

**For internal use
only**



RE 90304-03-S / 04.00
replaces 02.00

Service information - Rotary group adjustment



	A2FM/	10...180	Series 61
	A2FO/	10...180	Series 61
	A4V/	40...125	Series 1.0
	A4V/	71...250	Series 2.0
	A4VG/	28	Series 30
	A4VG/	40...180	Series 31
	A4VG/	40...180	Series 32
	A4VS/B	40...750	Series 22
		180...1000	Series 30
	A6VM/	28...200	Series 60
	A6VM/	28...200	Series 63
	A7VO/	28...200	Series 60
	A7VO/	28...200	Series 63
	A8VO/	28...160	Series 60/61
		80...200	Series 63
	A11VO/	40...250	Series 10
	← A10VG	18...63	Series 10
Calibration: not required for the hydraulic part	← A10VO	18...63	Series 10

NOTICE

Specifications, descriptions and illustrative material shown herein were as accurate as known at the time this publication was approved for printing.

BRUENINGHAUS HYDROMATIK reserves the right to discontinue models or options at any time or to change specifications, materials, or design without notice and without incurring obligation.

Optional equipment and accessories may add cost to the basic unit, and some options are available only in combination with certain models or other options.

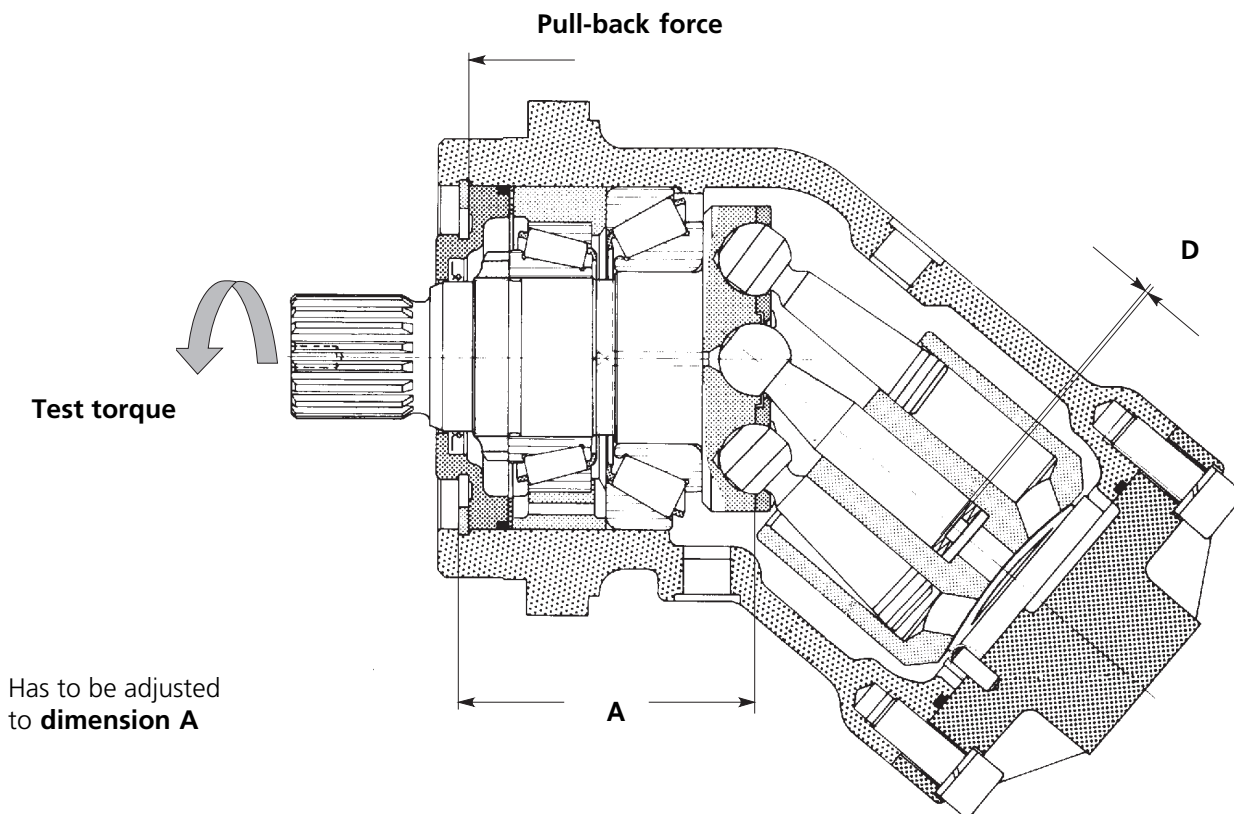
For the available combinations refer to the relevant data sheet for the basic unit and the desired option.

Adjustment and tests have to be carried out on the test bench under operating temperatures.

Protection of personnel and property has to be guaranteed by appropriate measures.

Expert knowledge, the precondition of any service work, can be obtained in our training courses.

Contents	Page
A2FM / A2FO / Rotary group old	3-7
A2FM / A2FO / Rotary group new	8-9
A4V...Series 1 / Series 2	10-11
A4VG ... /31 /32	12-13
A4VS/B	14-15
A6VM / A7VO	16-25
A8VO ...	26-33
A11VO ...	34-36



Has to be adjusted to **dimension A**

Note:

Drive shafts with bearing set are the smallest assembly groups to exchange and can only be de-livered completely. The assembly group has to be ad-justed to dimension (A). The tapered roller bearings are adjusted to the stipulated breakaway torque.

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos.D is effected with spring collars of different thickness so that the clearance is in the housing between the center pin and the spring collar for the mounted group.

Adjustment dimension

Size	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180
Dimension A(mm)	76,7 _{-0,1}			76,9 _{-0,1}			83,3 _{-0,1}	89,7 _{-0,1}		99,5 _{-0,1}		111,3 _{-0,1}		120,8 _{-0,1}	

Mounting instruction:

Retaining force

After mounting into the housing the rotary group has to be pulled back against the stop at the retaining ring. Let the housing cool down from the assembly temperature (approx.80°C) to room temperature. For this the following pull-back forces are defined:

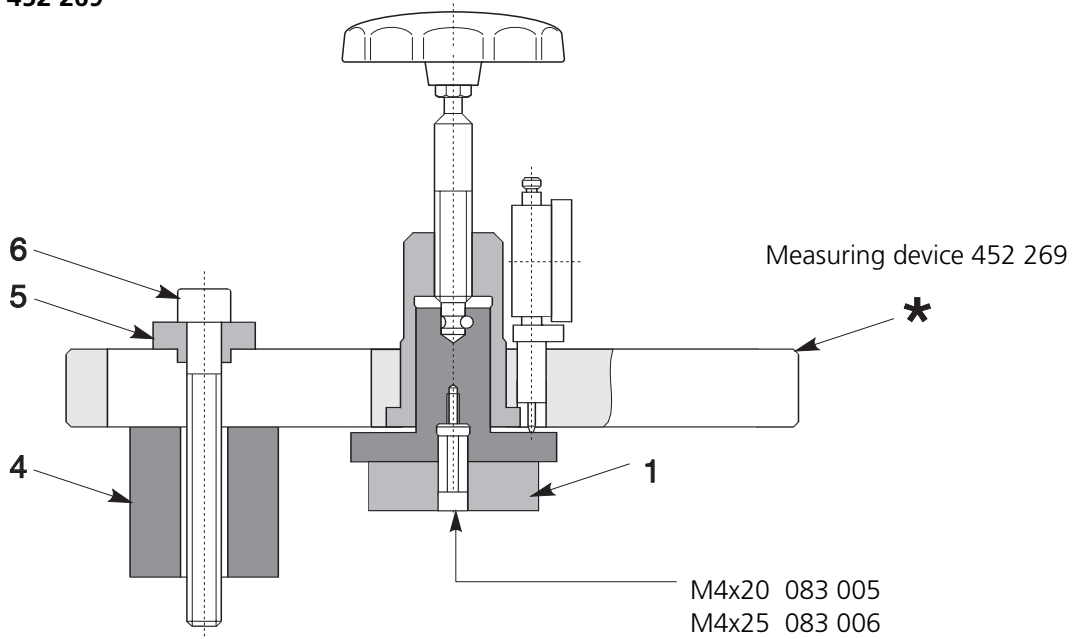
Size	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180
Piston diameter Ø	9	9,7	11,2	12	13,3	14,2	16	18,8	17,8	18,9	20	20,6	22,3	23,6	25
Max.pull-back force F(N)	800			1000			1000	1200		1400		2000		2800	

Test torque

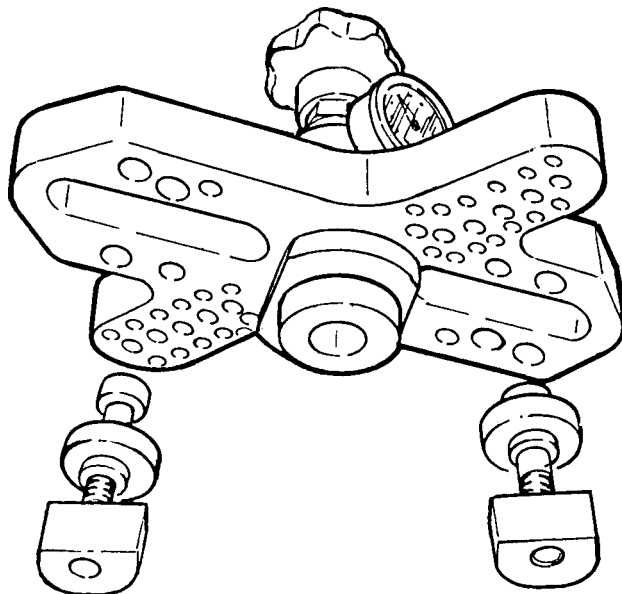
After assembly of the complete unit the breakaway torque of the rotary group has to be checked with the torque wrench.

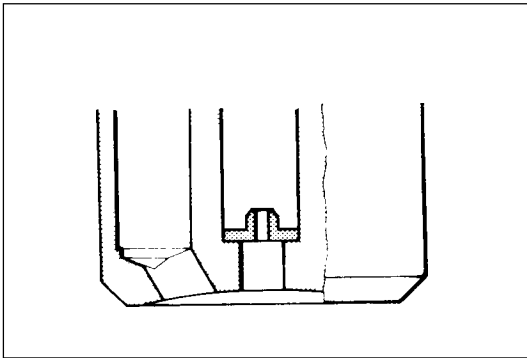
Size	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180
Piston diameter Ø	9	9,7	11,2	12	13,3	14,2	16	18,8	17,8	18,9	20	20,6	22,3	23,6	25
Max.breakaway torque (Nm)	2			4			6	8		12,5		16		25	

**Measuring device
Hydraulic part 1 452 269**



Size	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180
* Measuring device	9452269										9452269				
(1) Centering piece	9452006										-----				
(4) Intermediate ring	9452016										9452015				
(5) Shim	9452007	9452008	9452009	9452010	9083279										
(6) Cylinder screw	9083030	9083046	9083068	9083095	9083134										
	M6x60	M8x60	M10x60	M12x55	M16x50										





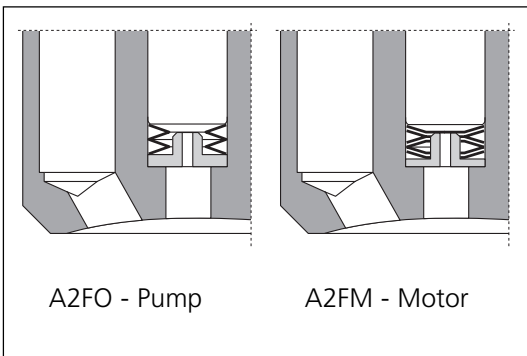
Note:

For the adjustment of dimension (D) **no** cup springs must be used.

They will only be mounted after the adjustment procedure (determination of the thickness of the spring collar).

Attention!

When the dimension (D) is measured with cup springs, more force has to be spent to carry out the measurement (measuring fault).



A2FO - Pump

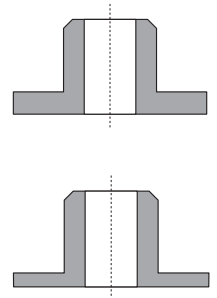
A2FM - Motor

Take care of the correct layer arrangement of all parts!

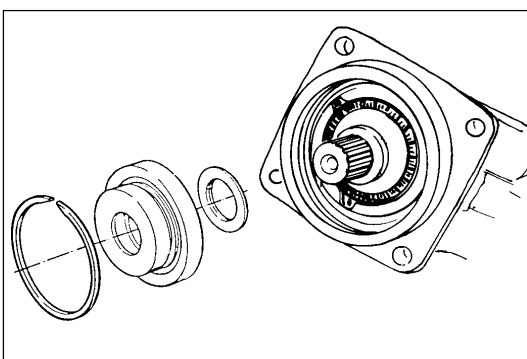
Note:

A2FO - pump - 4 cup springs / spring collars

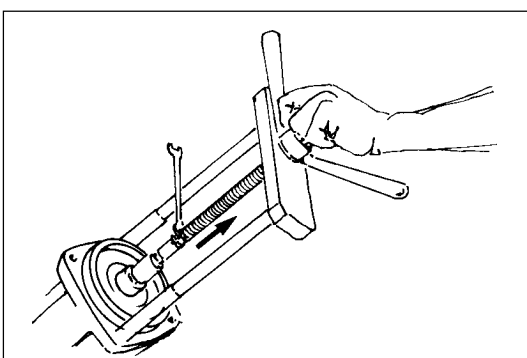
A2FM - motor - 6 cup springs / spring collars



Heat the housing to 80°C.
Insert rotary group.
(see repair instructions)



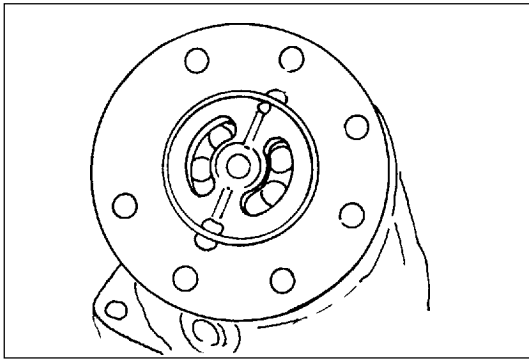
Install shims, front cover and retaining ring.



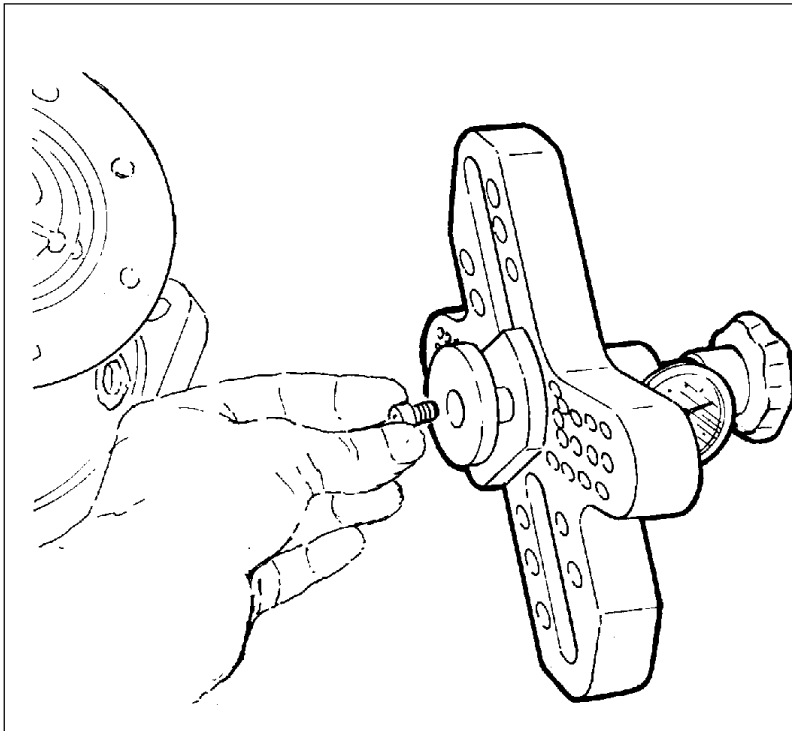
After mounting of the rotary group into the housing the drive shaft has to be pulled-back against the stop at the retaining ring.

Pulling means that the use of a bolt gun device is prohibited.

