SATAM

MEASURING CHAMBER

MA21/80 - MA21/150 - MA21/250

DISASSEMBLY - REASSEMBLY

U508320-e – Revision 2 – Le 25 February 2009

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MEASURING CHAMBER

Summary

DISASSEMBLY OF MEASURING CHAMBER

REASSEMBLY OF MEASURING CHAMBER

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1. REMOVE GEARBOX AB 21 AND THE DRIVE JOINT

Fig.1

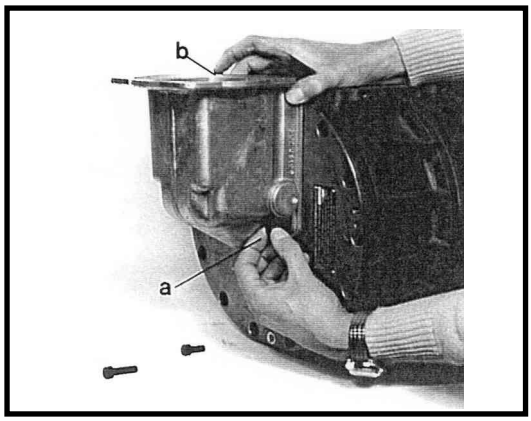
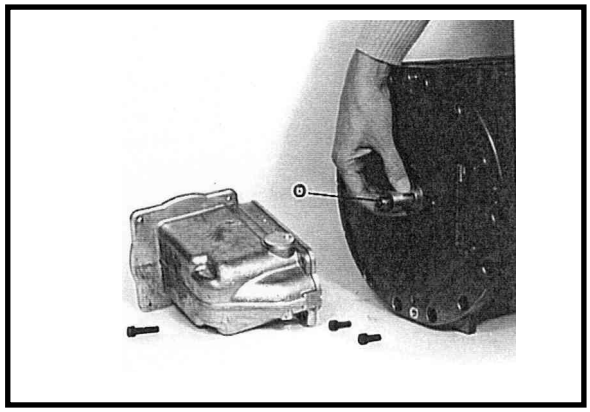
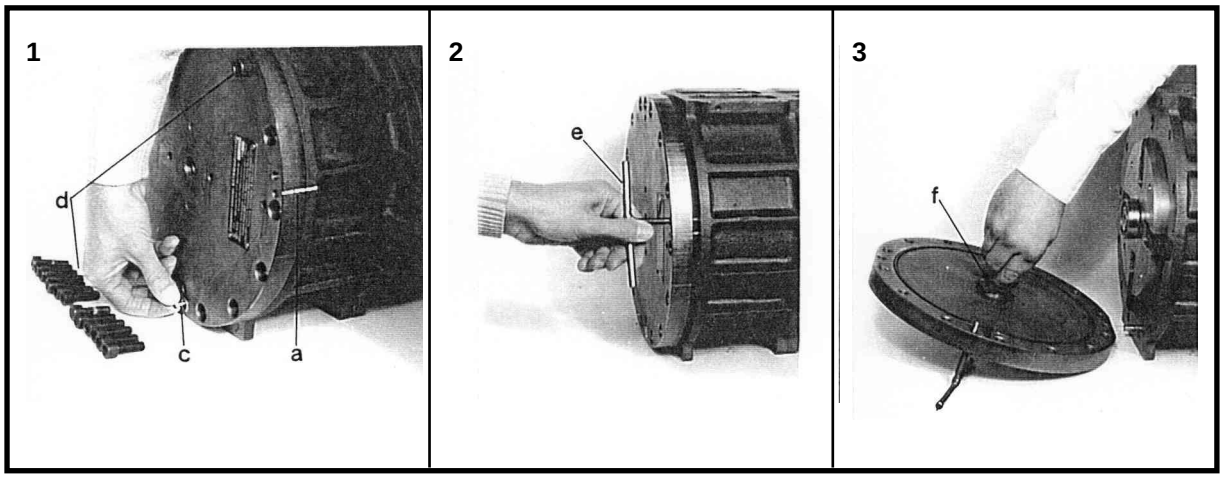


