

# **COUPLING**

**FLEXIBLE COUPLING BH 550VKR**

**NOMINAL COUPLE : 45 000 NM Ø 580 X 527**

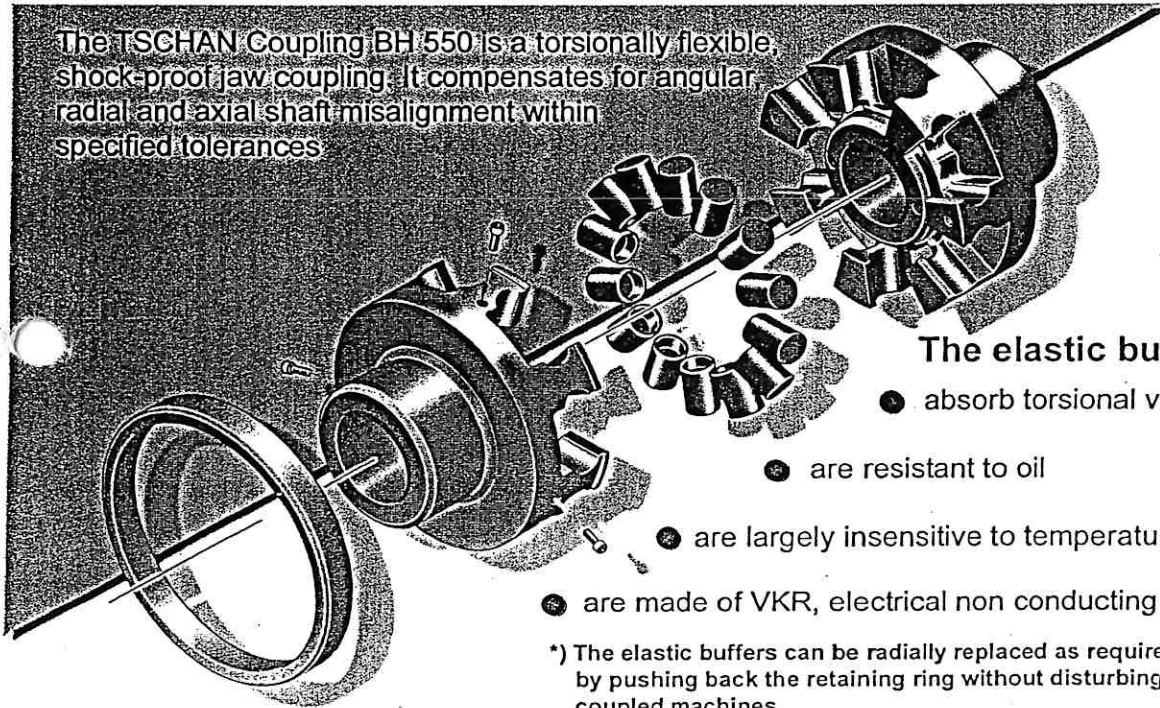
**COUPLE MAXI :45 000 NM**

**SUPPLIER : POSIVA**

## TSCHAN® BH 550

...the low-cost solution for use with high torque

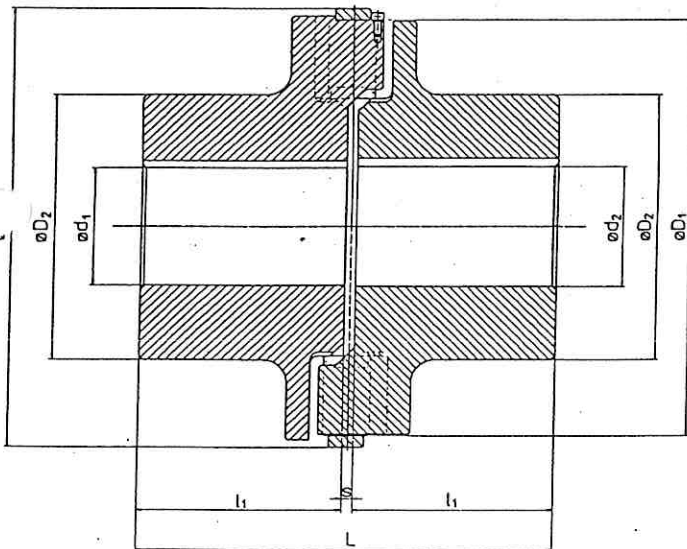
The TSCHAN Coupling BH 550 is a torsionally flexible, shock-proof jaw coupling. It compensates for angular, radial and axial shaft misalignment within specified tolerances.