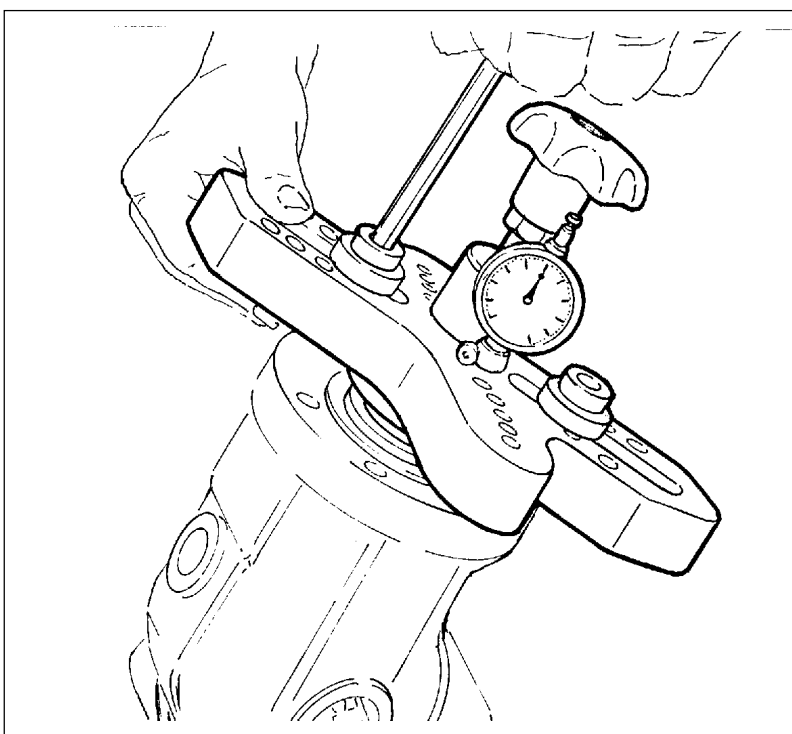
Use a press or an extractor device.



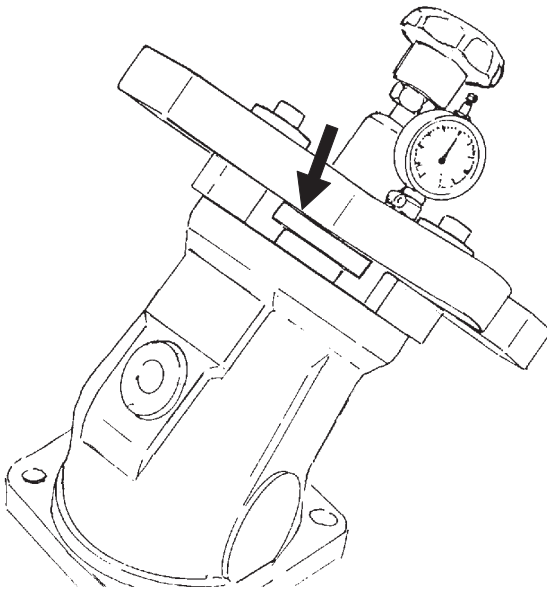
Insert the control plate.



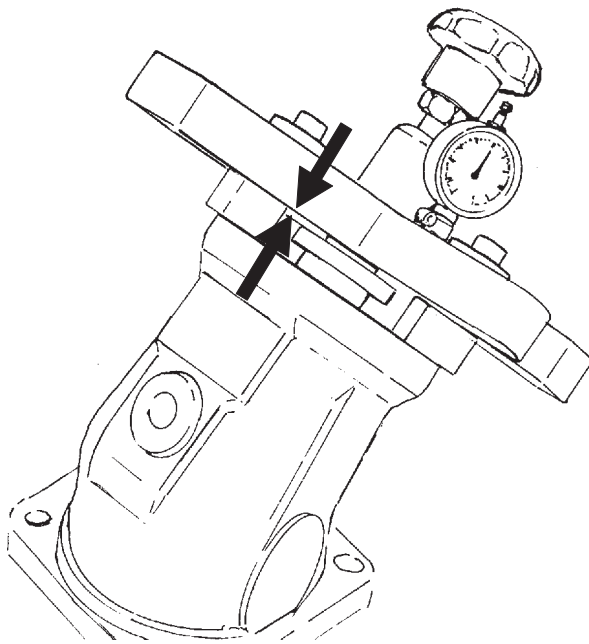
Assemble the measuring device for the size.



Mount and adjust the device.



Adjustment to zero - measuring device
Turn against the stop with the hand wheel.
- Dial gauge to zero -



Measuring process
Turn downwards by 4 turns at the dial gauge.
Inspection:
2 mm clearance, dial gauge "Zero".

Clearance:

Pump und motor with 4 cup springs

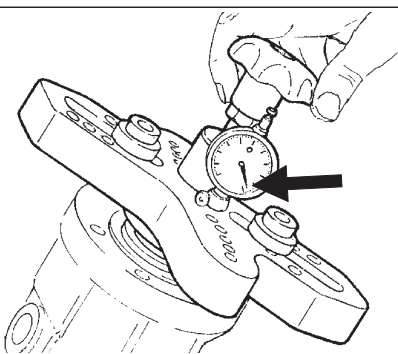
Size 10 - 32 0,15 - 0,25 mm

Size 45 - 180 0,15 - 0,30 mm

Motor with 6 cup springs

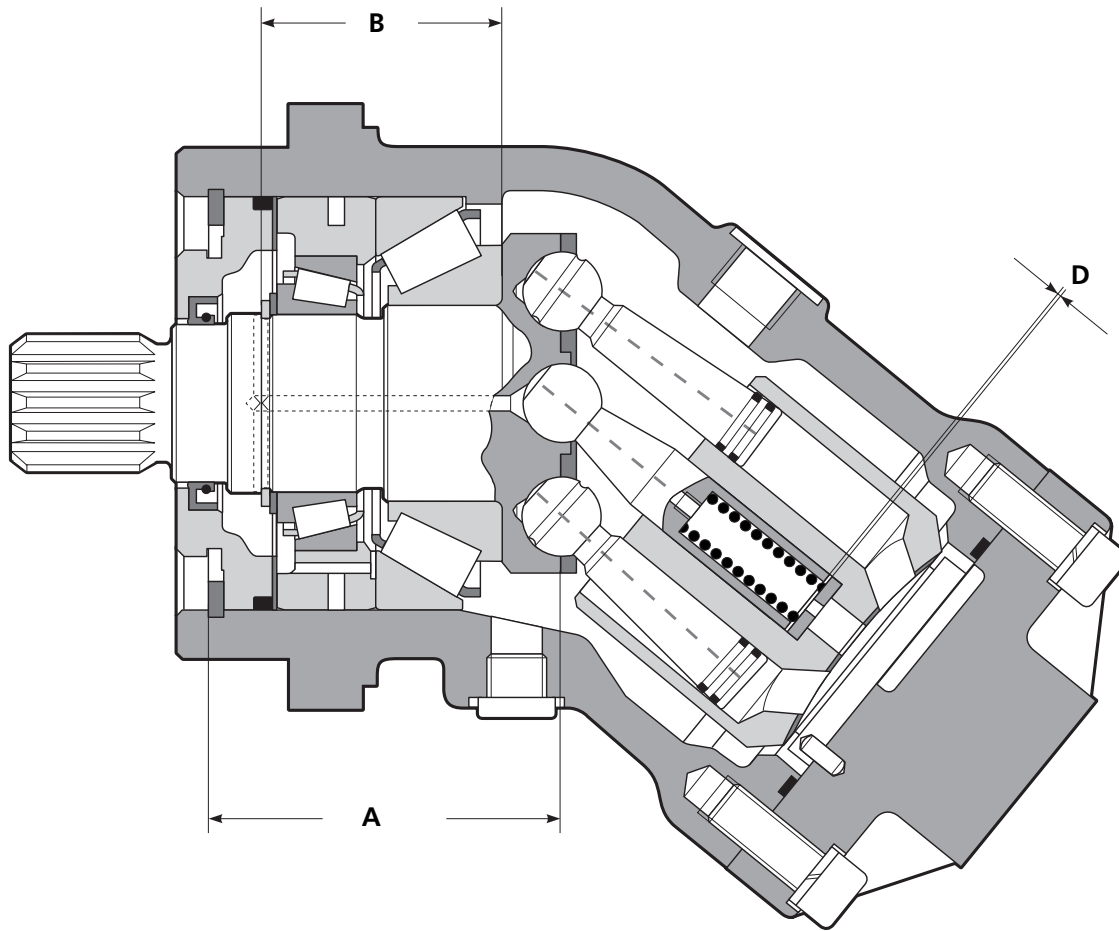
Size 10 - 90 0,15 - 0,25 mm

Size 107 - 180 0,25 - 0,40 mm




Measuring process:
Turn further downwards until the stoppage occurs.
Read the measuring value.

Note:
Without great expenditure of force.



A = Swivel centre

B = Bearing set, calibrated

 (Support washer and circlip are not "interchangeable")

D = Cylinder pre-load (stroke limitation)

Measuring points:

See service info

Note:

The calibrated drive shaft complete with bearing set or the calibrated bearing are the smallest assembly groups which are exchangeable and are only available as a set. The sub-assembly has to be calibrated to dimension (A). The tapered roller bearings are pre-set to the specified break-out torque.

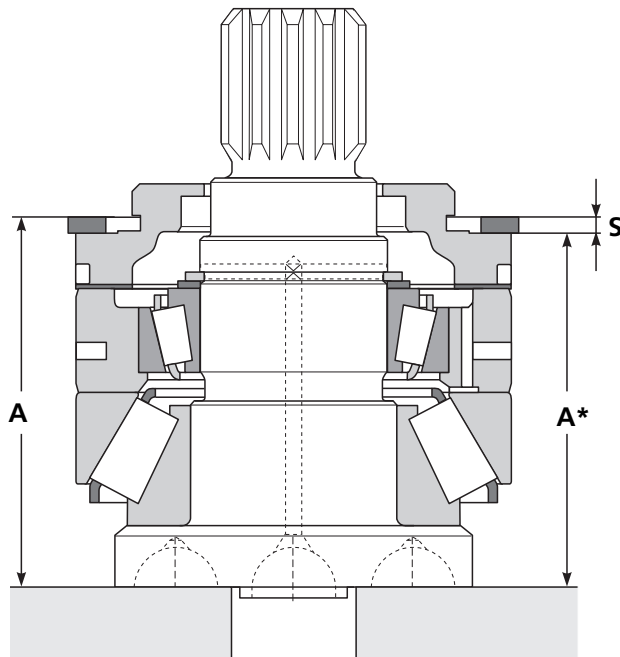
Mounting instruction:

Retaining force

After mounting into the housing the rotary group has to be pulled back against the stop at the retaining ring. Let the housing cool down from the assembly temperature (approx. 80°C) to room temperature. For this the following pull-back forces are defined: (see page 3).

Adjustment of the hydraulic component of the rotary group

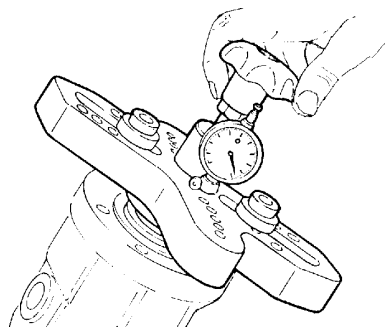
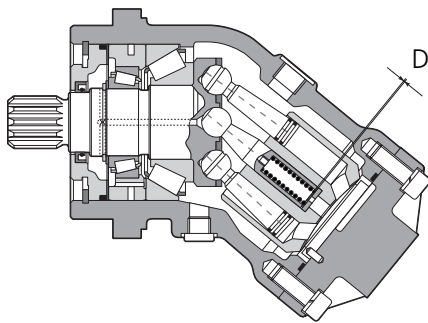
The adjustment of Pos.D is carried out by shims of different thickness. So that, when the rotary group is fitted into the housing, the correct clearance is obtained between the center pin and washer.

Adjustment Dimension A

$$A = A^* + S$$

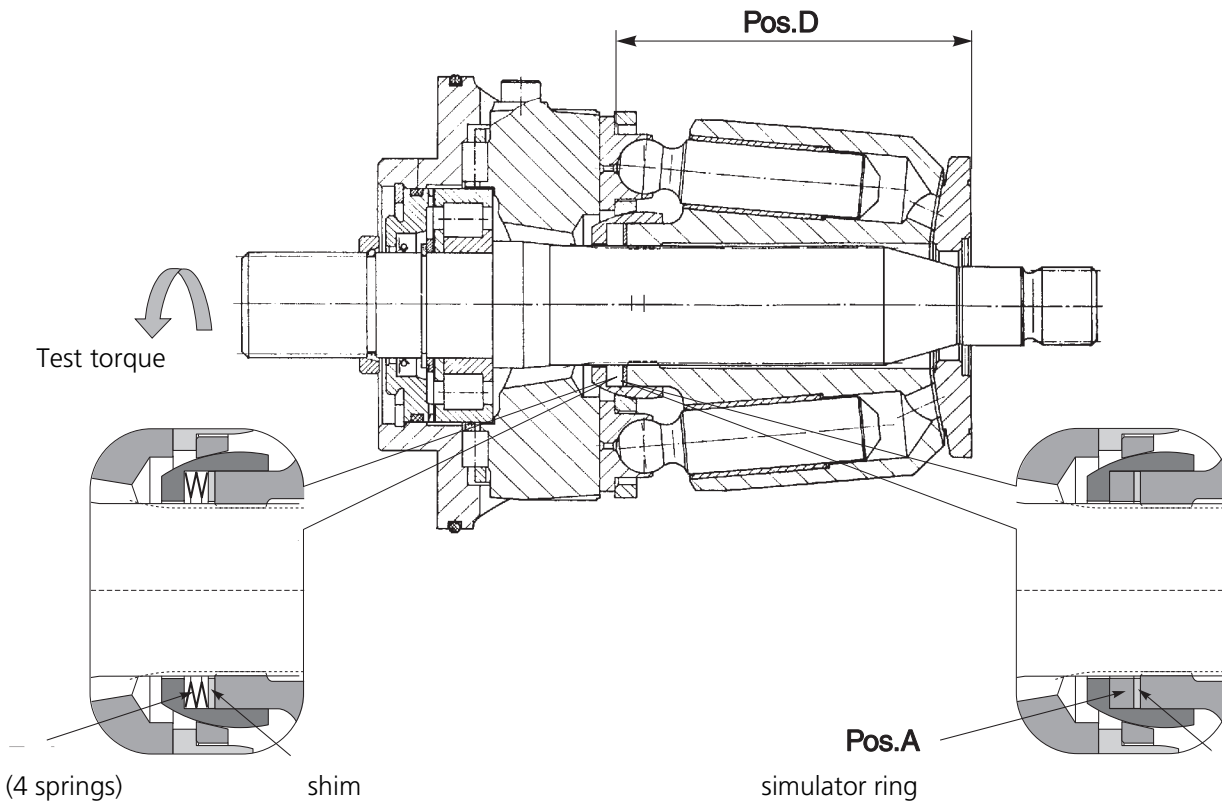
S = Nominal dimension - circlip

Size V (cm ³)	A (mm)	A* (mm)	Safety ring DIN 472 / Pos.4120
10; 12; 16	76,7 _{-0,1}	74,2 _{-0,1}	9083415 / 80 x 2,5
23; 28; 32	76,9 _{-0,1}	74,4 _{-0,1}	9083415 / 80 x 2,5
45	83,3 _{-0,1}	80,3 _{-0,1}	9154609 / 95 x 3
56; 63	89,7 _{-0,1}	85,7 _{-0,1}	9154528 / 105 x 4
80; 90	99,5 _{-0,1}	95,5 _{-0,1}	9085128 / 115 x 4
107; 125; 131	111,3 _{-0,1}	107,3 _{-0,1}	9152143 / 125 x 4
160; 180	120,8 _{-0,1}	116,8 _{-0,1}	9083421 / 140 x 4

Adjustment Dimension D

Size V (cm ³)	D (mm)
10; 12; 16	0,15 bis / to 0,25
23; 28; 32	
45	
56; 63	0,25 bis / to 0,4
80; 90	
107; 125; 131	0,25 bis / to 0,4
160; 180	

Tools see page 4

**Note:**

No combination of shims! The tolerance position is so that one shim is sufficient. Only **one** shim must be mounted.

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos. D is effected with the shim of different thickness and a simulator ring Pos. A.

A4V...B1/B2

Size	40	56	71	90	125	250
Piston diameter (Ø mm)	17	19	20,5	22,2	24,8	31,2
Pos.D (mm)	93,05 ^{+0,2} _{-0,2}	104,22 ^{+0,2} _{-0,2}	112,35 ^{+0,2} _{-0,2}	121,92 ^{+0,2} _{-0,2}	136,06 ^{+0,2} _{-0,2}	171,35 ^{+0,2} _{-0,2}
Pos.A (mm)	4,64 ^{+0,01} _{-0,03}	5,86 ^{+0,01} _{-0,03}	5,64 ^{+0,01} _{-0,03}	6,1 ^{+0,01} _{-0,03}	7,0 ^{+0,01} _{-0,03}	8,08 ^{+0,01} _{-0,03}

Test torque

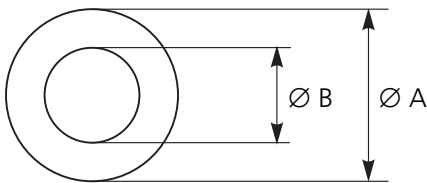
After assembly of the complete unit the breakaway torque of the rotary group has to be checked with a torque wrench.

