

**MANNESMANN  
REXROTH****Variable Vane Pump  
Type V3 (Series 30)****RE  
10437/8.81**

Size 63

up to 100 bar

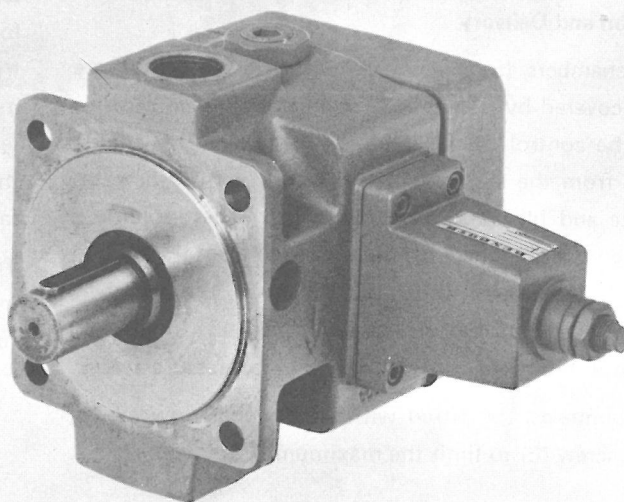
up to 47 cm<sup>3</sup>/rev.

Replaces: 2.80

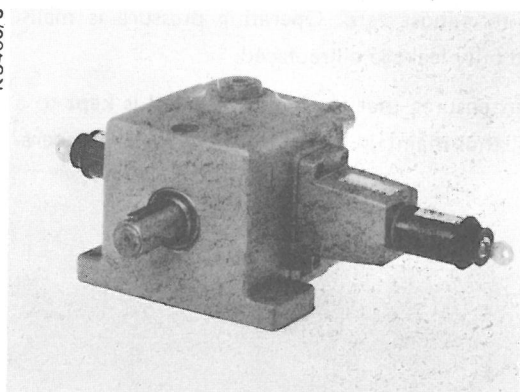
## Special features:

- 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 characteristics if friction occurs

K3460/7



K3460/3



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

Type 1PV 2 V3-30/63 RA 01 MC 100 A1

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

1 PV		V3-30 / 63										1		★	
Flange mounting = 2														Further details to be stated in text	
Subplate mounting = 6														1 = with bleed valve	
Vane pump type = V3														A = adjustment screw	
Series 30 = 30 (30 - 39 ≙ installation and connection dimensions remain the same)														H = adjustment screw with square end	
47 cm <sup>3</sup> /rev. = size = 63														S = lockable adjustment screw	
Clockwise rotation = R														100 = 100 bar zero stroke pressure	
Anti-clockwise rotation (subplate mounted models only) = L														63 = 63 bar zero stroke pressure	
Single shaft = A														40 = 40 bar zero stroke pressure	
Double shaft = D														25 = 25 bar zero stroke pressure	
(for other models, see combination pumps)														C = pressure controller with square end adjustment screw	
BSP threads = 01														H = pressure controller with square end	
Subplate = 08														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.

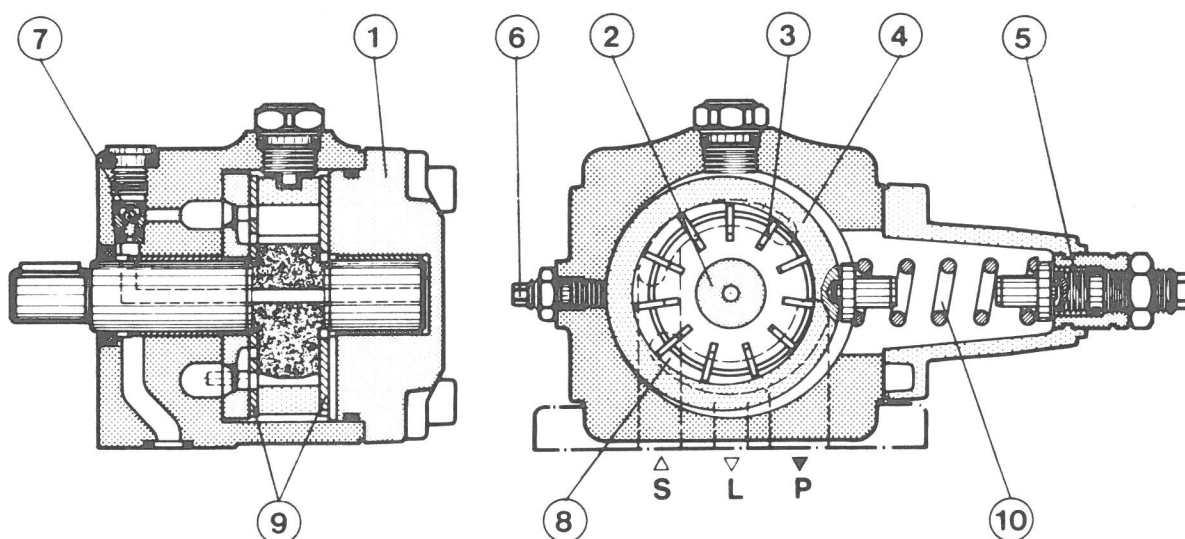
**Pressure Control**

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 (1) 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 <sup>3</sup> /rev.)	47			
Nominal flow	(l/min)	67 (at n = 1450 rpm; p = 10 bar Qmax = 70 l/min; max. 73 l/min)			
Speed range	(min <sup>-1</sup> )	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)	353			
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 recommend 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.

