



SERVICE and OPERATOR'S MANUAL

BM 200/400/600

BMV 200/400/600

Vertical and Horizontal execution



CODE: MA/004/00/EN/07

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Contents

1	Introduction	1
1.1	Warranty	1
1.2	Introduction	1
1.3	Working principles	1
2	General safety principles.....	2
2.1	General instructions.....	2
2.2	Meter operation.....	2
2.3	Instructions for the operator	3
2.4	Servicing instructions.....	3
2.5	Operating precautions	3
3	Installation.....	5
3.1	Start-up precautions	6
4	Maintenance.....	7
4.1	Disassembly	7
4.1.1	Main components disassembling	7
4.1.2	Rotor disassembling.....	8
4.2	Assembly	8
4.3	Calibrating mechanism (only for mechanical counter)	8
4.3.1	Calibration of flow meter.....	8
4.4	Suggested lubricating oil for calibrating mechanism	10
4.5	Tests after overhaul	11
4.6	Strainer/air separator (BMV only)	11
4.6.1	Strainer.....	11
4.6.2	Air vent valve.....	11
4.7	Extraordinary maintenance	12
4.8	Storing	12
4.9	Spare parts	12
4.10	Maintenance schedule	12
4.11	Fault Diagnosis	12
5	Special tools.....	14
6	Technical data - BM	15
6.1	BM200	15
6.2	BM400	15
6.3	BM600	15
7	Technical data - BMV.....	16
7.1	BMV200.....	16
7.2	BMV400.....	16
7.3	BMV600.....	16
8	Optional.....	47
8.1	Thermal relief valve model 604.....	47

Enclosures

BM200 exploded view	dwg. 6980/M
BM400 exploded view	dwg. 6254/M
BM600 exploded view	dwg. 6979/M
BMV400 exploded view	dwg. 6977/M
BM rotor exploded view	dwg. 6255/M
Air vent valve	dwg. 565/M
Vanes pair	dwg. 758
Mechanical seal	dwg. 5649
Magnetic transmission	dwg. 6478
Mechanical counter	dwg. 672
Transmission box for VEGA mounting	dwg. 3958

1 Introduction

1.1 Warranty

Instruments are guaranteed for twelve months for the date of delivery. Warranty cover only defective parts and faulty workmanship and doesn't cover defects due to wearing, dirt, modification and alteration of the instrument not authorized by IBE. Warranty is given free of charge ex our works. Warranty of instruments and accessories not manufactured by IBE, will be covered by warranty of the sub supplier. Warranty is valid only if original spares are used and is invalidated in case of improper use or not following the technical specification of the instrument. Only IBE has the right to decide if the warranty can be applied. If the purchasing order calls for different warranty conditions, above stated conditions are surpassed.

1.2 Introduction

IBE positive displacement meters are precision measuring instruments designed for use with a variety of petrochemical products and liquids. Each meter is fully tested and calibrated by factory before dispatch, and a regular service will maintain a high standard of performance and accuracy.

P.D. meters must be periodically tested by a calibrating tank, Prover, or Master Meter: if out of accuracy a service is necessary.

Experience has shown that mechanical defects are usually caused by the entry of foreign matters into the metering compartment due to inadequate straining facilities in the pipeline.

Special tools have been designed to facilitate overhaul operations and their use is recommended. Reference to the tools is included in the next pages.

1.3 Working principles

Liquid enters the meter through the manifold and causes the rotor to revolve by pressure on the vanes. The proximity of the rotor to the front and rear of the casing forms an efficient seal while the profile of the casing guides the vanes on to the measuring crescent.

The seal between vane and body is assured by the combined effects of gravity and centrifugal forces of vanes and it is assured the self-balance of clearances generated by the use too.

The rotor spindle extends through a pressure tight seal in the meter front cover into the calibrating mechanism which transmits the rotor movement to the register. (fig.1)

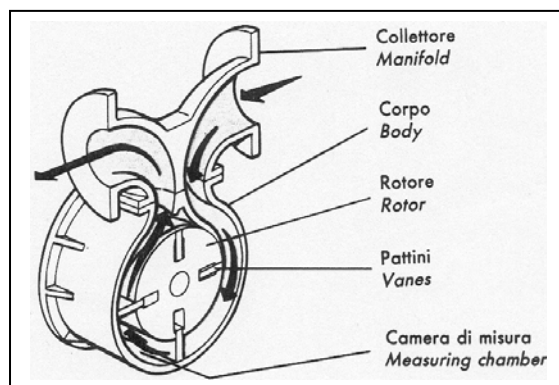


Fig.1



CAUTION



All parts under pressure must be released before disassembling the meter or its accessories for adjustment, inspection, servicing or substitution of its components.

Also make sure that all electric or electronic part, if present, are disconnected from its power supply.

2 General safety principles

This operator's manual contains basic safety instructions that must be followed during system installation, operation and maintenance. Failure to comply with these instructions may result in personal injury and can lead to personal, industrial or environmental accidents. Some examples of possible hazards caused by non-compliance with these instructions are:

- Failure of the system and/or some components.
- Hazards to people caused by the exposition to electrical, mechanical or chemical influences.
- Pollution of the environment through the leaking of hazardous substances.

Therefore, follow the safety instructions described in this manual; in case of uncertainties, please contact the manufacturer.

2.1 General instructions

- Read carefully the operator's manual.
- Make sure that all the personnel assigned to the installation, operation and maintenance is properly trained.
- Make sure that the contents of the operator's manual are completely understood by all personnel assigned to the operations on the system.
- Inspect parts under pressure in compliance with national regulations before the initial operation of the system.
- Make sure that the operator's manual is readily available to personnel on site
- Follow national safety regulation in force in the location of the plant.
- Make sure that the system operates in compliance with the relevant operational limits.
- All pressure parts must be inspected and serviced in accordance with national laws in force.

2.2 Meter operation

- The meter must be operated only by trained and authorized personnel.
- The meter must not be operated in presence of foreign, unauthorized or not

adequately trained personnel.

- The meter must be used for the purpose it is made for; the manufacturer is not responsible for any damage deriving from uses outside of the original purposes.
- The meter must be operated inside the limits fixed by the manufacturer; the manufacturer is not responsible for any damage deriving from uses outside of the operational limits of the device.

2.3 Instructions for the operator

- The operator must adhere to safety and accident-prevention standards currently in force in the country where the device is installed.
- The operator must not, by his own initiative, carry out any operation that is outside his competence.
- The operator must carefully comply with hazard and/or prohibition instructions contained in this manual.
- Do not use petrol, solvents or other flammable substances to clean parts. Use only approved commercial solvents that are non-flammable and non-toxic.

2.4 Servicing instructions


- Read carefully the rating plates on the individual equipment
- Never carry out any maintenance, servicing or regulation before having closed the root valve, discharged the pressure from the system and disconnected the power supply to any electrical device (if present), unless explicitly stated otherwise.
- All maintenance operations, either ordinary or extraordinary, must be done by authorised and trained personnel
- The maintenance operator must wear clothes adequate to the working environment and to the situation; in particular, loose or voluminous clothes, chains, bracelets, rings, earrings or anything that might get caught in the mechanical parts of the system should be avoided
- The maintenance operator must wear adequate protective devices in accordance with safety and accident-prevention regulations
- In explosive environments use only antisparking equipment
- If the meter is connected to any electric or electronic equipment, disconnect all of them from the power supply before doing any servicing or regulation operation, unless explicitly stated otherwise in the manual

2.5 Operating precautions

- The meter must be calibrated following the instructions reported into the operator's manual and in what stated into the Manual of Petroleum Measurement Standards (API) with particular attention to the following chapters:
 - Chapter 4: proving systems
 - Chapter 5: metering
 - Chapter 6: metering assemblies
 - Chapter 11 section 2.3: water calibration of volumetric provers
 - Chapter 12 section 2: calculation of petroleum quantities
- The meter must always remain full of product; to achieve this, it is suggested to install the meter so that it remains below the main line.

- The line upstream the meter must be kept full of product to avoid that some air enters the meter.
- Each meter must be adjusted following the instructions supplied in the operator's manual.
- Follow the recommendations of the manufacturer when installing pumps. Pay particular attention to factors such as the use of foot valves, inlet pipes dimension and conformity with NPSH when there are suction pumps. Follow the recommendations of the manufacturer to minimize the problems due to air and vapors.
- For flashing liquids (quick gasification of the liquid) or easily vaporizing liquids at high environmental temperatures, e.g. light hydrocarbon, it is advisable the use of submerged aspirations and pipes larger than the nominal dimension of the pump.
- Thermal expansions that generate overpressures can easily damage the meters and the systems in general. Put safety valves for overpressure in every section that can be closed through regulation or isolation valves.

3 Installation

 USER GUIDELINES WARNING	
BEFORE USING THIS METER FILL THE CALIBRATION MECHANISM WITH SAE 10 LUB OIL UP TO SIGHT GLASS LEVEL. TO AVOID FREEZING DURING WINTER ADD 10cc OF ANTIFREEZE CAR ADDITIVE TO THE OIL.	IN ORDER TO PROTECT THE METER FROM DEMAGE DUE TO ENTRAINED FOREIGN MATTER IN THE LIQUID, A SUITABLE STRAINER OF NOT LESS THAN: 100 MESH FOR GASOLINE, 60 MESH FOR DIESEL AND 40 MESH FOR OIL MUST BE INSTALLED UPSTREAM OF THE METER.
IN CASE OF PROLONGED INACTIVITY FILL THE METER WITH DIESEL OIL OR LUB OIL.	RESIDUAL DIESEL OIL OR LUB OIL MAY BE PRESENT IN THE METER! ISOIL WILL NOT BE HELD LAIBLE FOR ANY PRODUCT POLLUTION BUT SUGGEST WASHING THE METER CAREFULLY WHEN CHANGING PRODUCT.
WATER MUST NOT ENTER THE METER	
FOR FURTHER INFORMATION SEE THE SERVICE AND OPERATOR'S MANUAL <small>ISOIL cat.135</small>	

The installation of the meter counter does not require any special procedure; just pay attention to the following points:

- The meter counter must be installed horizontally; for other applications a vertical arrangement is provided. In both cases the rotor axis must be kept horizontal.
- All the meter's openings are protected with covers when shipped; those must not be removed until the meter is installed on the piping
- Before the installation of the meter, it's suggested to clean thoroughly the piping to remove dirt, crusts and other foreign particles.
- Piping should not exercise strain on the meter. The meter is designed for overhang and supports should be provided only on the adjacent pipes.
- Leave space enough around the meter to ease access for adjustment, servicing and disassembly. The counter, if present, must be easily readable.
- The meter must always remain full of product; it's suggested to install the meter so that it remains always under the main line.
- The line upstream the meter must always remain full of product to avoid that air enters the meter's measure chamber; if the pipe arrangement allows reversal flow, a non-return valve must be installed.
- Flow through the meter must be regular and uniform; pulsating and irregular flows must be avoided.
- It is recommended to install flow limiting valves downstream of the meter if the flow rate can reach values higher than the maximum allowed for the meter.
- If the line pressure can reach values higher than the maximum allowed, automatic safety valves must be installed in adequate places.
- To protect meter from damages due to foreign particles in the liquid, a suitable strainer with a correct mesh number (40 mesh for oil, 60 mesh for diesel oil, 100 mesh for gasoline) must be installed upstream the meter.
- In case the rate of flow through the installation exceeds the meter maximum rated capacity, it is advisable to use a flow limiting valve, which must be installed downstream the same meter.

- Water must not flow through the meter.
- Meters must be installed in such a way that air or vapour do not enter through the liquid under measurement. It is always suggested to install an air separator just upstream the meter.
- To avoid hammer shocks which may strongly damages the meter, it is not advisable to install upstream or downstream the meter any quick closing valves.
- It is recommended to install root valves at the inlet and outlet to ease servicing operations and isolation of the meter
- fill the carter containing the calibrating mechanism with oil till the sight glass is reached

3.1 Start-up precautions

- Before proceeding with the start-up make sure that:
 - The meter is adequately fixed
 - All the connections are tightened
 - Air is bled from the pipes
- If a calibration mechanism is associated with the meter, before the start-up it must be filled with lubricating oil
- Vent out all the air eventually present in the line
- When the meter is operated for the first time, fill it slowly with the operating fluid by following this procedure:
 - Open slowly the upstream isolation meter or fill the meter by gravity
 - Open slowly the downstream isolation meter letting the flow rate rise smoothly to the operating value



CAUTION



If the line pressure can reach values higher than the maximum allowed, automatic safety valves must be installed in adequate places. It is necessary to avoid the pressure meter exceeds the maximum high pressure showed on the meter plate.