Fig.2



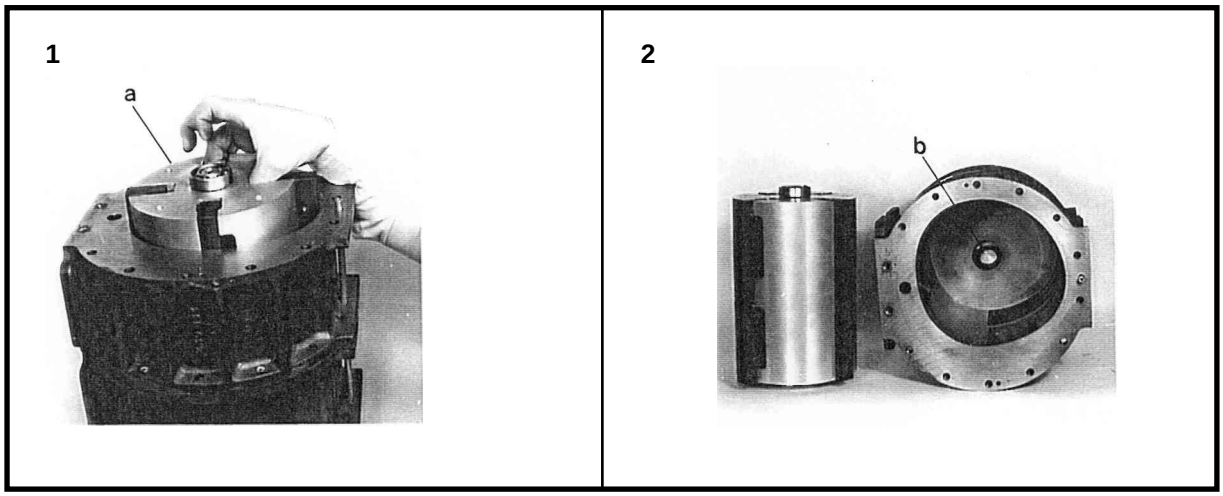
2. REMOVAL OF FRONT COVER

Fig.3



3. REMOVAL OF ROTOR ASSEMBLY

Fig.4



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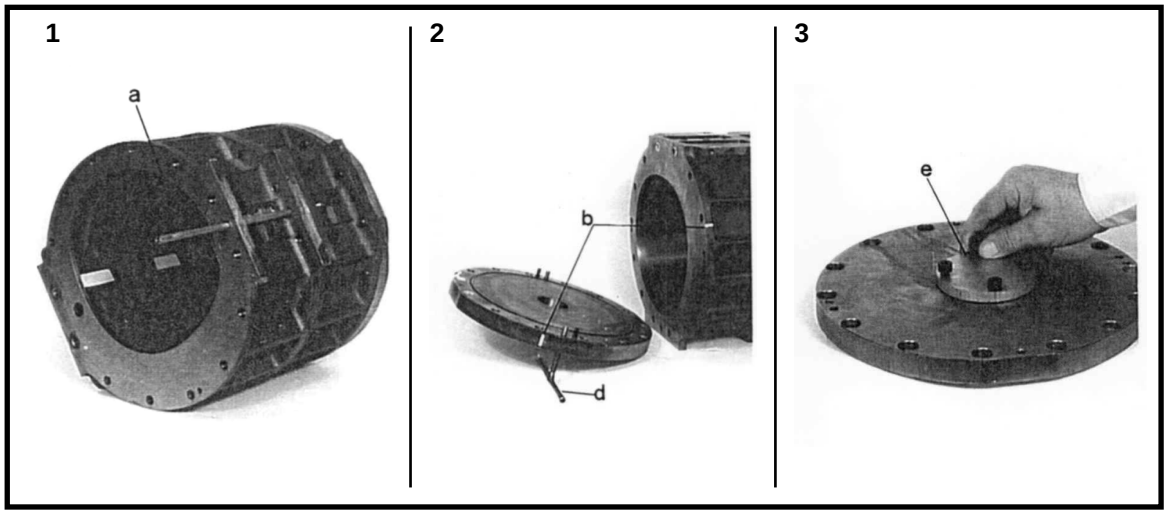
DISASSEMBLY OF MEASURING CHAMBER

A . Replacement of bearings.
B . Replacement of blades.
C . Replacement of rotor complete.
D . Replacement of front or rear covers.

	A	B	C	D
I - Remove gearbox AB21 : (Pict.1)	X	X	X	X
- Remove two exterior bolts (a).				
- Remove one interior bolt (b).				
Remove drive joint : (Pict.2)	X	X	X	X
II - Removal of front cover : (Pict.3)	X	X	X	X
- Make a positioning line across cover and body line (a).				
- Remove the lead				
- Break lead seal and remove screw (c).				
- Remove 14 bolts securing cover (d).				
- Using two T screws (e) through threaded holes uncover. Turn each uniformly to remove cover keeping parallel to body as far as possible.				
- Recover wave washers (F) from bearing recess in cover.				
Iii - Removal of rotor assembly. (Pict.4)	X	X	X	X
- Pull complete rotor (a) from body. Finger space for gripping rotor is available under blades.				
- Recover spacer ring (b) from bearing recess in rear cover.				