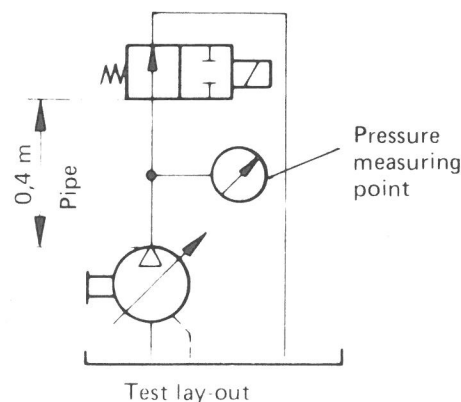
## Project Notes:

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

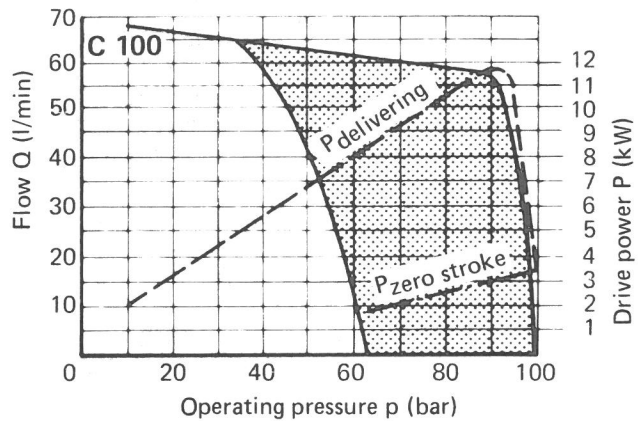
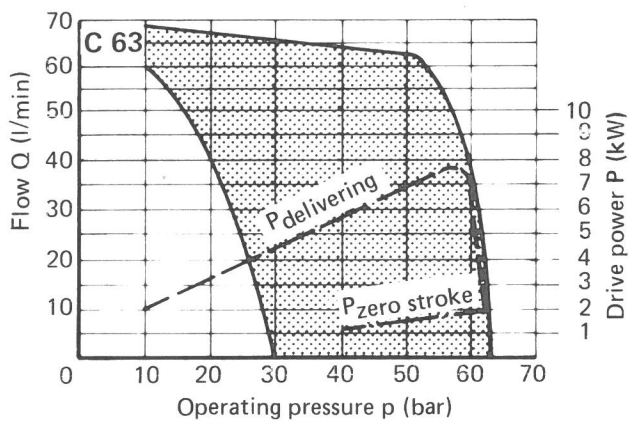
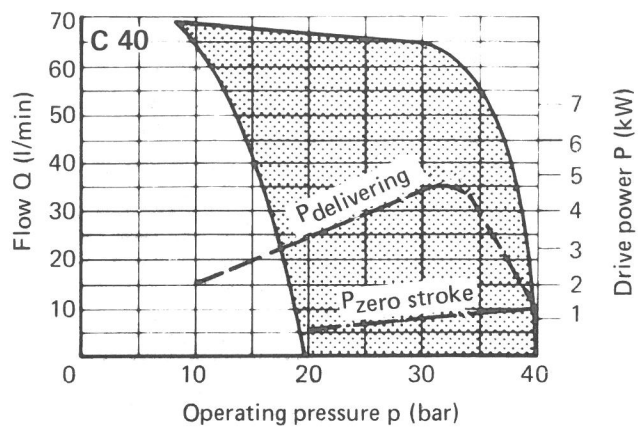
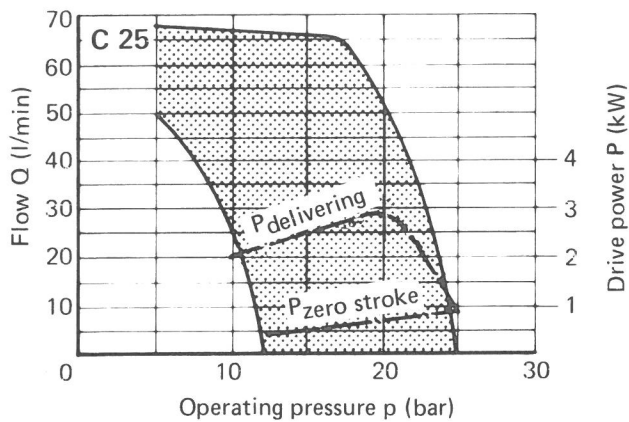
The following values were measured with the test layout shown below:

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.