Be very careful when starting up the meter: if the air enters the measuring chamber the rotor can easily reach high rotational speeds, leading to abnormal wear of the vanes and other components; this, in turn, will lead the meter to a major failure.



CAUTION



All parts under pressure must be released before disassembling the meter or its accessories for adjustment, inspection, servicing or substitution of its components.

Also make sure that all electric or electronic part, if present, are disconnected from its power supply.

4 Maintenance

Before removing the flow meter from the pipeline for repairs, it is recommended that the possible causes and corrective actions are noted with the help of Fault Diagnosis Chart given in this manual.

Note that certain components in the flow meter assembly are not interchangeable. Therefore, if more that one flow meter is dismantled, it is recommended that each flow meter is dismantled independently.

CAUTION: Be very careful when you start up the meter after maintenance: if the air enters the measuring chamber the rotor can easily reach high rotational speeds, leading to abnormal wear of the vanes and other components; this, in turn, will lead the meter to a major failure. See chap.3.2 for start-up procedures.

4.1 Disassembly

The flow meter may be considered as two main assemblies: the measuring chamber and the calibrating mechanism. To separate these two assemblies from each other, remove the screws securing the calibrating mechanism on the flow meter body.

CAUTION: Before dismantling the meter for maintenance release pressure from the line and drain all the fluid inside the meter through the draining hole below the meter.

Proceed then with the maintenance of the faulty part.

4.1.1 Main components disassembling

1. To ensure stability during the dismounting, it is advisable to use our "Ring Support tool" (see special tool Fig.D).
2. Remove the sealings and the screws of the counter, unscrew the screws fixing the calibrating mechanism and after the removal of the transmission spindle, take off the transmission spindle pin.
3. Remove all nuts, bolts and washers of the front cover.
4. Remove the front cover using the "Cover Removal Tool" (see special tool Fig.C).
5. Remove the rotor group by using the "Rotor removal and turning tool" (see special tool Fig.B). Turn the rotor so that two graphite vanes re-enter in the rotor in correspondence of the smaller radius.

6. Extract the rotor paying attention to use the free hand to guide the rotor and control the lateral vanes movement.

4.1.2 Rotor disassembling

NOTE: Never remove the vanes unless they are damaged. If it is necessary to remove the vanes, before proceeding mark the position of the four vanes that correspond with the position in the rotor: that will ease the reassembly procedure. Vanes are not interchangeable and, if they can be reused, they must be placed in their original position.

See dwg.758 for disassembling the vanes

- Remove the split pin placed in the opposite side of the adjusting screws
- Remove the vane and the two washers
- Remove the remaining vane-rods assembly

CAUTION: Don't remove or loosen the the vanes adjusting nuts, since that would vary the clearance between the vanes and the measuring chamber, causing loss of performance and/or meter failure.

4.2 Assembly

Before assembly, clean and inspect all parts for any visual damage. Ensure that all o-ring grooves are clean and undamaged. Examine the O-Rings and ensure that they are not damaged or swollen, replace them if necessary. Examine graphite bushes on rotor assembly for free rotation and play, replace them if either is apparent. Examine each vane assembly for damage or wear, replace vane(s) if either is apparent. Examine gland seal rings in rotor assembly for damage or wear and replace if either is apparent.

The assembly procedure is the reversal of the dismantling procedure; only for installation of the internal body special precautions should be taken to match the centering cap of the external body's front cover.

4.3 Calibrating mechanism (only for mechanical counter)

The calibrating mechanism comprises a train of gears which transmit movement of the rotor to the counter. Operational failures of the mechanism are rare and they generally regard the breaking of tension pin, due to an excessive strain. (see dwg.672)

It is recommended to repair without varying the calibrating adjustment.

CAUTION: do not remove the shimming washers between the frame and the bearing of the mechanism box.

This chapter only applies for mechanical counter; for the calibration of the meters with electronic counter please refer to the specific manual.

4.3.1 Calibration of flow meter

To carry out meter calibration follow next procedures (see Fig.2):

Remove the plug (8) under the housing (1) and drain the oil;

- a) Break and remove seals (10) to the cover (11);
- b) Remove the three screws (9) securing the cover to the housing (1) in which calibrating mechanism is fitted (7);

- c) Remove cover (11);
- d) By using square key (4 mm) (5) turn shaft (6) till the holes placed on the bracket (2) and on friction roller will be properly aligned;
- e) Insert in this hole (3) the stop pin (4) then using the square key (5) operate on the shaft (6) as follow:
 - turning counter-clockwise direction, even if the quantity of fluid does not vary, on the counter is obtained an higher volume indication;
 - turning clockwise direction it is obtained a lesser indication
- f) Put the cover (11) back to the housing, screw the screws (9) and set the seals (10); fill the housing with lub oil (see cap. 4.4)

The square key (5) and the stop pin (4) are always supplied whether the p.d.meter has a mechanical counter.

NOTE: one complete turn of the screw varies the volume indicated on the meter by approximately 0,18% (per cent).

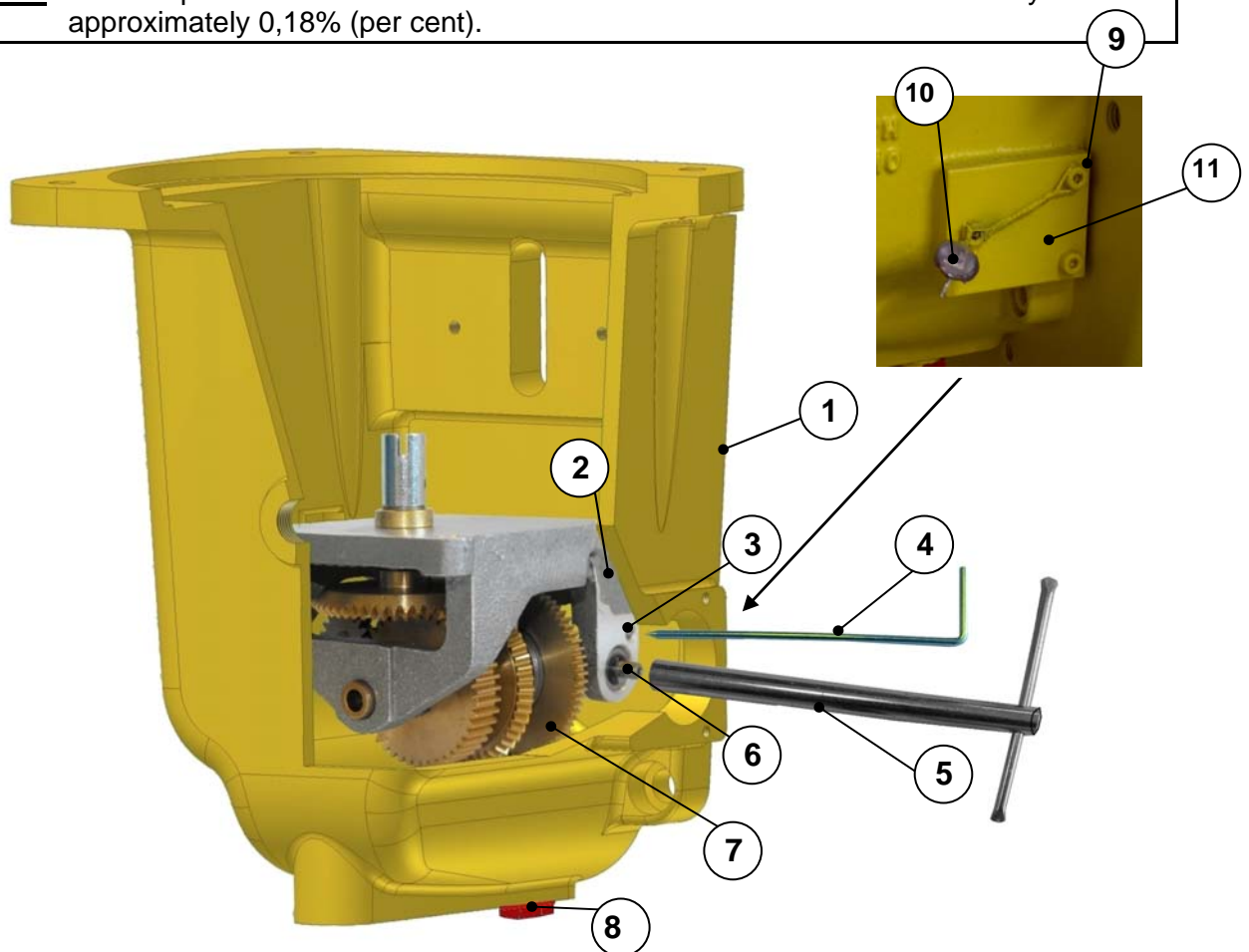


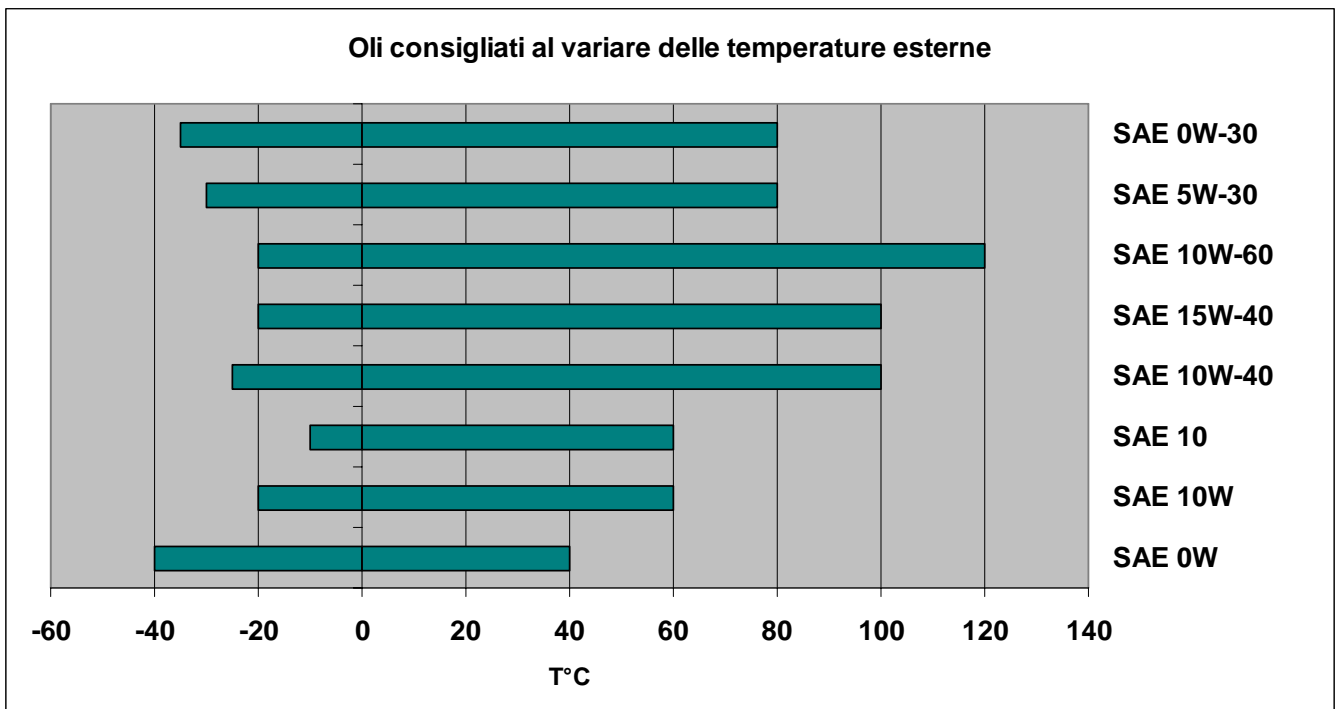
Fig.2

4.4 Suggested lubricating oil for calibrating mechanism

To allow proper lubrication of the gear wheels on the housing is essential to fill the box with lubricating oil, using the black plug on the side of the box.

Make sure that the level oil upper the sight glass.

In the Table 1 you can choose the lubricating oil if you know the using temperature



The oil is suggested by IBE, for standard application is SAE10, for a range temperature (from -10° to $+60^{\circ}\text{C}$); to avoid ice forming in wintertime, add two spoons of car antifreeze.

