

254

MECHANICAL BATCH COUNTER

For MidFlow[®] and HiFlow[®] series 'J' Vane meters



Publication nr
Supersedes

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TIB-254-GB-0103

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TO BE
REALLY
SURE

1. Without prejudice to the restrictions stated hereinafter, the contractor guarantees both the soundness of the product delivered by him and the quality of the material used and/or delivered for it, insofar as this concerns faults in the product delivered which do not become apparent during inspection or transfer test, which the principal shall demonstrate to have arisen within 12 months from delivery in accordance with subarticle 1a, exclusively or predominantly as a direct consequence of unsoundness of the construction used by the contractor or as a consequence of faulty finishing or the use of poor materials.

1a. The product shall be deemed to have been delivered when it is ready for inspection (if inspection at the premises of the contractor has been agreed) and otherwise when it is ready for shipment.

2. Articles 1 and 1a shall equally apply to faults which do not become apparent during inspection or transfer test which are caused exclusively or predominantly by unsound assembly/installation by the contractor. If assembly/installation is carried out by the contractor, the guarantee period intended in article 1 shall last 12 months from the day on which assembly/installation is completed by the contractor, with the understanding that in this case the guarantee period shall end not later than 18 months after delivery in accordance with the terms of subarticle 1a.

3. Defects covered by the guarantee intended under articles 1, 1a and 2 shall be remedied by the contractor by repair or replacement of the faulty component either on or off the premises of the contractor, or by shipment of a replacement component, this remaining at the discretion of the contractor. Subarticle 3a shall equally apply if repair or replacement takes place at the site where the product has been assembled/installed. All costs accruing above the single obligation described in the first sentence, such as are not restricted to shipment costs, travelling and accommodation costs or disassembly or assembly costs insofar as they are not covered by the agreement, shall be paid by the principal.

3a. If repair or replacement takes place at the site where the product has been assembled/installed, the principal shall ensure, at his own expense and risk, that:

- a. the employees of the contractor shall be able to commence their work as soon as they have arrived at the erection site and continue to do so during normal working hours, and moreover, if the contractor deems it necessary, outside the normal working hours, with the proviso that the contractor informs the principal of this in good time;
- b. suitable accommodation and/or all facilities required in accordance with government regulations, the agreement and common usage, shall be available for the employees of the contractor;
- c. the access roads to the erection site shall be suitable for the transport required;
- d. the allocated site shall be suitable for storage and assembly;
- e. the necessary lockable storage sites for materials, tools and other goods shall be available;
- f. the necessary and usual auxiliary workmen, auxiliary machines, auxiliary tools, materials and working materials (including process liquids, oils and greases, cleaning and other minor materials, gas, water, electricity, steam, compressed air, heating, lighting, etc.) and the measurement and testing equipment usual for in the business operations of the principal, shall be available at the correct place and at the disposal of the contractor at the correct time and without charge;
- g. all necessary safety and precautionary measures shall have been taken and adhered to, and all measures shall have been taken and adhered to necessary to observe the applicable government regulations in the context of assembly/installation;
- h. the products shipped shall be available at the correct site at the commencement of and during assembly.

(continued on next page)

4. Defects not covered by the guarantee are those which occur partially or wholly as a result of:
 - a. non-observance of the operation and maintenance instructions or other than foreseeable normal usage;
 - b. normal wear and tear;
 - c. assembly/installation by third parties, including the principal;
 - d. the application of any government regulation regarding the nature or quality of the material used;
 - e. materials or goods used in consultation with the principal;
 - f. materials or goods provided by the principal to the contractor for processing;
 - g. materials, goods, working methods and constructions insofar as are applied at the express instruction of the principal, and materials or goods supplied by or on behalf of the principal.
 - h. components obtained from third parties by the contractor insofar as that party has given no guarantee to the contractor.

5. If the principal fails to fulfil any obligation properly or on time ensuing from the agreement concluded between the principal and the contractor or any agreement connected to it, the contractor shall not be bound by any of these agreements to any guarantee regardless of how it is referred to. If, without previous written approval from the contractor, the principal commences disassembly, repair or other work on the product or allows it to be commenced, then every agreement with regard to guarantee shall be void.

6. Claims regarding defects must be submitted in writing as quickly as possible and not later than 14 days after the discovery of such. All claims against the contractor regarding faults shall be void if this term is exceeded. Claims pertaining to the guarantee must be submitted within one year of the valid complaint on penalty of invalidity.

7. If the contractor replaces components/products under the terms of his guarantee obligations, the replaced components/products shall become the property of the contractor.

8. Unless otherwise agreed, a guarantee on repair or overhaul work carried out by the contractor or other services shall only be given on the correctness of the manner in which the commissioned work is carried out, this for a period of 6 months. This guarantee only covers the single obligation of the contractor to carry out the work concerned once again in the event of unsound work. In this case, subarticle 3a shall apply equally.

9. No guarantee shall be given regarding the inspection conducted, advice given and similar matters.

10. Alleged failure to comply with his guarantee commitments on the part of the contractor shall not absolve the principal from his obligations ensuing from any agreement concluded with the contractor.

11. No guarantee shall be given on products which form a part of, or on work and services on, goods older than 8 years.

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0.0 INTRODUCTION

This manual covers operating and maintenance (cleaning, lubricating and inspection) procedures.

However, like any precision mechanism, it requires periodic care to assure maximum servicelife.

1.0 DESCRIPTION

1.1 GENERAL

The series 7889 Meter Preset is used in fluid flow application where it is desired to close a valve after a predetermined amount of liquid has passed through.

In technical terms the 7889 is a nonrepeating, predetermining counter that is driven by, and normally mounted on a flow meter. It has a two stage output that is normally used to close a valve in two stages.

It is used in combination with other Veeder-Root meter accessories. Typical applications include metering of home fuel oil from a tank truck, pipeline monitoring and bulk loading.

1.2 SPECIFICATIONS

INPUT

The preset is driven by a rotation shaft from the flowmeter. The type of input coupling is to specified with the order. Maximum torque to drive the preset (with a 30 kg valve load) through a shut-off is 0.44 kg cm.

Average running torque is below 4 g.cm.

MOUNTING

See figure 4. There are eight tapped mounting holes for use with 1/4-28 screws. The Veeder-Root preset is designed to mount directly to a VAF Instruments Flowmeter.

VALVE OR SWITCH CONNECTIONS

The preset can be connected directly to the two-stage valve through a supplied linkage, or electrical switch. The linkage is

connected to a rotating ring on the bottom of the Preset case, using a 1/2-28 screw in any one of eight positions. The rated first stage valve load is 30 kg.

FLOW RATE

The maximum speed of the right hand wheel (least significant digit) is 250 rpm. With a 1:1 ratio between the input and the right hand wheel, the maximum input speed would also be 250 rpm. If one revolution of the right hand wheel represents 10 liters, then the maximum flow rate would be 2500 l/min. One revolution of the right hand wheel can represent 10 liters, 1 liter, 0.1 liter, gallons, cubic feet, etc., depending upon the application and the input gear ratio.