### The elastic buffer elements\*

- absorb torsional vibrations
- are resistant to oil
- are largely insensitive to temperature
- are made of VKR, electrical non conducting material

\*) The elastic buffers can be radially replaced as required, by pushing back the retaining ring without disturbing the coupled machines



D1	D2	D3	L	l1	s	d1/d2(max)	
560	350	580	527	256,5	14	240	[mm]
22.047	13.779	22.834	20.748	10.098	0.551	9.448	[inch]

Torques Values		
Buffer material	Nominal torques TkN[Nm] (lb-ft)	maximum torques Tkmax[Nm] (lb-ft)
VKR	45000 (33200)	135000 (100000)
VK60D	65000 (48000)	195000 (144000)
Misalignment		
radial $\Delta Kr(\max)$	1 mm (0.04 inch)	
axial $\Delta Ka(\max)$	$\pm 3$ mm (0.12 inch)	
angular $\Delta Kw(\max)$	0,5°	
Temperature $\theta$		
-30° to 80°C (-22° to 176°F)		
Speed $n_{\max}$		
1800 rpm		

The coupling can be used in either direction of rotation and be installed in any position



## Installation and Operating Instructions

### 1 Function

The TSCHAN® Coupling Type BHDD is a torsionally flexible and shock-proof claw coupling with detachable claw rings. They compensate for angular as well as radial and axial shaft misalignment within fixed tolerances. The torque is transmitted through compressed, elastic buffers.

The elastic buffers dampen shocks and torsional vibrations, are oil-proof and essentially insensitive to temperature.

Buffers made of polyurethane (Vkr) make an electrical insulation between the coupled machines possible if no other type of electrical connection exists.

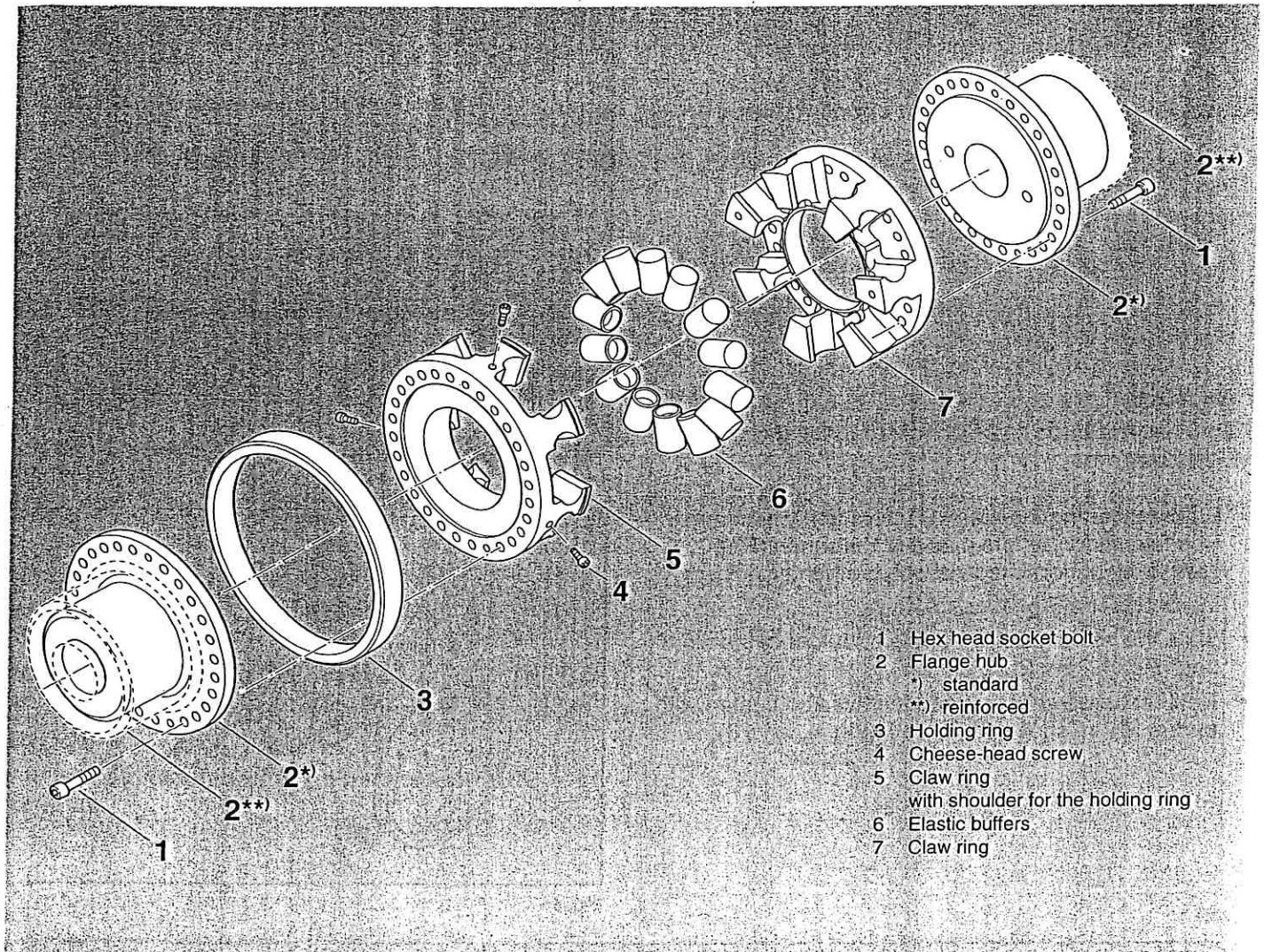
Buffers made of Perbunan (Pb) are normally electrically conductive and therefore prevent undesirable static charging, among other things.