4.5 Tests after overhaul

After overhaul the p.d. meters must be tested with suitable proving systems. Error between the value stated by the p.d.meter counter and the value stated by the proving device is calculated as below:

Example:

Measured by the meter	Measured by the proving tank	Error (%)
1000 l	1003 l	-0,3%
1000 l	997 l	+0,3%

The formula is:

$$E\% = \frac{V - V_0}{V_0} \cdot 100$$

V = Measured by the meter

V₀ = Measured by the proving tank

4.6 Strainer/air separator (BMV only)

4.6.1 Strainer

A clean strainer is fundamental for the correct operation of the system; a dirt strainer would create an excessive pressure drop, leading to the failure of the basket strainer and thus letting dirt, crusts and other harmful elements to flow into the fluid. If possible, check regularly the pressure drop between the inlet and the outlet of the strainer; the maximum allowed pressure drop is 130 kPa.

For a correct servicing of the basket strainer, follow the procedure described below:

- Discharge the pressure from the system and close the valves at the inlet and outlet
- Discharge the liquid inside the strainer air separator through the draining outlet on the bottom of the strainer
- Remove the upper cover
- Remove the basket strainer and clean it thoroughly with a water jet; if possible, use a water cleaning machine
- Check accurately that the strainer basket is intact; if it is found to be damaged, replace with another one with the same filtering grade:
 - For oils with viscosity up to 20°E(150cSt): 40 mesh (433 micron)
 - For diesel oils: 60 mesh (247 micron)
 - For gasoline or water: 100 mesh (153 micron)
- Put again the strainer basket in place, close the cover and the drain valve.

It's suggested to replace the gaskets between the strainer body and the cover each time the strainer air separator is disassembled.

4.6.2 Air vent valve

Follow the instructions below for the servicing of the air vent valve:

- Discharge the pressure from the system and close the valves at the inlet and outlet
- Discharge the liquid inside the strainer air separator through the draining outlet
- Inspect the air vent valve, checking that it works properly and its part aren't damaged

- Close the draining valve and restore the operating conditions

4.7 Extraordinary maintenance

The user must define a maintenance scheduling table according to the fluid utilised, the operational conditions, the estimated/real workloads and the environmental conditions.

For all extraordinary maintenance needed after a failure and/or the rising of a fault that compromises the normal operation of the system, please contact IBE Customer Care.

4.8 Storing

- if after a working period it is foreseen to stop the meter for a long time, drain the meter and its accessories;
- If the meter or the equipment of the system are not immediately used, or if it is withdrawn from service and stored, it is important to follow next instructions :
 - fill the meter and its accessories with clean kerosene or lubricated oil and close its ends with blind flanges;
 - fill the carter containing the calibrating mechanism with oil till the sight glass is reached
- adequately protect counters against rain and dust, with damp-proof caps

4.9 Spare parts

For a correct meter maintenance use only original spare parts from IBE.

IBE is not responsible for any problem that can result from the use of non original spare parts.

4.10 Maintenance schedule

Task	Monthly	6 Months	1 Year	2 Years
Visual inspection of manifold and meter body; check for leaks	X			
Inspection of the meter; check for internal part status: vanes, rotor, measure chamber, o-rings; check for wear or damage.				X

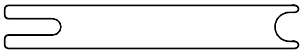
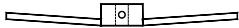
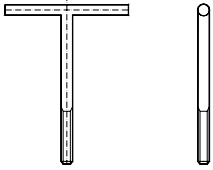
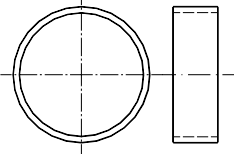
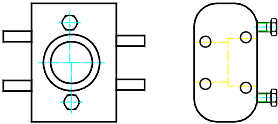
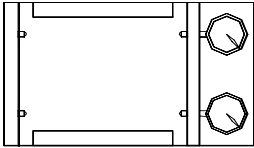
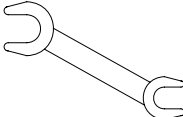
4.11 Faul Diagnosis

This table is rappresentative, there aren't all breakdown

Symptom	Possible cause	Remedy
Liquid passing with normal flow rate but counter fails to register.	Defective counter.	Remove and check the counter by rotating bottom coupling. In case of any problem in the counter, contact the factory.
	Drive from the rotor fails to reach the counter, due to sheared pins in the calibrating mechanism.	Check cross pins fitted on all gears in the calibrating mechanism.

Symptom	Possible cause	Remedy
No liquid passing through.	Defective counter.	Remove and inspect the counter for free movement.
	Jammed calibrating mechanism.	Remove and inspect the calibrating mechanism. Identify the source of friction and replace relevant parts.
	Jammed rotor assembly.	Dismantle meter assembly. Inspect front & rear covers and rotor for scoring marks. Inspect vanes and bearings for damage.
	Causes of rotor jamming :	
	Solid particles trapped on rotor surface.	Clean the rotor surfaces.
	Incorrect adjustment of rotor end clearance due to loose or defective bearing adjuster.	Check setting of bearing adjuster. Clean and inspect the bearing adjuster.
	Rotor bearings jammed.	Clean bearings and cover, and inspect for any damage.
	Rotor bearings worn out.	Replace the bearings, if axial play is observed.
	Misalignment of front & rear covers due to missing dowel pins.	Ensure that both dowel pins are used for locating the covers with the body.
	Clogged filter basket.	Clean the basket strainer regularly.
Liquid is leaking from the joint at front cover and calibrating mechanism.	Spindle seal is damaged.	Replace the spindle seal. Inspect rotor spindle for wear or scratch marks.
Liquid is leaking from the joint at front cover and body or rear cover and body.	Damaged o'ring seals, unclean o'ring grooves, cover bolts loose.	Clean o'ring grooves, replace o'rings and secure cover bolts tightly.
Excess delivery beyond 1%.	Vane blades damaged.	Inspect and replace damaged vane blades.
	Jammed rotor or calibrating mechanism.	As described above.

5 Special tools

DESCRIPTION	USE	FIGURE
Spring compression tool. Code 80AT0036	For compressing vane spring when assembling or dismounting split pins.	 A
Rotor removal and turning tool. Code 80AT0039	To fit on the rotor spindle in place of rotor gear when turning or removing rotor assembly.	 B
Cover removal tool (n.2 pieces are necessary). Code 80AT0042	For extracting front cover.	 C
Ring support tool. Code 80AT0048	For supporting bulkmeter during dismounting and re-assembly.	 D
Bearings extractor. Code 80ES0012	For dismounting the internal ring of the bearing after having broken the external ring.	 E
Vanes checking tool. Code 80AT0057	For measuring of the vanes length.	 F
Special spanner for vane adjustment. Cod.80AT0040	To tight adjusting nuts during adjusting length of vane assy.	 G

6 Technical data - BM

6.1 BM200

Maximum working pressure..... 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate..... 1300 lpm
Weight..... 54 kg approx.

6.2 BM400

Maximum working pressure..... 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate..... 2400 lpm
Weight..... 102 kg approx.

6.3 BM600

Maximum working pressure..... 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate..... 3400 lpm
Weight..... 155 kg approx.

The value reproduced in label can change as regards to those shown in the manual

7 Technical data - BMV

7.1 BMV200

Maximum working pressure 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate 1300 lpm
Weight..... 170 kg approx.

7.2 BMV400

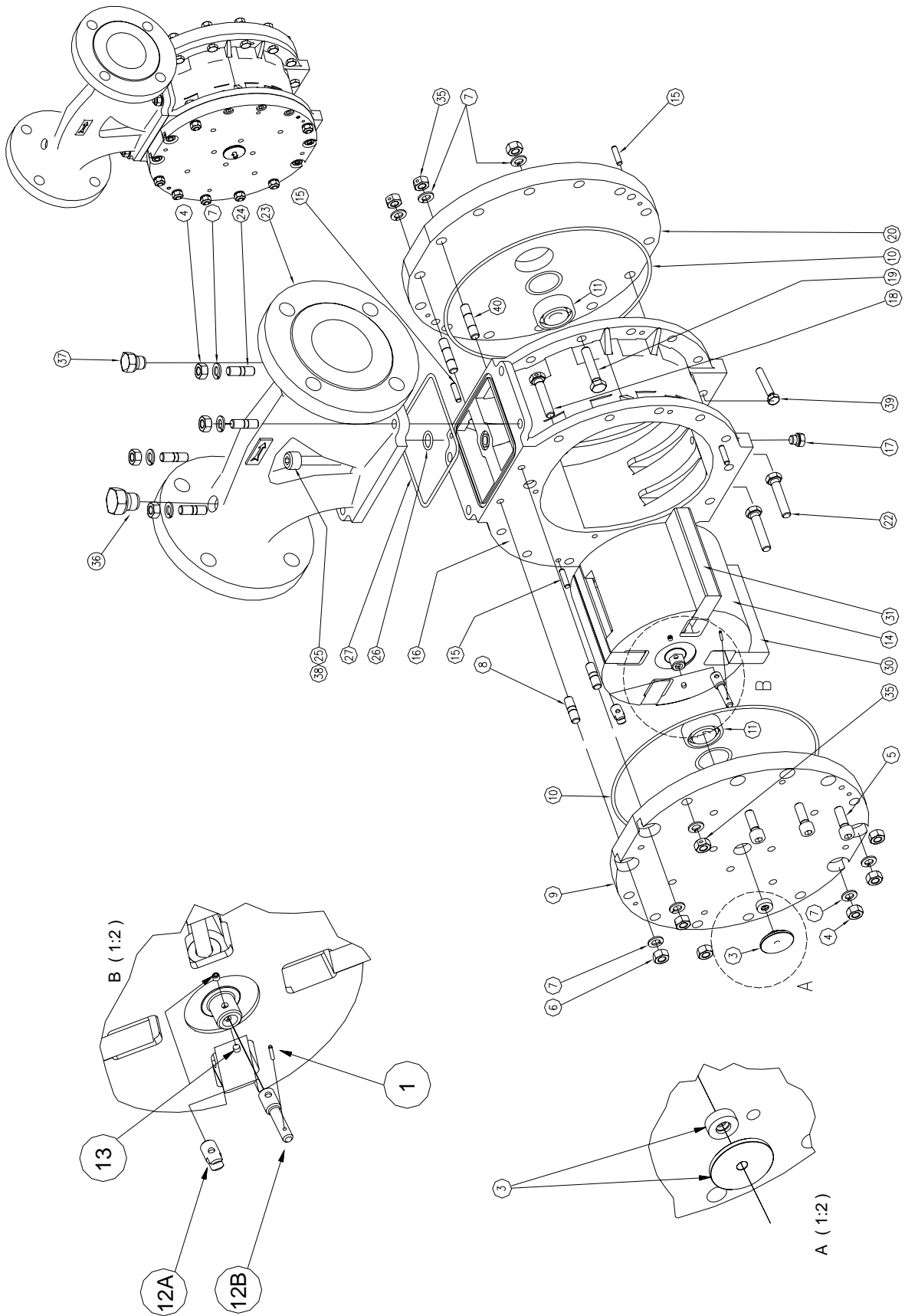
Maximum working pressure 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate 2400 lpm
Weight..... 210 kg approx.

7.3 BMV600

Maximum working pressure 1000 kPa
Working temperature -10°C ÷ +50°C
Maximum flow rate 3400 lpm
Weight..... 300 kg approx.