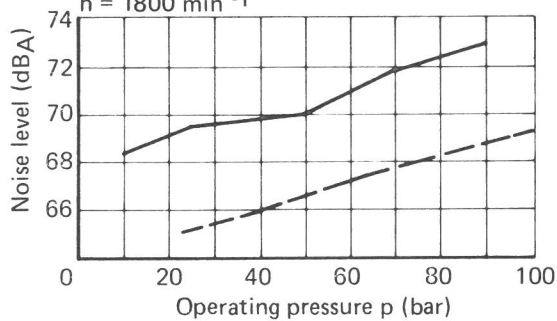


## Performance Curves



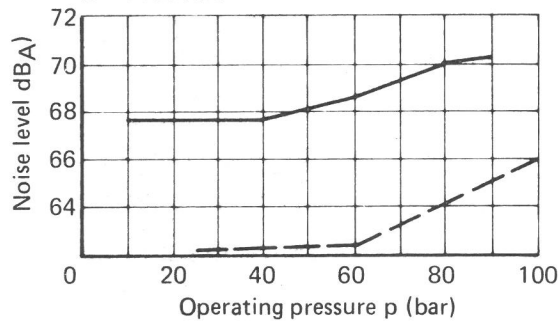
Measured in noise measurement chamber according to DIN 43 635, sheet 1, at a distance of 1 m from the pump.