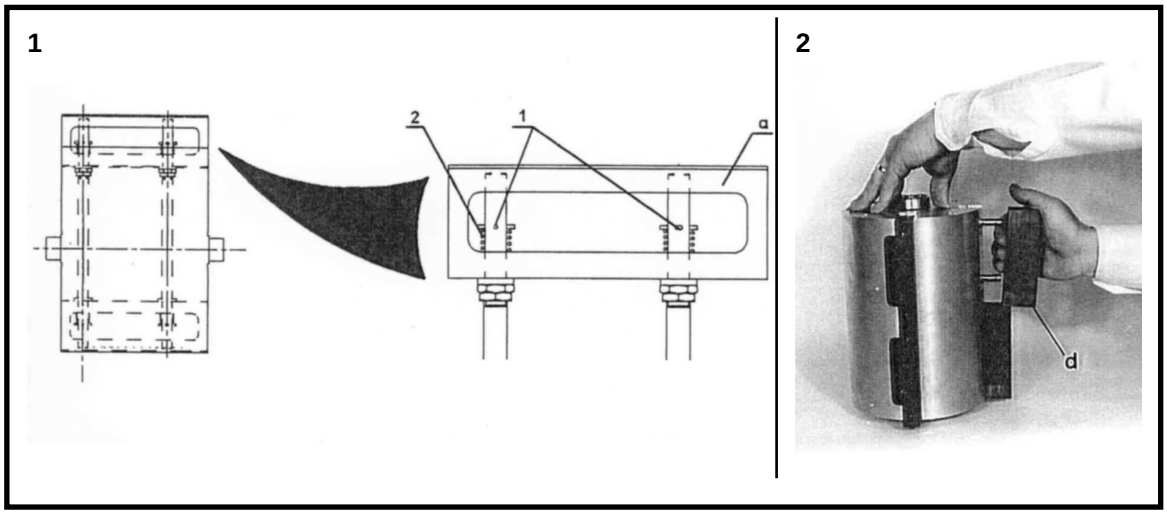
4. REMOVAL OF REAR COVER

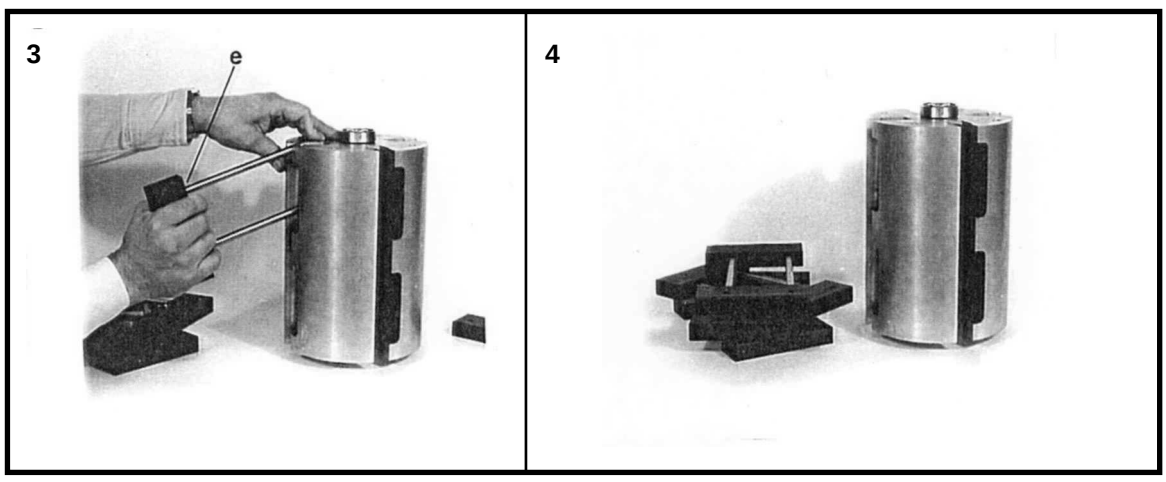
Fig.5



5. DISMANTLING THE BLADES

Fig.6





A	B	C	D
			X
	X	X	X

iV - Removal of rear cover. (Pict.5)

- Remove assize tie rod (a) (between front and rear covers) with screwdrivers.
- Make 2 position lines (b) across cover and body.
- Remove 14 bolts securing cover (as front cover).
- Using two T screws (d) through threaded holes in cover. Turn each uniformly to remove cover keeping parallel to body as far as possible.
- Remove 4 bolts and cover plate (e).

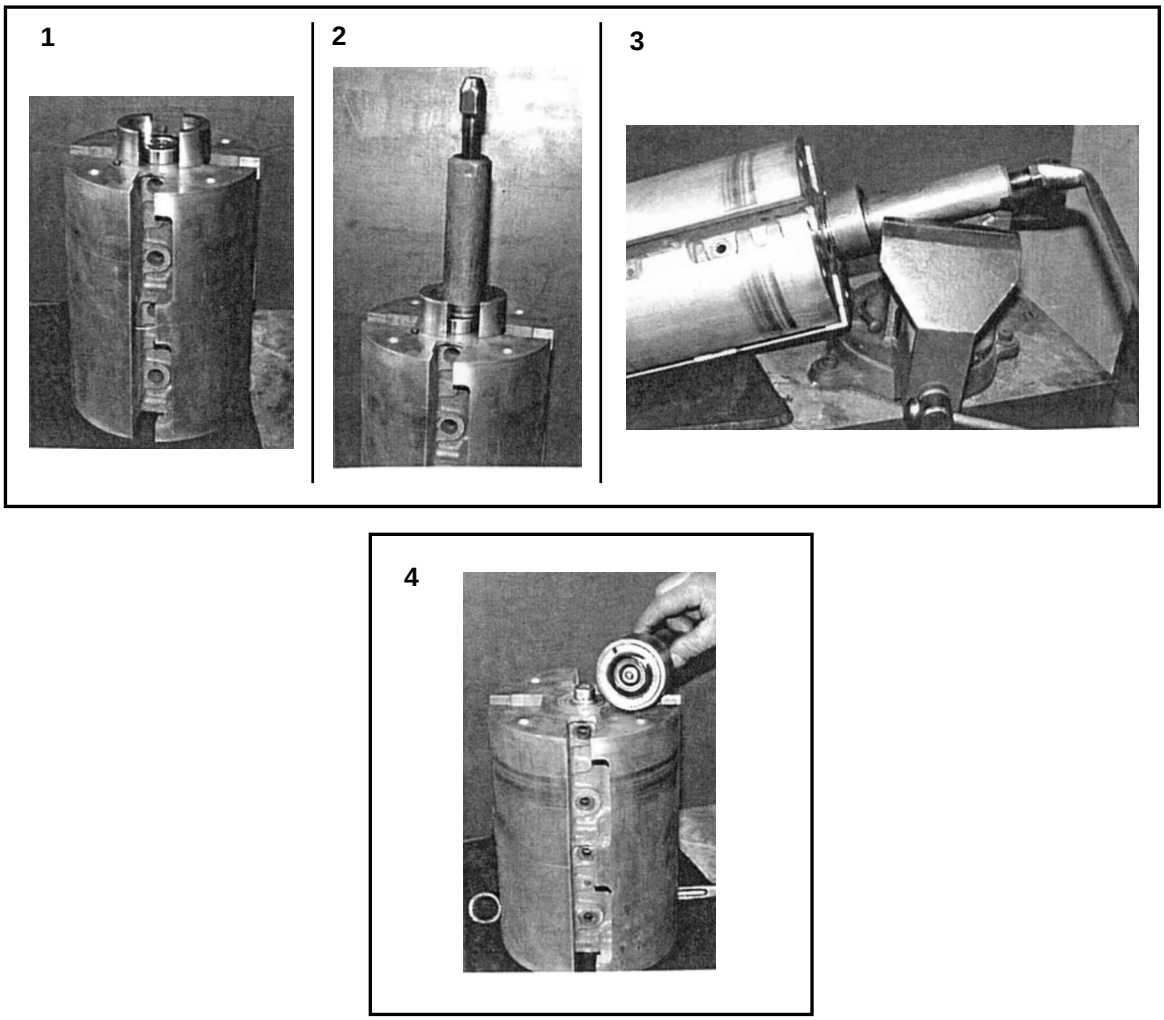
V - Dismantling the blades : (Pict.6)

- Remove the 2 pins (1) of the blade (a).
- Remove the blade (d) and the springs (2).
- Remove each blade with its mounting rods (e).

After dismantling, mark the components of each unit..
Above all, do not mix the parts.