PRESET NUMBER

5 digits Preset in an additive direction by individually actuating five preset buttons (maximum preset capacity 99999)

DISPLAY

5 figure wheels with 1/2" white digits on black background.

OUTPUT (SHUT-OFF)

Two stage shut-off. Unit counts down from preset number. First stage shut-off point is set at the factory to customer's specification at 90, 80, 70, 60, 50, 40, 30, 20, 10, 9, 8, 7, 6, 5, 4 or 3. The setting can be changed by the customer (internal modification) in the field. Second or final stage occurs when all wheels reach zero.

INTERLOCK

The preset has a unique interlock feature. The preset buttons cannot be actuated until the set button is depressed (latched). The set button can be latched with the valve load applied. Therefore, the preset number cannot be changed while fluid is flowing.

EMERGENCY STOP

The button will "dump" both first and final stages of the valve to provide complete shut down.

2.0 INSTALLATION

The following steps are required to install a preset register. Remove the screws and washers that are used to secure the valve actuating ring during shipment.

CAUTION:

The valve actuating ring is held in place during shipment with two disposable screws and washers. It is held in place after installation by the flow meter or adapter mounting surface. During installation, while the ring is loose, it must not be allowed to fall away from the case or damage to internal springs may result.

Install preset on flowmeter or adapter, taking care to correctly align the mating couplings. Secure with 1/4-28 screws and lock washers.

Install linkage between valve actuating ring and valve or switch.

NOTE:

Mounting screws in valve ring must not protrude beyond ring and rub on bottom of case.

CAUTION:

Valve loads of up to 60 lb may be applied to the preset but any loading or force on the valve actuating ring must be in a direction that causes the valve to close (ring to rotate in a counter-clockwise direction when viewed from above). Any forces in the opposite direction (including high friction in valve or linkage) could cause malfunction.

Verify that there is still some overtravel after the valve is fully open.

Verify that after the valve closes, the preset ring has travelled the correct distance (15°, 45', plus 7°), and that there is some overtravel still left in the ring.

TRIM THE RIGHT HAND WHEEL TO ZERO

If, after product flow stops, the right hand wheel does not read zero, adjust as follows:

NOTE:

Set button should be out during trimming.

Remove the trim hole plugs or the two screws securing the cover plate located on the front right side of the Preset. Insert the blades of two small screw drivers into the holes. See figure 9.

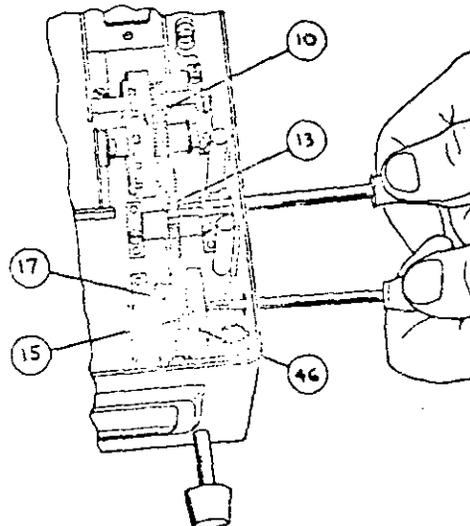


FIG. 9

Fit the tips of the screwdrivers into the slots in the side of the plastic parts. By prying with the front screwdriver and holding the gear train stationary with the rear screwdriver, adjust the shut-off cam as follows:

CAUTION:

Adjust the shut-off cam only in the direction indicated in the following steps. Adjustment of the cam in the wrong direction could result in damaging the internal stop which in turn could result in a runaway delivery. During adjustment, if strong resistance is encountered in one direction, you have reached the internal stop.

Do not attempt further adjustment in that direction.

- a. If the shut-off point is greater than zero, adjust the cam backwards (clockwise when looking into the trim hole) only. Do not attempt to adjust the cam forward since you cannot reach zero without breaking the internal stop. Each click or step represents a change in the shut-off point equal to one tenth of the way between numbers. To correct a reading of 0003, the cam would be moved 30 clicks.
- b. If the shut-off point is less than zero, adjust the cam forwards (counter-clockwise when looking into the trim hole) only. Do not attempt to adjust the cam backwards since you cannot reach zero without breaking the internal stop. Each click represents a change in the shut-off point equal to one tenth of the way between numbers. To correct a reading of 9998, the cam could be moved 20 clicks.

After adjustment. Set a small number into the Preset and deliver some product. The final shut-off point should be zero. If not, repeat the adjustments until zero is reached.

Install trim hole plugs or cover. Secure cover with screws and wire seal.

FIRST STAGE SHUT-OFF CHANGE

If it is desired to change the first stage shut-off setting, the following procedure must be followed: Proper operation of the preset depends upon the correct relationship between the first and second stage rakes and during any field servicing or adjusting, the unit will malfunction. The rakes must, therefore, be handled with

extreme care.

CAUTION:

Do not bend, twist or damage rakes. Be sure rakes are properly positioned over eccentric when meter register is lowered on to the preset, be sure protruding shafts do not contact the rakes. If rakes are disturbed follow instructions "Temporary/emergency adjustment".

Cut the clockwire that is threaded through the four bolts that hold the register to the preset.

Remove the four bolts.

With the unit in a vertical position, lift off the register.

Lift both rakes away from the wheels.

Set the desired first stage shut-off number in the window using the preset buttons.

Release the set button.

If the first stage shut-off is to be 9, 8, 7, 6, 5, 4 or 3, all notches or openings in the second wheel must be filled. Then:

- a. Push the trip cam to left to disengage it from the drive gear. See figure 13.

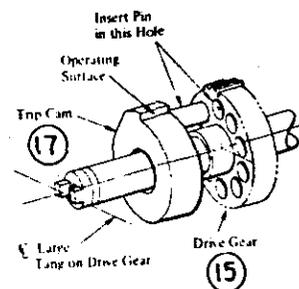


FIG. 13

- b. Rotate the cam so the operating surface is vertical. (The surface that pulls the rake is straight up when the desired number on the first wheel is displayed in the window).
- c. Engage the trip cam.

If the first stage shut-off is to be 10, 20, 30, 40, 50, 60, 70, 80, or 90, the trip cam must be set zero position. See figure 13.

Then:

- a. Remove the insert in the second wheel that is closest to be top of the wheel. The desired shut-off must be showing in the window.
- b. Place the insert into the other open position in the wheel or save the insert for possible future use if there are no other open positions.

LOWER RAKES

Install the register on top of preset. The two "up-down" shafts protruding from the register should be aligned to mate with the two shafts in the preset before the two units are put together. See Figure 11. Secure units with screws and lock wire.

NOTE:

If a high torque is experienced after reassembly, the register and preset cases should be shifted slightly to obtain better alignment.

OPERATION CHECK

Prior to releasing the preset for normal operation, it and associated delivery equipment must be checked. Perform complete operational check as described in Section 3.0.