$n = 1800 \text{ min}^{-1}$

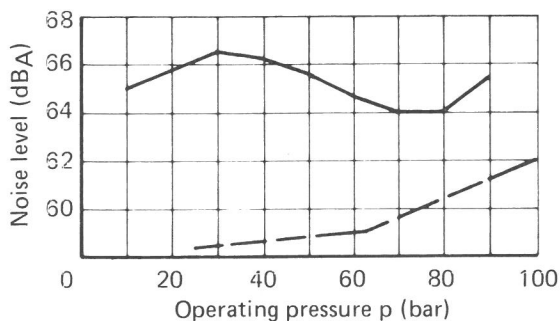


— noise when delivering  
- - - noise at zero stroke

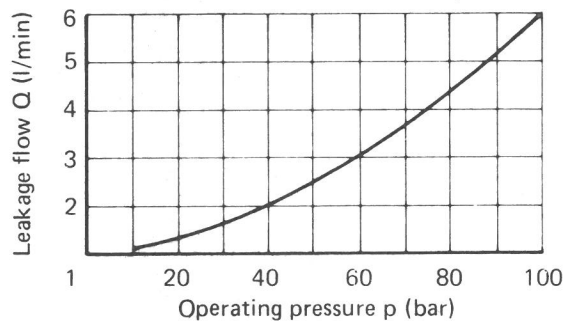
$n = 1450 \text{ min}^{-1}$



$n = 1000 \text{ min}^{-1}$



Measured after 10 min. zero stroke;  $\nu = 36 \text{ cSt}$



Unit Dimensions: Pump for Subplate Mounting up to 100 bar zero stroke pressure

(dimensions in mm) Weight 30.5 kg

## Type

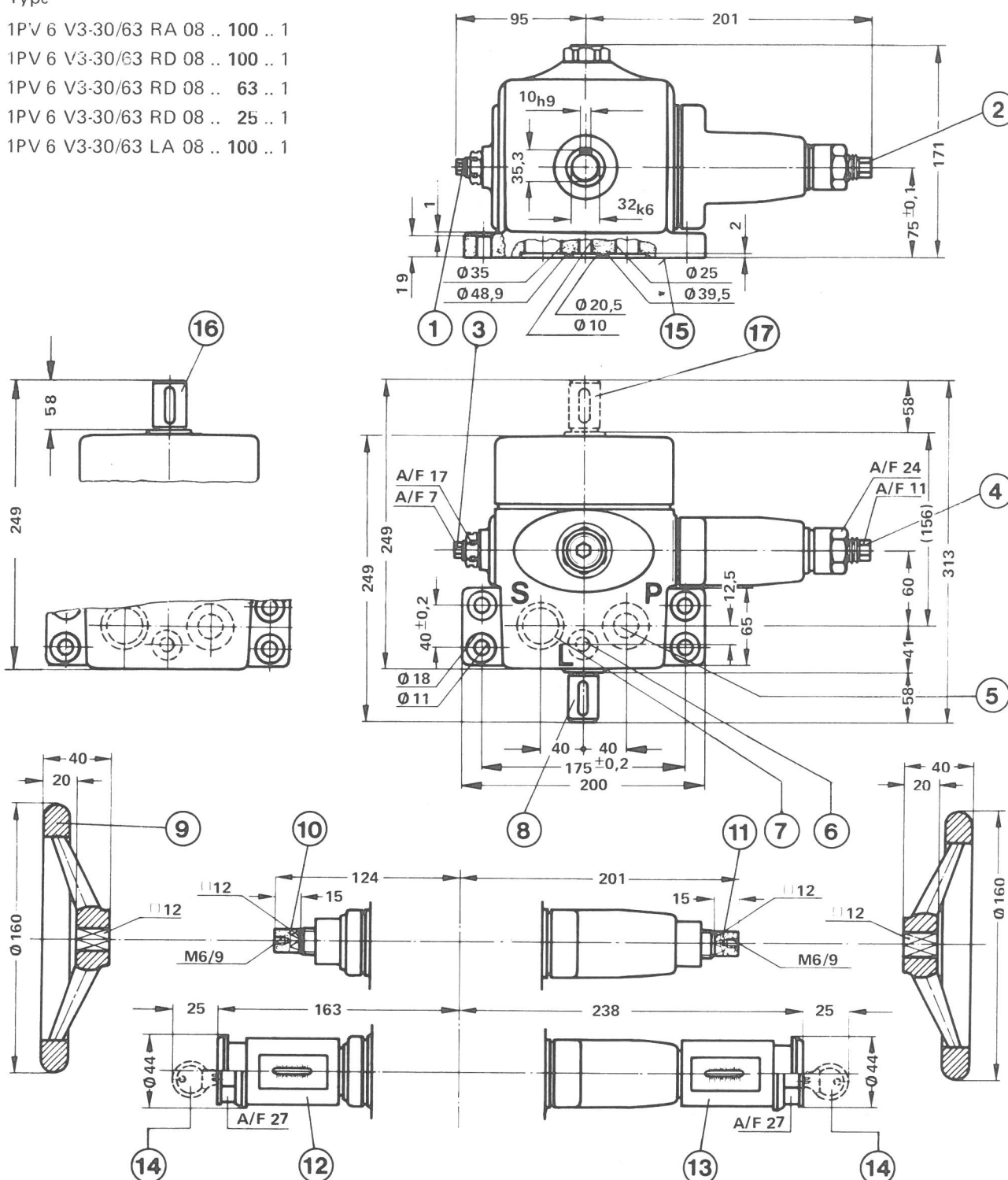
1PV 6 V3-30/63 RA 08 .. 100 .. 1

1PV 6 V3-30/63 RD 08 .. 100 .. 1

1PV 6 V3-30/63 RD 08 .. 63 .. 1

1PV 6 V3-30/63 RD 08 .. 25 .. 1

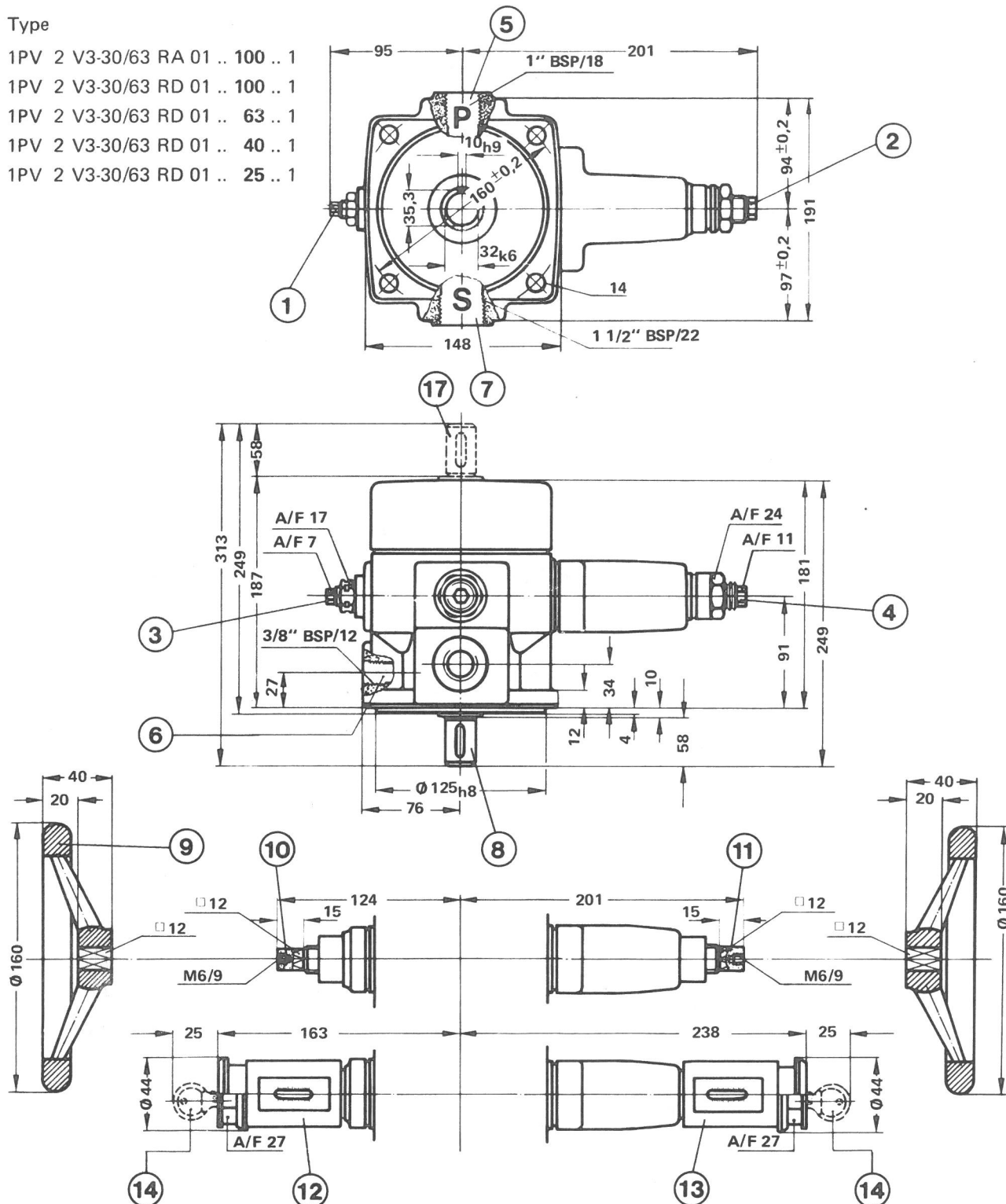
1PV 6 V3-30/63 LA 08 .. 100 .. 1



- |   |  |   |
|---|--|---|
| 1 Adjustment<br>Clockwise rotation<br>reduces flow;<br>Anti-clockwise rotation<br>increases 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 adjustment (S)                     |
| 3 Flow adjustment<br>(by means of adjustment screw (A) )  | 7 Suction port   | 13 Lockable pressure<br>adjustment (S)              |
| 4 Pressure adjustment<br>(by means of adjustment screw (C) )  | 8 Drive shaft for clockwise<br>rotation model  | 14 Key length 43                                    |