The value reproduced in label can change as regards to those shown in the manual

BM200 P.D. METER ASSEMBLY Dwg.6980/M





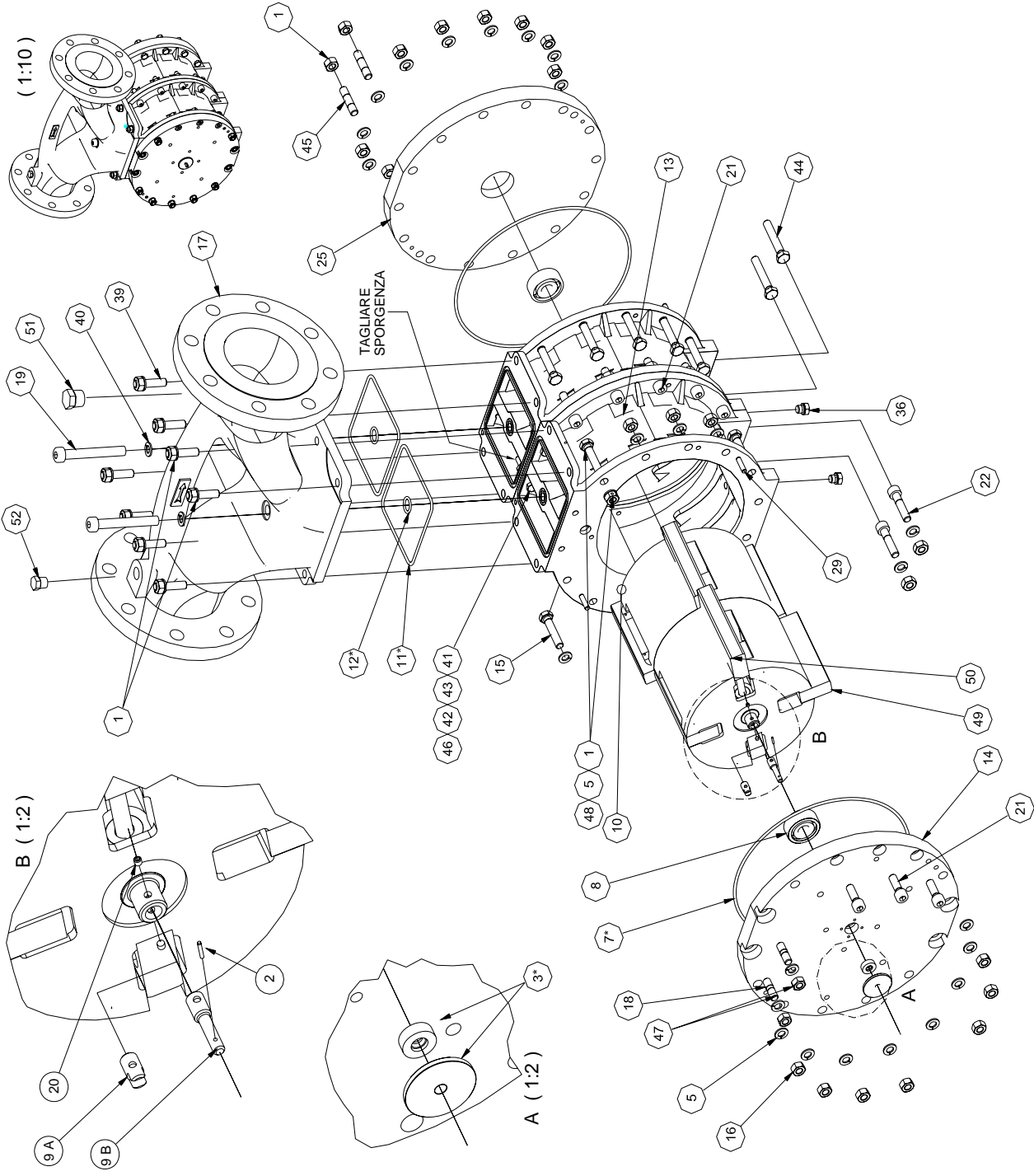
BM200 P.D.METER ASSEMBLY


Dis. 6980-M


Page 1 of 1

item	N° CODE	DESCRIPTION	Q.ty	MATERIAL	item	N° CODE	DESCRIPTION	Q.ty	MATERIAL
1	80SP5009	Spirol pin	1	Carbon steel	22	80VI4309	Screw	2	Carbon steel
3*	80KI0135	BM36 /1 Kit	1	FKM	23	80CO0368	Manifold	1	Carbon steel
3*	80KI0131	BM36 /1 Kit	1	Nitrile	24	80PR3066	Stud	4	Carbon steel
4	80DA1018	Nut	26	Carbon steel	25	80VI4331	Screw	1	Carbon steel
5	80VI4285	Screw	3	Carbon steel	26*	80GU1288	O-ring	1	Nitrile
6	80DA1063	Nut	2	Carbon steel	26*	80GU1285	O-ring	1	FKM
7	80RO1180	Spring washer	32	Carbon steel	27*	80GU1549	O-ring	1	Nitrile
8	80PR3060	Stud	2	Carbon steel	27*	80GU1546	O-ring	1	FKM
9	80COB501	Front cover	1	Carbon steel	30	80COC045	RH vanes pair	1	-
10*	80GU1630	O-ring	2	Nitrile	31	80COC075	LH vanes pair	1	-
10*	80GU1627	O-ring	2	FKM	35	80DA1006	Nut	6	Carbon steel
11*	80CU1100	Ball bearing	2	St. steel	36	80TA1090	Plug	1	St. steel
12-A	80BU0062	Bush	1	Carbon steel	37	80TA1099	Plug	1	St. steel
12-B	80AL0291	Shaft	1	Carbon steel	38	80RO1183	Spring washer	1	Carbon steel
13	80GR1034	Grain	2	Carbon steel	39	80VI2173	Screw	2	Carbon steel
14	80RO2081	assembly	1	Aluminum	40	80PR3075	Stud	2	Carbon steel
15	80SP6021	Pin	4	Carbon steel					
16	80COG503	Body	1	Carbon steel					
17	80TA1120	Plug	1	St. steel					
18	80VI2178	Screw	2	Carbon steel	12-B: Per VEGA, testata meccan., bare shaft/ For VEGA, meccan. counter , bare shaft				
19	80VI2171	Screw	17	Carbon steel					
20	80COB509	Front cover	1	Carbon steel	* Suggested spare parts				

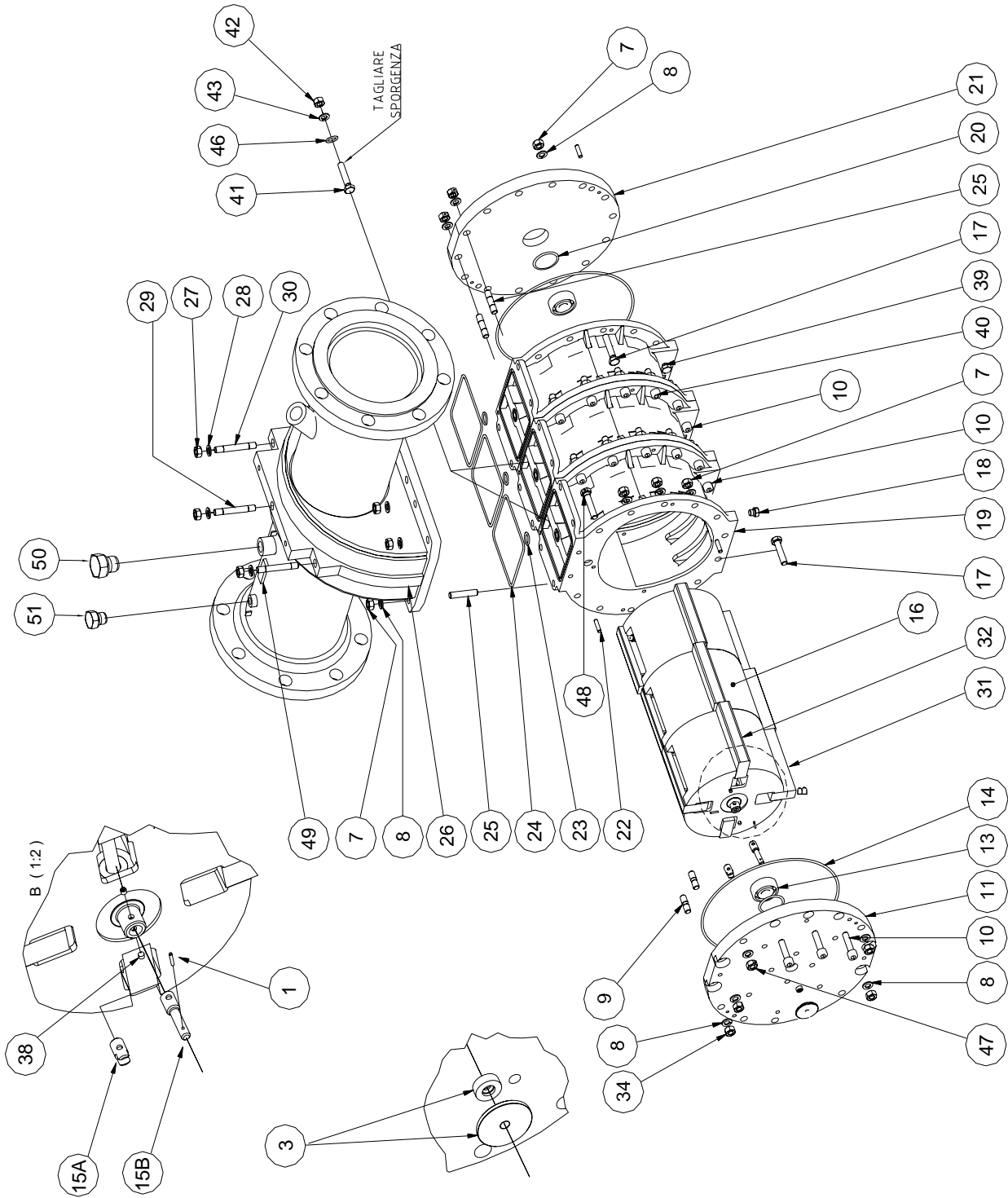
BM400 P.D. METER ASSEMBLY Dwg.6254/M



H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten Ingenieurbüro · Werkvertrömmen</small> 								Dis. 6254/M	
			BM400 P.D. METER ASSEMBLY					Page 1 of 2	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80DA1006	Nut	6	Carbon steel	13	80COG503	Body	2	Carbon steel
2	80SP5009	Spirol pin	2	Carbon steel	14	80COB501	Front cover	1	Carbon steel
3*	80KI0131	BM36/1 kit	1	Nitrile	15	80VI2171	Screw	19	Carbon steel
3*	80KI0135	BM36 kit	1	FKM	16	80DA1018	Nut	40	Carbon steel
5	80RO1180	Spring washer	50	Carbon steel	17	80CO0365	Manifold	1	Carbon steel
7*	80GU1630	O-Ring	3	Nitrile	18	80PR3060	Stud	2	Carbon steel
7*	80GU1627	O-Ring	3	FKM	19	80VI4345	Screw	2	Carbon steel
8*	80CU1100	Ball bearing	2	St. steel	20	80GR1034	Grain	2	St. steel
9-A	80AL0291	Shaft	1	St. steel	21	80VI4285	Screw	13	Carbon steel
9-B	80BU0046	Bush	1	St. steel	22	80VI4309	Screw	2	Carbon steel
10	80RO2090	Rotor assembly	1	Aluminium	25	80COB509	Back cover	1	Carbon steel
11*	80GU1549	O-Ring	2	Nitrile	29	80SP6021	Pin	6	Carbon steel
11*	80GU1546	O-Ring	2	FKM	36	80TA1120	Plug	2	St. steel
12*	80GU1288	O-Ring	2	Nitrile	39	80PR3066	Stud	8	Carbon steel
12*	80GU1285	O-Ring	2	FKM	40	80RO1183	Washer	2	Carbon steel
(*) Suggested spare parts			9-A : For Pulse emitter (without Pos.3) 9-B: For VEGA, meccan. counter , bare shaft						

H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten</small> <small>Spezialpumpe · Wechsellagerungen</small> 								Dis. 6254/M	
					BM400 P.D. METER ASSEMBLY			Page 2 of 2	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
41	80VI4237	Screw	2	St. steel					
42	80DA1000	Nut	2	St. steel					
43	80RO1207	Washer	2	Carbon steel					
44	80VI2173	Screw	2	Carbon steel					
45	80PR307	Stud	2	Carbon steel					
46	80GU1205	O-Ring	2	Nitrile					
46	80GU1204	O-Ring	2	FKM					
47	80DA1063	Nut	2	Carbon steel					
48	80VI2178	Screw	2	Carbon steel					
49*	80COC075	LH vanes pair	2	/					
50*	80COC045	RH vanes pair	2	/					
51	80TA1090	Pulg	1	St. steel					
52	80TA1099	Pulg	1	St. steel					
(*) Suggested spare parts									

BM600 P.D. METER ASSEMBLY Dwg.6979/M





BM600 P.D. METER ASSEMBLY

Dis. 6979/M

Page 1 of 2

item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80SP5009	Spirol pin	2	Carbon steel	18	80TA1120	Plug	3	St. steel
3*	80KI0131	BM36/1 kit	1	Nitrile	19	80COG503	Body	1	Carbon steel
3*	80KI0135	BM36/1 kit	1	FKM	20	80SP0168	Shim	1	St. steel
7	80DA1018	Nut	56	Carbon steel	21	80COB579	Back cover	1	Carbon steel
8	80RO1180	Spring washer	64	Carbon steel	22	80SP6021	Pin	8	Carbon steel
9	80PR3060	Stud	2	Carbon steel	23*	80GU1288	O-Ring	3	Nitrile
10	80VI4309	Screw	4	Carbon steel	23*	80GU1285	O-Ring	3	FKM
11	80COB147	Front cover	1	Carbon steel	24*	80GU1549	O-Ring	3	Nitril
13*	80CU1101	Ball bearing	2	St. steel	24*	80GU1546	O-Ring	3	FKM
14*	80GU1630	O-Ring	4	Nitrile	25	80PR3075	Stud	14	Carbon steel
14*	80GU1627	O-Ring	4	FKM	26	80CO0087	Manifold	1	Carbon steel
15-A	80BU0046	Bush	1	St. steel	27	80DA1072	Nut	3	Carbon steel
15-B	80AL0291	Shaft	1	Carbon steel	28	80RO183	Spring washer	3	Carbon steel
16	80RO2099	Rotor	1	Aluminium	29	80PR3112	Stud	1	Carbon steel
17	80VI2171	Screw	17	Carbon steel	30	80PR3110	Stud	2	Carbon steel