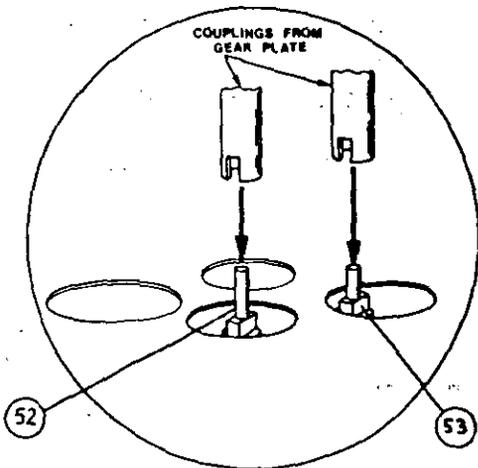


FIG. 11

3.0 OPERATION

The operator first pushes the set button into its latched position. The inward movement of the set button causes:

- A. The input drive to de-clutch so that its internal parts are disconnected from the flow meter.
- B. A "gate" to open that had blocked the preset button from operation.

The operator pushes the preset buttons to display the number that represents the quantity of fluid that he wants to deliver. One stroke of each button will rotate its corresponding wheel 1/10 revolution or one digit in an additive direction.

NOTE:

Due to the unique design, the presetting of one wheel will not affect the other wheels.

The operator opens the valve to start fluid flow by moving the linkage between the preset and the valve. Normally there is a handle provided by the valve or meter manufacturer for this function. Units fitted with Series 7856 switch have such a handle. This action rotates the ring located on the bottom of the preset case and:

- a. The "set" button pops out which locks out the preset buttons and engages the clutch between the input shaft and the wheels.
- b. The valve actuating ring on the bottom of the case has two "ears" projecting into the case. When the valve load is applied, and the ring rotates, these ears move internal latches into their "loaded" positions.
- c. The ring movement also locks out the set button.

Fluid starts to flow. The flow meter drives the preset wheels directly in a subtractive direction.

When the first stage shut-off number is reached, a series of notches on the wheels become aligned and the first stage rake drops into the notches. At this point, a cam pulls the rake forward and this action releases one of the previously loaded latches. The release of the latch allows the ring to move back approximately 15°, 45' and the valve partially closes.

When the wheel reach zero, a second rake drops into its notches and another cam pulls this rake forward. This action releases the final latch which allows the ring to move another 7° and the valve closes completely.

4.0 SHUT-OFF

4.1 PRESET REGISTER WITH ELECTRICAL SHUT-OFF

In this case the preset register is equipped with a switchbox containing 2 single pole double throw switches. At the start of the batch both switches are activated. At the first stage 1 switch is deactivated and at the final stage the other switch is also deactivated.

The contact rating of the switches is:

125 V AC, 6 A

250 V AC, 5 A

125 V DC, 0.6 A

250 V DC, 0.4 A

When a high batching accuracy is needed, and to prevent surge pressures, a two stage shut-off system has to be used.

The wiring should be connected according to diagram 2. The connection size of the final stage solenoid valve should be about half the connection size of the first stage solenoid valve. This reduces the flow prior to the final shut-off to approx. 20% of the maximum flow.

When applying a single shut-off solenoid valve, the wiring should be connected according to diagram 3 (For cable size, see technical specifications).

4.2 PRESET REGISTER WITH PNEUMATIC SHUT-OFF

2 inputs, 1 output version:

This version is used together with a pneumatic shut-off valve. The preset register is equipped with a box containing 2 pneumatic switches. The internal piping in the box is given in diagram 4, while the external piping should be made according to the same diagram.

The external piping should be 6 x 1 mm. The high pressure should be set to approx. 1.1 bar and the low pressure to approx. 0.5 bar.

The action of the valve must be 'air to open'.

When starting the batch, both switches are activated, connecting the high pressure to the shut-off valve. The valve will open fully and the flowrate will be maximum.

When the first stage is reached, the first stage switch is deactivated, connecting the low pressure to the shut-off valve. The valve will close partially, causing the flowrate to reduce to approx. 20% of the maximum flowrate.

When the final stage is reached, the piping to the valve is connected to the open air, causing the closure of the valve and thus the end of the batching.

1 input, 2 outputs version:

This version is used together with a pneumatic valve with a special actuator for 2-stage opening. The preset register is equipped with a box containing 2 pneumatic switches. The internal piping in the box is as given in diagram 5, while the external piping should be made according to the same diagram. The external piping should be 6 x 1 mm. The pressure should be set to approx. 1.1 bar. The action of the valve must be 'air to open'.

When starting the batch, both switches are activated, connecting the pressure to both actuators of the valve. The valve will open fully and the flowrate will be maximum.

When the first stage is reached, the first stage switch is deactivated, connecting the first stage actuator to the open air. The valve will close partially, causing the flowrate to reduce to approx. 20% of the maximum flowrate.

When the final stage is reached, the final stage actuator of the valve is connected to the open air, causing the closure of the valve and thus the end of the batching.

4.3 PRESET REGISTER WITH MECHANICAL SHUT-OFF VALVE

The flowmeter, registers and the shut-off valve are factory built together and can be installed directly in the pipeline. Because the actuating mechanism prevents the registers to be positioned in every desired direction, the register must always be horizontal. The valve and its actuating mechanism is constructed in such a way, that at the first stage the flow is reduced to approx. 20% of the maximum flow and is fully close at the final stage, thus preventing surge pressure and allowing a high batching accuracy.

4.4 PRESET REGISTER WITH (ADDITIONAL) PUMP SWITCH

All versions of the preset register can be equipped with an additional pump 'switch to start/stop the booster pump'.

Actually a switchbox similar to the switchbox as used on the electrical shut-off version is installed on the preset register. The electrical wiring should be connected according to diagram 6.

4.5 OPERATION INSTRUCTION

Setting of the batch quantity:

Press the 'SET' button on the left-hand side and hold it. The different digits of the quantity to be set must be set by repetitively pressing the corresponding button, till the required number shows.

When the required quantity is set, the 'SET' button can be released by rotating the shut-off ring slightly (start lever).

CAUTION!

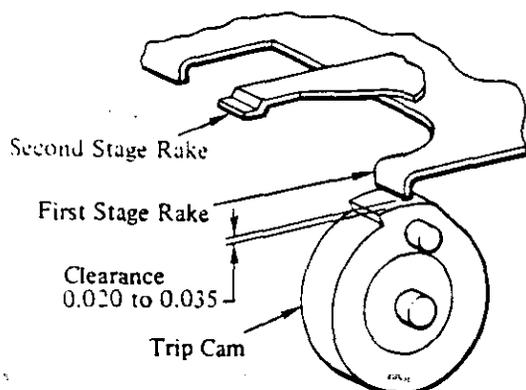
The register must only be set when there is no flow through the flowmeter.