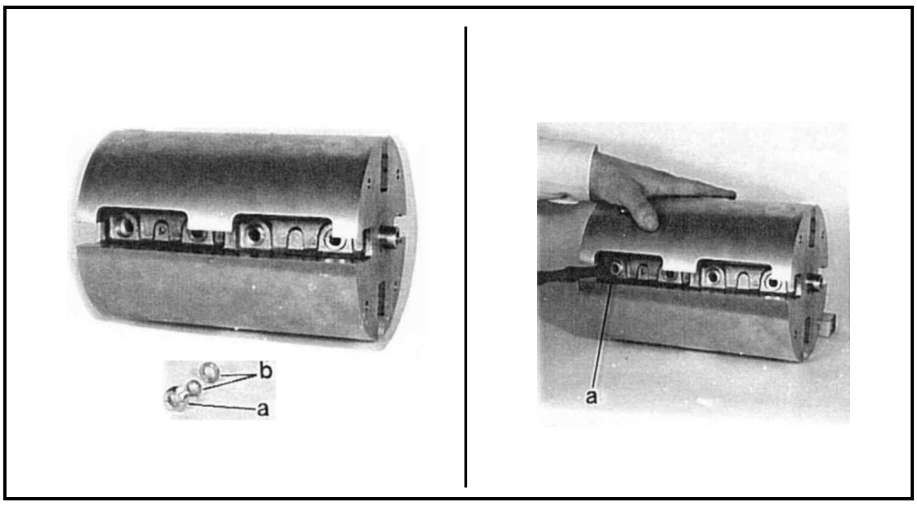
6. REMOVAL OF BEARINGS

Fig.7



7. REMOVAL GUIDE BUSHES FOR PUSHRODS: *(Pict.8)*

Fig.8



A	B	C	D
X	X	X	

VI - <u>Removal of bearings</u> : (.Pict.7)

- Place two halves of puller over bearing.
- Remove the puller over bearing.
- Remove the bearing.

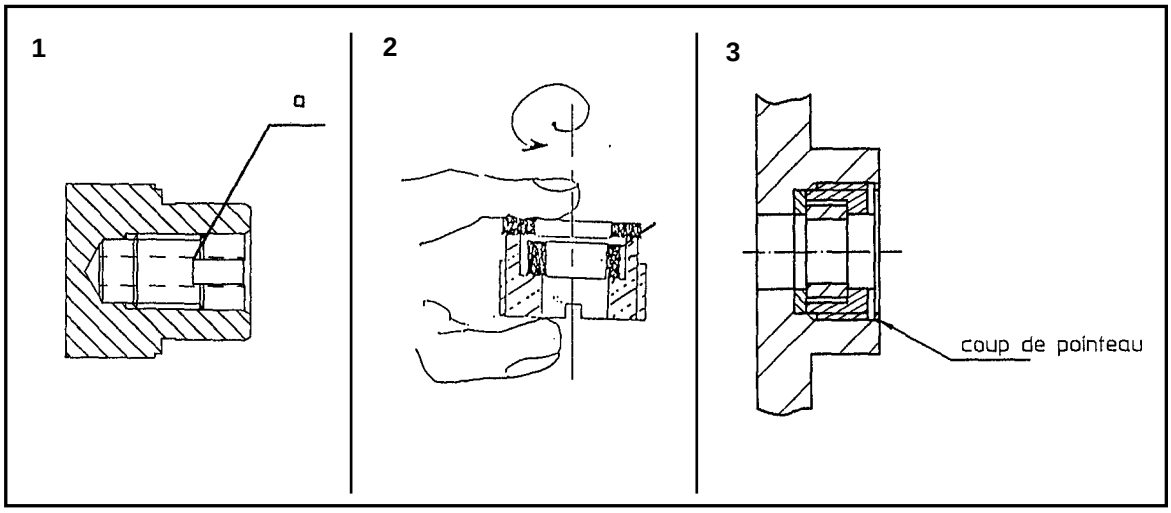
A	B	C	D
		X	

VII - <u>Removal guide bushes for pushrods</u>: (Pict.8)

- Use large wide screwdriver to unscrew item (a).
- Recover inner bush and washer (b).

8. PREPARE THE ROTOR .

Fig.1



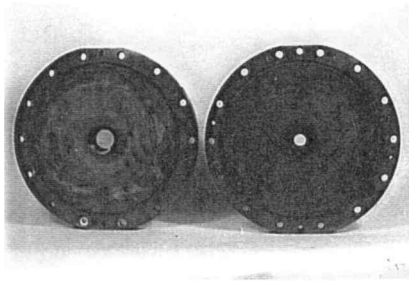
REASSEMBLY OF MEASURING CHAMBER

	A	B	C	D
I - Preparation for reassembly.	X	X	X	X
- Wash and clean all loose components to remove dirt and abrasive particles. - Blow dry with compressed air. - Prepare a clean working area and set out all clean components preferably on a hard surface (not on an old dirty wooden work bench.) - Clean all tools before starting assembly.				
II - Prepare the rotor. (Pict.1)				
- Fitting new drive slot into rotor shaft. (Photo 1)			X	
- Tap component (a) into hollow end of rotor shaft until its flush with end of motor.				
- Fitting bush - washer - Screw. (Photo 2 et 3)			X	
- Screw into position until bush can just slide freely sideways - Lock the component in position by forcing a portion of the aluminium. of the rotor into the screwdriver slot. Use a pointed punch for this.				
- Fitting new bearings on shaft.	X	X	X	
With rotor on end and shaft on solid base press new bearing into position. To ensure new bearing is hard against shaft step at (a) use an old bearing above new bearing while pressing into position.				