|   | 9 Optional accessory:<br>Handwheel adjustment, for fitting<br>on square end adjustment,<br>part no. 303 792<br>(includes handwheel, shim and<br>retaining screw) | 15 Connection surface                               |
|   | 10 Square end flow adjustment (H)  | 16 Drive shaft for anti-clockwise<br>rotation model |
|   |  | 17 2nd shaft extension                              |

## Type

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



- |   |  |  |
|---|--|--|
| 1 Adjustment<br>Clockwise rotation<br>reduces flow;<br>Anti-clockwise rotation<br>increases flow                            | 5 Pressure port  | 11 Square end pressure<br>adjustment   |
| 2 Adjustment<br>Clockwise rotation<br>increase operating pressure;<br>Anti-clockwise rotation<br>reduces operating pressure | 6 Leakage port   | 12 Lockable flow adjustment (S)        |
| 3 Flow adjustment<br>(by means of adjustment screw (A) )  | 7 Suction port   | 13 Lockable pressure<br>adjustment (S) |
| 4 Pressure adjustment<br>(by means of adjustment screw (C) )  | 8 Drive shaft for clockwise<br>rotation model  | 14 Key length 43                       |
|   | 9 Optional accessory:<br>Handwheel adjustment, for fitting<br>on square end adjustment,<br>part no. 303 792<br>(includes handwheel, shim and<br>retaining screw) | 17 2nd shaft extension                 |
|   | 10 Square end flow adjustment (H)  |  |