For the variable displacement units the following standard values can be specified for inspection.

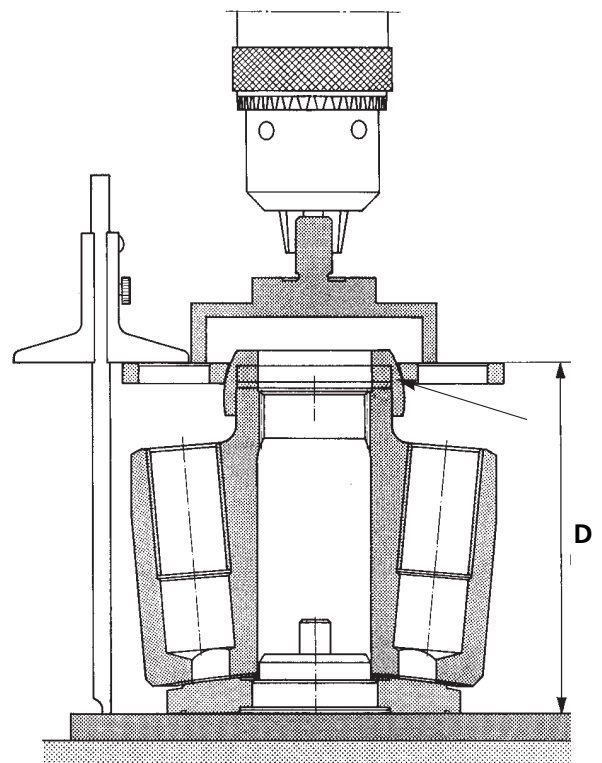
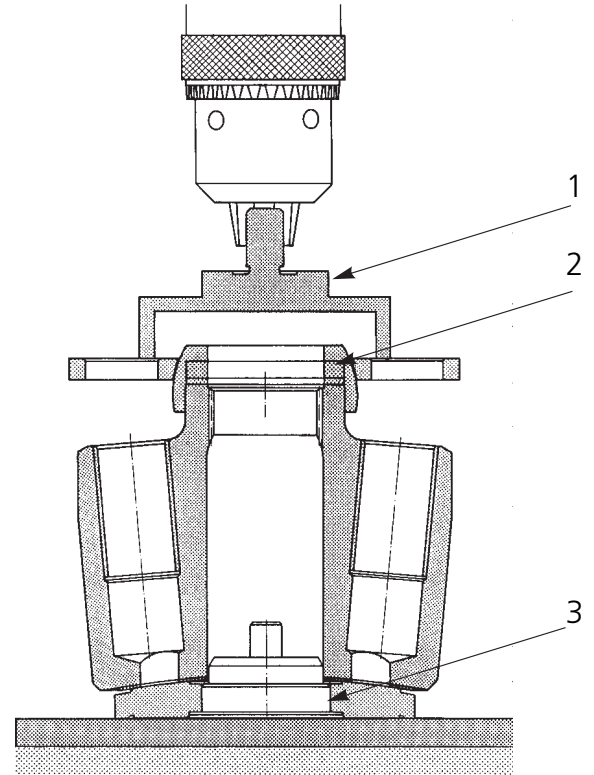
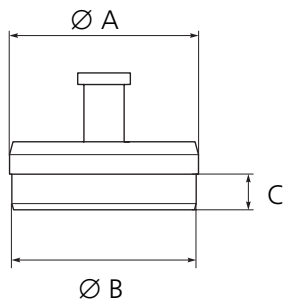
Size	40	56	71	90	125	250
M _n (Nm)	8	8	8	11	13	(20)
	±2	±2	±2	±2	±3	±3

Size	40	56	71	90	125	250
1 Measur. bell	9453085	9453085	9452868	9452868	9452868	9452869
2 Simulat. ring	9236667	9236668	9236967	9236669	9236670	9236966
3 Center. piece	9450420	9450421	9453573	9450422	9450423	9453022

Size	40	56	71	90	125	250
Simulat. ring						
(\varnothing mm) A	42,7	47,8	51	55,9	62,4	77,5
(\varnothing mm) B	37,9	41,8	43	46	52	67



Size	40	56	71	90	125	250
Center. piece						
(\varnothing mm) A	33,2	37,0	39,85	43,3	48,4	61,0
(\varnothing mm) B	29,0	32,5	34,95	38,0	42,0	53,65
(mm) C	9	9	10	10	10	10

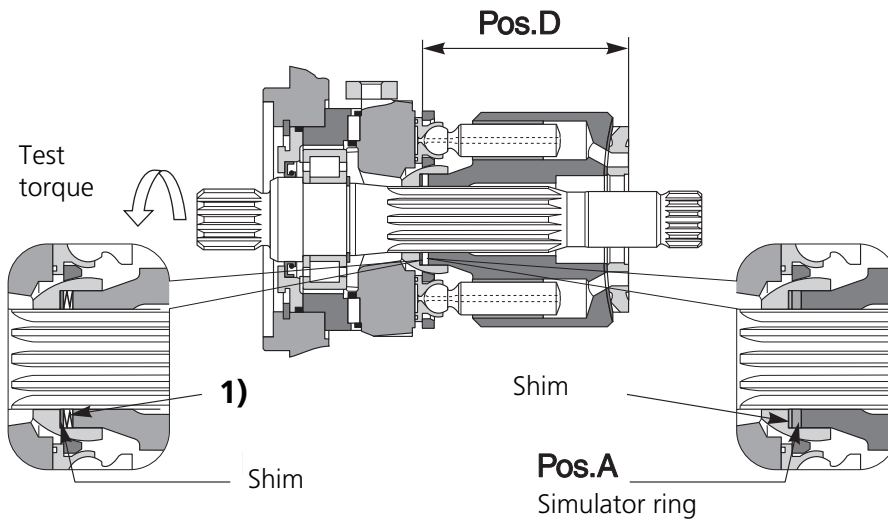


1. The measuring bell shall press on the retaining plate in the center.
2. Measure with depth gauge dimension D and compensate with a shim.
Attention!
Use only **one** shim!.

Note:

It is recommended to repeat the measurement on the opposite side and/or at adjacent spots. Even out the dimensions if need be.

NG 28 ... 56

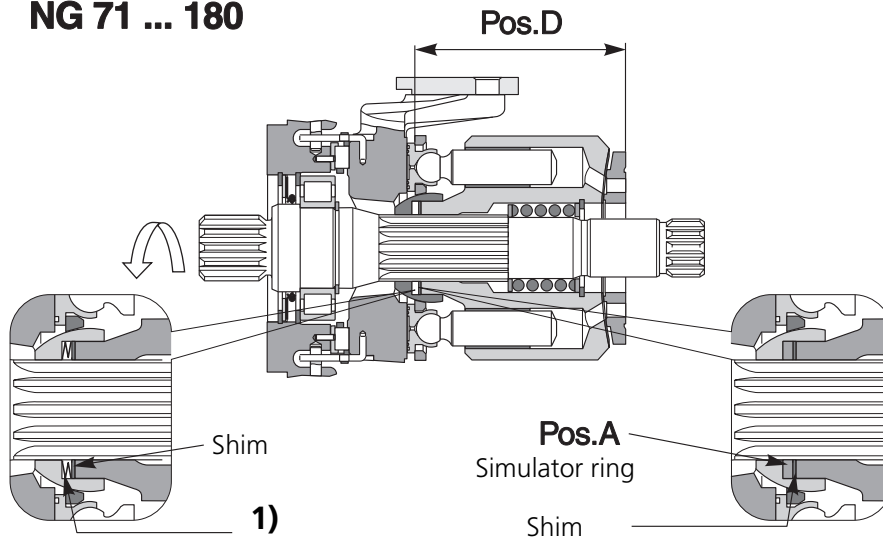


1) A4VG 28 /30
to 12/90 4 springs
from 01/91 3 springs

1) A4VG 40 /31
to 10/93 4 springs
from 11/93 3 springs

1) A4VG 56 /31
3 springs

NG 71 ... 180



1) A4VG 71-180 /31
3 springs

Note:

No combination of shims! The tolerance position is so that one spacer is sufficient. Only **one** shim must be mounted.

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos. D is effected with one shim of different thickness and a simulator ring Pos. A.

A4VG.../ 31 / 32

	to 12/90							
Size	28	28	40	56	71	90	125	180
Piston (Ø mm)	(13,5)	13,5	15,2	17	18,4	19,9	22,2	25,1
Pos.D (mm)	(80,1 _{-0,2})	80,1 _{-0,2}	89,6 _{-0,2}	100,06 _{-0,2}	108,7 _{-0,2}	117,4 _{-0,2}	131,0 _{-0,2}	148,2 _{-0,2}
Pos.A (mm)	(3,75)	3,16 ^{+0,01} _{0,03}	3,19 ^{+0,01} _{-0,03}	3,49 ^{+0,01} _{-0,03}	3,58 ^{+0,01} _{-0,03}	4,0 ^{+0,01} _{-0,03}	4,5 ^{+0,01} _{-0,03}	5,05 ^{+0,01} _{0,03}

Test torque

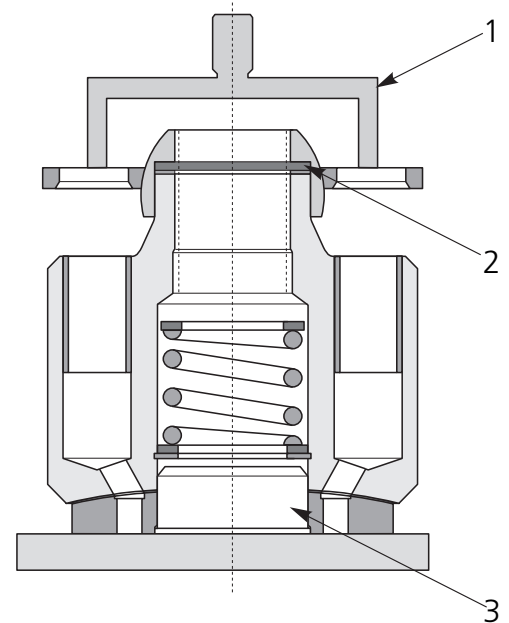
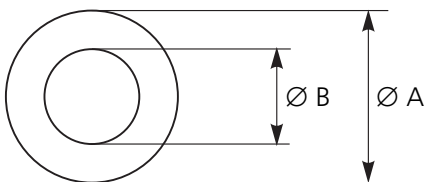
After assembly of the complete unit the breakaway torque of the rotary group has to be checked with a torque wrench.

For the variable displacement units the following standard values can be specified for inspection.

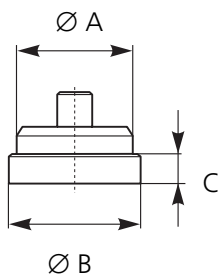
Size	28	40	56	71	90	125	180
M _n (Nm)
	±.	±.	±.	±.	±.	±.	±.

Size	to 12/90 28	28	40	56	71	90	125	180
1 Measur. bell	9453085	9453085	9453085	9453085	9452868	9452868	9452868	9452869
2 Simulat. ring	9451429	9452838	9452837	9452839	9452850	9453556	9452851	9452852
3 Center. piece	9451430	9451430	9453169	9453170	9453171	9453172	9452878	9453173

Size	to 12/90 28	28	40	56	71	90	125	180
Simulat. ring								
(\varnothing mm) A	31,6	34	37	43	46	51	56	63
(\varnothing mm) B	25,5	25,5	29,5	31,5	34,5	38	41,5	47,5



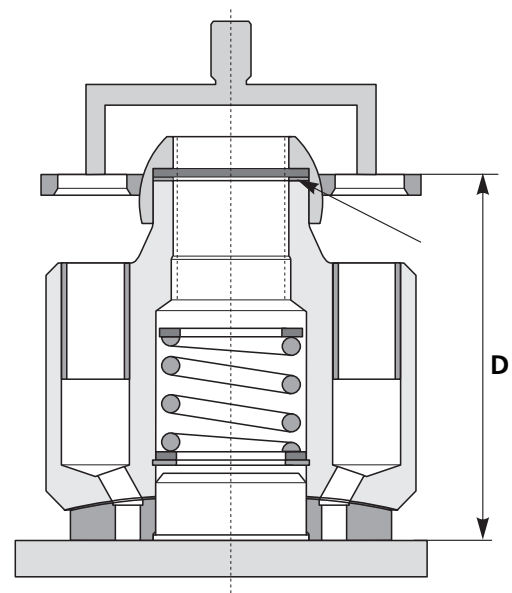
Size	28	40	56	71	90	125	180
Center. piece							
(\varnothing mm) A	25,65	35,5	42,8	44,95	47,95	54,95	61,95
(\varnothing mm) B	27,9	34,8	41,8	43,8	47,8	53,8	57,8
(\varnothing mm) C	6,5	6	7	8	9	10	10

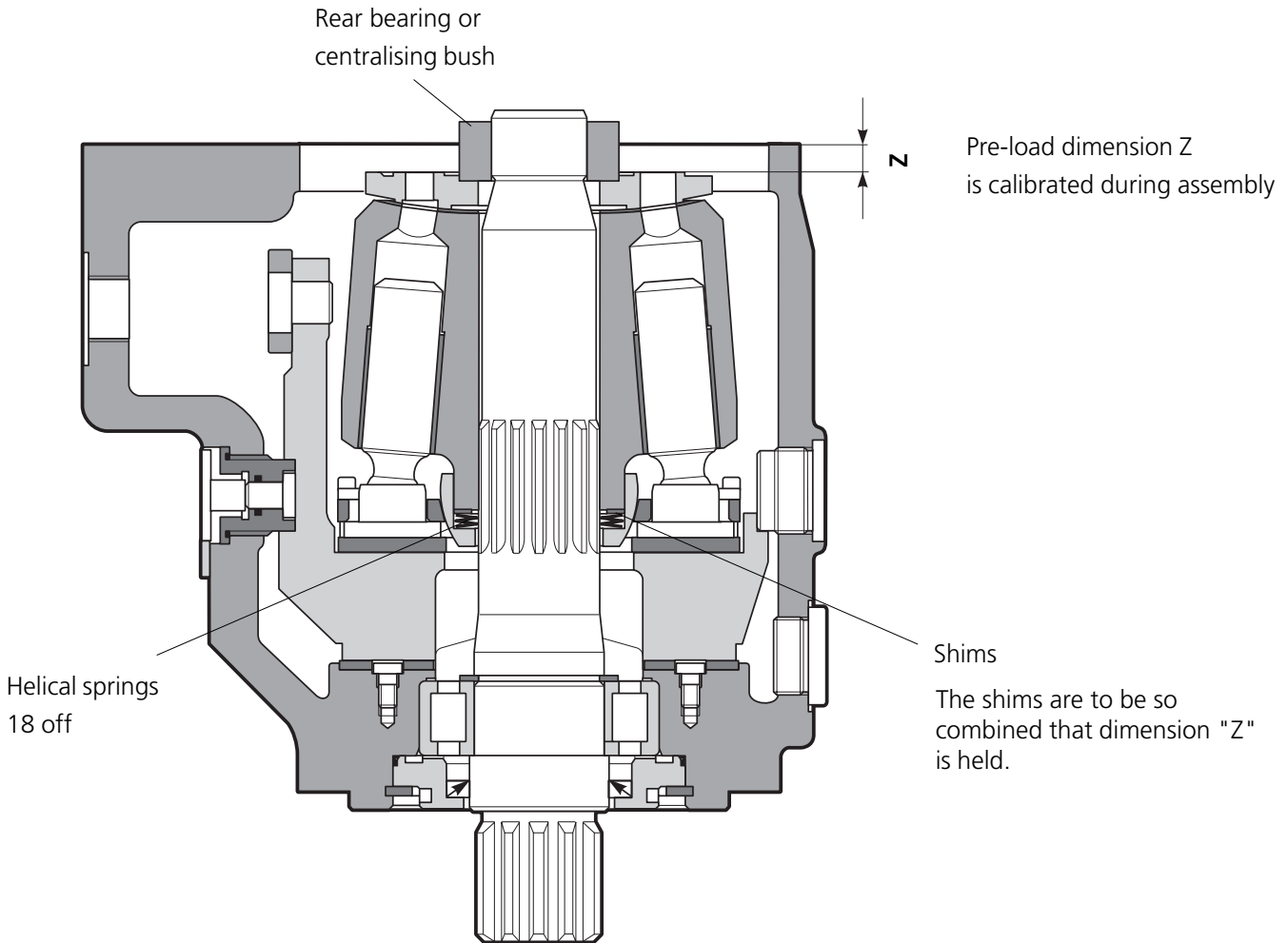


1. The measuring bell shall press on the retaining plate in the center.
2. Measure dimension D with depth gauge and compensate with a shim.
Attention!
Use only **one** shim!