9. FITTING THE BODY

Fig.2

1



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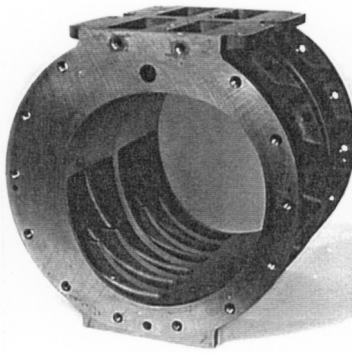

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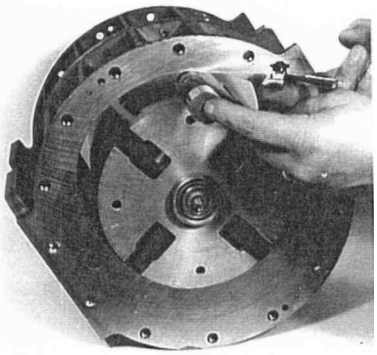

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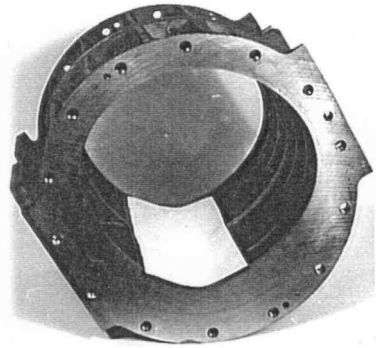

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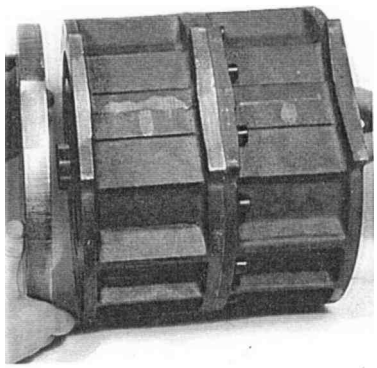

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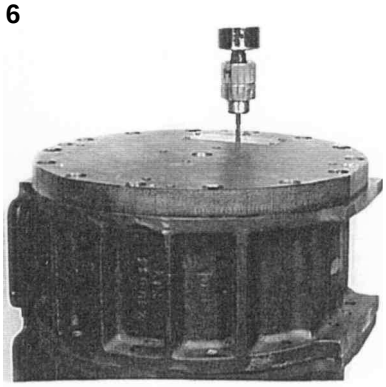

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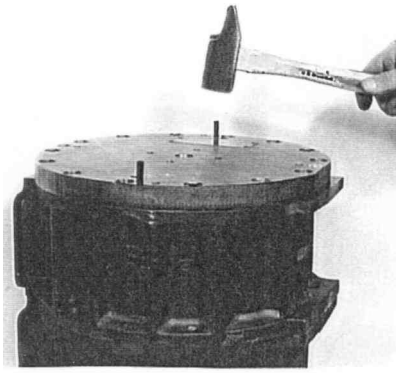

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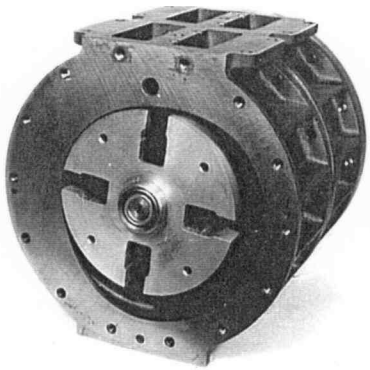

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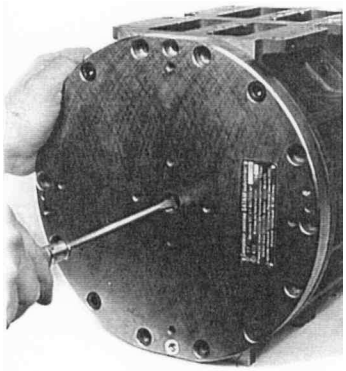


A	B	C	D
			x

III - *Fitting the body. (Pict.2)*

- Fitting covers. (Photo 1)

- Select covers front and rear and with bearing pockets to suit metric or imp. As on rotor snaft.

- Take the body. (Photo 2)

- Position body for correct liquid flow. In this example liquid enters LH slots turns rotor anti clockwise and exits through RH slots. Front cover therefore near side and rear cover far side.

- Turn body until small radius is down and flange inlet/outlet is to left. Place rotor inside body on small rod and centralised. Measure measuring chamber segment with rod gauge and feeler gauge. (Photo 3).

- Remove rotor and lay strip of paper of thickness equal to smaller tolerance from table across small radius. (Photo 4).

- Replace rotor into body to lay with solid portion of rotor (between blade slots) laying on paper and on small radius. Centralise within body (Annexe 1).

- Holding front cover in correct attitude place carefully over shaft bearing. Do not move Rotor inside body. Do not fit any spacers or springs into bearing recess. Do not fit o'ring. Secure front cover with 4 bolts equally spaced. Position cover by slightest rotation so that 4 securing bolts are central within holes in cover as per drg below. Tighten 4 bolts firmly (photo 5).

- Turn casing around and fit rear cover (first fit O'ring within groove using grease). Use 4 bolts first as explained for front cover and only when these 4 bolts are tight, then fit remaining 12 bolts and tighten. Note that the two bolts which enter into the inlet/outlet liquid gallery, must be fitted with Teflon sealing tape on the threads to provide a liquid tight seal.

- Stand assembly to have rear cover upper most. Use drill press (not hand drill) to drill 6 mm Ø hole completely through flange and cover in 2 places diametrically opposite (but approx. parallel with mounting flange). Drive 6 mm Ø stainless steel spring pin into each hole (Photo 6 et 7).

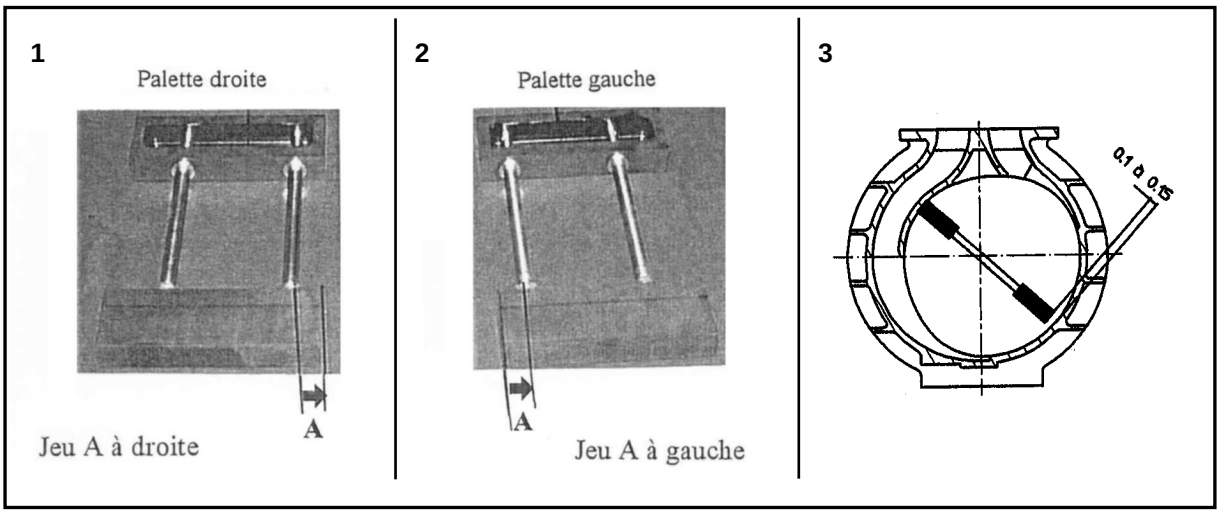
- Remove front cover and rotor. Remove paper.