Starting the batch:

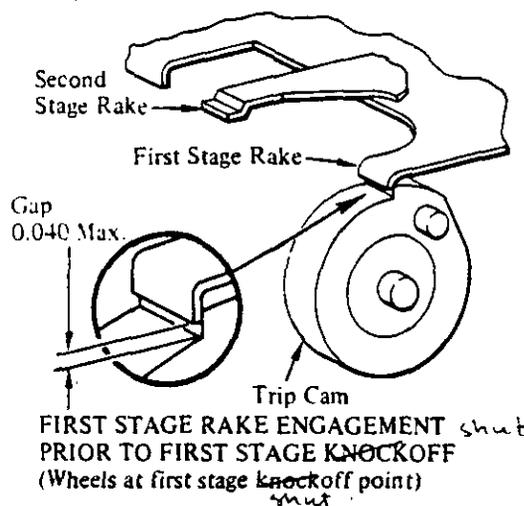
Before starting the batch, insert a delivery note in the ticket printer and lock it and/or reset the reset register (if mounted). Start the batching by pulling the start lever on the lower right-hand side of the register (pushing, when it is mounted on the lower left-hand side) until it sticks. Now the shut-off valve is opened fully and the liquid will start flowing. The preset register will start counting down, while the reset register (if mounted) will start counting up. At a certain quantity before zero the first stage shut-off is actuated and the flowrate will be reduced. When the preset register reaches zero the final stage is actuated and the flow will be stopped.

Emergency stop:

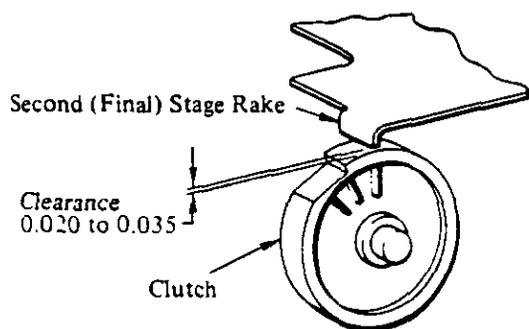
In case of emergency, the batching can be stopped by means of pressing the red 'STOP' button on the right-hand side. This will cause the actuation of both the first stage and the final stage shut-off and the shut-off valve will be closed. The interrupted batch can be continued by simply operating the start lever again, or a complete new batch can be set.



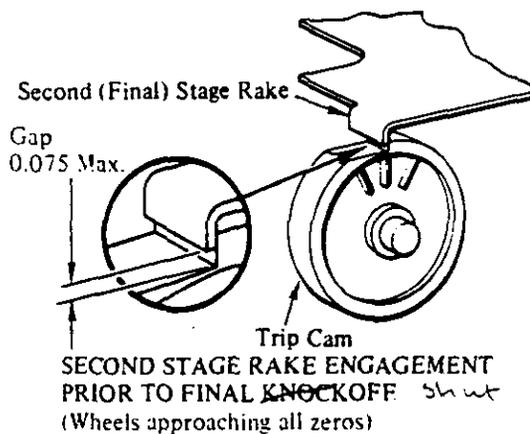
FIRST STAGE RAKE CLEARANCE WHILE RUNNING



FIRST STAGE RAKE ENGAGEMENT PRIOR TO FIRST STAGE KNOCKOFF
(Wheels at first stage knockoff point)



SECOND STAGE RAKE CLEARANCE WHILE RUNNING



SECOND STAGE RAKE ENGAGEMENT PRIOR TO FINAL KNOCKOFF
(Wheels approaching all zeros)

5.0 SERVICE

5.1 GENERAL

Although the preset is adjusted and lubricated when manufactured, it does require periodic cleaning and lubricating to give maximum service. Judgment of the intervals at which the preset requires such service must necessarily be left individual users, due to varying conditions of service.

5.2 CLEANING

- Flush display wheels and all drive gears with cleaning solvent. Blow out surplus solvent with compressed air.
- Lubricate the preset.

5.3 LUBRICATION

RECOMMENDED LUBRICANTS

Use one of the following lubricants or equivalent lubricants must remain fluid over the full temperature range and should not oxidize or dry out.

OIL

Temperature range: -54°C to +135°C
(-65°F to +275°F)

Anderol L-401D
Aeroshell fluid no. 12
Regent Spintex 60
Gargoyle artic-light
Castrol hyspin 40

GREASE

Temperature range: -54°C to +149°C
(-65°F to +300°F)

Anderol L-795
Aeroshell no. 14
Esso Beacon 40

LUBRICATION INSTRUMENTS

Apply oil or grease as required with a small brush to ensure proper coverage.

OIL

Apply oil to all points using one of the recommended lubricants listed above. Lubrication points include all shafts, studs and bosses where are moving partbears. In addition, oil all bearing surfaces on the gear plate assembly.

GREASE

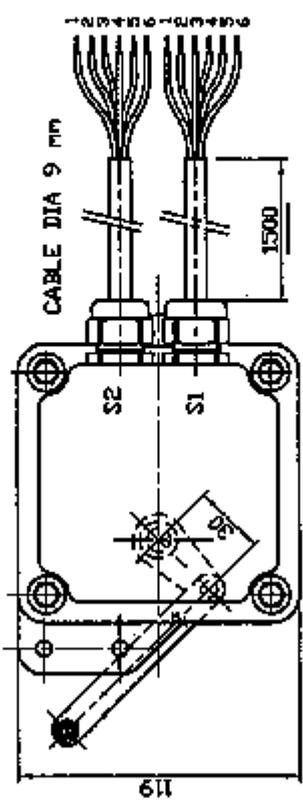
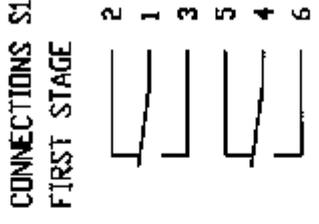
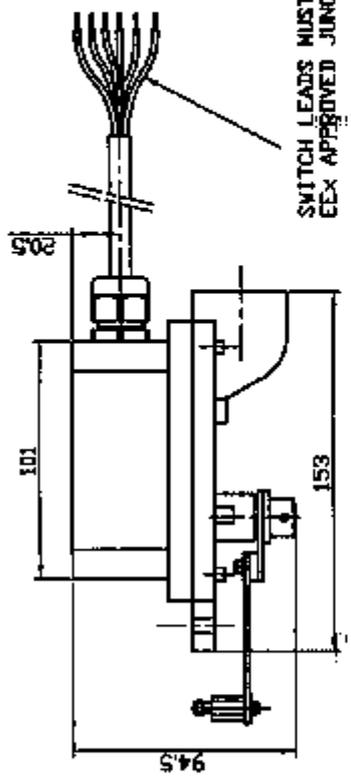
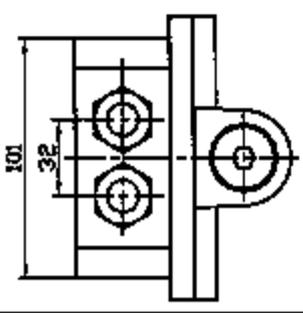
Apply grease to all points using one of the recommended lubricants listed above. Also, ensure that all gear teeth on the gearplate assembly are properly lubricated.

5.4 ASSEMBLY AFTER LUBRICATION

1. Install the gearplate on the bottom of the housing and secure with screws.
2. Install the meter register in the housing and secure with three button head bolts. Tighten to 5 to 6 kg cm.
3. Install the cover (if present) and secure with bolts.