(*)

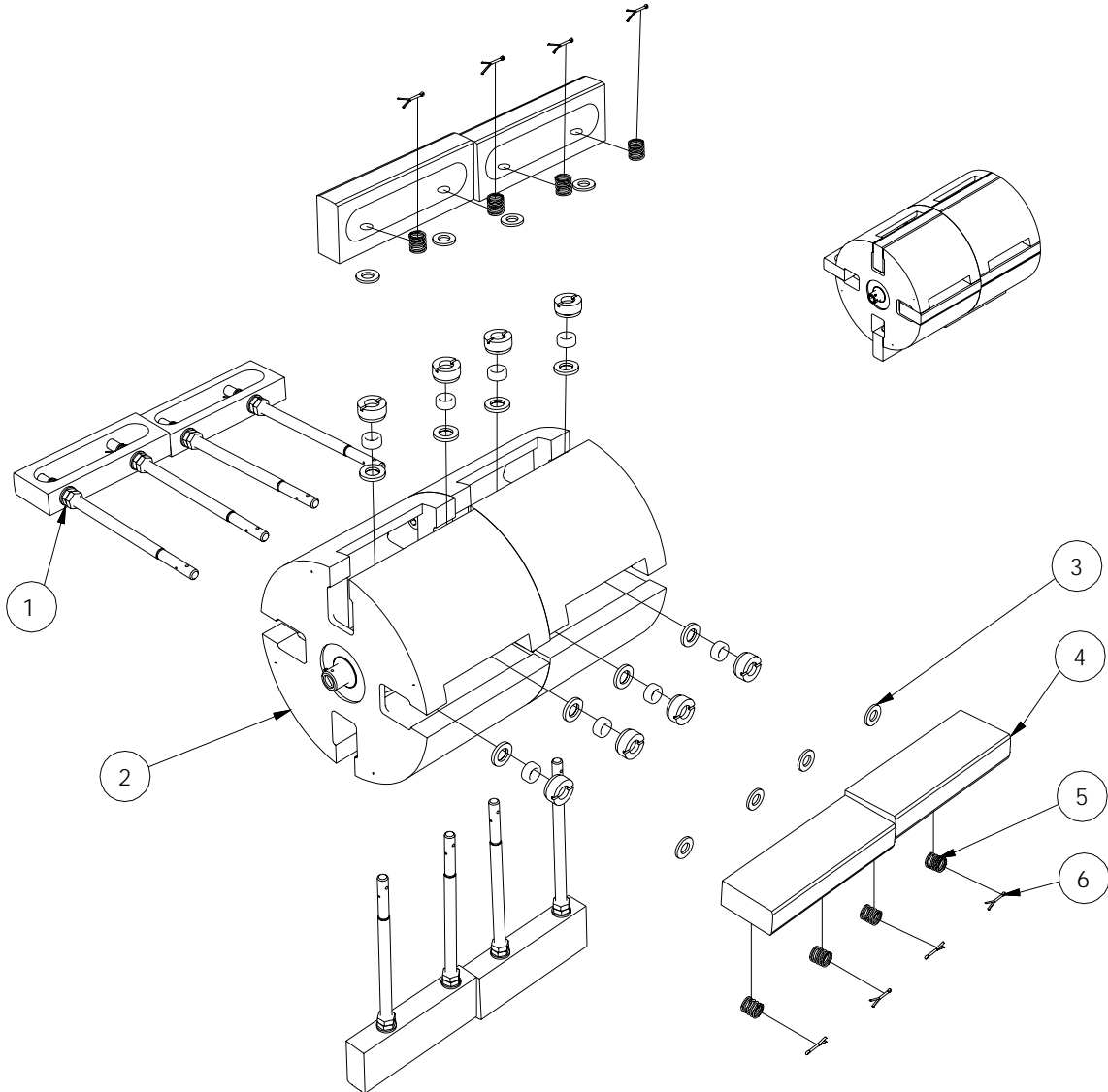
Suggested spare parts

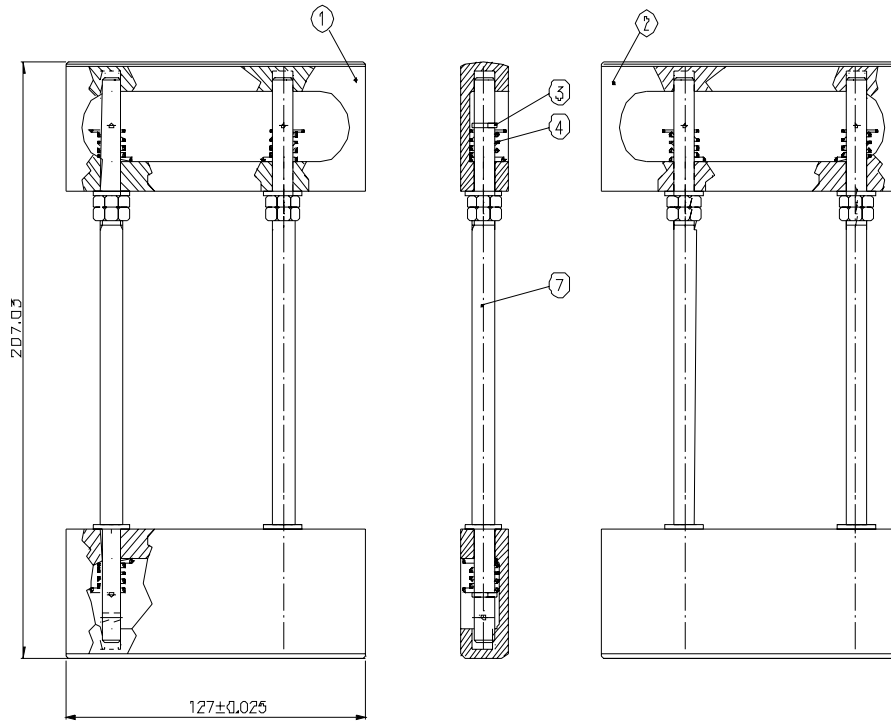
15-A : For Pulse emitter (without Pos.3)

15-B: For VEGA, meccan. counter , bare shaft



item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	COD	DESCRIPTIO	Q.ty	MATERIA
31*	80COC045	RH vanes pair	3	-	51	80TA1090	Plug	1	St. steel
32*	80COC082	LH vanes pair	3	-					
34	80DA1063	Nut	4	Carbon steel					
38	80GR1034	Grob screw	1	Carbon steel					
39	80VI2173	Screw	4	Carbon steel					
40	80VI4285	Screw	23	Carbon steel					
41	80VI4237	Screw	4	St. steel					
42	80DA1000	Nut	4	St. steel					
43	80RO1207	Spring washer	4	Carbon steel					
46	80GU1205	O-Ring	4	Nitrile					
46	80GU1204	O-Ring	4	FKM					
47	80DA1008	Nut	6	St. steel					
48	80VI2178	Screw	2	Carbon steel					
49	80TA3060	Plate	1	Aluminium					
50	80TA1090	Plug	1	St. steel					
(*) Suggested spare parts									