Note

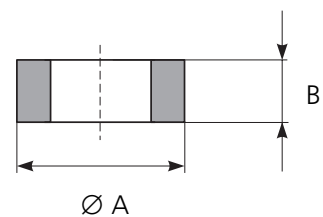
It is recommended to repeat the measurement on the opposite side and/or at adjacent spots. Even out the dimensions if need be.





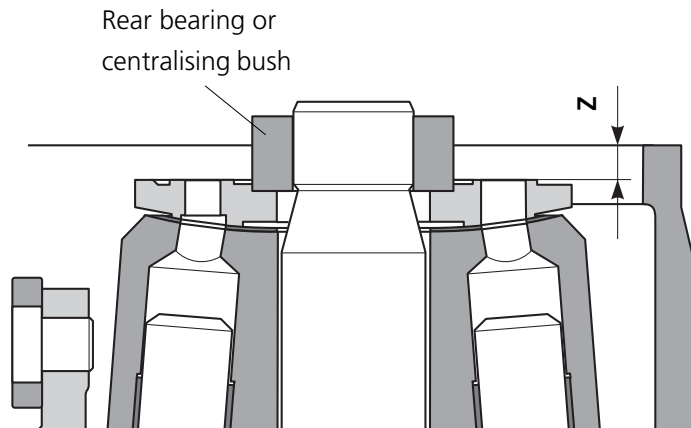
Nominal size	Pre-load dimension Z (mm) vertical ¹⁾ with the helical springs	Centralising bush	
		A	B
180	3,20 ^{+0,25}	63	27
225 / 250	16,25 ^{+0,25}	72	30
355	4,00 ^{+0,25}	49,5	32
450 / 500	6,90 ^{+0,25}	90	34
750	7,00 ^{+0,25}	100	37
1000	6,30 ^{+0,25}	120	40

 ¹⁾ By carrying out the calibration vertically the weight of the cylinder and the distributor plate are taken into account.



All tolerances: - 0,1


Cylinder pre-load A4VSO 40...750 BR2X

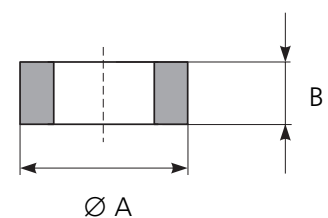


Pre-load dimension Z
Is calibrated during assembly
(measured with pump open,
without connection plate).

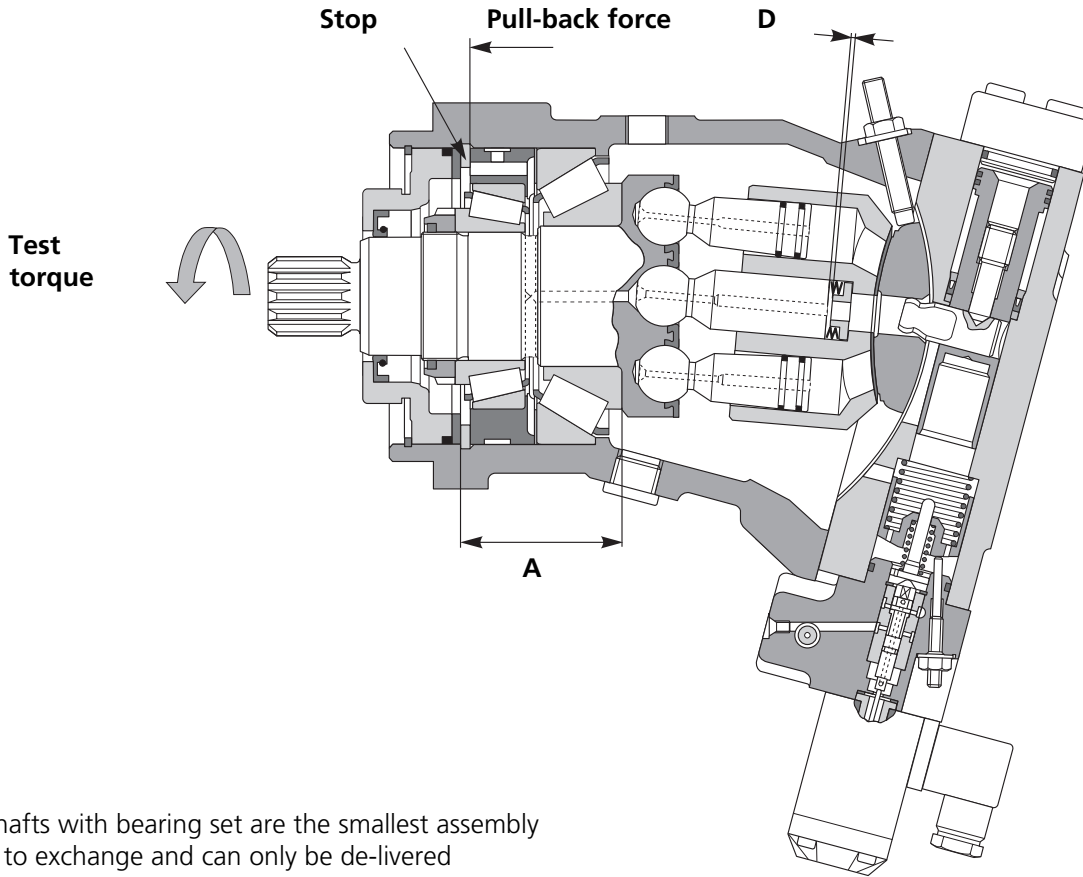
The shims are to be so
combined that dimension "Z"
is held.

Nominal size	Pre-load dimension Z (mm) vertical	Centralising bush	
		A	B
40	10,00 ±0,15	39	17
71	8,65 ±0,15	48	18,5
125	11,80 ±0,2	57	22
180	1,4 ±0,2	63	27
250	15,35 ±0,2	72	30
355	1,45 ±0,25	49,5	32
500	4,75 ±0,25	90	34
750	4,45 ±0,25	100	37

 The calibration is carried out before assembling
the retaining system (segments and spacer tube).



All tolerances: - 0,1

**Note:**

Drive shafts with bearing set are the smallest assembly groups to exchange and can only be de-livered completely. The assembly group is adjusted to dimension (A). The tapered roller bearings are adjusted to the stipulated breakaway torque.

Mounting instruction:**Pull-back force**

After mounting into the housing the rotary group has to be pulled-back against the stop at the retaining ring. Let the housing cool down from the assembly temperature (approx. 80°C) to room temperature. For this the following pull-back forces are defined:

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos.D is effected with spring collars of different thickness so that the clearance is in the housing between the center pin and the spring collar for the mounted rotary group.

A6VM / A7VO

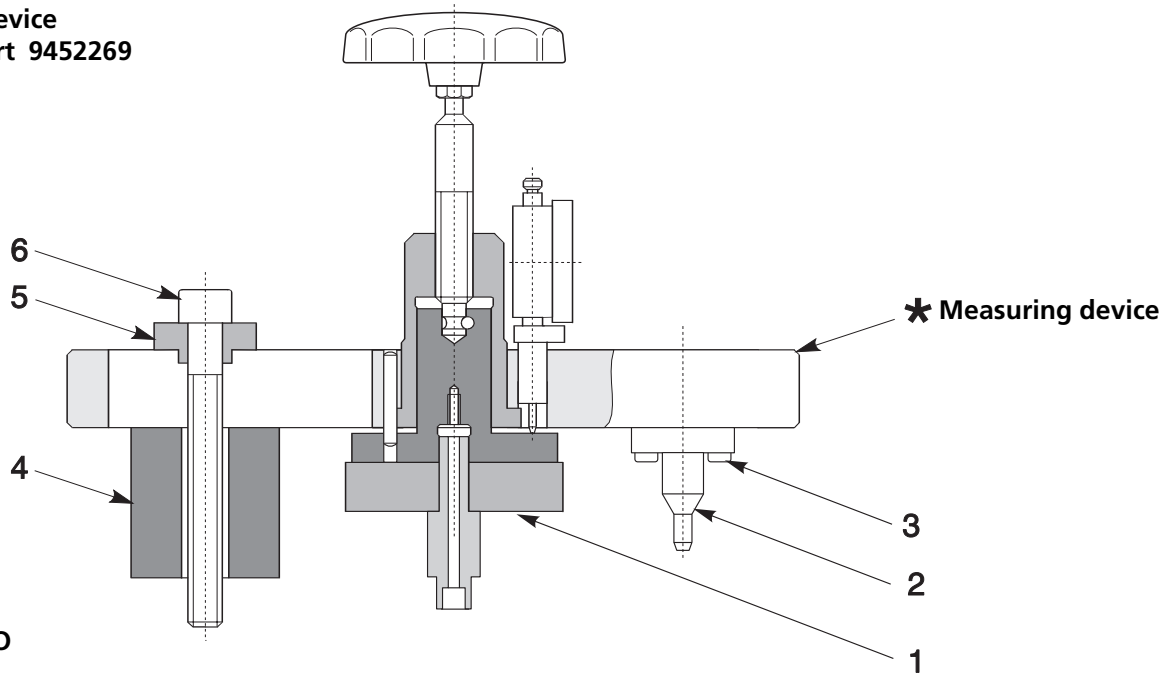
Size	28	55	80	107	160	200
Max. pull-back force (N)	10000	14000	20000	28000	31500	38000

Test torque

After assembly of the complete unit the breakaway torque of the rotary group has to be checked with the torque wrench.

Size	28	55	80	107	160	200
Max. admissible breakaway torque (Nm)	6	8	12,5	16	25	31,5

Measuring device
Hydraulic part 9452269

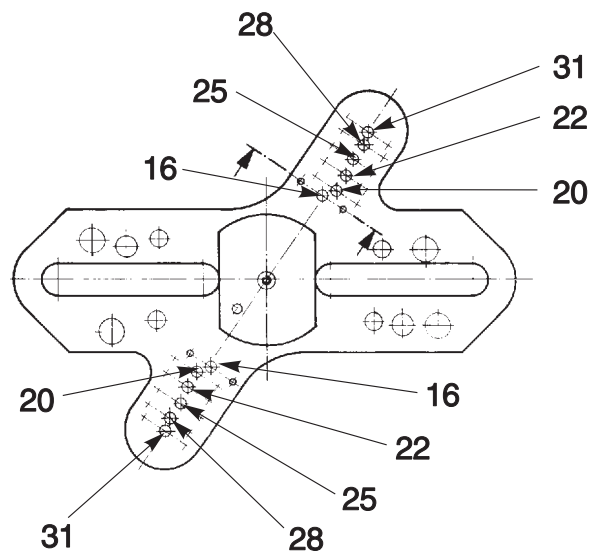
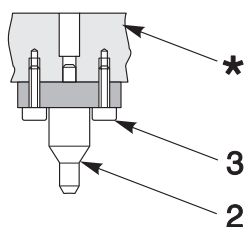


A6VM / A7VO

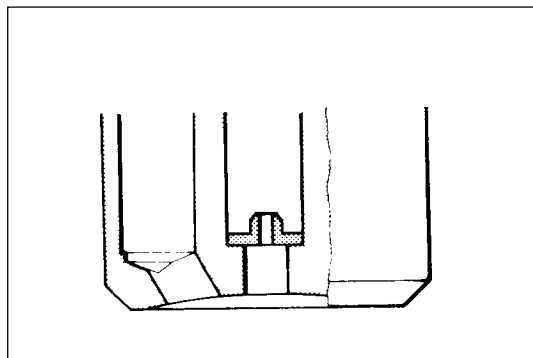
Size		28	55	80	107	160	200
* Measuring device		9452269	9452269	9452269	9452269	9452269	9452269
(1) Centering piece	1x	9452019	9452020	9452021	9452022	9452023	9452024
(2) Connecting pin	2x	9452272	9452272	9452271	9452271	9452270	9452270
(3) Cylinder screw	4x	9083010	9083010	9083010	9083010	9083010	9083010
(4) Intermediate ring	2x	9452013	9452013	9452014	9452014	9452014	9452014
(5) Shim	2x	9452008	9452009	9452010	9452010	9083279	9083279
(6) Cylinder screw	2x	9083051	9083073	9083105	9083105	9083144	9083144

Mounting position

Mount the connecting pin (2) with the cylinder screw (3) at the measuring device (*). The numbers on the bottom side of the measuring device (*) designate the piston diameter.



Size		28	55	80	107	160	200
Mounting position		16	20	22	25	28	31

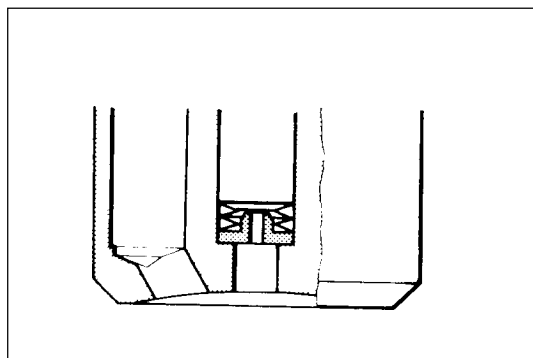
**Note:**

For the adjustment of dimension (D) **no** cup springs must be used.

They will only be mounted after the adjustment procedure (determination of the needed thickness of the spring collar).

Attention!

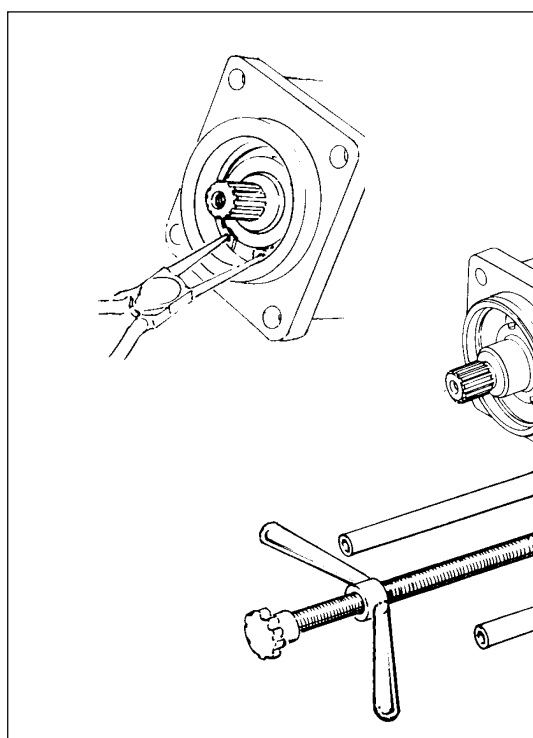
When the dimension (D) is measured with cup springs, more force has to be spent to carry out the measurement (measuring fault).



Take care of the correct layer arrangement of all parts!

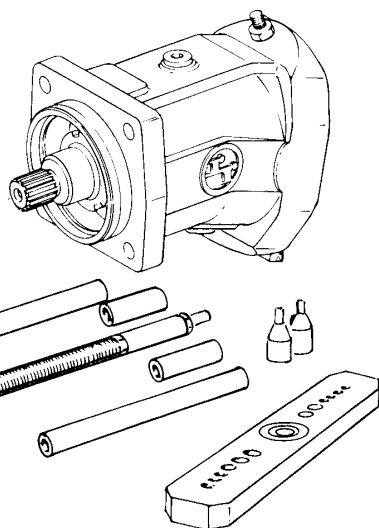


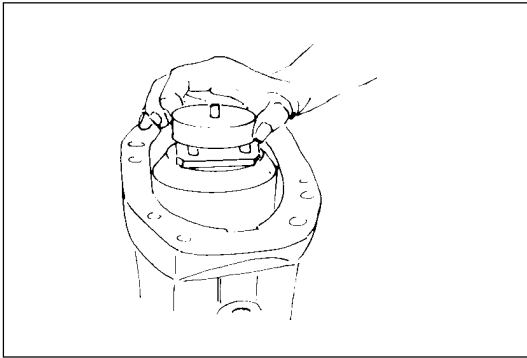
Heat the housing to 80°C.
Insert rotary group.
(see repair instructions)



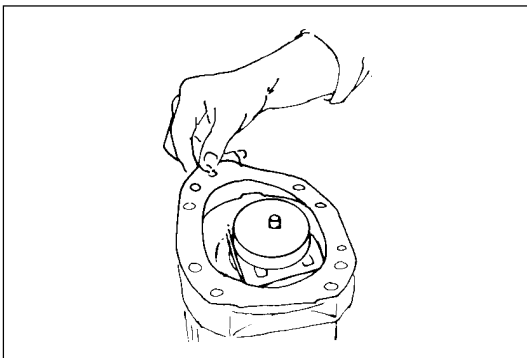
Insert retaining ring.

After mounting of the rotary group into the housing the drive shaft has to be drawn up against the stop at the retaining ring.
Max. pull-back force: (see page 12)





Center the control lens and cylinder with a centering piece.