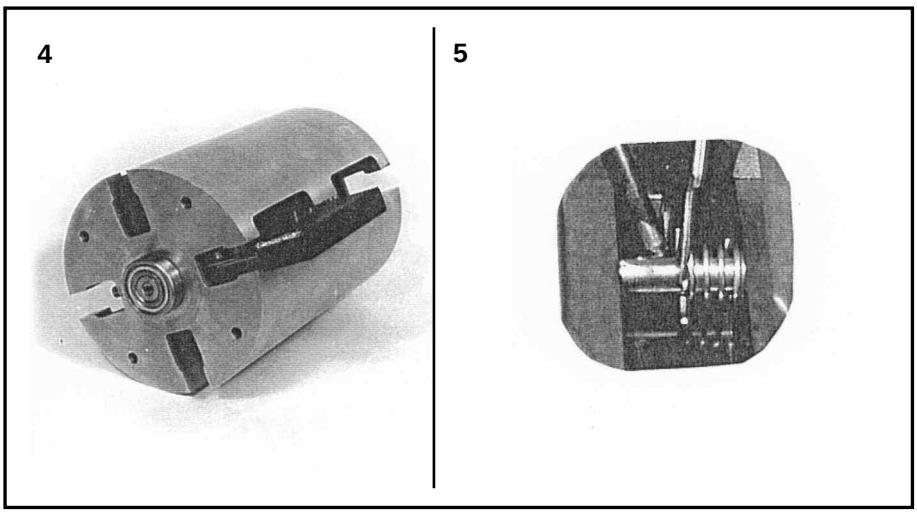
- Put in place rotor on small radius and front cover. (Photo 8)

- Check easy free rotation of rotor using screwdriver. (Photo 9)

10. FINISHING THE ROTOR

Fig.3





A	B	C	D
	X	X	X

IV - Finishing the rotor. (Pict.3)

- Take the sets of right or left blades (Photo 1 et 2).

- Take a set of blades, check they are parallel, and the length of the unit by the comparator (207.13 mm)

- Adjustment is made by tightening or loosening the screws.

- Place the blade set in the body, check the clearance between the blades and the interior form according to the position given in the drawing, with a clearance of between : 0.10 and 0.15 mm (photo 3).

- If necessary, readjust the blade set.

- After checks and adjustment, adjust the other blade sets in an identical manner.

- Remove the blade to remove the 2 pins and springs.

Above all, do not mix up the parts..

- Mount the blade sets on the rotor. (Photo 4 et 5)

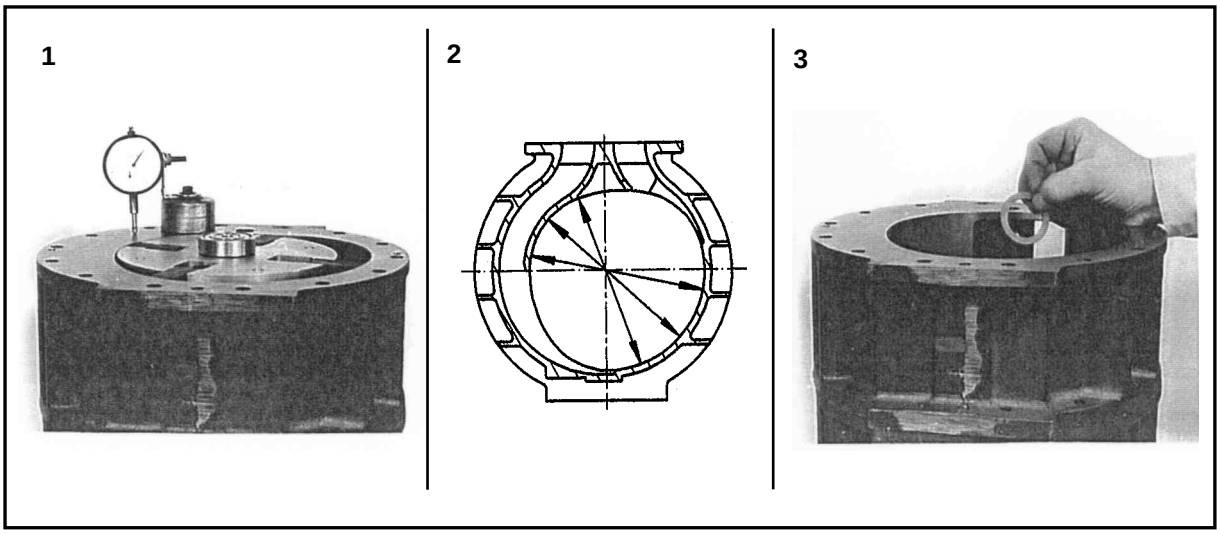
- Position the blade with its two rods.