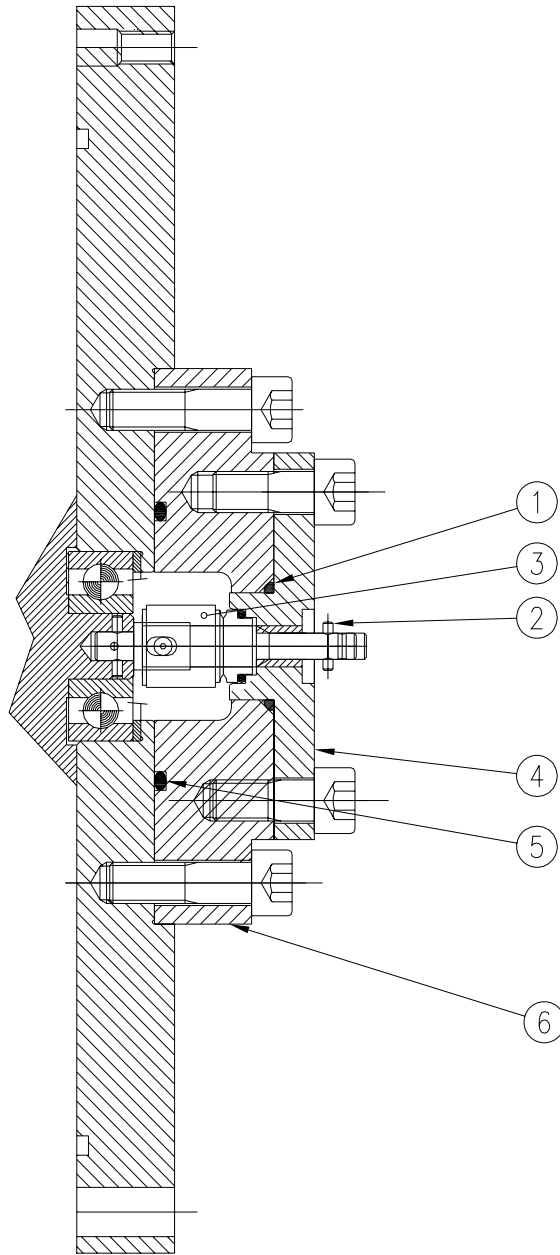




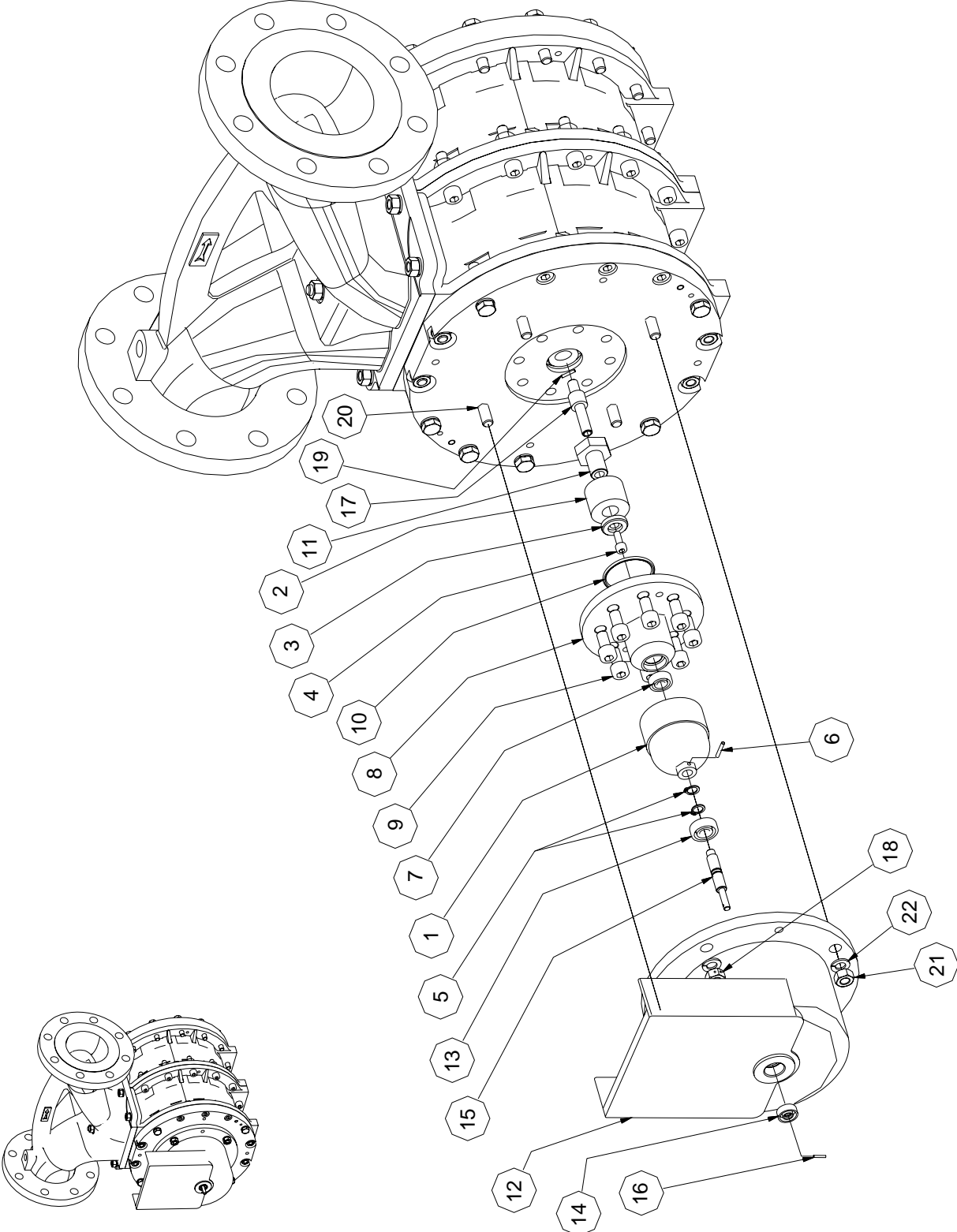
LEFT VANES COUPLE
C OD. 80COC075


RIGHT VANES COUPLE
C OD. 80COC045

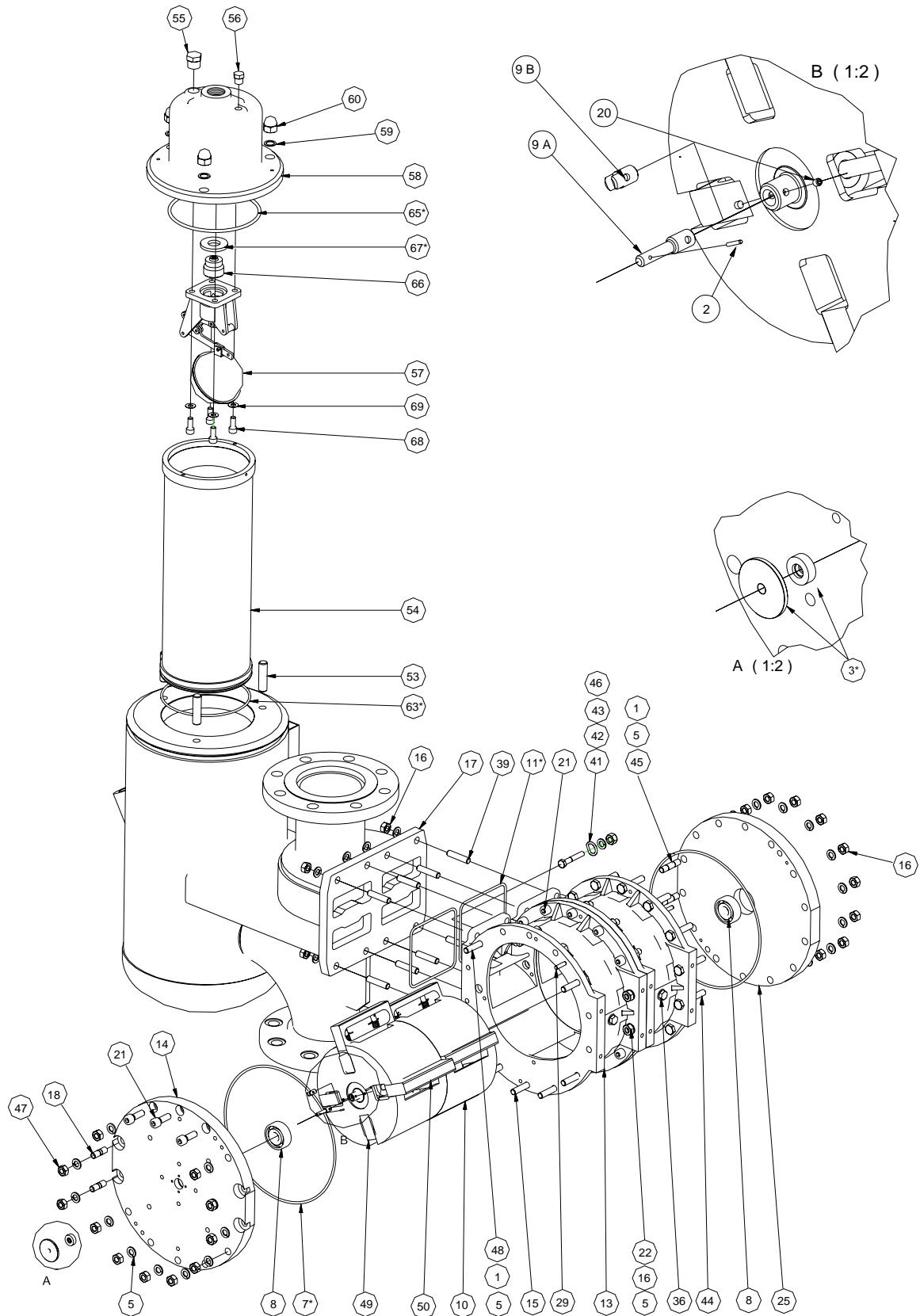
item	N° CODE	DESCRIPTION	Q.ty	MATERIAL	item	N° CODE	DESCRIPTION	Q.ty	MATERIAL
1	80PA1075	Left vane	2	Graphite					
2	80PA1012	Right vane	2	Graphite					
3	80COD009	Cotter pin	8	St. steel					
4	80MO0216	Spring	8	St. steel					
7	80AS0093	Rod assembly	4	St. steel					




MAGNETIC TRASMISSION ASSEMBLY ASSEMBLY Dwg.6478/M



H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten</small> <small>Ingenieurbüro · Betriebsleistungen</small> 								Dis. 6478/M	
			MAGNETIC TRANSMISSION ASSEMBLY					Page 1 of 1	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80MA0051	External magnet	1	-	16	80SP5009	Spirol pin	1	Carbon steel
2	80MA0050	Internal magnet	1	-	17	80AL0304	Shaft	1	St. steel
3	80RO1400	Backing washer	1	St. steel	18	80DA1006	Coupling ring	2	Carbon steel
4	80VI4145	Screw	1	St. steel	19	80SP5033	Pin	1	Carbon steel
5	80AN2036	Snap ring	2	St. steel	20	80PR3066	Stud	4	Carbon steel
6	80SP5066	Pin	1	St. steel	21	80DA1018	Nut	2	Carbon steel
7	80CU1105	Ball bearing	1	St. steel	22	80RO1180	Spring washer	4	Carbon steel
8	80FL0306	Flange	1	St. steel					
9	80VI4264	Screw	8	St. steel					
10*	80GU1088	O-Ring	1	FKM					
11	80DI7005	Spacer	1	St. steel					
12	80COB402	Cover	1	St. steel					
13	80CU1066	Ball bearing	1	Aluminium					
14*	80AN1016	Lip seal	1	Nitrile					
15	80AL0452	Shaft	1	St. steel					
(*) Suggested spare parts									



H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosiern · Verdichten</small> <small>Ingenieurbüro · Messanordnungen</small> 								Dis. 6977/M	
					BMV200 P.D. METER ASSEMBLY			Page 2 of 2	
<i>item</i>	<i>CODE</i>	<i>DESCRIPTION</i>	<i>Q.ty</i>	<i>MATERIAL</i>	<i>item</i>	<i>CODE</i>	<i>DESCRIPTION</i>	<i>Q.ty</i>	<i>MATERIAL</i>
41	80VI4237	Screw	-	St. steel	55	80TA1090	Plug	1	St. steel
42	80DA1000	Nut	-	St. steel	56	80TA1099	Plug	1	St. steel
43	80RO1207	Washer	-	Carbon steel	57**	-	Air vent valve	1	-
44	80VI2173	Screw	-	Carbon steel	58	80CA0000	air vent cap	1	Aluminium
45	80PR307	Stud	-	Carbon steel	59	80RO1186	Washer	3	Carbon steel
46	-	-	-	-	60	80DA2012	Nut	3	Carbon steel
46	-	-	-	-	63*	80GU1578	O-Ring	1	Nitrile
47	80DA1063	Nut	-	Carbon steel	63*	80GU1576	O-Ring	1	FKM
48	80VI2178	Screw	-	Carbon steel	65*	80GU1162	O-Ring	1	Nitrile
49*	80COC075	LH vanes pair	1	/	65*	80GU1159	O-Ring	1	FKM
50*	80COC045	RH vanes pair	1	/	66**	-	Obturator	1	St. steel
53	80PR3117	Stud	3	Carbon steel	67**	-	O-Ring	1	-
54*	80CE2048	Basket strainer 100 mesh	1	St. steel	68**	-	Screw	4	Carbon steel
54*	80CE2054	Basket strainer 60 mesh	1	St. steel	69**	-	Washer	4	Carbon steel
54*	80CE2051	Basket strainer 40 mesh	1	St. steel					
(*)					See dwg.565-M				
Suggested spare parts									

BMV400 P.D. METER ASSEMBLY

item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80DA1006	Nut	-	Carbon steel	13	80COG503	Body	2	Carbon steel
2	80SP5009	Spirol pin	2	Carbon steel	14	80COB501	Front cover	1	Carbon steel
3*	80KI0131	BM36/1 kit	1	Nitrile	15	80VI2171	Screw	-	Carbon steel
3*	80KI0135	BM36 kit	1	FKM	16	80DA1018	Nut	-	Carbon steel
5	80RO1180	Spring washer	-	Carbon steel	17	80CO0186	Manifold	1	Carbon steel
7*	80GU1630	O-Ring	3	Nitrile	18	80PR3060	Stud	-	Carbon steel
7*	80GU1627	O-Ring	3	FKM					
8*	80CU1100	Ball bearing	2	St. steel	20	80GR1034	Grain	2	St. steel
9-A	80BU0046	Bush	1	St. steel	21	80VI4285	Screw	-	Carbon steel
9-B	80AL0291	Shaft	1	Carbon steel	22	80VI4309	Screw	-	Carbon steel
10	80RO2090	Rotor assembly	1	Aluminium	25	80COB509	Back cover	1	Carbon steel
11*	80GU1549	O-Ring	2	Nitrile	29	80SP6021	Pin	-	Carbon steel
11*	80GU1546	O-Ring	2	FKM	36	80TA1120	Plug	-	St. steel
					39	80PR3066	Stud	-	Carbon steel
					40	80RO1183	Washer	-	Carbon steel

(*)

9-A : For Pulse emitter (without Pos.3)

Suggested spare parts

9-B: For VEGA, meccan. counter , bare shaft

H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Ansteuern · Verdrichten</small> <small>Ingenieur- und Maschinenbau</small>								Dis. 6977/M	
			BMV200 P.D. METER ASSEMBLY					Page 1 of 2	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80DA1006	Nut	-	Carbon steel	13	80COG503	Body	1	Carbon steel
2	80SP5009	Spiral pin	2	Carbon steel	14	80COB501	Front cover	1	Carbon steel
3*	80KI0131	BM36/1 kit	1	Nitrile	15	80VI2171	Screw	-	Carbon steel
3*	80KI0135	BM36/1 kit	1	FKM	16	80DA1018	Nut	-	Carbon steel
5	80RO1180	Spring washer	-	Carbon steel	17	80CO0368	Manifold	1	Carbon steel
7*	80GU1630	O-Ring	2	Nitrile	18	80PR3060	Stud	-	Carbon steel
7*	80GU1627	O-Ring	2	FKM					
8*	80CU1100	Ball bearing	2	St. steel	20	80GR1034	Grain	2	St. steel
9-A	80BU0046	Bush	1	St. steel	21	80VI4285	Screw	-	Carbon steel
9-B	80AL0291	Shaft	1	Carbon steel	22	80VI4309	Screw	-	Carbon steel
10	80RO2081	Rotor assembly	1	Aluminium	25	80COB509	Back cover	1	Carbon steel
11*	80GU1549	O-Ring	1	Nitrile	29	80SP6021	Pin	-	Carbon steel
11*	80GU1546	O-Ring	1	FKM	36	80TA1120	Plug	-	St. steel
					39	80PR3066	Stud	-	Carbon steel
					40	80RO1183	Washer	-	Carbon steel
(*)			9-A : For Pulse emitter (senza / without Pos.3)						
Suggested spare parts			9-B: For VEGA, meccan. counter , bare shaft						