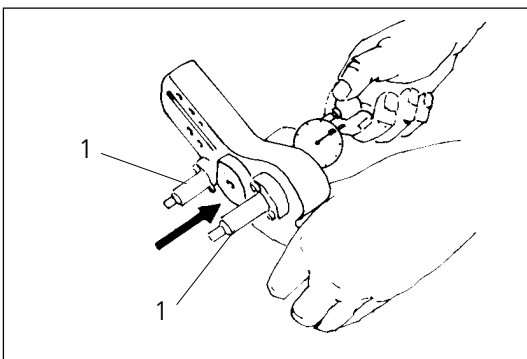


Note:

Remove location pins, lay on the gasket.

Attention!

Use ORIGINAL HYDROMATIK gasket as to spare parts list.
The thickness of the original gasket is allowed for in the adjustment of dimension (D) and is taken into consideration for the constructive dimensions of the tool parts.

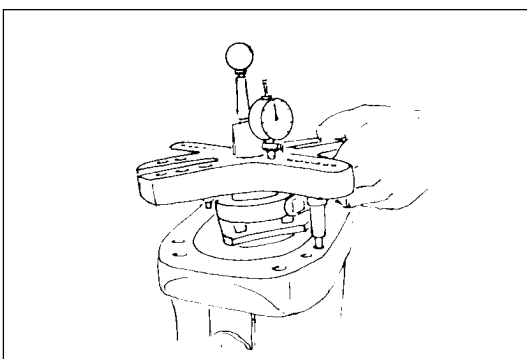


Note:

Centering bolt (1) on measuring device.

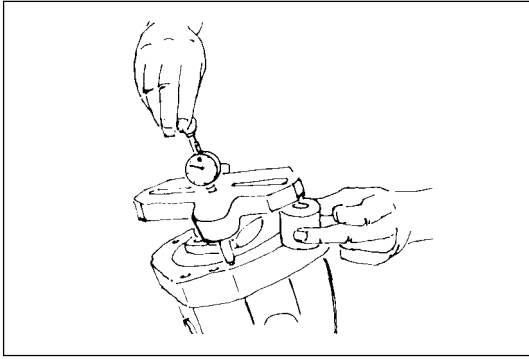
Mounted "correctly".

Turn the "dial gauge" against the stop with the ball head.

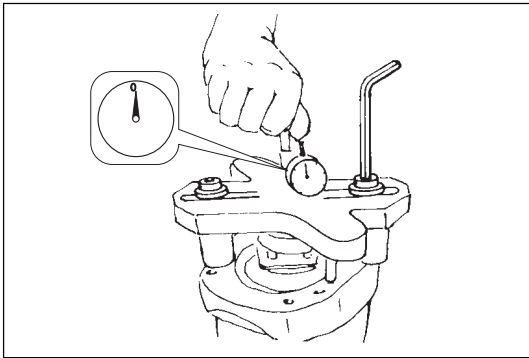


Mount the measuring device in the centering piece and the location pin borings.

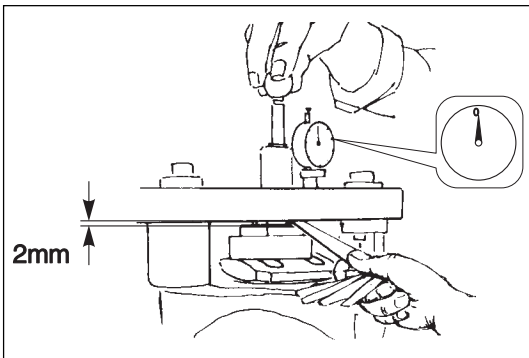




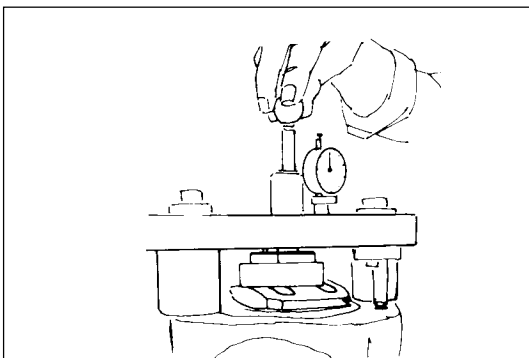
Lift the measuring device by turning and insert intermediate rings.
Fix the cylinder crews and the shim.



Attention!
Turn measuring device back against the stop.
"Zero adjustment" before the cylinder screws are tightened for fixing.



Turn down by four turns at the dial gauge.
Check:
2 mm clearance, dial gauge "Zero".



Measuring procedure:
Turn further downward until the stop occurs.
Attention!
No expenditure of force!

Read the measuring value:

A6VM 28

Dim. (D) : 0,2 ± 0,05 mm

A6VM 107

Dim. (D) : 0,2 ± 0,05 mm

A6VM 55

Dim. (D) : 0,2 ± 0,05 mm

A6VM 160

Dim. (D) : 0,25 ± 0,05 mm

A6VM 80

Dim. (D) : 0,2 ± 0,05 mm

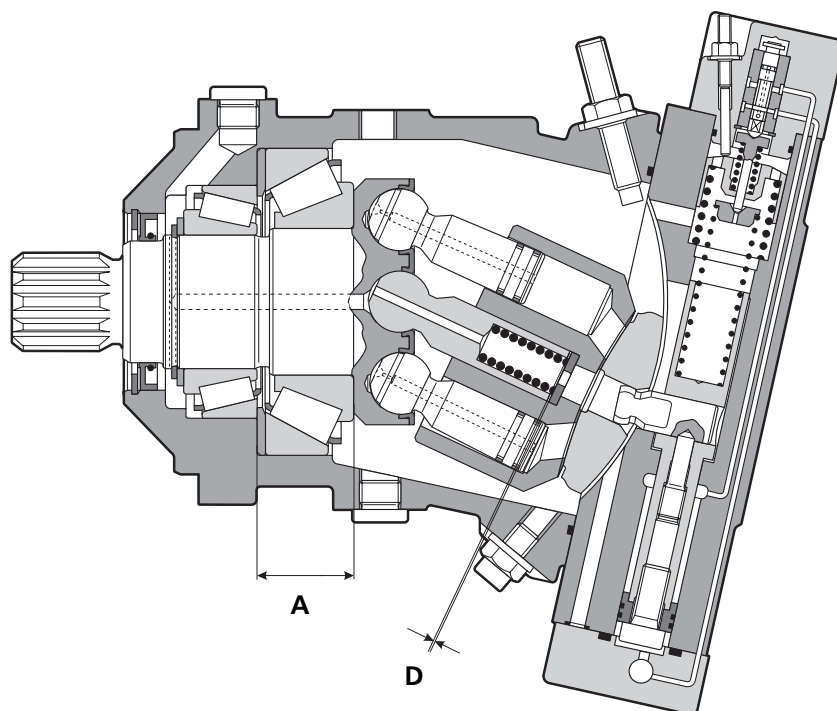
A6VM 200

Dim. (D) : 0,25 ± 0,05 mm

A7VO

Dim. (D) : 0,4 ± 0,1 mm

For adjustment to dimension (D) "spring collars" of different thickness are available for each size with steps of 0,1 mm each time.

**Note:**

The drive shaft complete with bearing set is the smallest exchangeable sub-assembly and is only available as a complete sub-assembly. The sub-assembly is set up with reference to dimension (A). The taper roller bearings are adjusted to comply with the specified break-away torque.

Assembly guideline:**Withdrawal force**

After the rotary group has been fitted into the housing pull the rotary group in until the end stop is reached. Allow the housing to cool down from its assembly temperature (approx. 80°C) to room temperature. The following withdrawal forces are defined as follows.

Adjusting the hydraulic component of the rotary group

The adjustment of item D is achieved by the use of shims of various thicknesses, so that with an installed rotary group the clearance (D) is obtained between the centre pin and shim.

A6VM / A7VO

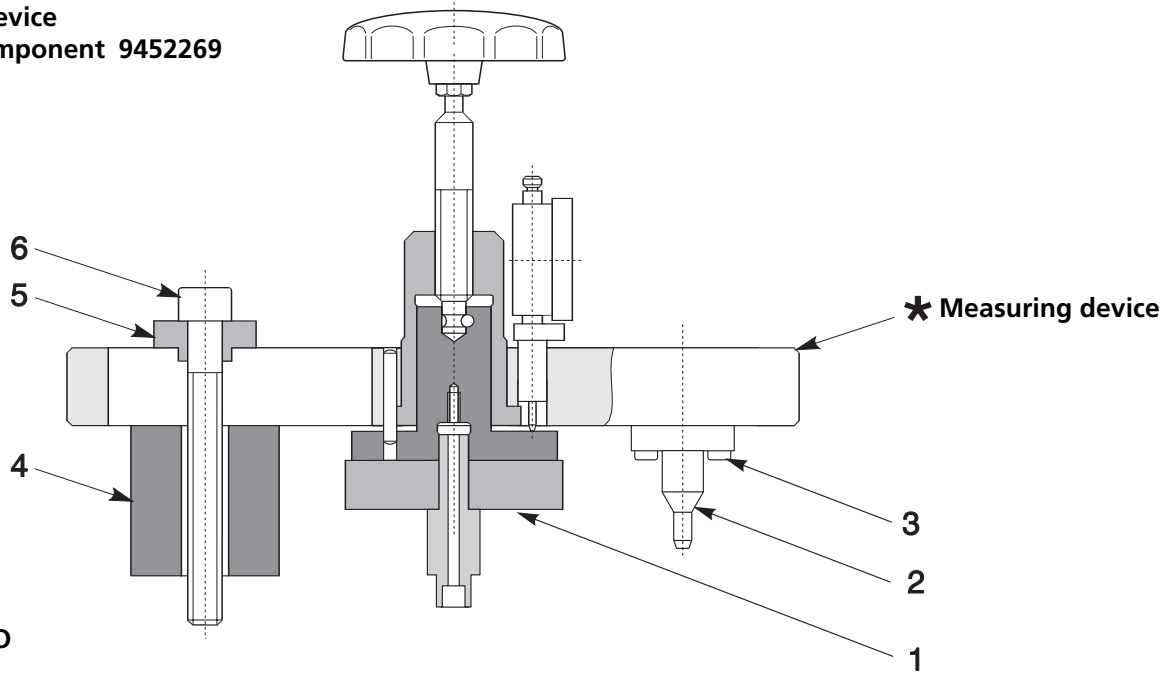
Nominal size	28	55	80	107	140	160	200
Max. withdrawal force (N)	10000	14000	20000	28000	30000	31500	38000

Test torque

After assembly of the entire unit check the breakaway force of the rotary group by means of a torque wrench.

Nominal size	28	55	80	107	140	160	200
Max. permissible torque (Nm)	6	8	12,5	16	21	25	31,5

**Measuring device
Hydraulic component 9452269**

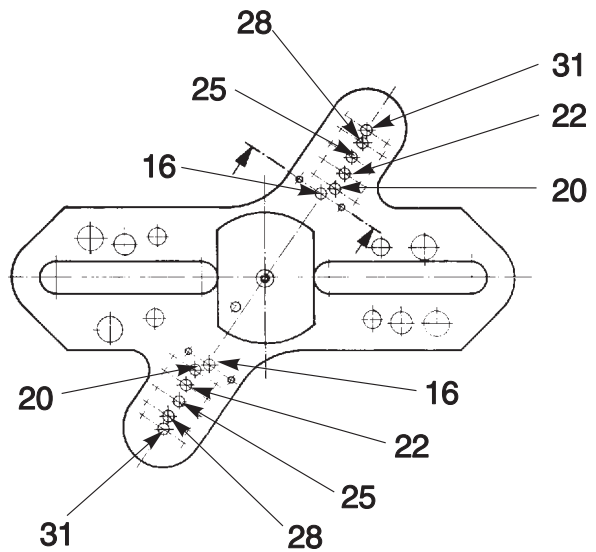
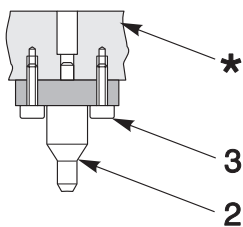


A6VM / A7VO

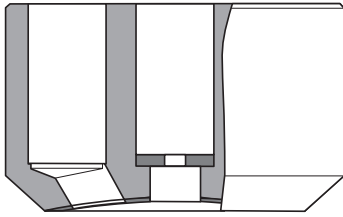
Nominal size		28	55	80	107	140	160	200
* Measuring device		9452269	9452269	9452269	9452269	9452269	9452269	9452269
(1) Centring device	1x	9452019	9452020	9452021	9452022	9452023	9452023	9452024
(2) Locating pin	2x	9452272	.	9452271	9452271	9452270	9452270	9452270
(3) S.H.C.S.	4x	9083010	.	9083010	9083010	9083010	9083010	9083010
(4) Intermediate ring	2x	9452013	9452013	9452014	9452014	9452014	9452014	9452014
(5) Support ring	2x	9452008	9452009	9452010	9452010	9083279	9083279	9083279
(6) S.H.C.S.	2x	9083051	9083073	9083105	9083105	9083144	9083144	9083144

Assembly position

Assemble locating pin (2) and S.H.C.S. (3) onto the measuring device (*). Take care to ensure that the correct assembly position is used. The numbers on the underside of the measuring device (*) relate to the piston diameter.



Nominal size		28	55	80	107	140	160	200
Assembly position		16	20	22	25	28	28	31

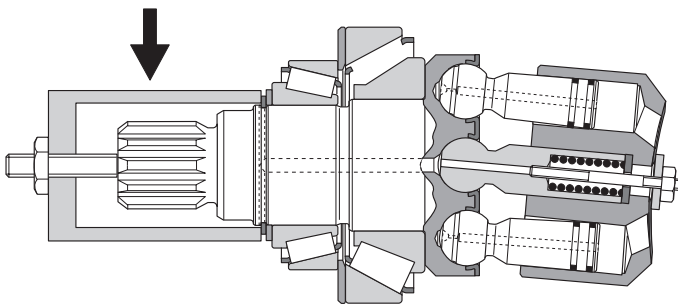
**Note:**

When adjusting dimension (D) do **not** use a spring. This is fitted after the adjustment (determination of the required shim thickness) procedure has been carried out.

Attention!

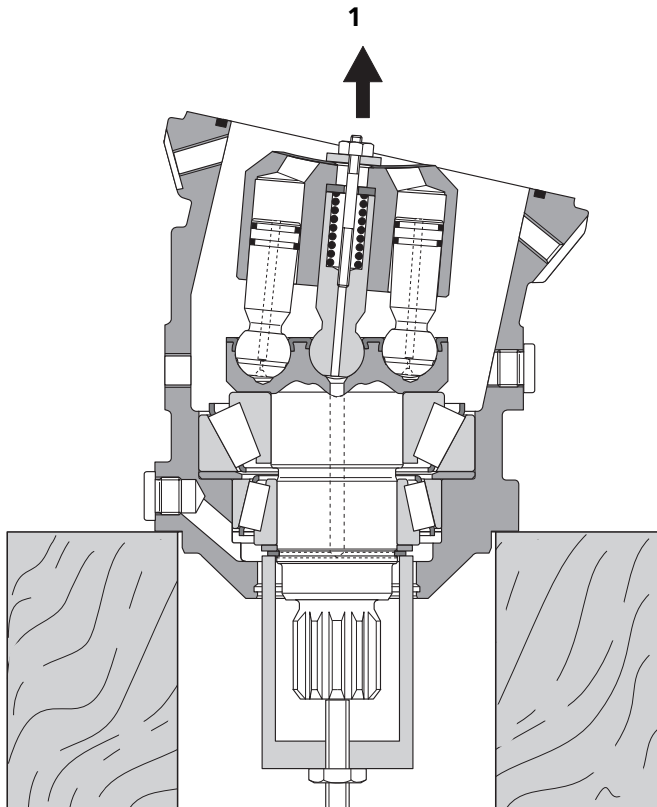
**If dimension (D) is adjusted using a spring then more force is necessary to carry out the measurement.
(Measuring error)**

Fit assembly bush



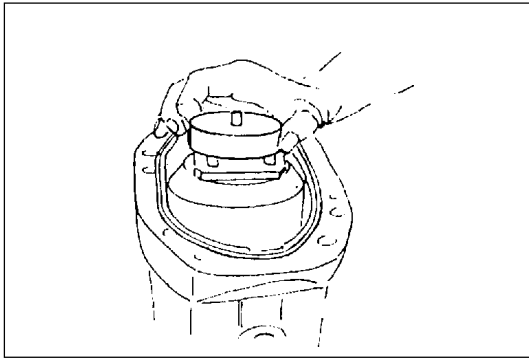
Rotary group is ready for installation

Warm housing up to approx. 80°C
Insert rotary group
(See repair instructions)



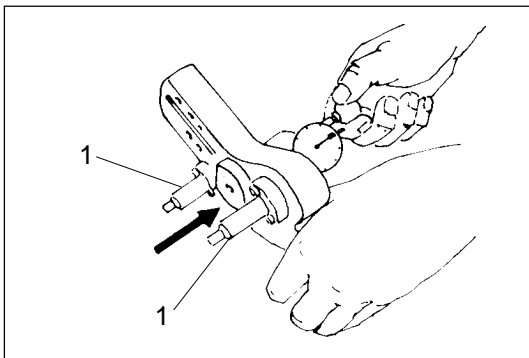
Position the cylinder into the zero position.