5.5 METER PRESET INSTALLATION

Mount the meter preset on the meter and secure the two with the bolts previously removed.



ELECTRIC PRESET SWITCH ASSEMBLY WITH
2 DOUBLE-CHAMBER MICRO LIMIT SWITCHES

- MICRO LIMIT SWITCHES : AC-11 2.5V-400V, DC-11 0.8A-250V
- SWITCH RATING : 250VAC-7A 250VDC-0.8A
- TEMPERATURE : -20°C TO +40°C
- PROTECTION CLASS : IP66
- CLASS No. : EEX dII T6
- APPROVALS : PTB 02 ATEX 1031 X

DATE	01-07-2002	WAF INSTRUMENTS
DRAWN	M. MUM	Amstelveen, The Netherlands
CHECKED	BY	
MATERIAL		
SCALE	1:1	50 mm
DIMENSIONAL DRAWING		REV. No.
ELECTRIC		
PRESET SWITCH		
2-STAGE EX-PROOF		0845-1013-3
PART OF 0845-0001		
THIS DOCUMENT IS THE PROPERTY OF WAF INSTRUMENTS		
IT MUST NOT BE REPRODUCED IN ANY MANNER, IN ANY FORM, OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF WAF INSTRUMENTS.		
REVISIONS	DATE	DESCRIPTION

Item No.	Part number	Partname	Item No.	Part number	Partname
1	W4015-012	Rake	48	J054-0073	Rod Group
2	W5201-068	Spring	49	W0600-005	Washer (0.015 thk)
3	W3601-021	Lever	50	J054-0074	Rack
4	W3601-022	Shaft	51	W1101-062	Bush
5	W4010-009	Circlip	52	W5201-071	Spring
6	W5573-047	Shaft	53	W4088-008	Bar
7	W5371-252	Spacer	54	W4051-008	Plate
8	W4051-015	Rake	57	W7779-787	Shaft Group
9	W3601-020	Lever	58*	J054-0075	Gear
10	W3601-023	Shaft	59*	J054-0076	Pin
11	W5201-078	Spring	60	W6171-037	Washer (0.010 thk)
12	W4010-014	Circlip	61	W4010-025	Ring
13	W4051-009	Plate	62	W5573-042	Shaft
14	W5408-008	Screw	63	W4501-021	Pawl
15	W5201-073	Spring	64	W0601-748	Washer(0.01 thk)
16	W5201-072	Spring	65	W4006-008	Strap
17	W4501-022	Palw	66	W4501-023	Palw
18	W3601-019	Lever	67	W7779-934	Case Std. finish
19	W6102-028	Shim	101	W4006-007	Strap
20	W6104-174	Washer	102	W5573-054	Shaft
21	W3601-018	Lever	103	W4501-024	Pawl
22	W0600-005	Washer (0.015 thk)	104	W4501-025	Pawl
22	W6104-029	Washer (0.020 thk)	105	W5406-024	Screw
22	W0601-748	Washer (0.010 thk)	106	W4029-009	Eccentric
23	W4010-068	Circlip	107	W6104-166	Washer (0.005 thk)
24	W0600-005	Washer (0.015 thk)	108	W6104-207	Washer (0.062 thk)
25	W5201-069	Spring	109	W2401-040	Connector
26	J054-0065	Pin	110	W6104-169	Washer (0.32 thk)
27	W5371-254	Collar	111	W5271-306	Spring Washer
28	W4089-012	Seal	112	W5201-077	Spring
29	J054-0066	Rod Group	113	W5271-312	Spring
30	W5403-022	Screw	114	J054-0077	Insert
31	W6104-207	Washer (0.062 thk)	115	W5371-253	Spacer
32	W4010-016	Circlip	116	W0601-148	Washer (0.005 thk)
33	W6104-167	Washer (0.010 thk)	116	W0601-748	Washer (0.010 thk)
33	W6171-014	Washer (0.031 thk)	116	W6104-029	Washer (0.020 thk)
33	W6104-180	Washer (0.005 thk)	117	W6104-169	Washer (0.032 thk)
33	W6104-168	Washer (0.007 thk)	118	W4301-040	Pinion
34	W1101-055	Bush	119	W4029-010	Eccentric
35	W6104-179	Washer (0.010 thk)	120	W2601-015	Disc
38	J054-0067	Pin	121	W6501-014	Wheel 0- 9
36+40	0609-0026	Coupling with pin	121	W6501-017	Wheel 00-90
41	W4051-011	Plate	122	W6104-171	Washer (0.030 thk)
42*	J054-0068	Insert	123	W4029-011	Ring
43	J054-0069	Rod Group	124	W2601-016	Disc
44	J054-0070	Collar	125*	J054-0078	Shaft Group
45	J054-0071	Pawl	126	W2371-643	Plate
46	J054-0072	Spring	127	W6104-170	Washer (0.010 thk)
47	W2371-626	Tag	128	W4006-011	Strap

				date : october 19, 1984	
				drawn: J.Vollebregt	
				check: <i>JV</i>	
				SHT 2 OF 3	
				REV.	
B	whole changed	jan.90	MP	A/B	
A	partsl. added	may 87	AA	PARTS LIST	
rev.	modification	date	name	PRESET REGISTER	
				0830-1205-4	

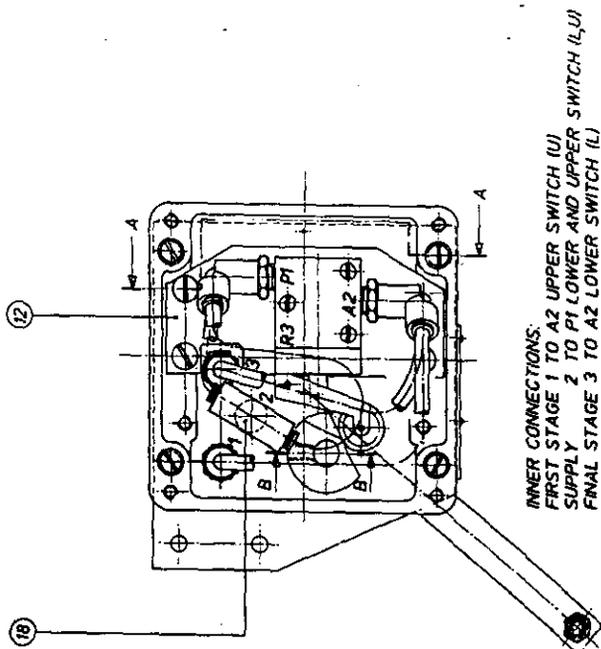
Item No.	Part number	Partname	Item No.	Part number	Partname
129	W5271-315	Spring			
130	W4006-012	Band	143	W2371-605	Nameplate
131	W5201-076	Spring	144	W5405-024	Screw
132	W0601-748	Washer (0.010 thk)	146		Crystal
132	W6104-162	Washer (0.032 thk)		0499-0352	Reading 0.1 l (litre)
133	W0601-752	Washer (0.020 thk)		0499-0330	Reading 1 $\frac{1}{3}$ (litre)
133	W6104-178	Washer (0.010 thk)		0499-0353	Reading 0.01 $\frac{1}{3}$
133	W0601-747	Washer (0.005 thk)		0499-0342	Reading 0.1 $\frac{1}{3}$
134	W1101-057	Bushing		0499-0407	Reading 1 $\frac{1}{3}$
135	W7779-786	Clutch Group		0499-0347	Reading 0.1 Gallon
136	W1101-056	Bushing		0499-0346	Reading 1 or 10Gallon
137	W5201-075	Spring	147	W1771-053	Plate
138	W5573-051	Shaft	148	W5405-025	Screw
139	W4301-039	Pinion	149	W7779-806	Seal and Wire
140	W6104-026	Washer (0.010 thk)	150	W0601-748	Washer (0.010 thk)
141*	J054-0079	Gear	151	W6104-161	Washer
142	W5573-049	Shaft			