The elastic buffers can be radially replaced by pushing back the holding ring without disturbing the coupled machines.

In addition, the detachable middle element allows connected machines to be lifted out radially. The direction of rotation of the drive can also be verified.

The coupling can be used for either direction of rotation and be installed in any position. Part 5 must be fitted at the top when installed in a vertical position.

### 2 Construction



- 1 Hex head socket bolt
- 2 Flange hub
  - \*) standard
  - \*\*) reinforced
- 3 Holding ring
- 4 Cheese-head screw
- 5 Claw ring with shoulder for the holding ring
- 6 Elastic buffers
- 7 Claw ring

### 3 Observe before Installation

**WARNING!**



Before performing any work on the coupling, switch off the motor! Secure the motor against switching on unintentionally!

- Ensure that the intended rotational speed and the torque as well as the operating temperature do not exceed the allowable values in the current Catalogue No. 2.

- The maximum allowable size of the bore diameter in the flange hubs is according to the current Catalogue No. 2.
- Standard tolerances for the pre-drilled bores Fit H7 according to DIN ISO 286.
- Standard key groove according to DIN 6885, sheet 1 (ISO R773).
- Set screws as required.

### 4 Installing the Coupling

Flange hub and claw ring are preassembled by the manufacturer.

- Undo the three cheese-head screws around the claw ring (Fig. 2, Item 1).
- Slide the holding ring over the claw ring and flange hub and place it on the corresponding shaft (Fig. 2, Item 2).
- The bores in the flange hubs and the shaft ends must be cleaned prior to assembly.
- The flange hub with claw ring must be heated. Standard: 80 °C

**WARNING!**



Gloves must always be worn in order to avoid injury due to hot coupling parts!

- Slide the coupling halves onto the shaft to achieve full engagement only, e.g. the shaft end should be flush with the end of the hub and not protrude into the claw ring (Fig. 3). Observe deviating agreements!
- Assemble the coupling halves with the fitted parts to value h in Table 4.

**CAUTION!**

Allow the hot hubs to cool before inserting the elastic buffers.

- Before inserting the elastic buffers apply lubricant. Use talcum for buffers made of Perbunan (Pb), grease for buffers made of polyurethane (Vkr).
- Insert buffers (Fig. 4, pos. 1).
- Slide the holding ring up to the shoulder of the claw ring (Fig. 4, Item 2).
- Refit the three cheese-head screws and tighten with torque  $M_A$  as shown in Table 1 (Fig. 4, Item 3).