Remove the cylinder fixing screw **1**.



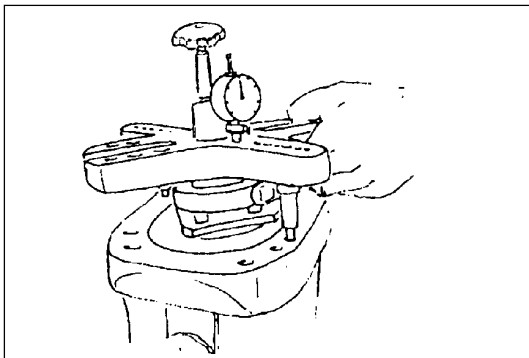
Note:

Remove locating pins, centralise the port plate and cylinder with the centring device.

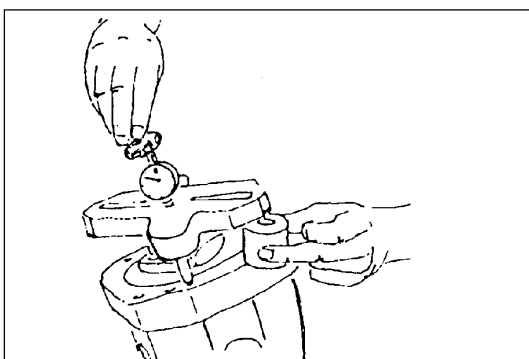


Note:

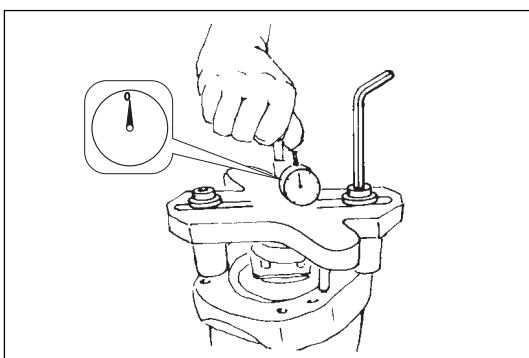
Fit locating pin (2) correctly onto the measuring device.
Turn "dial gauge" with ball head up to the end stop.
Assemble nominal size 55 without the centralising bolt.



Assemble the measuring device into the centralising device and locating pin hole.

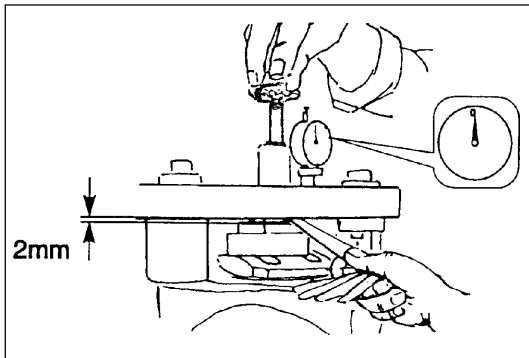


Lift by turning the measuring device and insert the intermediate ring.
Fix using the S.H.C.S. and support ring.
Adjust nominal size 55 by hand.



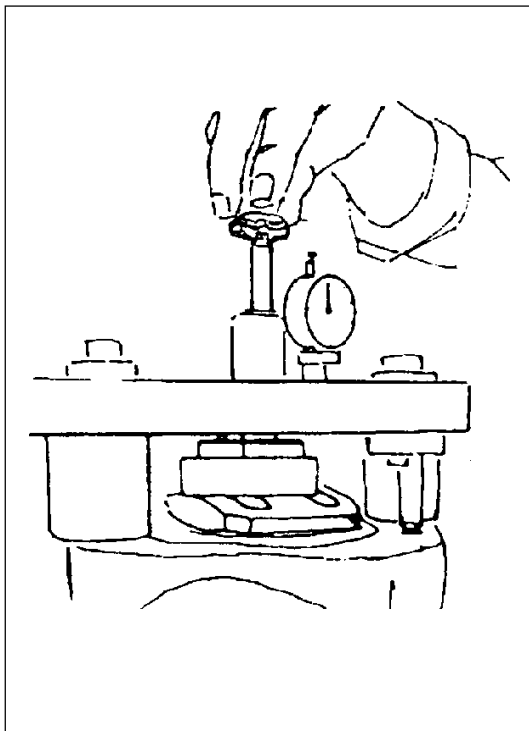
Attention!

Turn back the measuring device up to the end stop.
"Zero adjustment" before the S.H.C.S. are tightened.



Turn down by four turns at the dial gauge:

Check:
2mm clearance, dial gauge "zero".



Measurement procedure

Continue to turn downwards until resistance is met.

Attention! Do not use force!

Read the measured value.

A6VM 28

Dim. (D) : 0,15 - 0,3 mm

A6VM 107

Dim. (D) : 0,15 - 0,35 mm

A6VM 55

Dim. (D) : 0,15 - 0,3 mm

A6VM 140

Dim. (D) : 0,2 - 0,4 mm

A6VM 80

Dim. (D) : 0,15 - 0,3 mm

A6VM 160

Dim. (D) : 0,2 - 0,4 mm

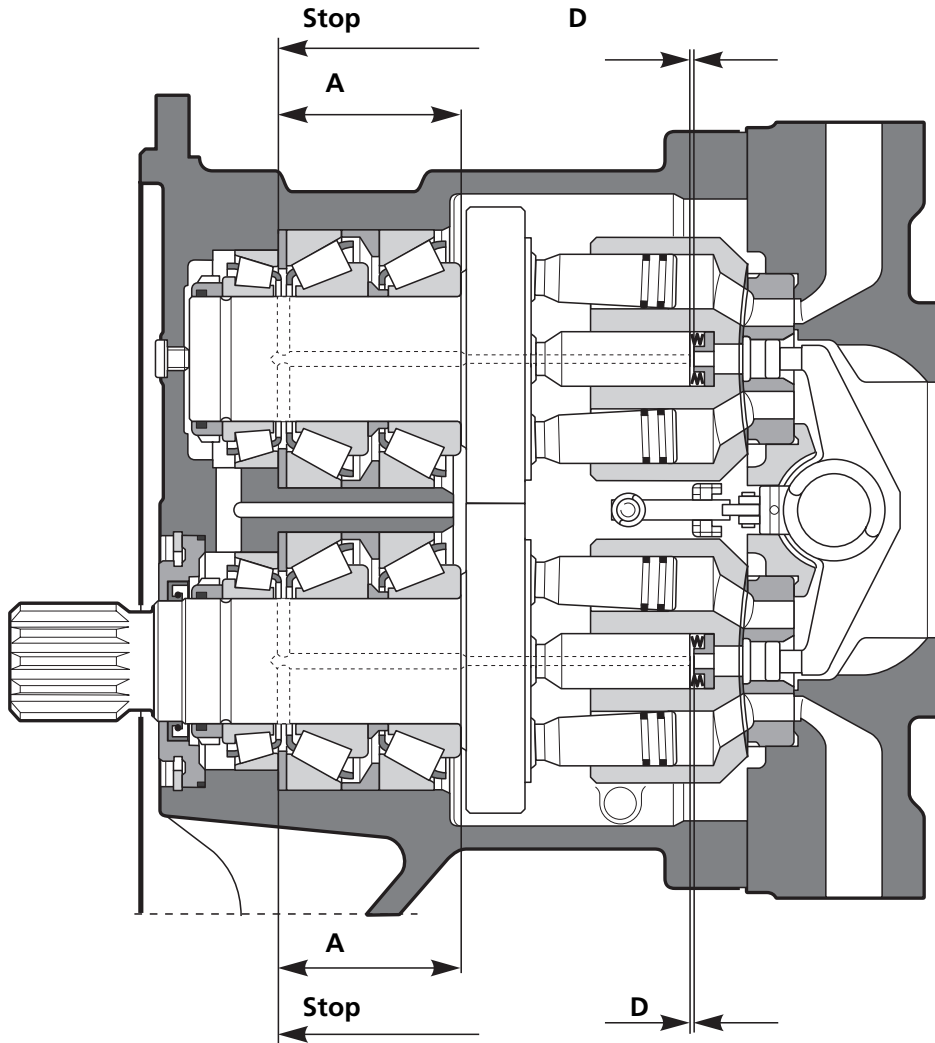
A6VM 200

Dim. (D) : 0,2 - 0,4 mm

A7VO

Dim. (D) : 0,4 ± 0,1 mm

For adjusting the Dim. (D) there are shims available in various thicknesses for each nominal size in steps of 0,1 mm.

**Note:**

Drive shafts with bearing set are the smallest assembly groups to exchange and can only be de-livered completely. The assembly group is adjusted to dimension (A). The tapered roller bearings are adjusted to the stipulated breakaway torque.

Mounting instruction:**Pressing force**

After mounting into the housing the rotary group has to be pressed against the stop. Let the housing cool down from the assembly temperature (approx. 80°C) to room temperature.

Test torque

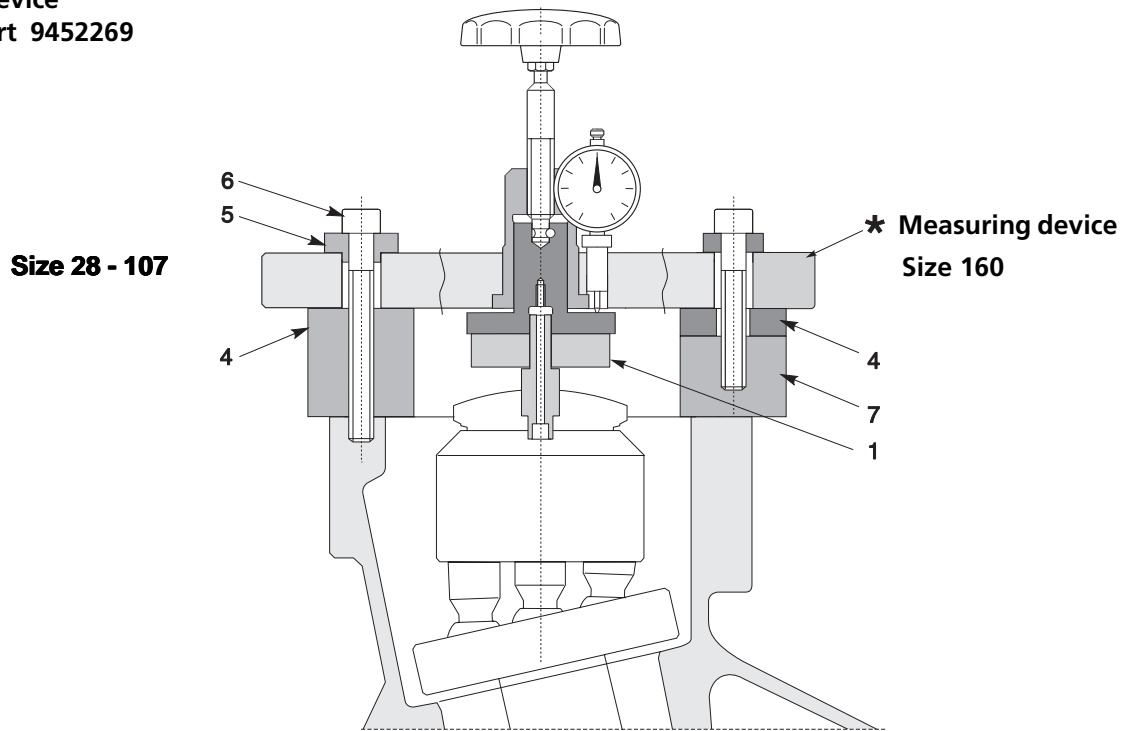
After assembly of the complete unit the breakaway torque of the rotary group has to be checked with the torque wrench.

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos.D is effected with spring collars of different thickness so that the clearance is in the housing between the center pin and the spring collar for the mounted rotary group.

Dimension (D) = 0,4 ± 0,1 mm

Measuring device
Hydraulic part 9452269



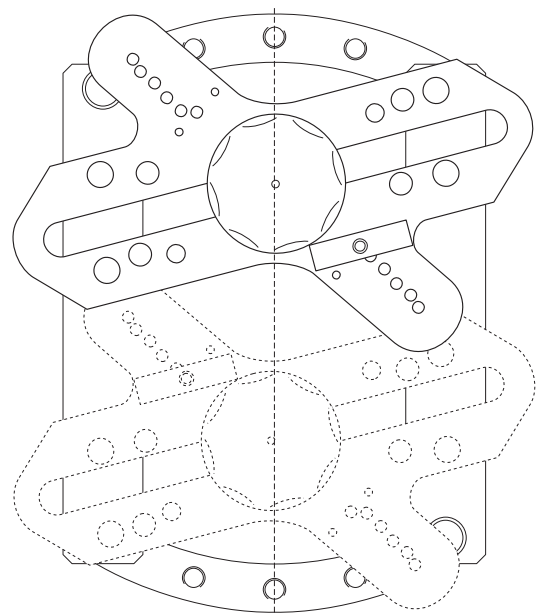
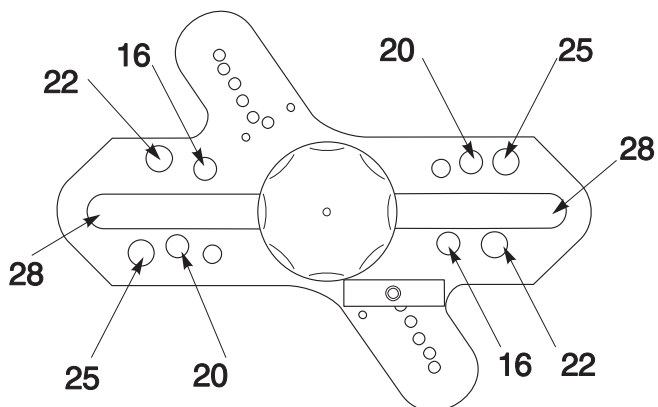
A8VO

Size	28	55	80	107	160	
* Measuring device	9452269					
(1) Centering piece	1x	9452019	9452020	9452021	9452022	9452023
(4) Intermediate ring	2x	9452017	9452013	9452014	9452014	9452015
(5) Shim	2x	9083275	9083276	9083277	9083277	9083279
(6) Cylinder screw	2x	9083051	9083073	9083105	9083105	9083134
(7) Intermed. border	2x					9453862

Mounting position

Check correct mounting position!

The numbers on the top side of the measuring device (*) designate the piston diameter.



Size	28	55	80	107	160
Mounting position	16	20	22	25	28

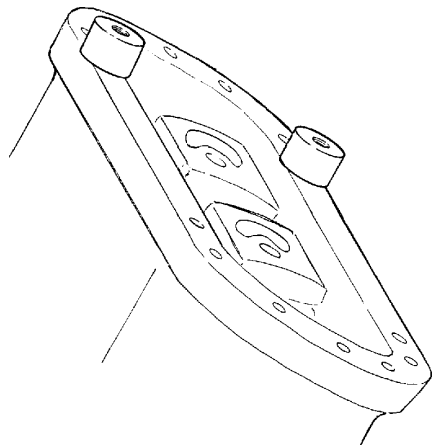


Lay on the gasket!

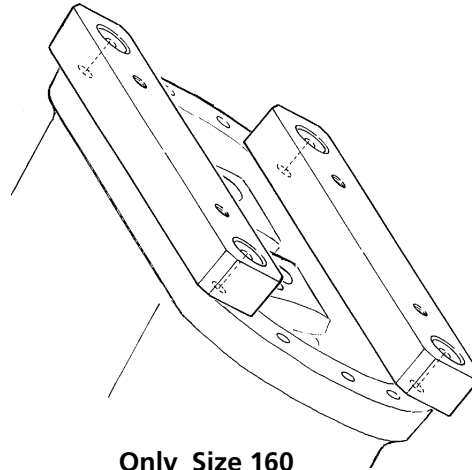
Attention!

Use ORIGINAL- BRUENINGHAUS HYDROMATIK gasket as to spare parts list.

The thickness of the original gasket is allowed for in the adjustment of dimension (D) and is taken into consideration for the constructive dimensions of the tool parts.