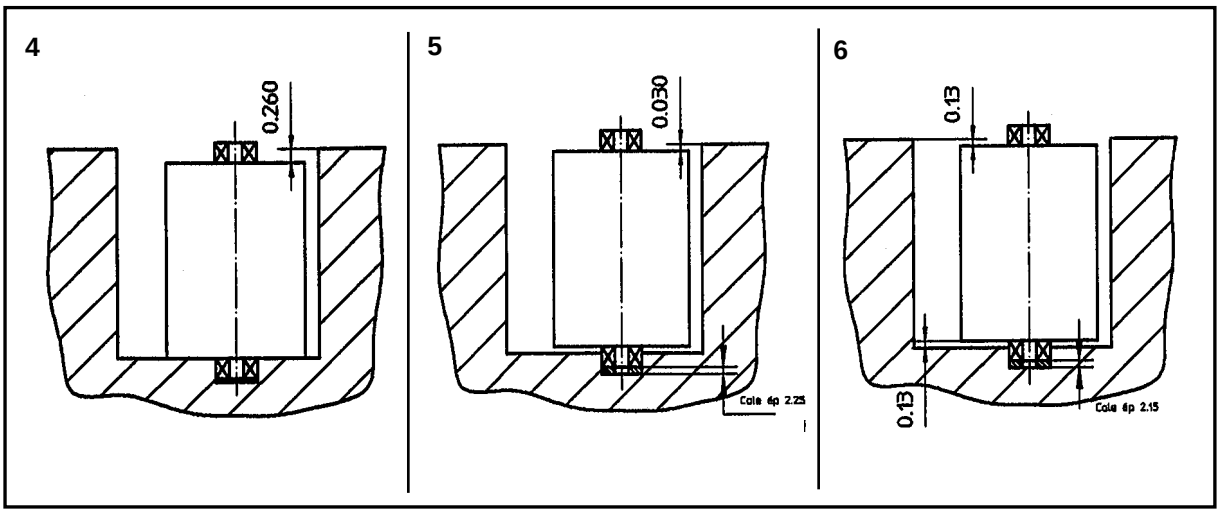
- Position the washers, the 2nd blade and the springs

- Put the pins back in place.

11. FITTING THE ROTOR

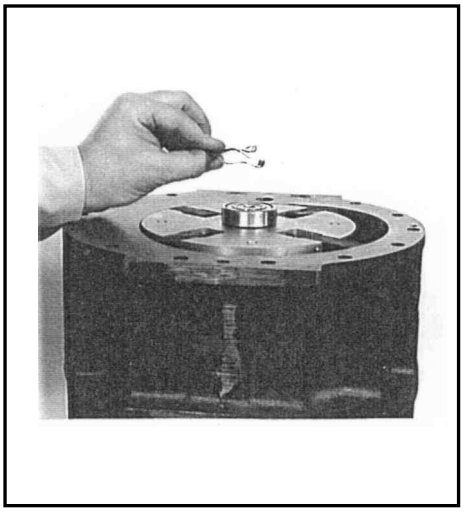
Fig.4





12. FITTING FRONT COVER

Fig.5



A	B	C	D
X	X	X	X

V- *Fitting the rotor. (Pict. 4)*

- Fitting assembled rotor with blades and bearings into body.

- Stand meter body on rear cover, and lower rotor assembly into body. Keep rotor hard against small radius using fingers in blade slots. Be sure that rear bearing. enters into recess in rear cover, and that slotted drive end of rotor shaft uppermost (to front).

- With dial gauge, measure dimension from face of housing to face of rotor (Photo 1) Turn rotor and check this dimension in 4 segments. Record this dimension as it is used for calculation of spacer rings required.

- With dial gauge, measure dimension from face of housing to top edge of projecting rib on each blade. Check on 4 blades. Record these readings and check against tolerances listed in table. (Photo 2 and annexe 2)

N.B Be sure that blade is touching rear cover when this reading is taken, and be sure that the blade is below housing edge.

- Using long feeler gauge, measure diametric clearance between end of blade and body. Check that measurement on 2 sets blades is within tolerance according to table.

- Lift out rotor and place 2.25 mm spacer in bearing pocket in rear cover (Photo 3/4/5/6). Replace rotor and measure once again dimension housing to rotor sing dial gauge as per photo 1. Note this new dimension.

Example

Assume 1st measurement were 0.26 mm (with rotor direct on rear over).
Assume 2nd measurement (with 2.25 spacer) was 0.03 mm.
Therefore exact thickness of spacer required should be :

2.25 - (0.26/2 - 0.03) = 2.15 mm

Select nearest spacer thickness available.
Remove rotor and 2.25 spacer ring. Fit new 2.15 (or nearest) spacer into rear cover pocket. Refit rotor according to 23.1. Take final measurements and confirm that rotor is as near as practical possible midway between end covers.

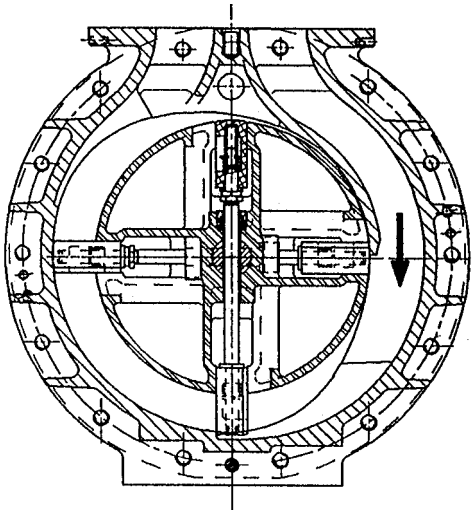
A	B	C	D
X	X	X	X

VI - *Fitting front cover. (Pict.5)*

Place 2 spring wave washers on front bearing. Fix o'ring in front cover groove with grease. Position front cover carefully over wave washers and onto bearing at same time aligning hole in cover with s/s locating pins. Fix cover with 4 bolts equally spaced and tighten gently and uniformly.