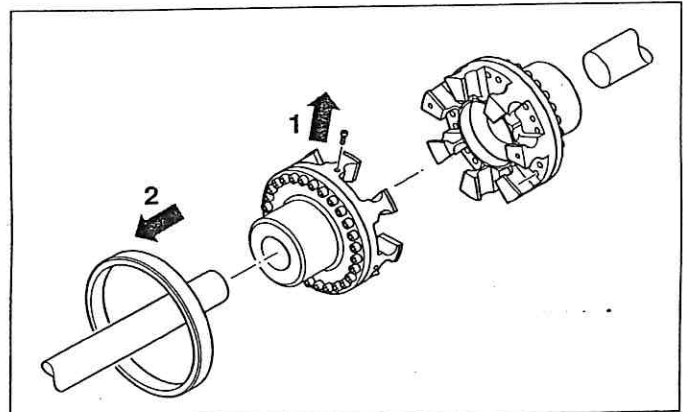


Fig. 2

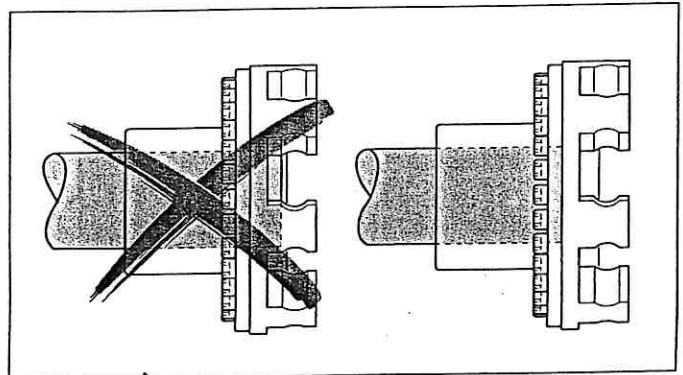


Fig. 3

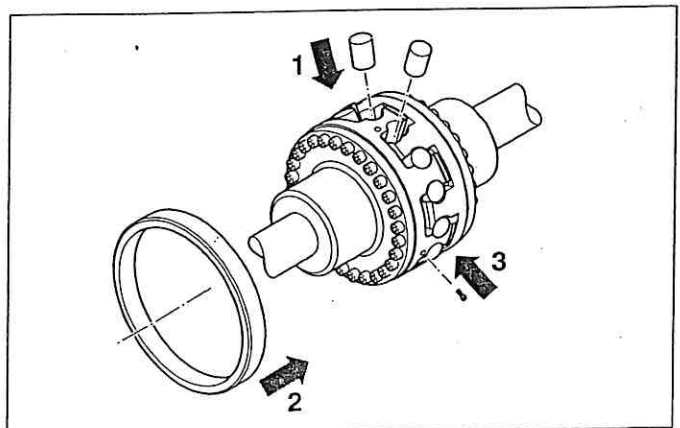


Fig. 4

Table 1

Size	240	300	350	400	450	500	550	600	650	700	800	900
DIN 912-8.8	M10	M10	M10	M12	M12	M12	M12	M12	M12	M12	M12	M12
$M_A$ [Nm]	49	49	49	86	86	86	86	86	86	86	86	86

## 5 Coupling Alignment



### WARNING!

Before performing any work on the coupling, switch off the motor! Secure the motor against switching on unintentionally!

### Note:

Exact alignment of the coupling increases the service life of the elastic buffers.

Tables 2 to 4 list recommended alignment values.

- The specified values must be reduced if more stringent requirements are imposed with regard to smooth running or at higher speeds.

### Recommended alignment values – angular

- Measure a complete revolution (360°). Determine the largest deviation  $z_1$  as well as the smallest deviation  $z_2$  (Fig. 5). Calculate the angular misalignment  $\Delta z = z_1 - z_2$ .
- When aligning, comply with the maximum allowable angular misalignment  $\Delta z_{\max}$  according to Table 1. The values according to Table 1 apply for a reference speed of 1500 rpm.