Size 28 - 107

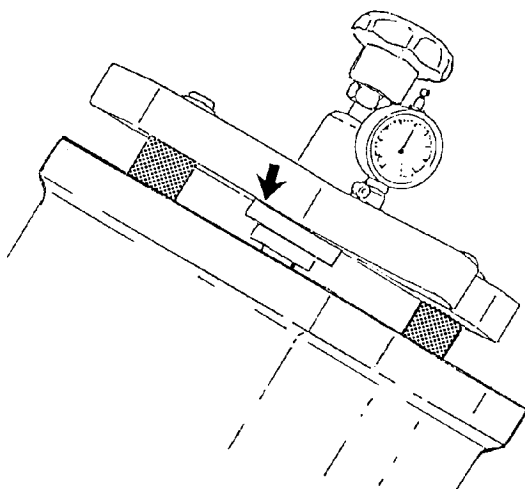


Only Size 160

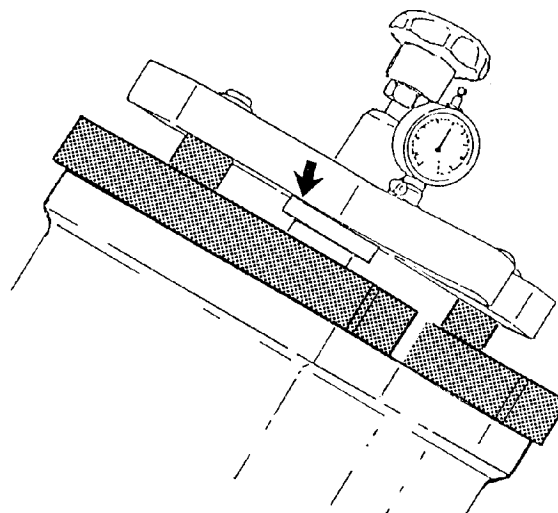
Mount intermediate borders to the housing.

Adjustment to zero - measuring device
Turn against the stop with the hand wheel.
- Dial gauge to zero -

Size 28 - 107



Size 160



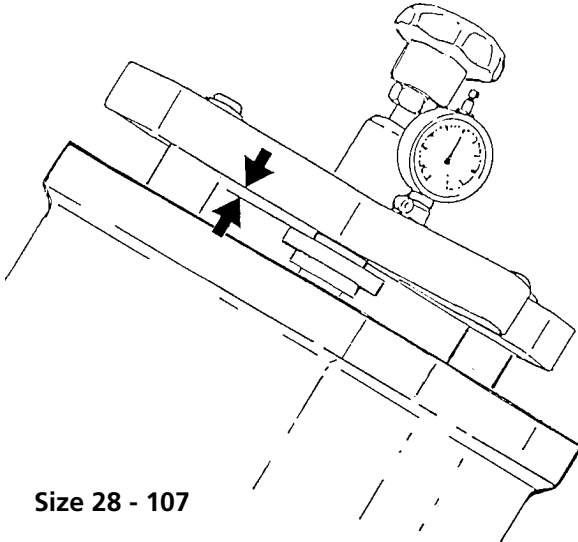
Measuring process

Turn downwards by 4 turns at the dial gauge.

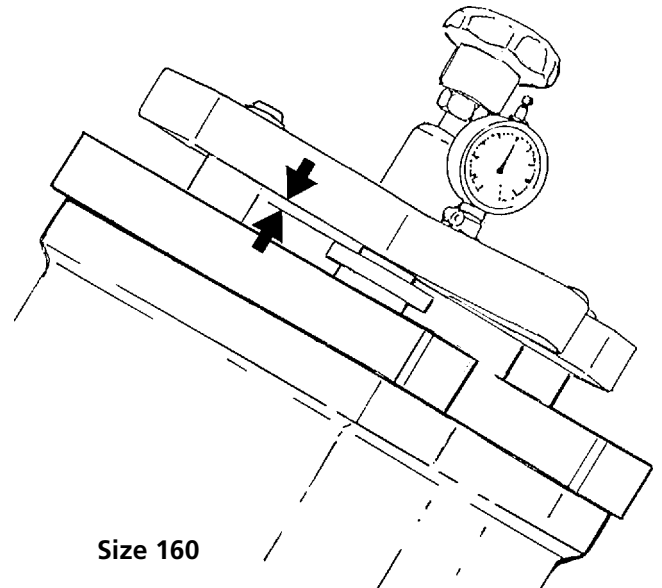
Inspection:

2 mm clearance, dial gauge "Zero".

Clearance: Size 28 - 160 0,4 mm ± 0,1



Size 28 - 107



Size 160

Measuring process:

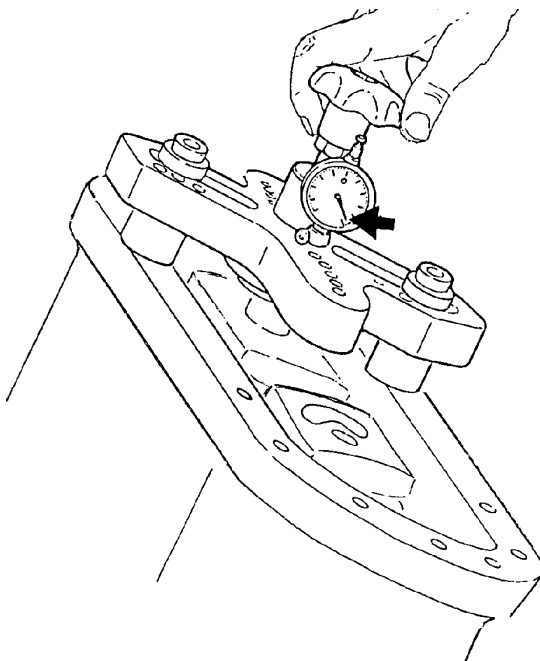
Turn further downwards until the stoppage occurs.

Read the measuring value.

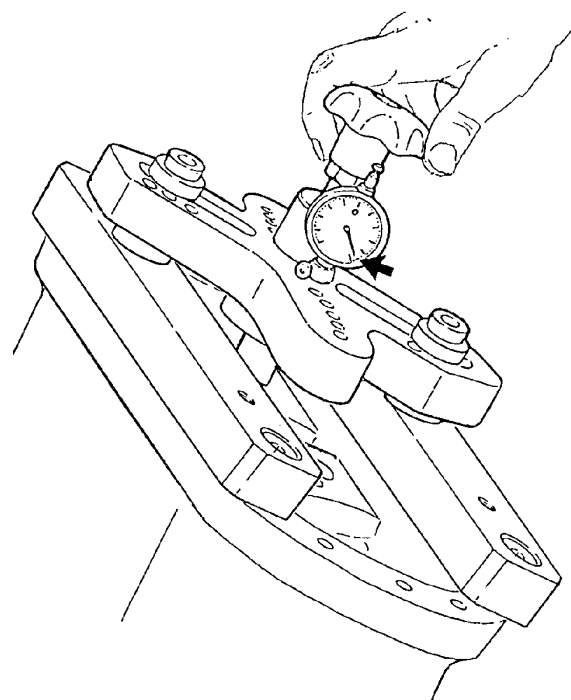
Note:

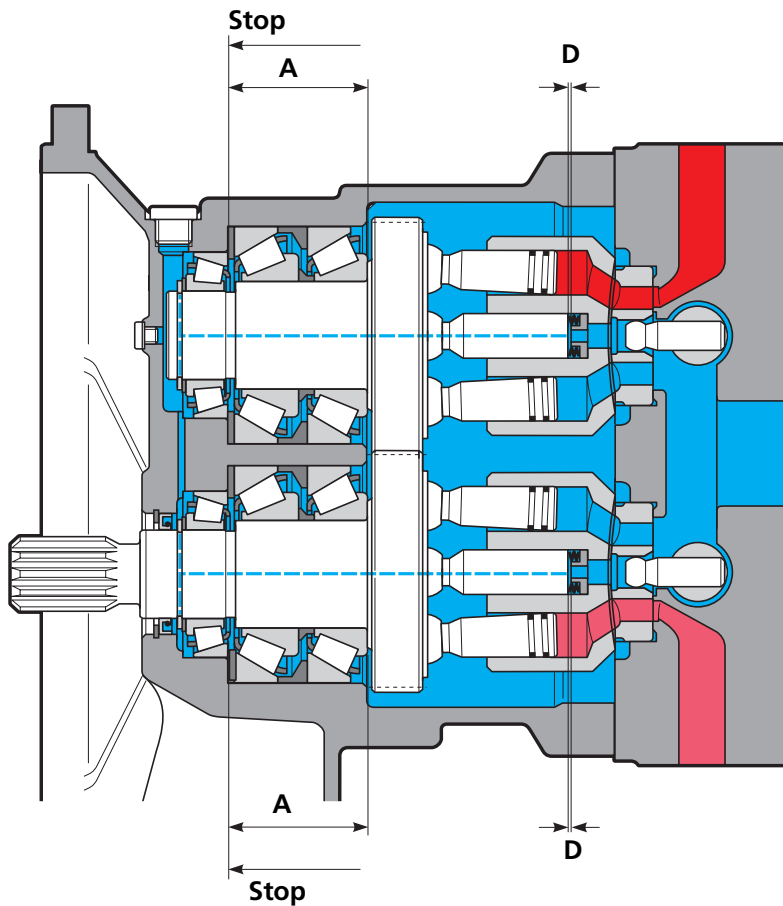
Without great expenditure of force.

Size 28 - 107



Size 160



**Note:**

Drive shafts with bearing set
 The assembly group is adjusted to dimension (A). The tapered roller bearings are adjusted to the stipulated breakaway torque.

Assembly guideline:**Retaining force**

After the rotary group has been fitted into the housing, it has to be pressed in until the end stop is reached. Allow the housing to cool down from its assembly temperature (approx. 80°C) to room temperature.

Adjustment of the hydraulic component of the rotary group

The adjustment of dimension D is carried out using spring plates of differing thickness, so that the correct clearance is achieved between the rotary group which is fitted in the housing and the centre pin and spring plates.

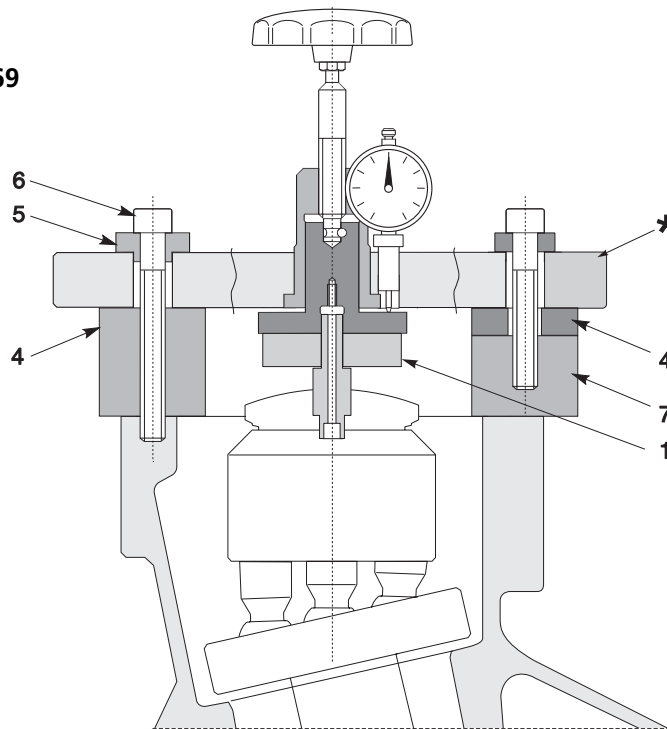
Dimension (D) = 0,4 ± 0,1 mm

After assembly of the complete unit the breakaway torque of the rotary group has to be checked with the torque wrench.

Measuring device
Hydraulic component 9452269

Size 80 - 107

Size 140 - 200

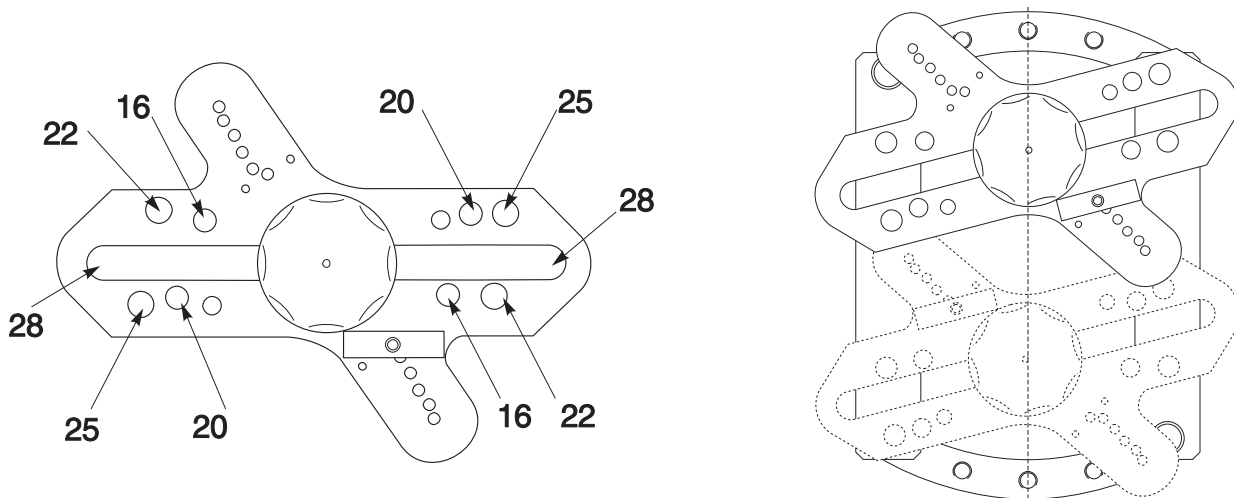


A8VO

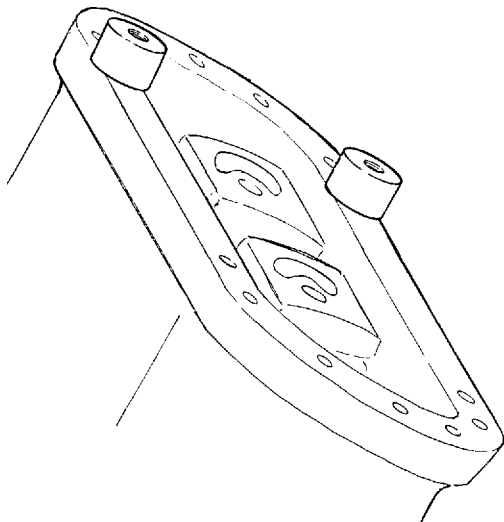
Size		80	107	140	200
* Measuring device		9452269	9452269	9452269	9452269
(1) Centering device	1x	9452019	9452022	9452026	9452025
(4) Intermediate ring	2x	9452014	9452014	9452015	9452015
(5) Shim	2x	9083277	9083277	9083279	9083279
(6) S.H.C.S	2x	9083105	9083105	9083134	9083134
(7) Intermediate plate	2x			2775186	2775187

Mounting position

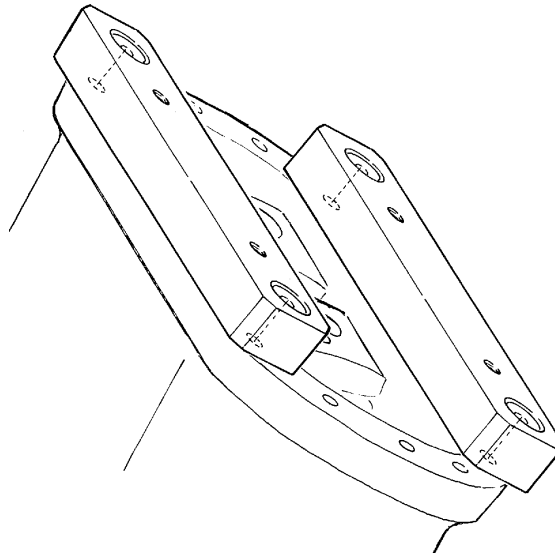
Ensure that the correct mounting position is used.
 The numbers on the top of the measuring device (*) refer to the piston diameter.



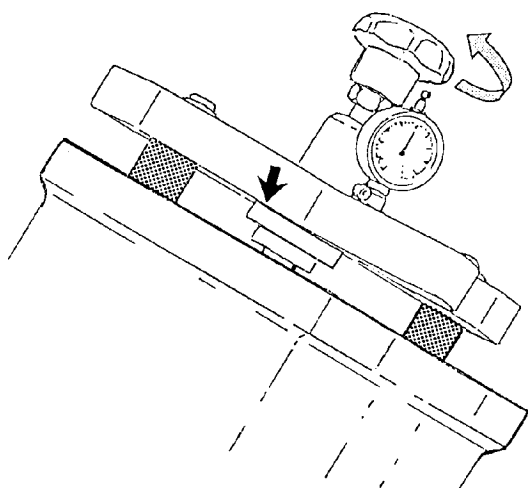
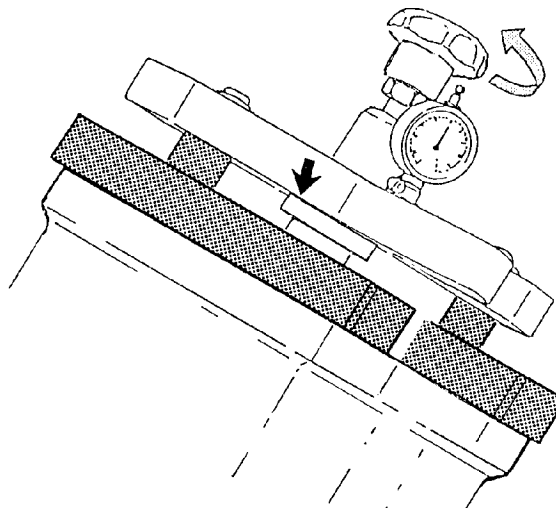
Size	80	107	140	200
Mounting position	22	25	28	28

Size 80 - 107**Only Size 140 - 200**

Fit the intermediate plates onto the housing.



