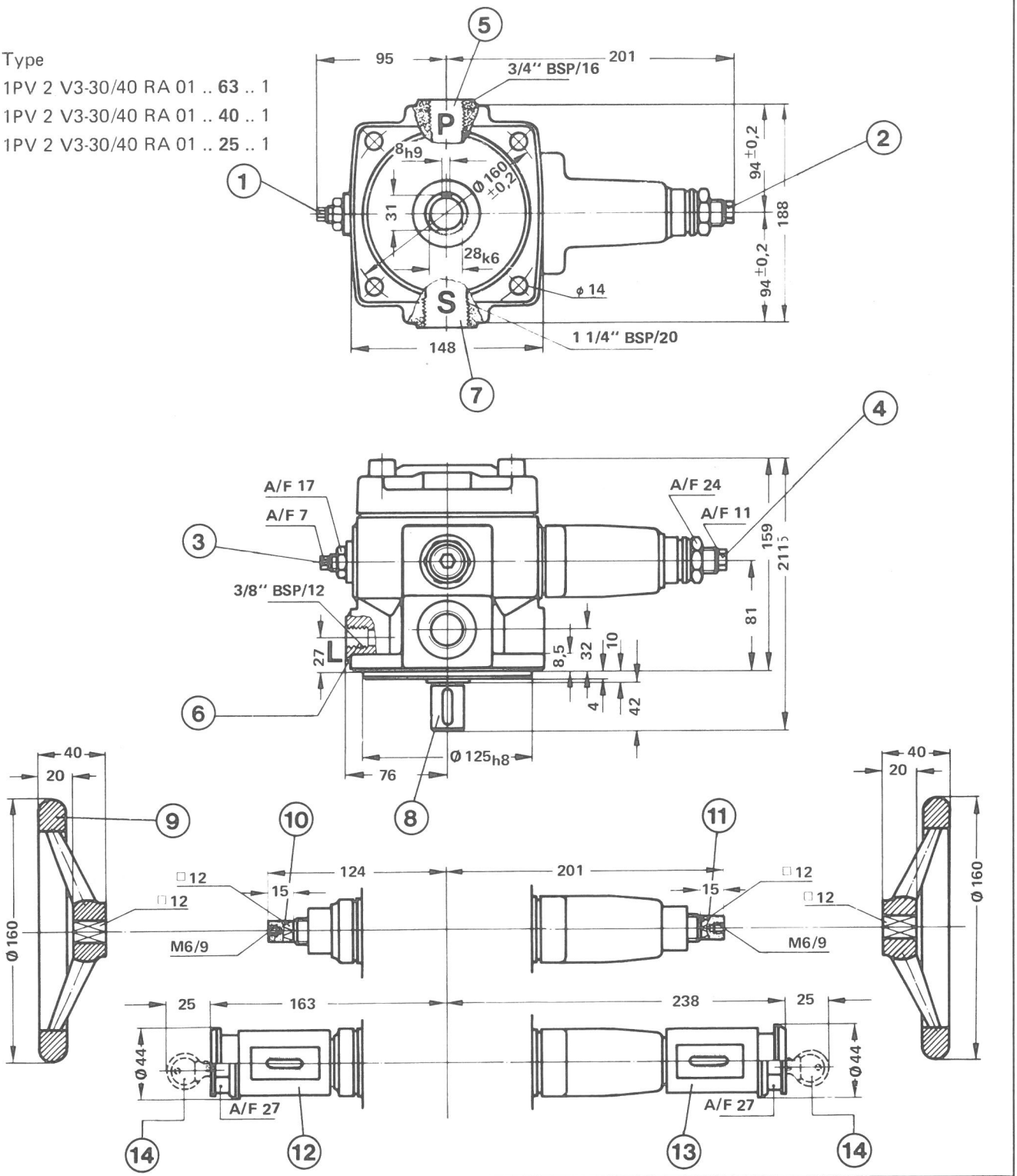
14 Key length 43

15 Connection surface

Unit Dimensions: Pump for Flange Mounting up to 70 bar zero stroke pressure (dimensions in mm) Weight: 26.5 kg