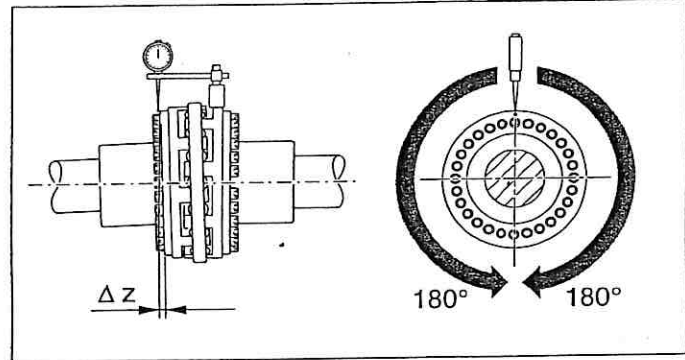


Fig. 5

Table 2

Size		240	300	350	400	450	500	550	600	650	700	800	900
$\Delta z_{\max}$	[mm]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.25	1.25	1.25	1.25

### Recommended alignment values – radial

- Measure a complete revolution (360°). Determine the largest deviation  $y_1$  as well as the smallest deviation  $y_2$  (Fig. 6). Calculate the radial misalignment  $y = 0.5 \cdot (y_1 - y_2)$ .
- When aligning, comply with the maximum allowable radial misalignment  $y_{\max}$  according to Table 3. The values according to Table 3 apply for a reference speed of 1500 rpm.

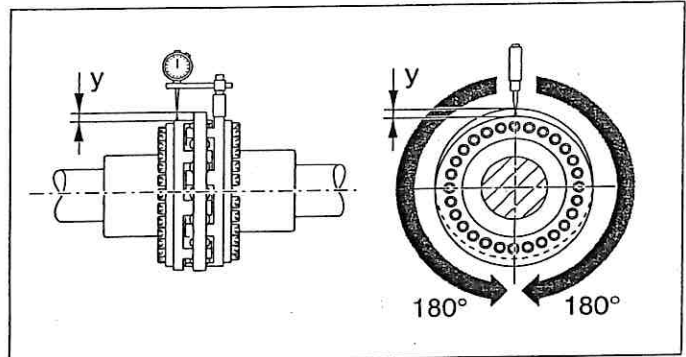


Fig. 6

Table 3

Size		240	300	350	400	450	500	550	600	650	700	800	900
$y_{\max}$	[mm]	0.25	0.30	0.35	0.35	0.40	0.50	0.55	0.55	0.55	0.55	0.65	0.70

### Recommended alignment values – axial

- Measure the axial flange spacing  $h$  (Fig. 7).
- When aligning, comply with the allowable tolerance  $\Delta x$  according to Table 4.

### CAUTION!

Up to twofold displacement is permissible in operation.

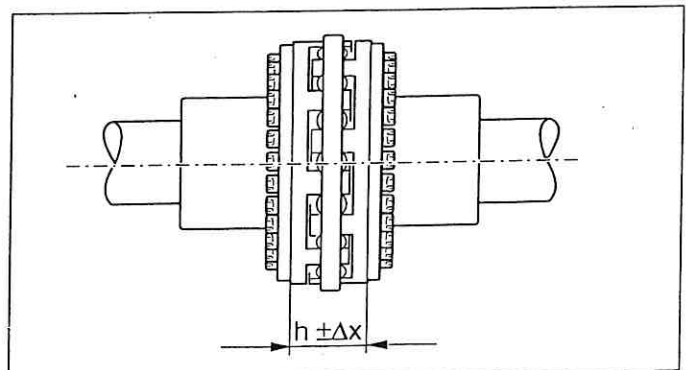


Fig. 7

Table 4

Size		240	300	350	400	450	500	550	600	650	700	800	900
$h$	[mm]	104	124	124	138	138	160	160	170	182	200	200	214
$\pm \Delta x$	[mm]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	0.7

## 6 Operation

Table 5

Size	240	300	350	400	450	500	550	600	650	700	800	900
DIN 912-10.9	M16	M16	M18	M20	M20	M24	M24	M24	M27	M30	M30	M30
$M_A$ [Nm]	225	225	300	440	440	700	700	700	950	1400	1400	1400

- Before placing into operation, check the tightening torques  $M_A$  of the bolts according to Table 5 (Fig. 8).

### WARNING!



Before placing into operation, all moving parts must be covered with stationary protective devices.

The TSCHAN® Coupling Type BHDD requires little maintenance in operation.

Check during routine control of the drive system:

- Alignment of the coupling.
- Condition of the elastomer.

During maintenance work on the drive system or after five years at the latest:

replace the elastic buffers.