Zero adjustment - measuring device
 Turn using the hand wheel until the stop is reached.
 - Set dial gauge to zero -

Size 80 - 107**Size 140 - 200**

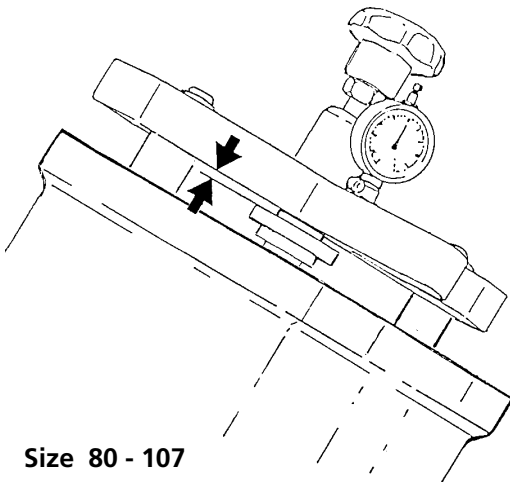
Measuring procedure

Turn down by 4 turns on the dial gauge.

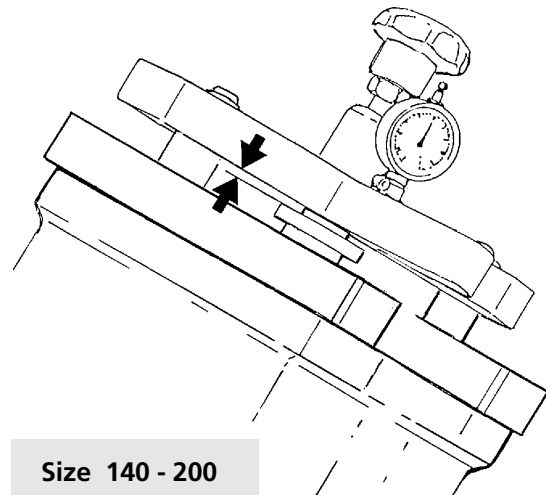
Check:

2 mm clearance, set dial gauge to "Zero".

Clearance: Size 28 - 160 0,4 mm \pm 0,1



Size 80 - 107



Size 140 - 200

Measuring procedure:

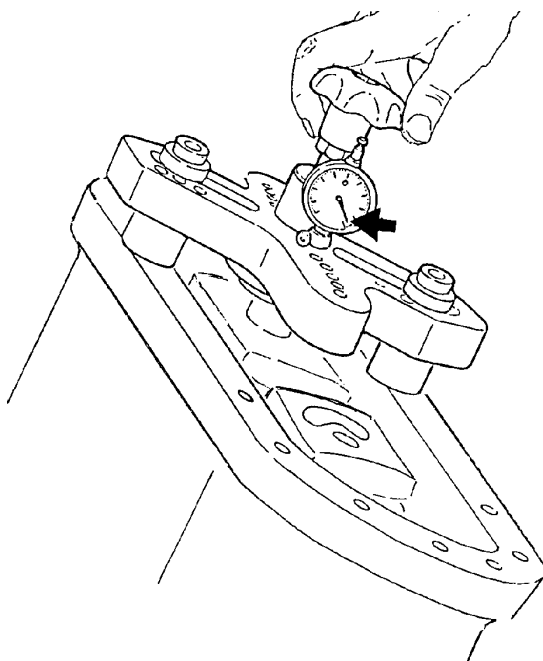
Turn down, using the hand wheel, until resistance is met.

Read the measured value.

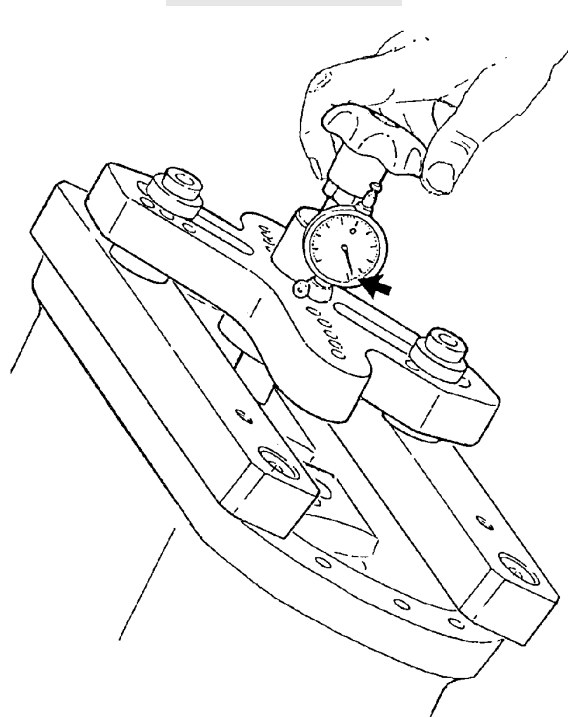
Note:

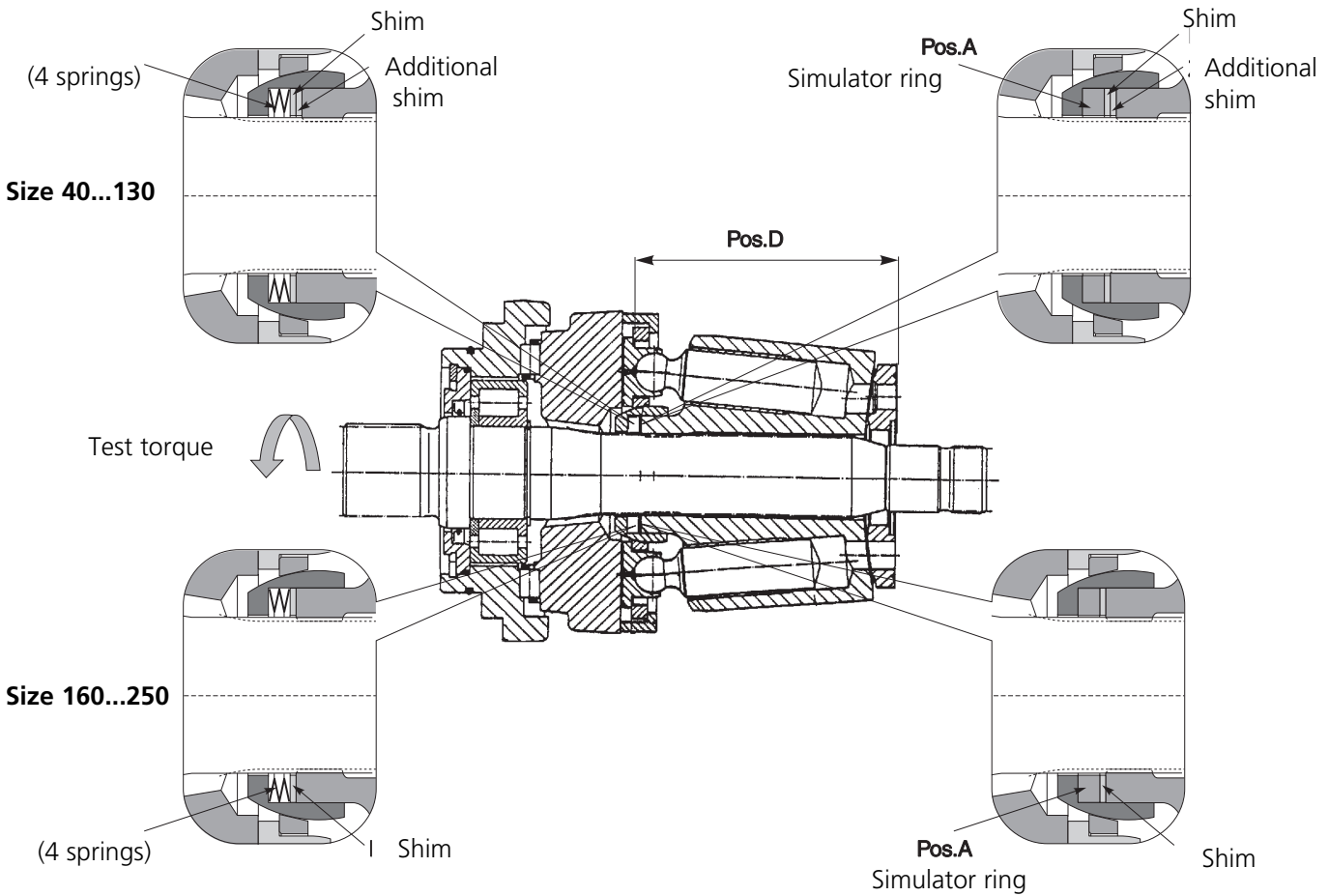
Don't use excessive force.

Size 80 - 107



Size 140 - 200





Note:
No combination of shims! The tolerance position is so that one shim is sufficient. Only **one** shim must be mounted.

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos. D is effected with one shim of different thickness and a simulator ring Pos. A.

A11VO ... /10

Size	40	60	75	95	130	160	200	250
Piston diameter (Ø mm)	17,0	19,0	20,5	22,2	24,8	27,4	29,55	31,8
Pos.D (mm)	93,75 ^{-0,2}	104,89 ^{-0,2}	113,05 ^{-0,2}	122,65 ^{-0,2}	136,95 ^{-0,2}	138,60 ^{-0,2}	149,50 ^{-0,2}	160,95 ^{-0,2}
Pos.A (mm)	4,64 ^{+0,01} _{-0,03}	5,86 ^{+0,01} _{-0,03}	5,64 ^{+0,01} _{-0,03}	6,10 ^{+0,01} _{-0,03}	7,0 ^{+0,01} _{-0,03}	6,0 ^{+0,01} _{-0,03}	7,26 ^{+0,01} _{-0,03}	7,82 ^{+0,01} _{-0,03}

Test torque

After assembly of the complete unit the breakaway torque of the rotary group has to be checked with a torque wrench.

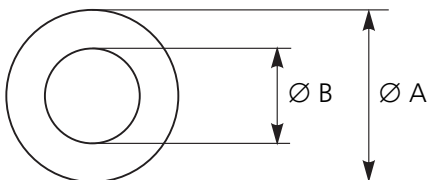
For the variable displacement units the following standard values can be specified for inspection.

Size	35	60	75	95	130	160	200	250
M _n (Nm)
	±.	±.	±.	±.	±.	±.	±.	±.

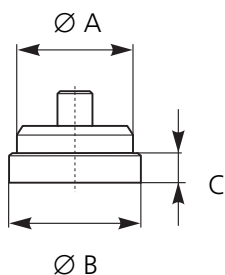
Size	40	60	75	95	130	160	200	250
Add. shim	9078314	9078317	9408057	9080153	9412706	-	-	-
Thickness (mm)	0,6	0,6	0,8	0,7	0,9	-	-	-
1 Measur. bell	9453085	9453085	9452868	9452868	9452868	9452869	9452869	9452869
2 Simulat. ring	.	9236668	9236967	9236669	9236670	9453581	9453111	9452765
3 Center. piece	.	9867920	9453571	9453568	9452808	9453572	9453113	9452865

For A11VO 40 to 130 a further shim (see table above) is needed for the rotary group adjustment in addition to the adjustment shim. This further shim always has to be mounted.

Size	40	60	75	95	130	160	200	250
Simulat. ring								
(Ø mm) A	.	47,8	51	55,8	62,4	63	68	73
(Ø mm) B	.	47,8	43	46	52	47	50	53



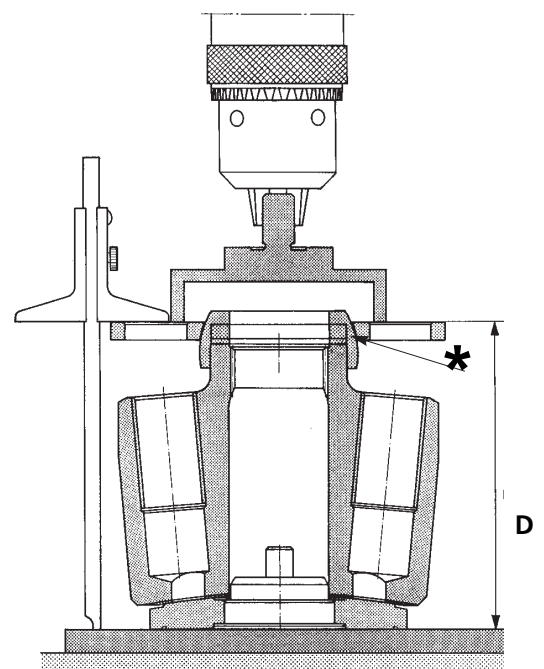
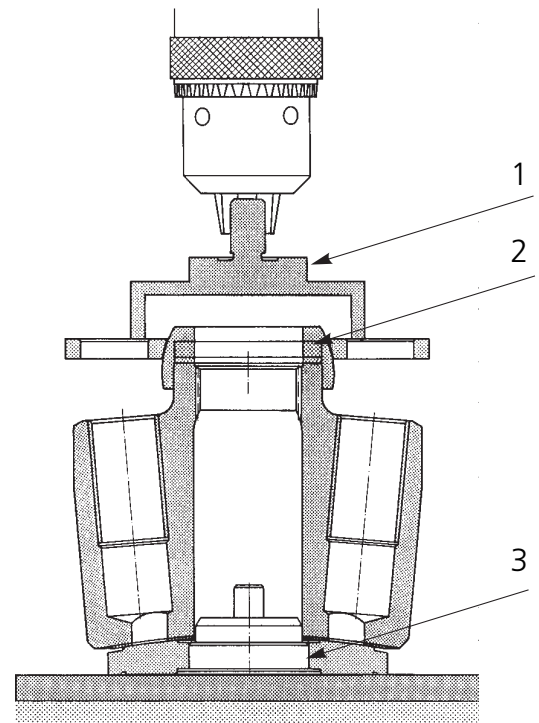
Size	40	60	75	95	130	160	200	250
Center. piece								
(Ø mm) A	.	36,9	39,85	43,15	48,25	46,35	57,0	59,5
(Ø mm) B	.	34,95	48,0	41,95	45,95	64,0	67,0	72,0
(Ø mm) C	.	9	3,4	10	10	3,4	3,2	3,2



1. The measuring bell shall press on the retaining plate in the center.
 2. Measure dimension D with depth gauge and compensate with a shim*.
- Attention!
Use only **one** shim!

Note

It is recommended to repeat the measurement on the opposite side and/or at adjacent spots. Even out the dimensions if need be.



Size	190	260
1 Measur. bell	9452869	9452869
2 Simulat. ring	2790544	2790545
3 Center. piece	2712961	2712962

Adjustment of the hydraulic part of the rotary group

Adjustment of Pos. D is effected with shims * of different thickness and a simulator ring Pos.2

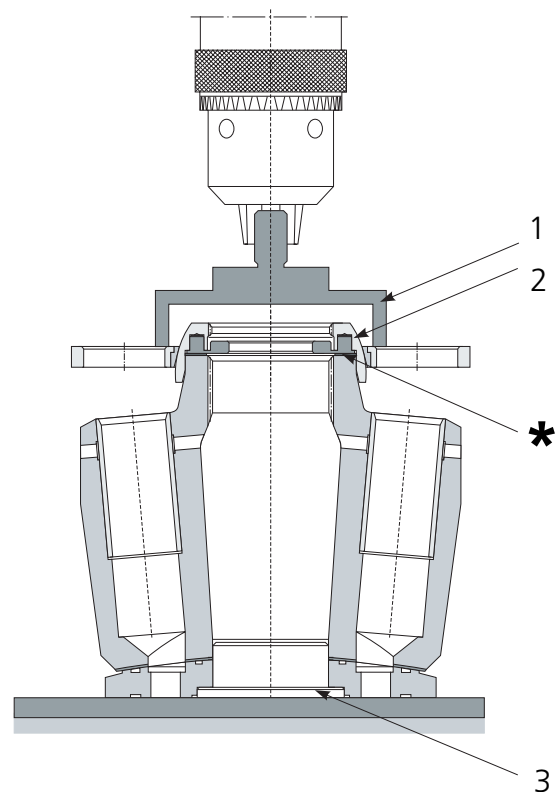


Table dimension D

Size	190	260
Piston diameter (\varnothing mm)	28	31
Pos. D (mm)	146,1 _{-0,25}	171,2 _{-0,25}

1. The measuring bell shall press on the retaining plate in the center.
2. Measure dimension D with depth gauge and compensate with shim(s) *.

Note:

It is recommended to repeat the measurement on the opposite side and/or at adjacent spots. Even out the dimensions if need be.