BMV400 P.D. METER ASSEMBLY

item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
41	80VI4237	Screw	-	St. steel	55	80TA1090	Plug	1	St. steel
42	80DA1000	Nut	-	St. steel	56	80TA1099	Plug	1	St. steel
43	80RO1207	Washer	-	Carbon steel	57**	-	Air vent valve	1	-
44	80VI2173	Screw	-	Carbon steel	58	80CA0000	air vent cap	1	Aluminium
45	80PR307	Stud	-	Carbon steel	59	80RO1186	Washer	3	Carbon steel
46	80GU1205	O-Ring	2	Nitrile	60	80DA2012	Nut	3	Carbon steel
46	80GU1204	O-Ring	2	FKM	63*	80GU1578	O-Ring	1	Nitrile
47	80DA1063	Nut	-	Carbon steel	63*	80GU1576	O-Ring	1	FKM
48	80VI2178	Screw	-	Carbon steel	65*	80GU1162	O-Ring	1	Nitrile
49*	80COC075	LH vanes pair	2	/	65*	80GU1159	O-Ring	1	FKM
50*	80COC045	RH vanes pair	2	/	66**	-	Obturator	1	St. steel
53	80PR3117	Stud	3	Carbon steel	67**	-	O-Ring	1	Nitrile
54*	80CE2048	Basket strainer 100 mesh	1	St. steel	68**	-	Screw	4	Carbon steel
54*	80CE2054	Basket strainer 60 mesh	1	St. steel	69**	-	Washer	4	Carbon steel
54*	80CE2051	Basket strainer 40 mesh	1	St. steel					

(*)

Suggested spare parts

(**)

See dwg.565-M



BMV600 P.D. METER ASSEMBLY


item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80DA1006	Nut	-	Carbon steel	13	80COG503	Body	3	Carbon steel
2	80SP5009	Spirol pin	2	Carbon steel	14	80COB147	Front cover	1	Carbon steel
3*	80KI0131	BM36/1 kit	1	Nitrile	15	80VI2171	Screw	-	Carbon steel
3*	80KI0135	BM36 kit	1	FKM	16	80DA1018	Nut	-	Carbon steel
5	80RO1180	Spring washer	-	Carbon steel	17	80CO0188	Manifold	1	Carbon steel
7*	80GU1630	O-Ring	4	Nitrile	18	80PR3060	Stud	-	Carbon steel
7*	80GU1627	O-Ring	4	FKM					
8*	80CU1101	Ball bearing	2	St. steel	20	80GR1034	Grain	2	St. steel
9-A	80BU0046	Bush	1	St. steel	21	80VI4285	Screw	-	Carbon steel
9-B	80AL0291	Shaft	1	Carbon steel	22	80VI4309	Screw	-	Carbon steel
10	80RO2099	Rotor assembly	1	Aluminium	25	80COB579	Back cover	1	Carbon steel
11*	80GU1549	O-Ring	3	Nitrile	29	80SP6021	Pin	-	Carbon steel
11*	80GU1546	O-Ring	3	FKM	36	80TA1120	Plug	-	St. steel
					39	80PR3066	Stud	-	Carbon steel
					40	80RO1183	Washer	-	Carbon steel

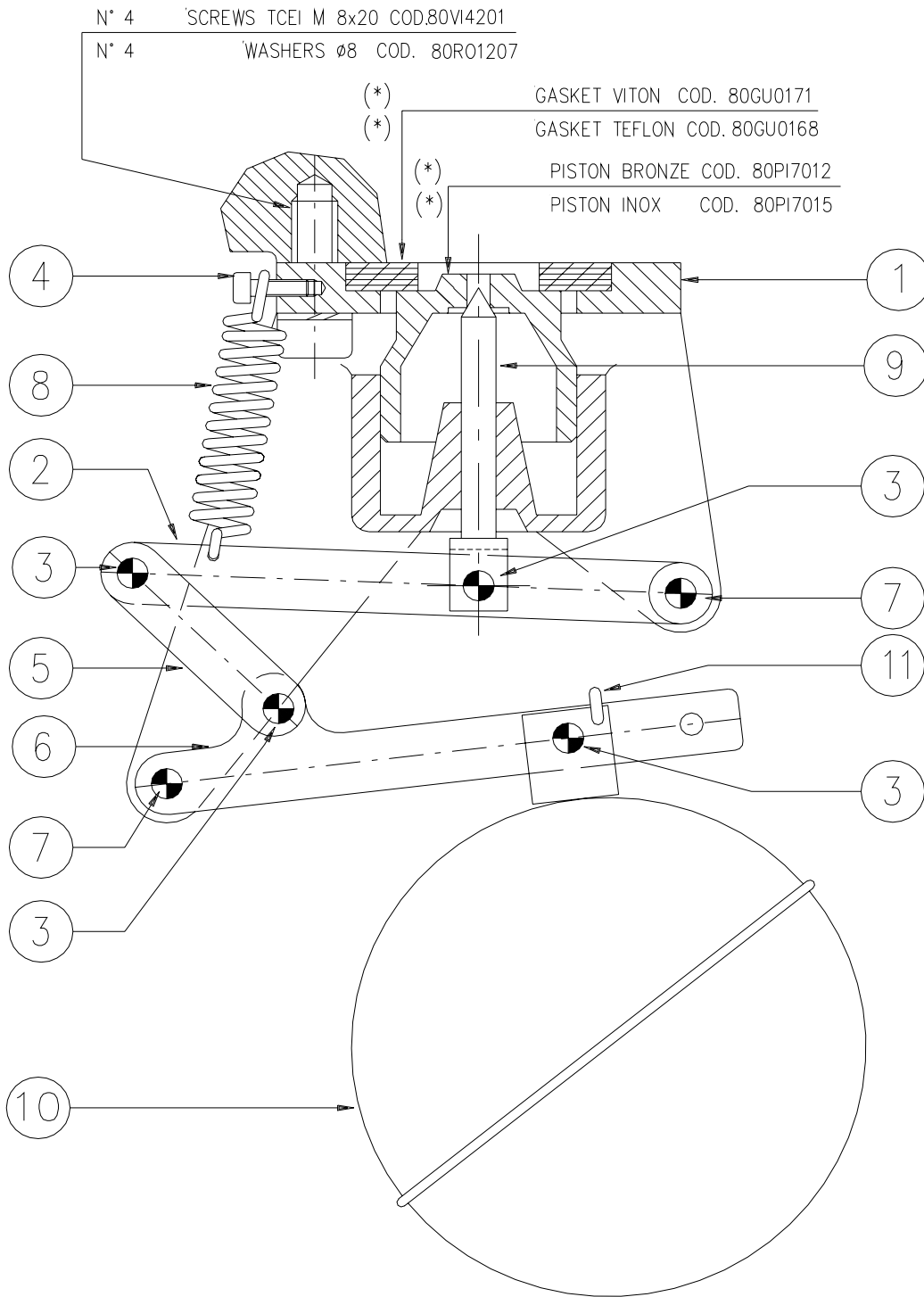
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Suggested spare parts

9-A : For Pulse emitter (senza / without Pos.3)

9-B: For VEGA, meccan. counter, bare shaft

H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten</small> <small>INGENIEURBÜRO · WERKZEUGFABRIK</small> 								Dis. 6977/M	
				BMV600 P.D. METER ASSEMBLY				Page 2 of 2	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
41	80VI4237	Screw	-	St. steel	55	80TA1090	Plug	1	St. steel
42	80DA1000	Nut	-	St. steel	56	80TA1099	Plug	1	St. steel
43	80RO1207	Washer	-	Carbon steel	57**	-	Air vent valve	1	-
44	80VI2173	Screw	-	Carbon steel	58	80CA0000	air vent cap	1	Aluminium
45	80PR307	Stud	-	Carbon steel	59	80RO1186	Washer	3	Carbon steel
46	80GU1205	O-Ring	4	Nitrile	60	80DA2012	Nut	3	Carbon steel
46	80GU1204	O-Ring	4	FKM	63*	80GU1578	O-Ring	1	Nitrile
47	80DA1063	Nut	-	Carbon steel	63*	80GU1576	O-Ring	1	FKM
48	80VI2178	Screw	-	Carbon steel	65*	80GU1162	O-Ring	1	Nitrile
49*	80COC075	LH vanes pair	3	/	65*	80GU1159	O-Ring	1	FKM
50*	80COC045	RH vanes pair	3	/	66**	-	Obturator	1	St. steel
53	80PR3117	Stud	3	Carbon steel	67**	-	O-Ring	1	Nitrile
54*	80CE2048	Basket strainer 100 mesh	1	St. steel	68**	-	Screw	4	Carbon steel
54*	80CE2054	Basket strainer 60 mesh	1	St. steel	69**	-	Washer	4	Carbon steel
54*	80CE2051	Basket strainer 40 mesh	1	St. steel					
							See dwg.565-M		
Suggested spare parts									



VALVE ASSEMBLY FLOAT Ø90

{ COD. 80VA4021

VALVE ASSEMBLY FLOAT Ø110

{ COD. 80VA4024

*

SUGGESTED SPARE PARTS

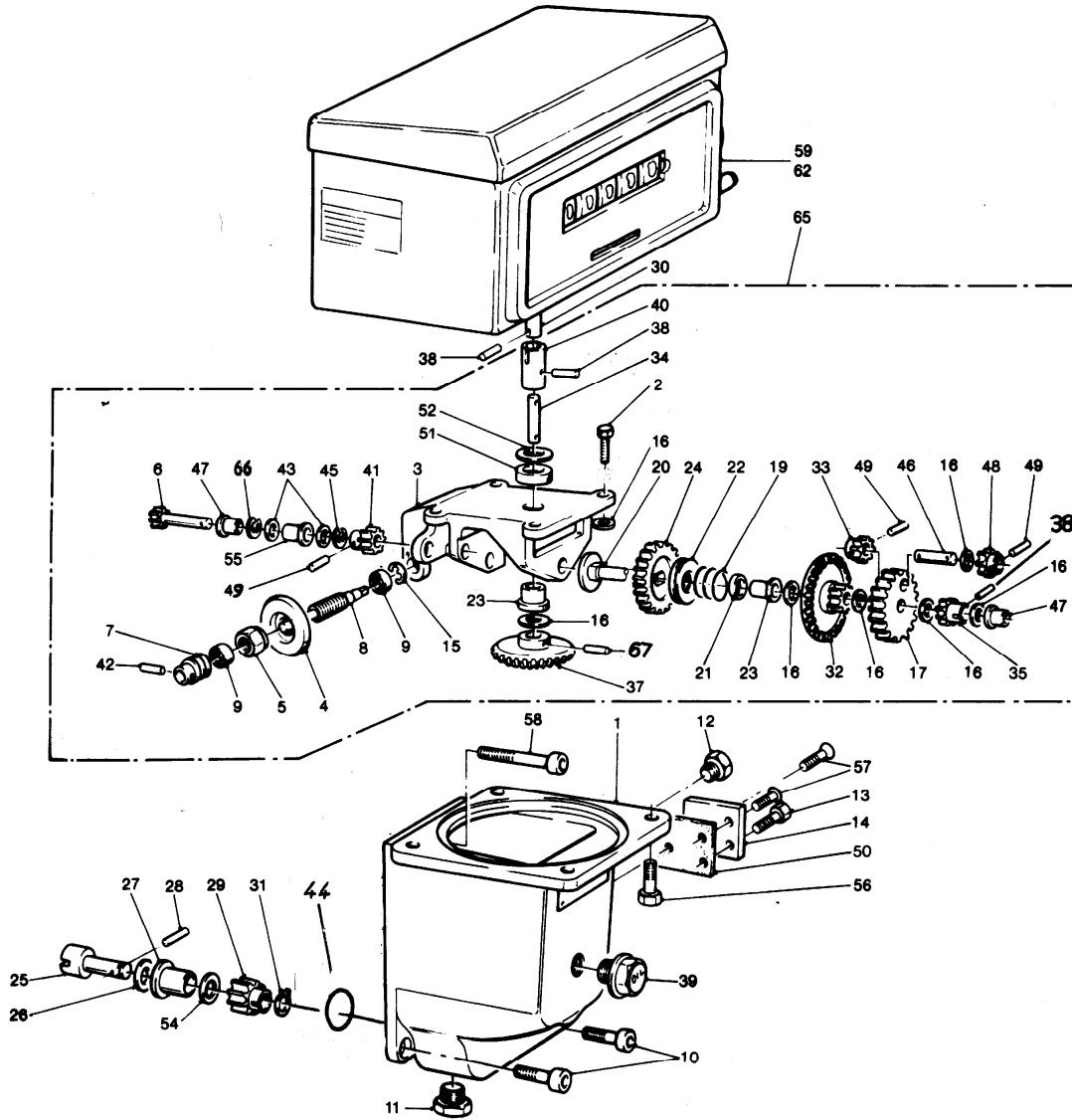


Air vent valve

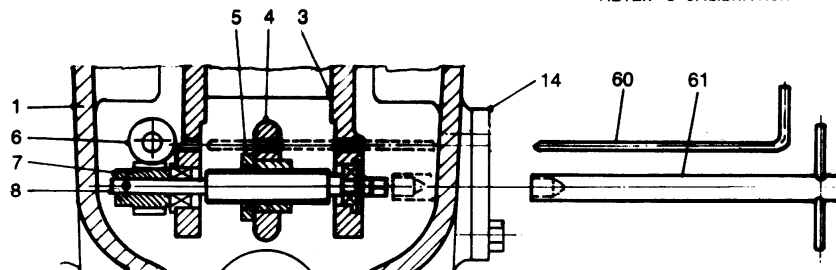
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80COG018	Body	1	Aluminium					
2	80LE0054	Pilot lever	1	Aluminium					
3	80PE1081	Pin	4	St. steel					
4	80VI4006	Screw 3x10	1	St. steel					
5	80LE0000	Connection lever	1	Aluminium					
6	80LE0030	Floating lever	1	Aluminium					
7	80PE1078	Long pin	2	St. steel					
8	80MO0084	Spring	1	St. steel					
9(*)	80SP4006	Pilot pin	1	St. steel					
10(*)	80SF0015	Floating sphete Φ90	1	St. steel					
10(*)	80SF0018	Floating sphete Φ110	1	St. steel					
11	80COD006	Coter pin	1	St. steel					
(*) Suggested spare parts									