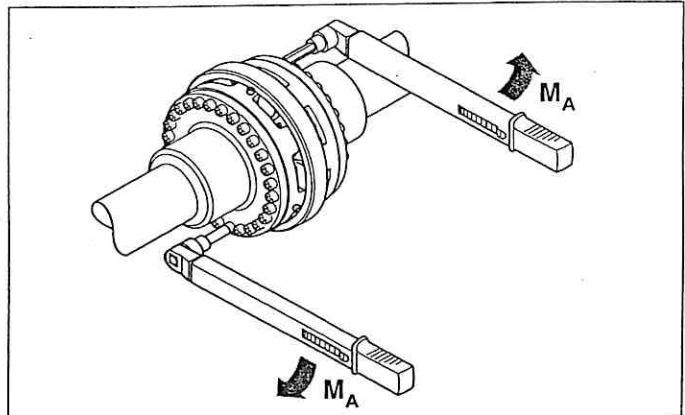


Fig. 8

## 7 Work on the coupling

### WARNING!



Before performing any work on the coupling, switch off the motor! Secure the motor against switching on unintentionally!

### Changing the elastic buffers

- Undo the three cheese-head screws around the claw ring (Fig. 9, Item 1).
- Slide the holding ring over the claw ring and flange hub (Fig. 9, Item 2).
- Remove the elastic buffers (Fig. 9, Item 3)
- Lubricate and insert the new elastic buffers. Use talc for Perbunan buffers (Pb) and grease for polyurethane buffers (Vk).

Slide the holding ring back into place and secure with the three cheese-head screws (note Table 1).

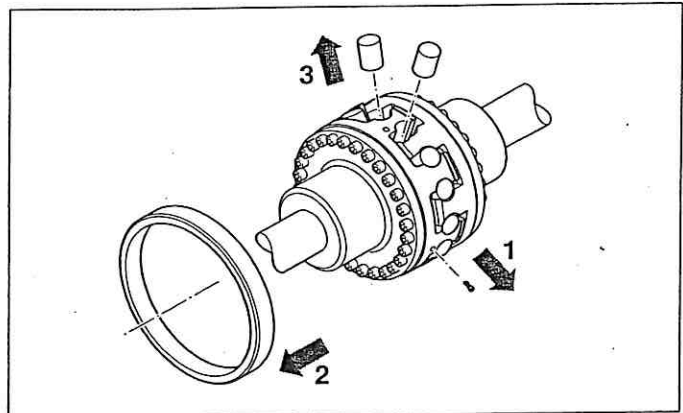


Fig. 9

**Lift out middle element**, e.g. to simplify removal of connected units.

- Slide holding ring back and remove the elastic buffers.
- Undo the hexagon socket head screws on both sides.
- Axially compress the claw rings and lift them out radially (Fig. 10).

**Separate input and output** (not illustrated), e.g. to check the direction of rotation and for disconnection:

- Completely remove the hexagon socket head screws from one half of the coupling and disengage the claw ring from the flange hub.
- Remove the hexagon socket head screws opposite the two or three drilled claws on the other half of the coupling (depends on the size of the coupling).
- Axially draw the opposite claw ring out of the centering device with the aid of longer screws.

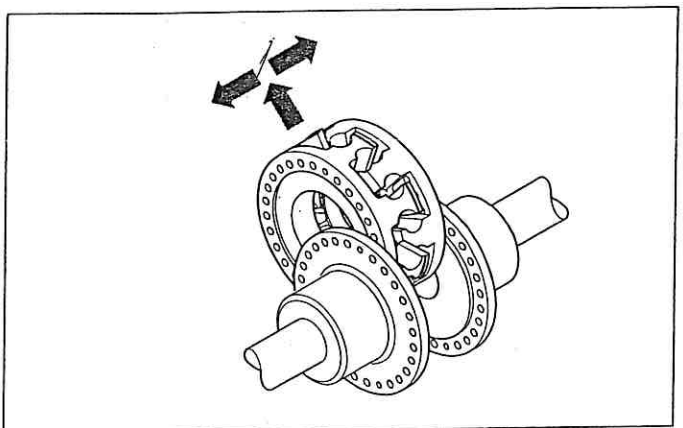


Fig. 10

### WARNING!



Before placing into operation, install all protective devices!