* RECOMMENDED SPARE PARTS ITEM 42(4x), 58(2x), 59(2x), 125 & 141,
SPARE PART KIT 0390-0901

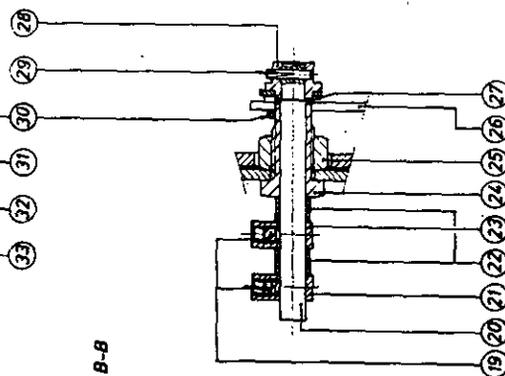
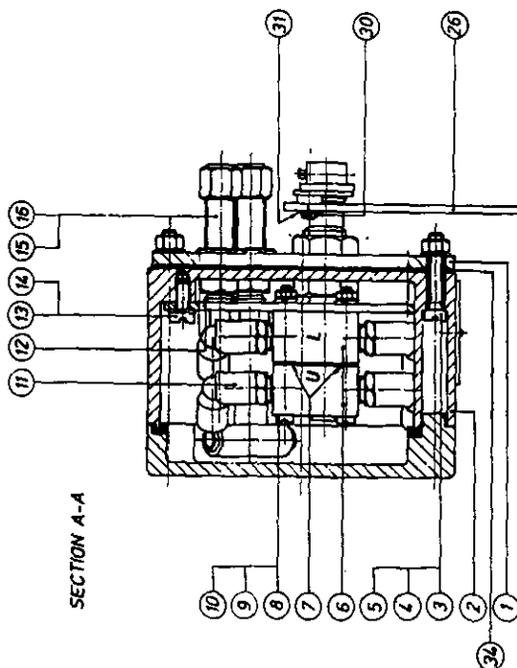
				date : october 19, 1984	
				drawn: J.Vollebregt	
				check: <i>J</i>	SHT 3 OF 3
B	whole changed	jan.90	MP	PARTS LIST	REV. A B
A	partsl. added	may 87	AA	PRESET REGISTER	0830-1205-4
rev.	modification	date	name		

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1		MOUNTING PLATE
2	1		BOX
3			
4	4		SCREW
5	2		END STOP
6	1		END PLATE
7	2		SCREW
8	2		WASHER
9	2		SPACER
10	1		MOUNTING PLATE
11	2		SCREW
12	2		SPRING WASHER
13	6		TERMINAL
14	2		SWITCH
15	4		SCREW
16	4		WASHER
17	1		SHAFT GROUP
18	1		WASHER
19	4		SCREW
20	1		EARTHING TERMINAL
21	1		GLAND PG 13.5
22	1		PLUG ASSY
23	1		SPRING WASHER
24	1		BOLT
25	2		SPLIT PIN
26	2		WASHER
27	1		LINK
28	1		SPRING
29	1		WASHER
30	1		LEVER
31	1		PIN
32	1	W503619-001	HEX. HEAD SCREW 1/4"-28 UNFx0.75"
33	4		LOCK WASHER
34	1	W503300-113	HEX. HEAD SCREW 1/4"-20 UNCx3.25"
35	2	W503610-001	HEX. SO. HD. CA. SCREW
36	1	W325214-001	HANDLE

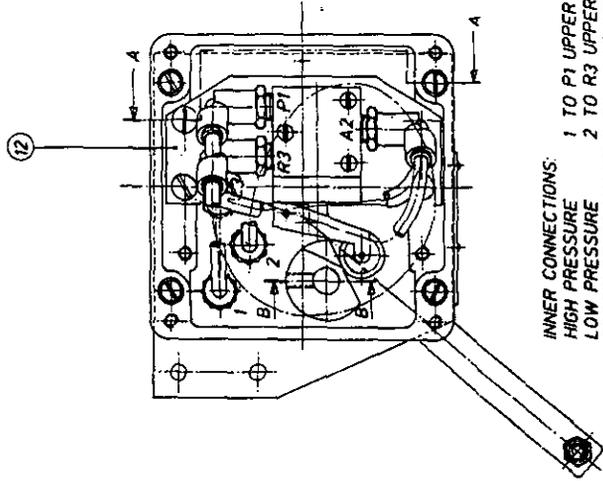
FOR DRAWING SEE 0845-1201-4 SHEET 1 OF 2



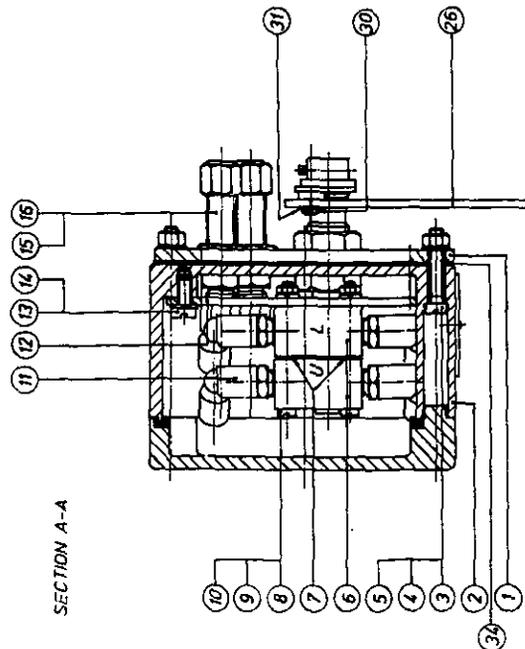
INNER CONNECTIONS:
 FIRST STAGE 1 TO A2 UPPER SWITCH (U)
 SUPPLY 2 TO P1 LOWER AND UPPER SWITCH (L,U)
 FINAL STAGE 3 TO A2 LOWER SWITCH (L)