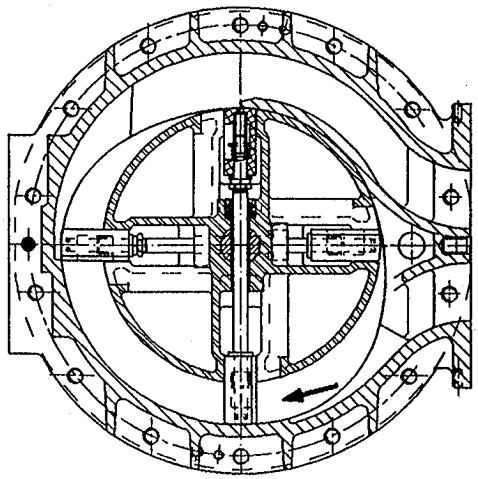
After each tightening of 4 bolts check that rotor rotates freely without any friction or binding. When all 4 bolts completely tight then fit remaining 12 bolts and remember to use Teflon tape to seal 2 bolts into liquid cavity..

13. ANNEXE 1



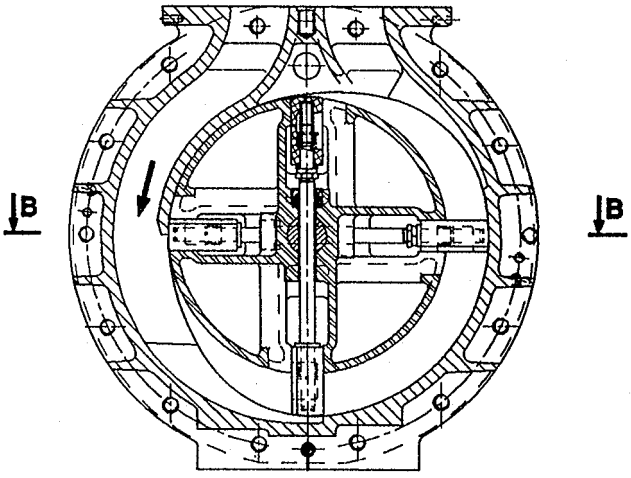
Entrée droite

L H discharge



Entrée droite inversée
Inverted right inlet
For vertical units L H discharge

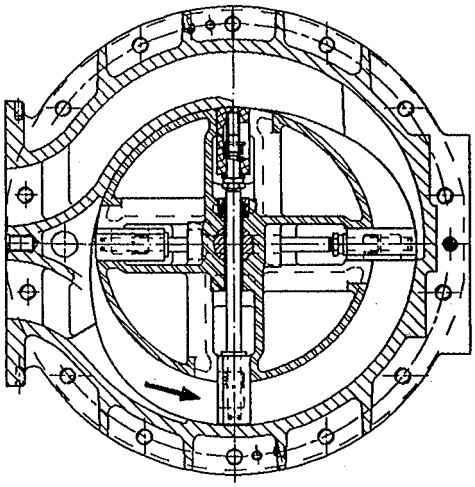
A-A



Entrée gauche

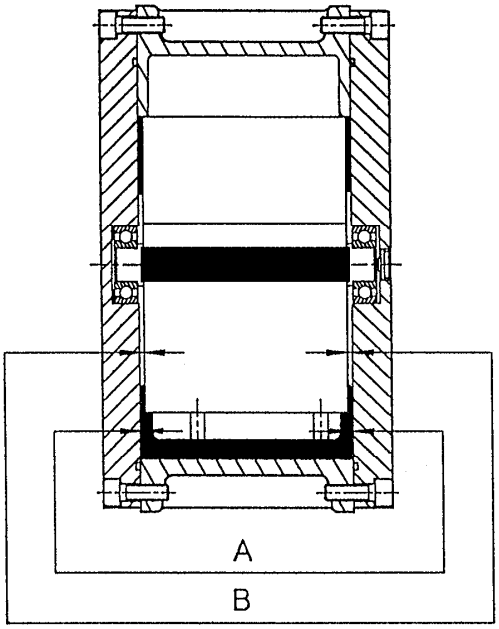
R H discharge

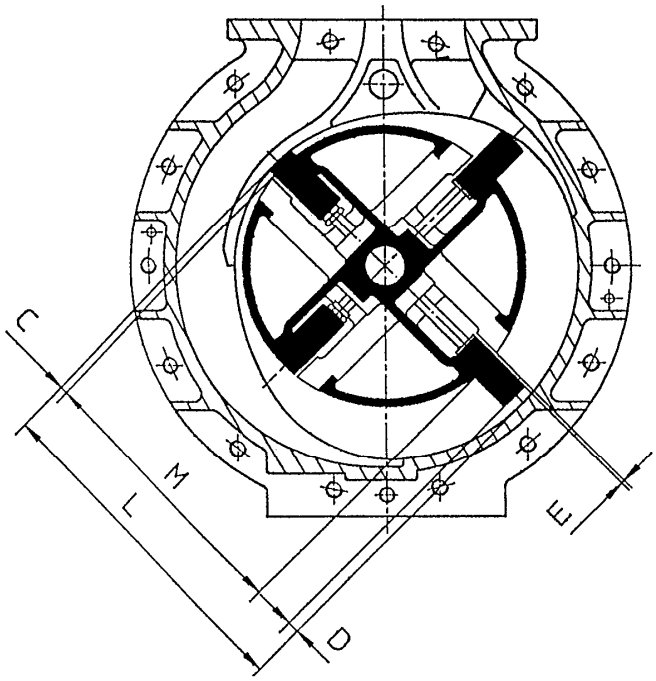
A-A



Entrée gauche inversée
Inverted left inlet
For vertical units R H discharge

14. ANNEXE 2





Mesureurs	Latéral		Diamétral		Largeur
	A Corps / palettes	**B** Corps / rotor	**C** Corps / rotor	**D** Corps / palettes	**E** Rotor / palettes
MA21 24/24	1 < 6	7 < 12	10 < 15	5 < 14	7 < 12
MA21 24/48	1 < 7	7 < 12	10 < 15	5 < 14	7 < 12
MA21 80/80	7 < 12	15 < 19	15 < 25	9 < 20	8 < 13
MA21 80/150	12 < 21	25 < 33	15 < 25	9 < 20	8 < 13
MA21 80/250	17 < 31	36 < 48	15 < 25	9 < 20	8 < 13
MA21 100	3 < 7	9 < 13	11 < 18	9 < 21	10 < 23

Jeux en centième de mm