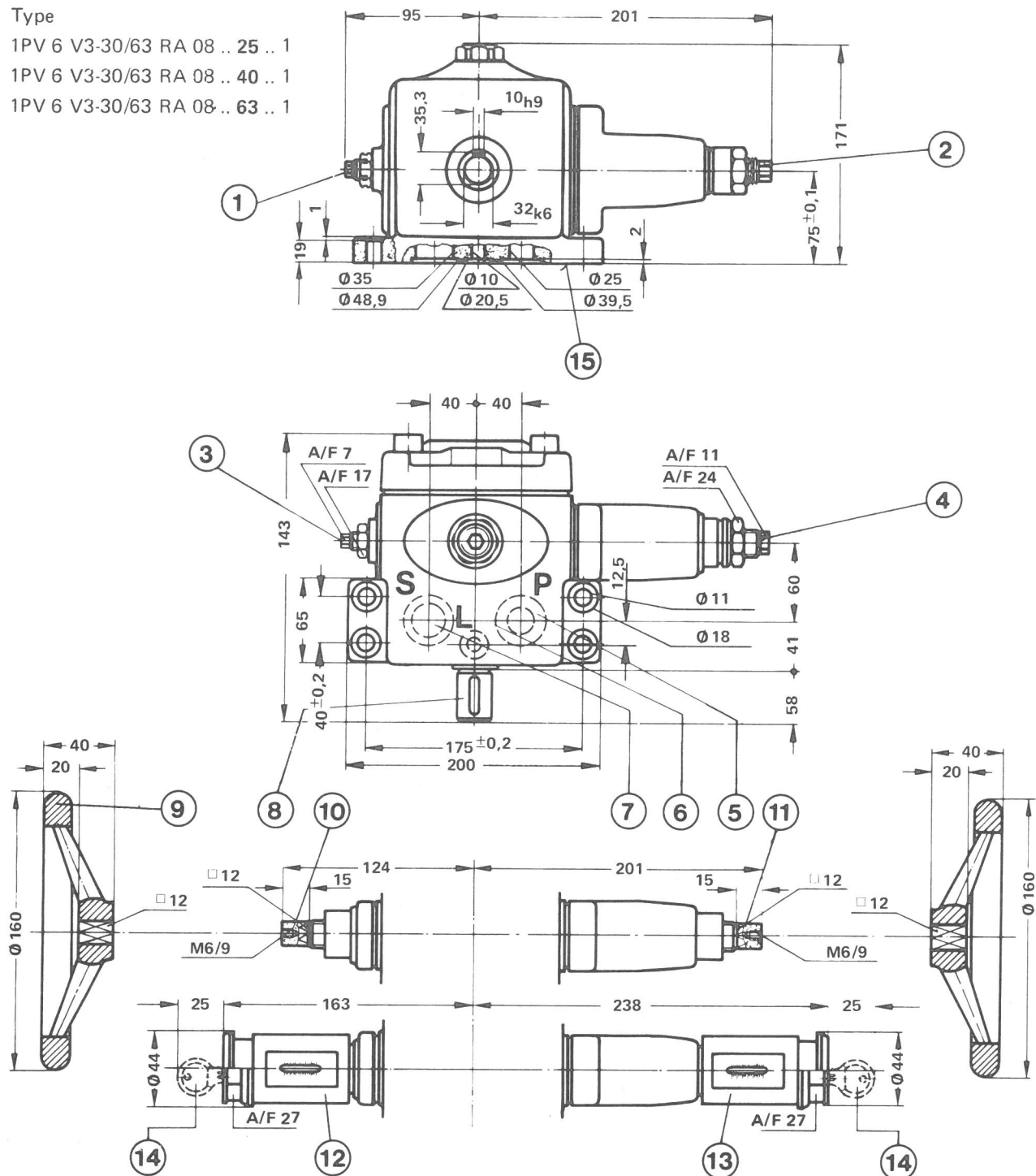


## Type

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

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

1PV 6 V3-30/63 RA 08 .. 63 .. 1



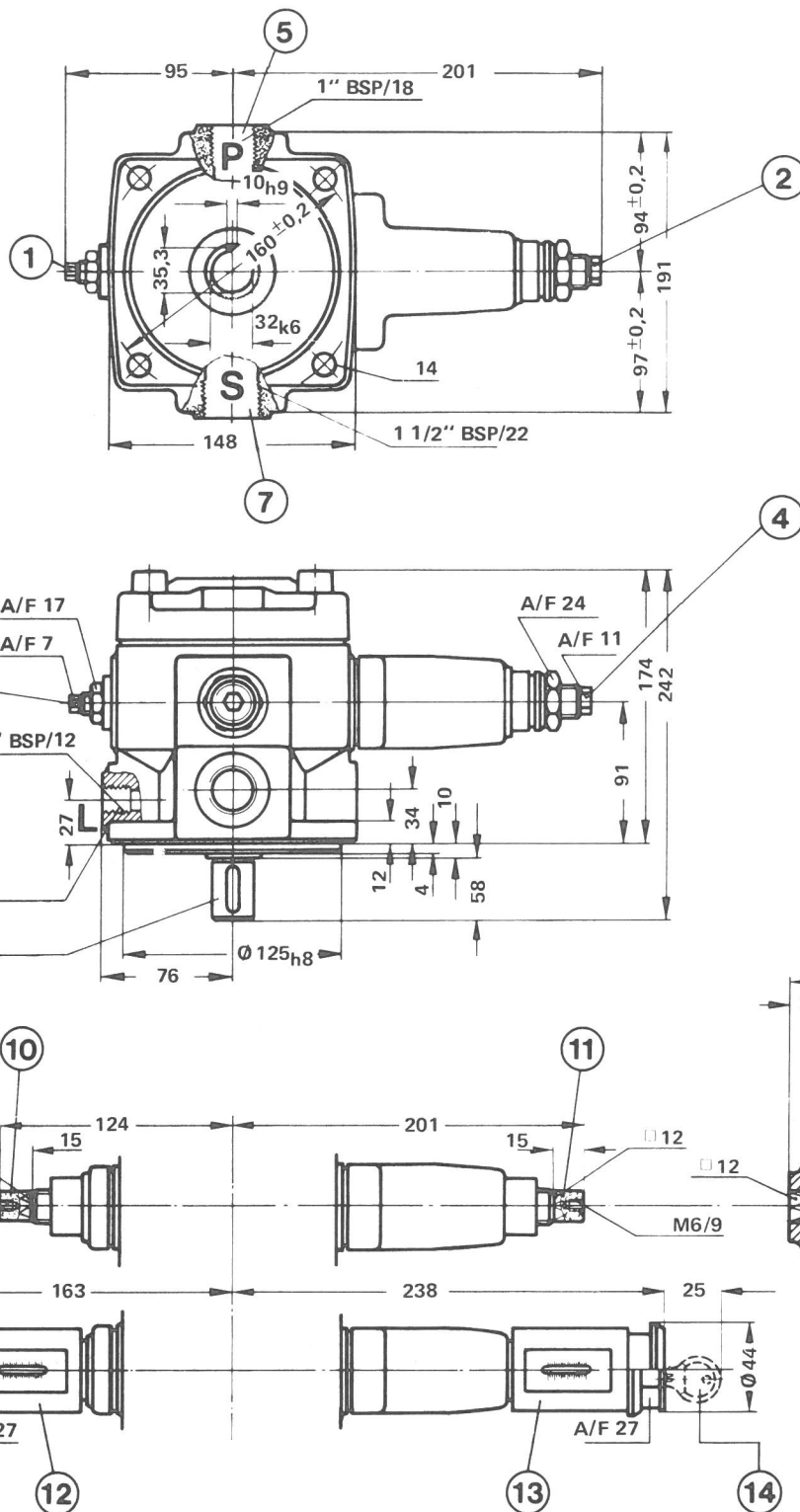
- |  |  |  |
|--|--|--|
| 1 Adjustment<br>Clockwise rotation<br>reduces flow;<br>Anti-clockwise rotation<br>increases flow                             | 5 Pressure port  | 11 Square end pressure<br>adjustment (H) |
| 2 Adjustment<br>Clockwise rotation<br>increases operating pressure;<br>Anti-clockwise rotation<br>reduces operating pressure | 6 Leakage port   | 12 Lockable flow<br>adjustment (S)       |
| 3 Flow adjustment<br>(by means of adjustment screw (A) )   | 7 Suction port   | 13 Lockable pressure<br>adjustment (S)   |
| 4 Pressure adjustment<br>(by means of adjustment screw (C) )   | 8 Drive shaft for clockwise<br>rotation model  | 14 Key length 43                         |
|  | 9 Optional accessory:<br>Handwheel adjustment, for fitting<br>on square end adjustment,<br>part no. 303 792<br>(includes handwheel, shim and<br>retaining screw) | 15 Connection surface                    |
|  | 10 Square end flow adjustment (H)  |  |