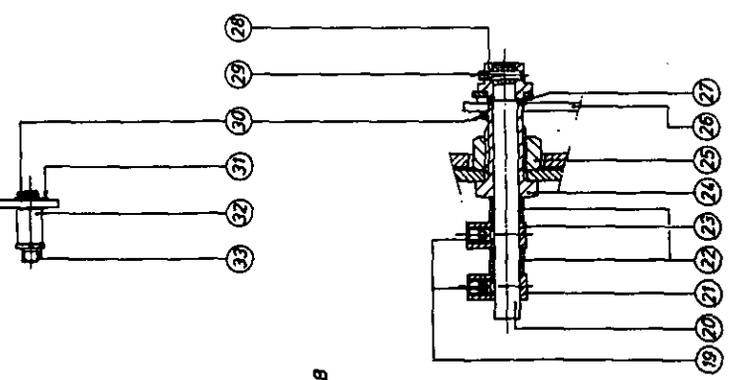
ITEM	PART NUMBER	QUANTITY	PART NAME	MATERIAL
1	0410-0045	1	PLATE	AL.
2	0499-0351	1	BOX	AL.
3	0708-0635	4	HEAD SCREW M6x30 DIN 84	STEEL 5.8
4	0718-0600	4	SPRING WASHER M6 DIN 127	SPR. STEEL
5	0734-0600	4	HEX. NUT M6 DIN 934	STEEL 8
6	0619-0016	2	PNEUMATIC SWITCH	
7	0716-0400	3	WASHER M4 DIN 125	STEEL
8	0708-0450	3	HEAD SCREW M4x50 DIN 84	STEEL 5.8
9	0718-0400	3	SPRING WASHER M4 DIN 127	SPR. STEEL
10	0734-0400	3	HEX. NUT M4 DIN 934	STEEL 8
11	0621-0173	4	MALE ELBOW QR 1/8" BSPTx6	BRASS/SY
12	0410-0046	1	PLATE	AL
13	0708-0612	3	HEAD SCREW M6x12 DIN 84	STEEL 5.8
14	0718-0600	3	SPRING WASHER M6 DIN 127	SPR. STEEL
15	0621-0172	3	BULKHEAD UNION 6mm	STEEL
16	0621-0061	3	INSERT FOR TUBE 6x1mm	BRASS
17				
18	0621-0175	1	T-COUPLING QR 6x6x6 mm	BRASS/SY
19	0731-0612	2	SET SCREW M6x12 DIN 916	STEEL 4.5H
20	0404-0093	1	SHAFT	SS 303
21	0458-0008	1	CAM (FIRST STAGE)	AL.
22	0406-0076	2	BUSHING	BRASS
23	0458-0009	1	CAM (FINAL STAGE)	AL.
24	0429-0015	1	BEARING	BRASS
25	0734-1600	1	HEX. NUT M16 DIN 934	STEEL 8
26	0441-0011	1	STRIP	STEEL
27	0716-1000	1	WASHER M10 DIN 125	STEEL
	0390-0470	1	KIT CONSISTS OF ITEM 28 → 33	
28		1	LEVER	STEEL
29		1	PIN	STEEL
30		2	SPLIT PIN ϕ 1.5x12 DIN 94	BRASS
31		2	WASHER ϕ 12x ϕ 5x0.5	STEEL
32		1	BOLT	STEEL
33		1	SPRING WASHER 1/4 DIN 127	SPR. STEEL
34	0716-0600	4	WASHER M6 DIN 125	STEEL
	R 60-60-504	L =680	TUBE ϕ 6x1 mm	SYNTH.



INNER CONNECTIONS:
 1 TO P1 UPPER SWITCH (U)
 HIGH PRESSURE
 2 TO R3 UPPER SWITCH (U)
 LOW PRESSURE
 3 TO VALVE 3 TO A2 LOWER SWITCH (L)
 A2 UPPER SWITCH (U) TO P1 LOWER SWITCH (L)