B2

Type
1PV 2 V3-30/40 RA 01 .. **63** .. 1
1PV 2 V3-30/40 RA 01 .. **40** .. 1
1PV 2 V3-30/40 RA 01 .. **25** .. 1



1 Adjustment
Clockwise rotation reduces flow;
Anti-clockwise rotation increases flow

2 Adjustment
Clockwise rotation increases operating pressure;
Anti-clockwise rotation reduces operating pressure

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

4 Pressure adjustment
(by means of adjustment 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. 303 792
(includes handwheel, shim and retaining screw)

10 Square end flow adjustment (H)

11 Square end pressure adjustment (H)

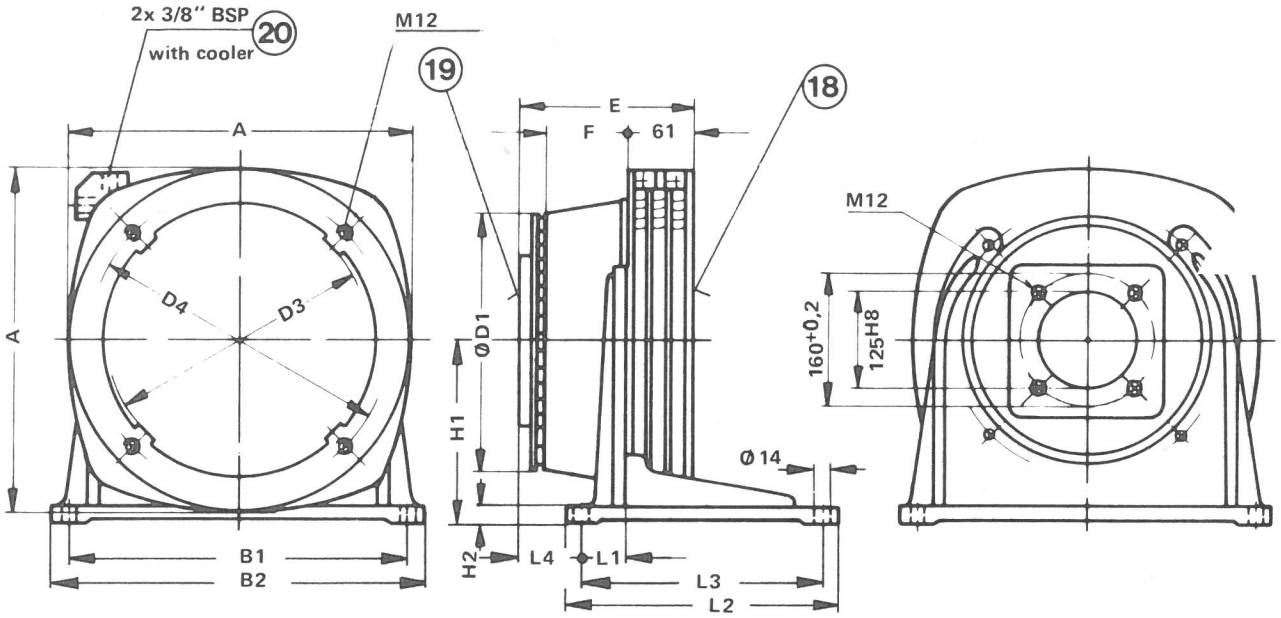
12 Lockable flow adjustment (S)

13 Lockable pressure adjustment (S)

14 Key length 43

Foot Mounted Bellhousing, with and without Oil Cooler

(dimensions in mm)



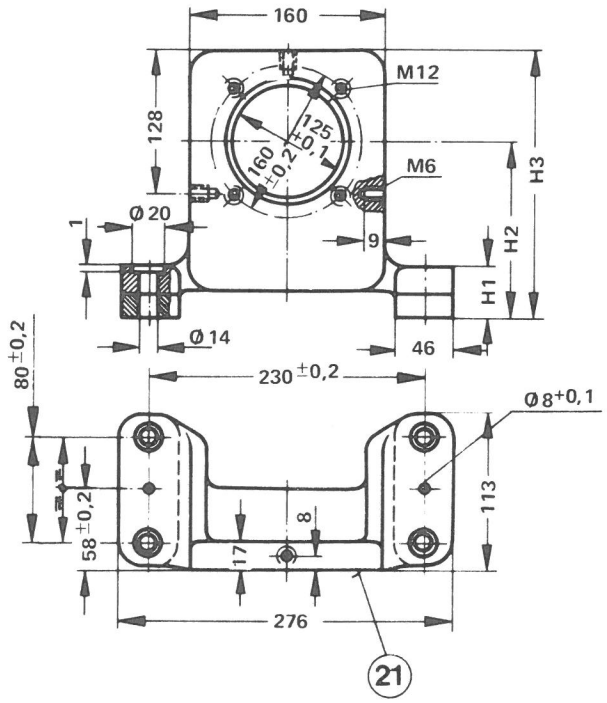
18 Motor flange **19** Pump flange **20** Cooler port, 3/8" BSP internal threads