CALIBRATION MECHANISM

Dis.672



USE OF KEYS FOR
 METER'S CALIBRATION



H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten Ingenieurbüro · Werkvertrichtungen</small> 								Dis. 672	
				CALIBRATING MECHANISM				Page 1 of 3	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80SC2000	Calibr. mechanism box	1	Aluminium	16	80RO1063	Washer	7	Carbon steel
2	80VI2042	Support screw	4	Carbon steel	17	80AS0069	Pinion assembly	1	Carbon steel
3	80SU0012	calibr. mech. supp.	1	Aluminium	19	80MO0228	Friction plate spring	1	St. steel
4	80AS0027	Friction wheel	1	Carbon steel	20	80PI1057	Friction plate spring	1	Carbon steel
5		Supplied with item 4			21	80RO1042	Washer	1	Carbon steel
6*	80AS0129	Shaft with pinion	1	Carbon steel	22*	80CU1045	Bearing	1	Carbon steel
7	80AS0258	Worm screw	1	Carbon steel	23	80BO1000	Bush	2	Bronze
8*		Supplied with item 7			24	80IN3135	Gear Z=67	1	Carbon steel
9*	80CU1081	Bearing	2	St. steel	25	80AL0282	Drive shaft	1	St. steel
10	80VI4201	Screw	2	Carbon steel	26	80RO1066	Washer	2	Carbon steel
11	80TA1072	Drain plug	1		27	80BO1009	Bush	1	Bronze
12	80TA1015	Oil charge plug	1		28*	80SP5009	Spirol pin	1	Carbon steel
13	80VI5117	Screw	1	Carbon steel	29	80IN3150	Z=20 gear	1	Carbon steel
14	80COB069	Calibrating cap	1	Aluminium	30	80AL0270	Extension shaft	1	Carbon steel
15	80AN2018	Bearing circlip	1	Carbon steel	31	80AN2000	Circlip	1	Carbon steel
(*) Suggested spare parts									



CALIBRATING MECHANISM

item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
32	80PI5000	Bevel pinion	1	Carbon steel	48		Supplied with item 17		
33		Supplied with item 17			49	80SP5006	Spirol pin	3	Carbon steel
34	80AS0084	Shaft/gear assembly	1	St. steel	50*	80GU0207	Gasket	1	Rubber
35	80IN3165	Gear Z=14	1	Carbon steel	51	80DI6018	Spacer	1	Brass
37		Supplied with item 34			52	80RO1081	Washer	1	Carbon steel
38	80SP5009	Spirol pin	3	Carbon steel	53	80RO1033	Washer	4	Carbon steel
39	81IN0006	Oil level indicator	1		54	80RO1093	Washer	1	Carbon steel
40	80MA1009	Transmission sleeve	1	Carbon steel	55	80BO1000	Bush	1	Bronze
41		Supplied with item 6			56	80VI9009	Screw	4	Carbon steel
42	80SP5000	Spirol pin	2	Carbon steel	57	80VI8048	Screw	2	Carbon steel
43	80RO1078	Washer	2	Carbon steel	58	80VI4312	Screw	1	Carbon steel
44*	80GU1243	Gasket	1	Viton	59	81TE0003	VR7887 counter	1	
45	80AN2006	Circlip	1	Carbon steel	60	80COC003	Calibration keys	1	
46		Supplied with item 17			61		See item 60		
47	80BO1000	Bush	2	Bronze	62	81PI1006	BM200 RH gear plate	1	
(*) Suggested spare parts									

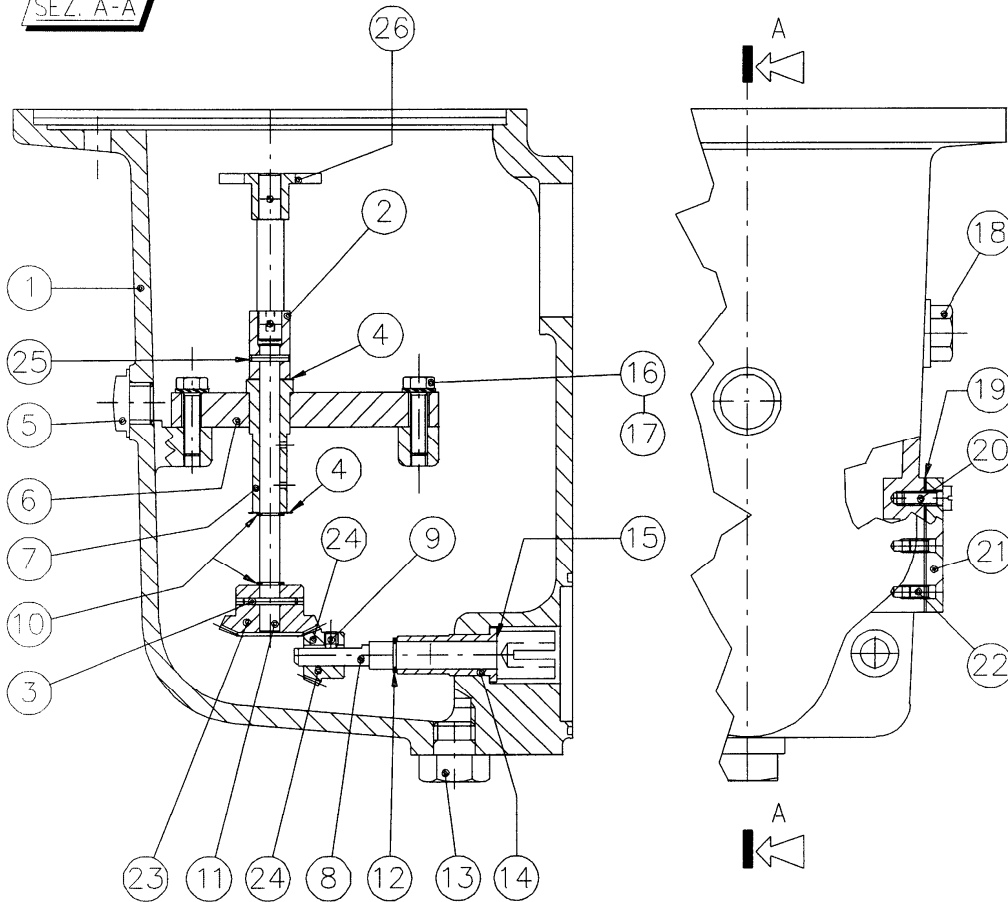


DRAWING

GEARING BOX FOR MOUNTING OF ELECTRONIC
 COUNTER VEGA (WITH EXTENSION OR PULSE EMITTER)

N. 3958

SEZ. A-A



T-3958.DOC

H. HERMANN EHLERS GMBH <small>Fördern · Messen · Regeln · Dosieren · Verdichten Ingenieur- und Werkzeuggestaltung</small> 								Dis. 3958	
				TRANSMISSION BOX FOR VEGA				Page 1 of 1	
item	CODE	DESCRIPTION	Q.ty	MATERIAL	item	CODE	DESCRIPTION	Q.ty	MATERIAL
1	80SC2030	Mechanism box	1	Aluminium	16	80VI2042	Screw	4	Carbon steel
2	80MA1009	Transmission coupling	1	Carbon steel	17	80RO1033	External washer	4	Carbon steel
3	80SP5018	Spirol pin	1	Carbon steel	18	80TA1015	Oil charge plug	1	
4	80RO1078	Washer	4	Carbon steel	19	80GU0207	Gasket	1	
5	80IN0006	Oil level indicator	1		20	80VI5117	Screw	1	Carbon steel
6	80SU0072	Mech. support for VEGA	1	Aluminium	21	80COB069	Calib. access cover	1	Aluminium
7	80BO1147	Bush	1	Bronze	22	80VI5117	Screw	2	Carbon steel
8	80AL0243	Shaft	1	St. steel	23	80IN3279	Gear	1	Carbon steel
9	80GR1093	Grain	1	St. steel	24	80IN3276	Gear	1	Carbon steel
10	80AN2006	Retaining ring	2	Carbon steel	25	80SP5009	Spirol pin	1	Carbon steel
11	80AL0246	Shaft	1	St. steel	26	80AS0102	Entrainer	1	Carbon steel
12	80AN2000	Retaining ring	1	Carbon steel					
13	80TA1072	Oil discharge plug/gasket	1						
14	80BO1099	Bush	1	Bronze					
15	80RO1066	Washer	2	Carbon steel					
(*) Suggested spare parts									

8 Optional

8.1 Thermal relief valve model 604

Applications

The thermal relief valve model 604 is a proportional relief valve that open gradually as the line pressure increases to limit the max pressure at the valve set pressure.

The inlet and outlet section is made exclusively to eject the excess pressure due to a temperature increase in equipment or in pipeline intercepted between two on-off valves.

Operation

The thermal relief valves model 604 OPEN when the system pressure reaches the set pressure, this is determined by the load applied to the spring pos.6, using the screw pos.3, and CLOSE when system pressure falls below the set pressure.

Set pressure

All the valves are tested and set in our factory. The set value is printed on the body valve. The repeatability of each valve is +/- 5%.

⚠ For valves that have not been actuated for a long period of time, initial relief pressure may be higher than the set pressure.

Installation

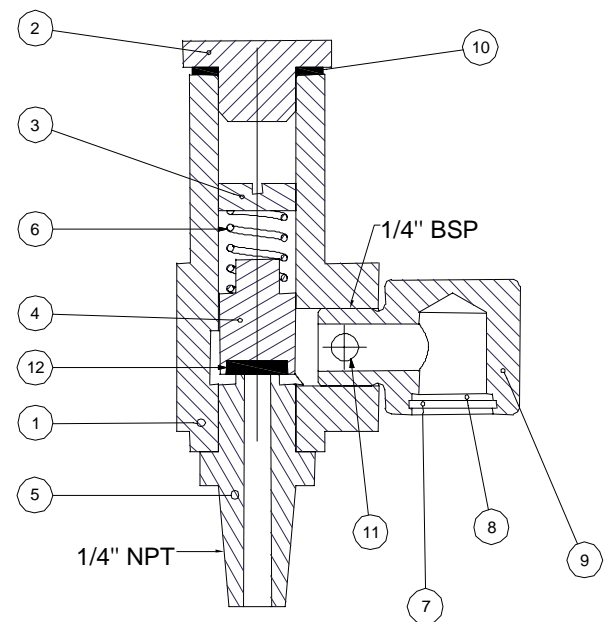
The valve model 604 can be installed without an outlet connection, in this case the position of the nozzle (pos.9) determines the direction of the ejection, alternatively, eliminate the nozzle (pos.9), by using a connection pipe to a stock point or piping with a lower pressure.

Back pressure

If the valve is connected to a circuit with pressure, be aware of back pressure influences.

Example: if the back pressure is 2 bar, you have to decrease the set pressure of the valve by 2 bar if you want to maintain the initial value.

Materials



1. Valve body – carbon steel
2. plug – brass
3. setting screw - brass
4. stem – brass
5. valve seat – stainless steel
6. spring – spring steel
7. seeger-ring
8. drilled disk
9. nozzle – carbon steel
10. gasket – FKM
11. stop dowel
12. gasket – FKM

Warranty

⚠ The thermal relief valve model 604 should never be used as safety relief valve

⚠ The thermal relief valve model 604 is not classified under "Safety Accessories" as defined in the Pressure Equipment Directive 97/23/EC.