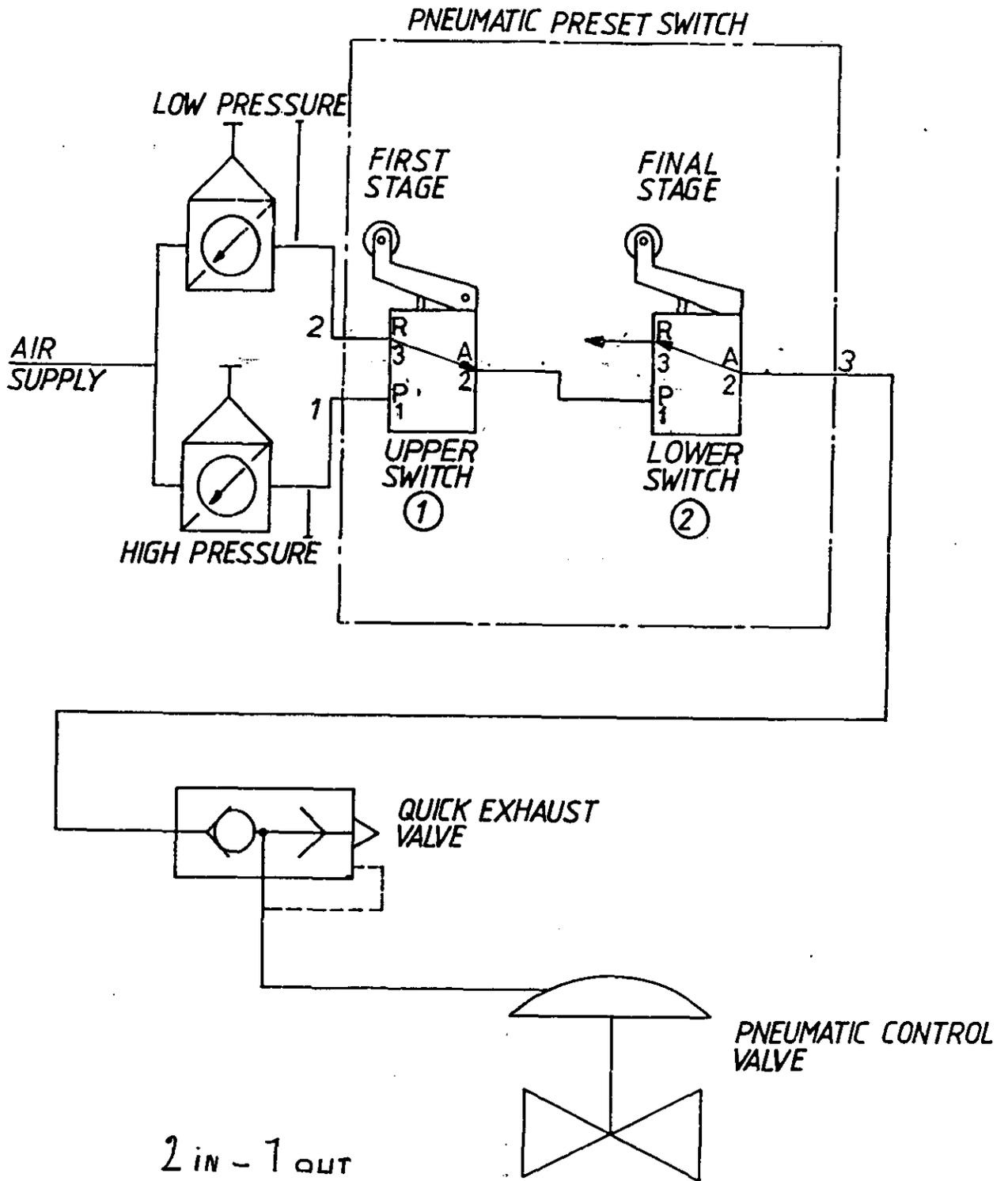


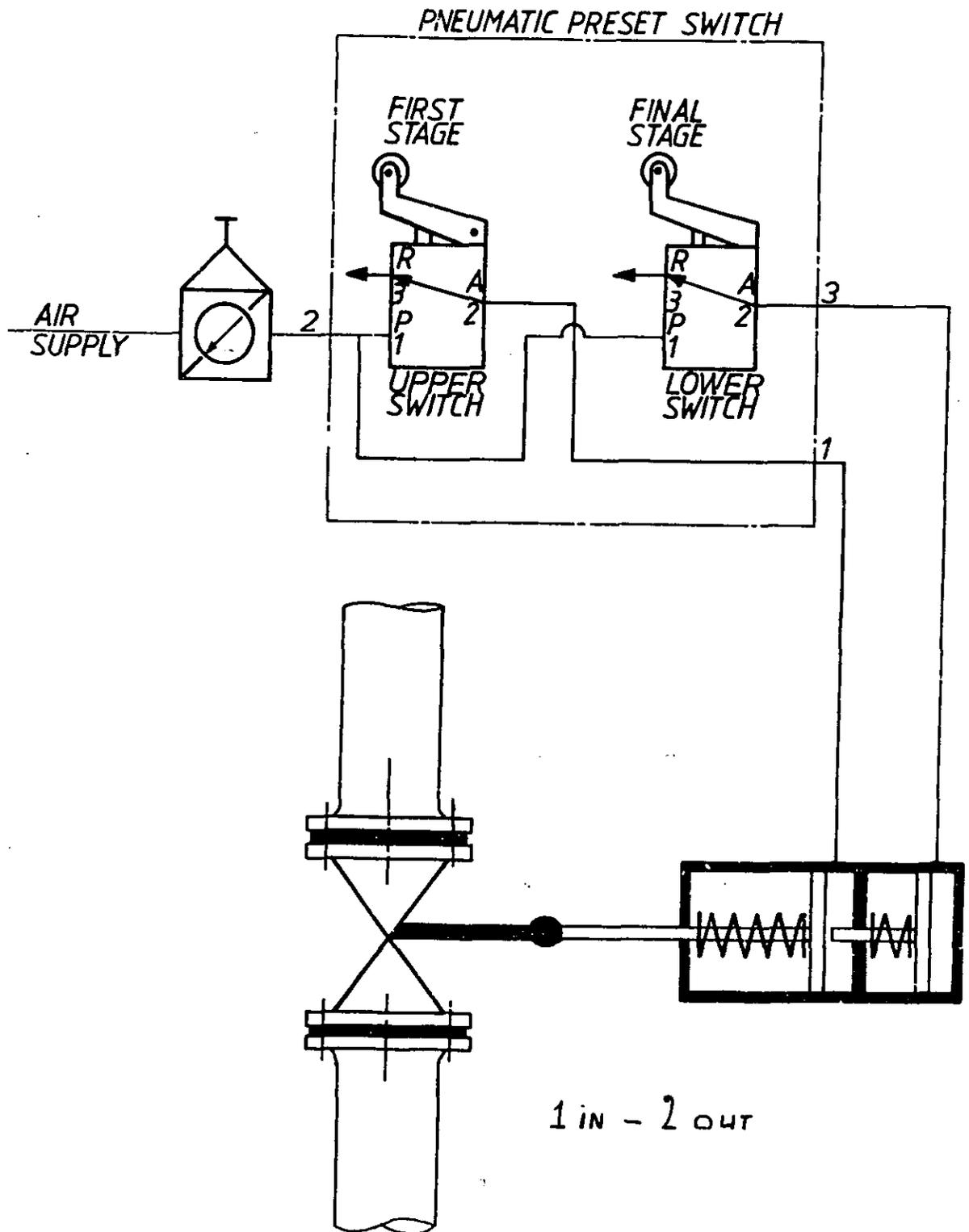
SECTION A-A



SECTION-B-B

ITEM	PART NUMBER	QUANTITY	PART NAME	MATERIAL
1	0410-0045	1	PLATE	AL.
2	0499-0351	1	BOX	AL.
3	0708-0635	4	HEAD SCREW M6x30 DIN 84	STEEL 5.8
4	0718-0600	4	SPRING WASHER M6 DIN 127	SPR. STEEL
5	0734-0600	4	HEX. NUT M6 DIN 934	STEEL 8
6	0619-0016	2	PNEUMATIC SWITCH	
7	0716-0400	3	WASHER M4 DIN 125	STEEL
8	0708-0450	3	HEAD SCREW M4x50 DIN 84	STEEL 5.8
9	0718-0400	3	SPRING WASHER M4 DIN 127	SPR. STEEL
10	0734-0400	3	HEX. NUT M4 DIN 934	STEEL 8
11	0621-0173	5	MALE ELBOW Q.R. 1/8" BSPTx6	BRASS/SY
12	0410-0046	1	PLATE	AL.
13	0708-0612	3	HEAD SCREW M6x12 DIN 84	STEEL 5.8
14	0718-0600	3	SPRING WASHER M6 DIN 127	SPR. STEEL
15	0621-0172	3	BULKHEAD UNION 6mm	STEEL
16	0621-0061	3	INSERT FOR TUBE 6x1mm	BRASS
17				
19	0731-0612	2	SET SCREW M6x12 DIN 916	STEEL 45H
20	0404-0093	1	SHAFT	SS 303
21	0458-0008	1	CAM (FIRST STAGE)	AL.
22	0406-0076	2	BUSHING	BRASS
23	0458-0009	1	CAM (FINAL STAGE)	AL.
24	0429-0015	1	BEARING	BRASS
25	0734-1600	1	HEX. NUT M16 DIN 934	STEEL 8
26	0441-0011	1	STRIP	STEEL
27	0716-1000	1	WASHER M10 DIN 125	STEEL
	0390-0470	1	KIT CONSISTS OF ITEM 28-33	
28		1	LEVER	STEEL
29		1	PIN	STEEL
30		2	SPLIT PIN ϕ 1,5x12 DIN 94	BRASS
31		2	WASHER ϕ 12x ϕ 5x0,5	STEEL
32		1	BOLT	STEEL
33		1	SPRING WASHER 1/4" DIN 127	SPR. STEEL
34	0716-0600	4	WASHER M6 DIN 125	STEEL
	R 60-60-504	L = 760	TUBE ϕ 6x1 mm	SYNTH.





VAF

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