## Type

1PV 2 V3-30/63 RA 01 .. 63 .. 1

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

1PV 2 V3-30/63 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) )

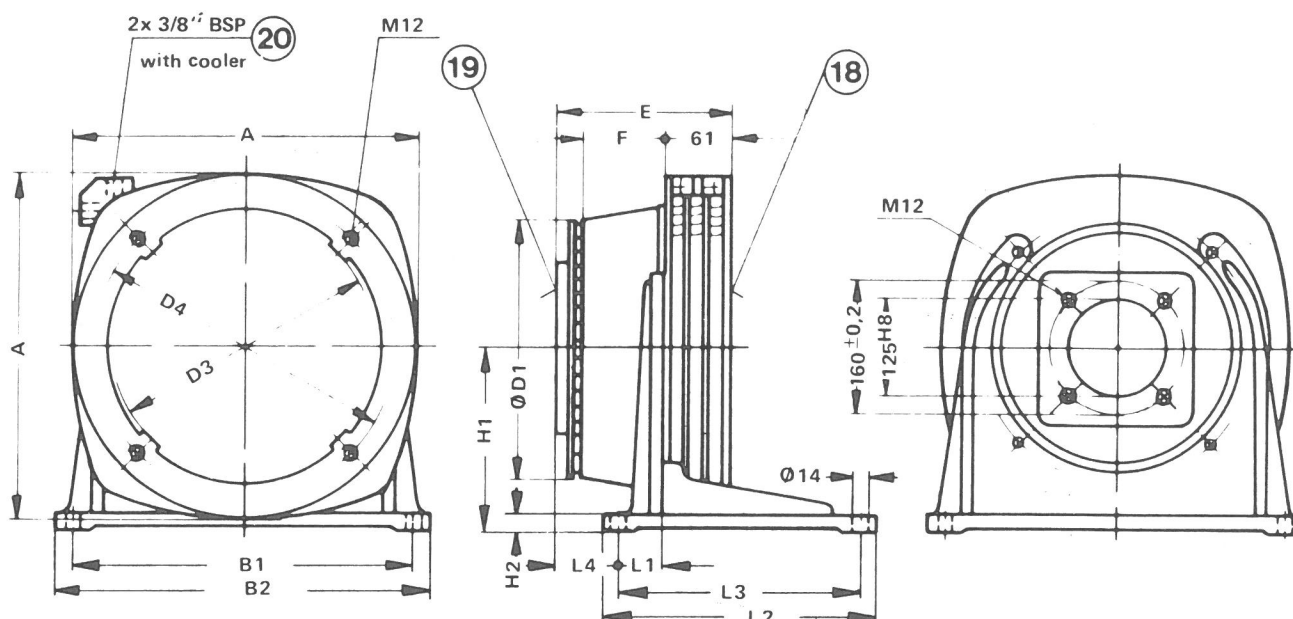
- 5 Pressure port
- 6 Leakage port
- 7 Suction port
- 8 Drive shaft for clockwise  
rotation model
- 9 Optional accessory:  
Handwheel adjustment, for fitting  
on square end adjustment,  
part no. 303 792  
(includes handwheel, shim and  
retaining screw)
- 10 Square end flow adjustment (H)

- 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

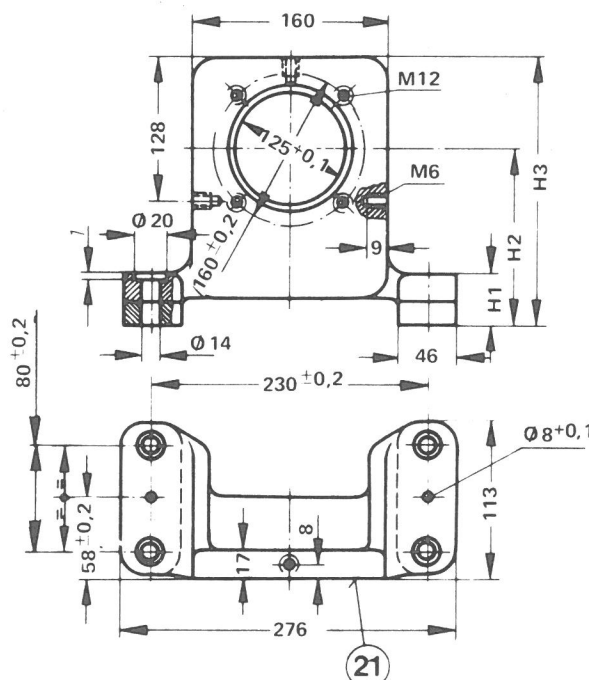
**20** Cooler port, 3/8" BSP internal threads

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
011 454	011 453	2,2 ... 4	100/112	250	285	320	180	180	215	148	42	155	15	25	220	182	62
011 455	011 459	5,5 ... 7,5	132	300	335	370	228	230	265	168	69	185	18	40	275	240	67