The part number includes foot mounted bellhousing and fixing screws for pump and motor

Foot mounted bellhousing	Part Number D flange mounting bracket with cooler	E-Motor P (kW)	Size	A	B1	B2	D1	D3	D4	E	F	H1	H2	L1	L2	L3	L4
011 475	011 480	2,2 ... 4	100/112	250	285	320	180	180	215	130	42	155	15	25	220	182	44
011 476	011 481	5,5 ... 7,5	132	300	335	370	228	230	265	152	69	185	18	40	275	240	51

Unit Dimensions: Flange mounting bracket

(dimensions in mm)



21 Pump side

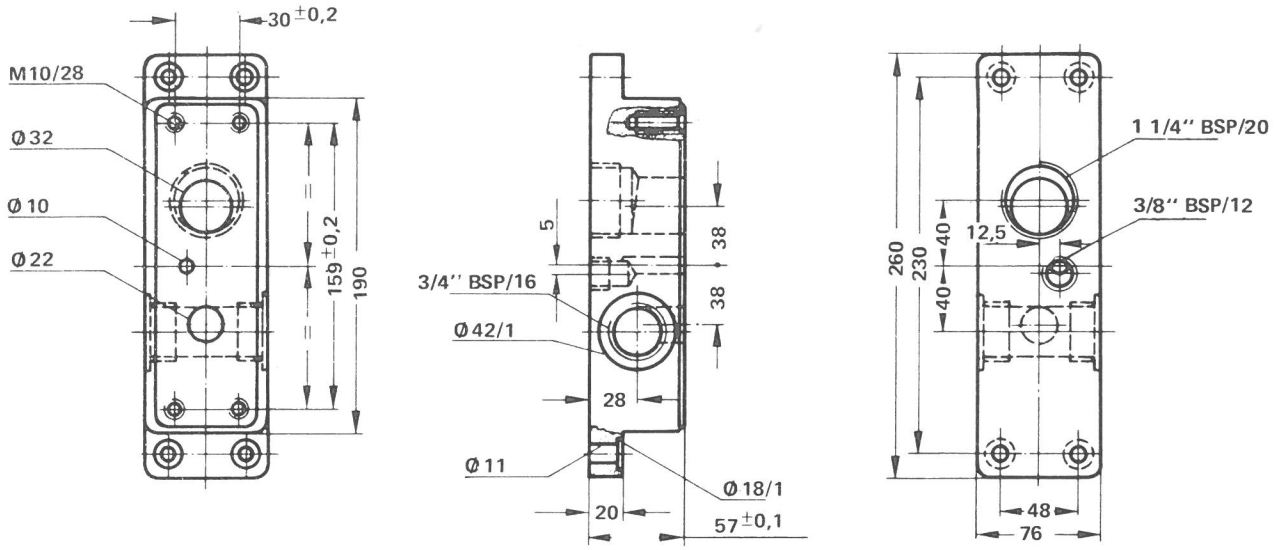
E-Motor Size	Part No.	H1	H2	H3	Weight
132	303 525	15	132 ±0,1	212	5 kg
160	303 524	43	160 ±0,2	240	6,5 kg
180	303 523	63	180 ±0,2	260	7,5 kg

Part number includes mounting bracket, pump fixing screws and intermediate plates (for sizes 160 and 180)

Unit Dimensions: Subplate (part no. 303 790) (dimensions in mm) Weight: 6.0 kg

B2

The part no. of the subplate includes the plate and fixing screws for the pump



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HYDRAULICS WORLDWIDE