Technical details of oil/air cooler: see RE 32 110

## Unit Dimensions: Flange mounting bracket



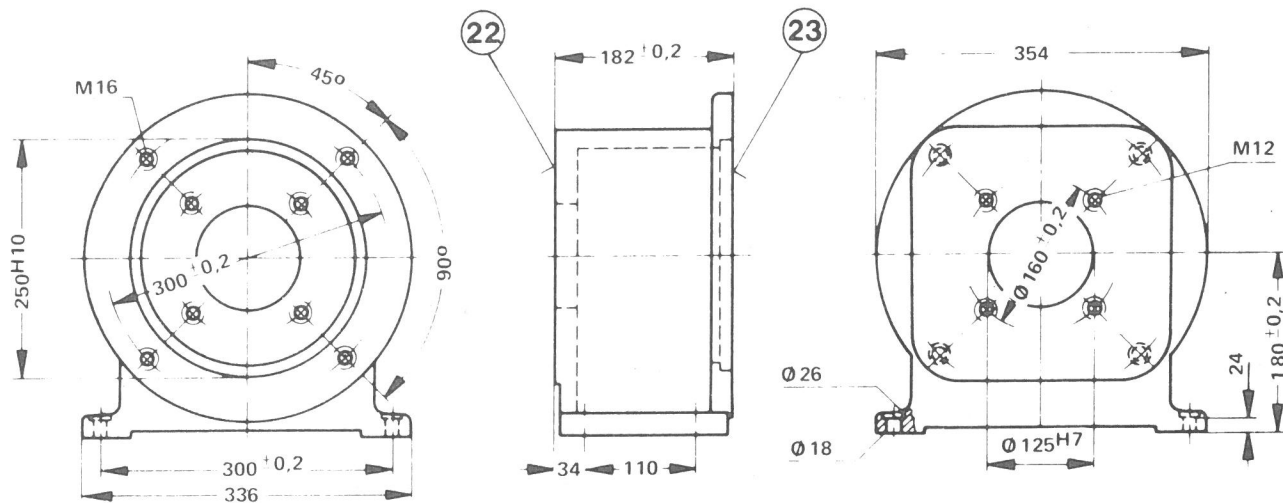
21 Pump side

Part number	E-motor size	E-motor P (kW)	H1	H2 ± 0,2	H3	Weight (kg)
303 525	132	<b>5,5 ... 7,5</b>	15	132	212	5
303 524	160	<b>11 ... 15</b>	43	160	240	6,5
303 523	180	<b>18,5 ... 22</b>	63	180	260	7,0

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

## Unit Dimensions: Foot Mounted Bellhousing

(dimensions in mm)



22 Pump flange

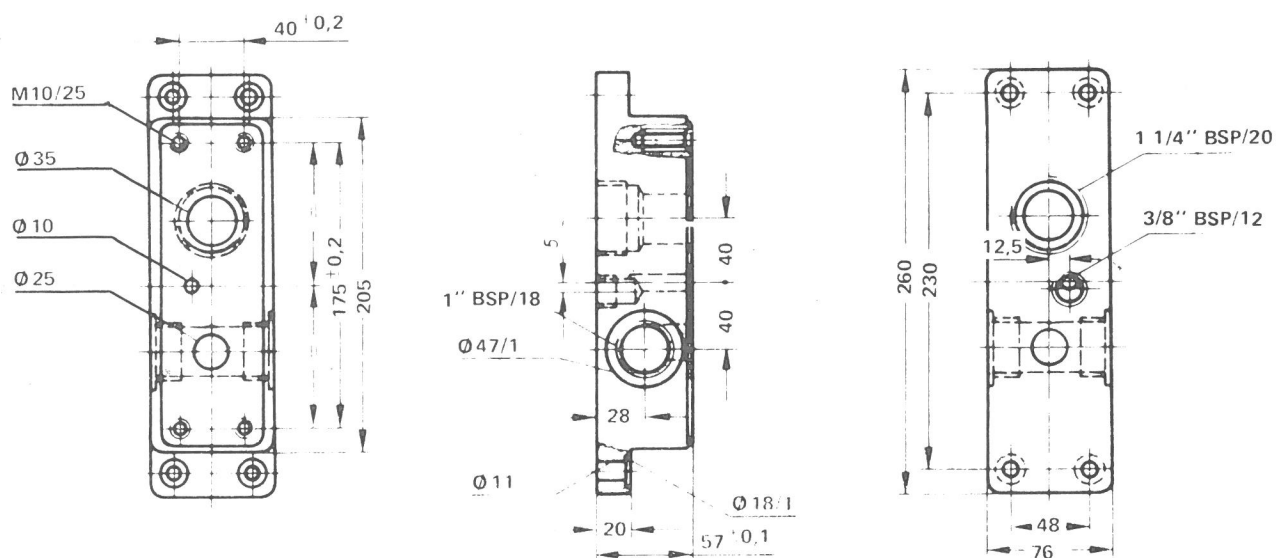
23 Motor flange

Part Number	E-Motor Size	E-Motor P (kW)	Weight
305 811	160	11 ... 15	10,0 kg

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

## Unit Dimensions: Subplate (part no. 303 791)

(dimensions in mm) Weight 6,0 kg



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

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Subject to revision

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