

This manual gives instructions of the power transmission for the rotating tools of the turrets family TBMA.  
For the instructions of the basic turret please refer to the manual of the the TB turret.

**INSTRUCTION FOR THE USE**  
Toolholder turrets series TBMA

26.0120  
26.0160  
26.0200  
26.0250  
26.0320  
26.0400

Before the setting at work, take vision of the instructions for the use and follow it!  
Only competent people, that have taken vision of the instructions, is allowed to operate the toolholder turrets.



Responsability and guarantees are excluded if;

- the instructions of use are not followed
- the turret is not operated in the correct way
- the maintenance of the turret is not performed correctly
- Functional changes of any type are brought without the consent of the manufacturer
- original spare parts are not used

**NOTE:**

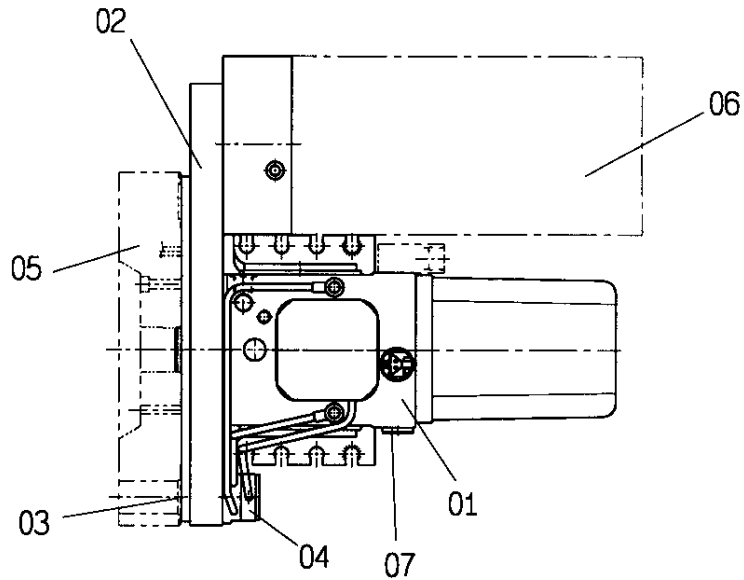
- This symbol underlines operations of particular importance
- a wrong procedure can provoke damages to the turret
- the not respect can determine wrong settings at work
- the not observance can jeopardize the safety the operator



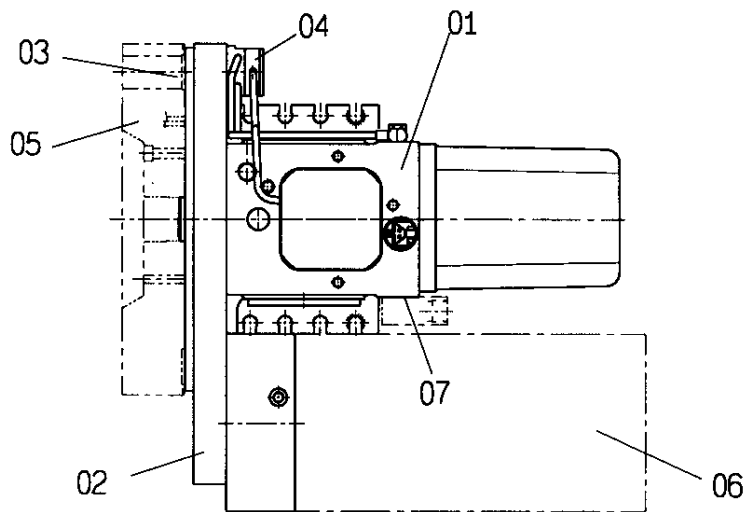
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1 Structure of the turret

1.1 Right hand (take power on the right side)



1.2 Left hand (take power on the left side)



- 01 Housing
- 02 Element which contains the gears of the transmission
- 03 Take power
- 04 Element which contains the parts which engage the clutch
- 05 Toolholder disk
- 06 Motor of the rotating tools (not included in the supply)
- 07 Data plate

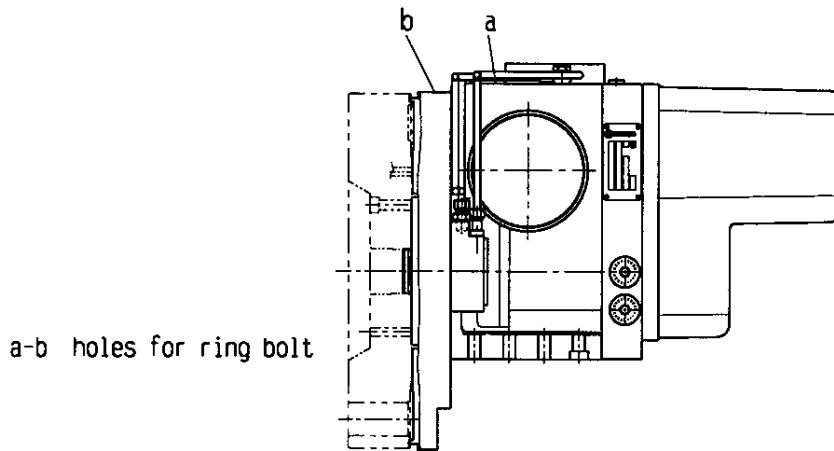
1.3 Toolholderdisk

The toolholder disk, if not included in the delivery, must respect the technical indications of Baruffaldi.



2 Setting at work

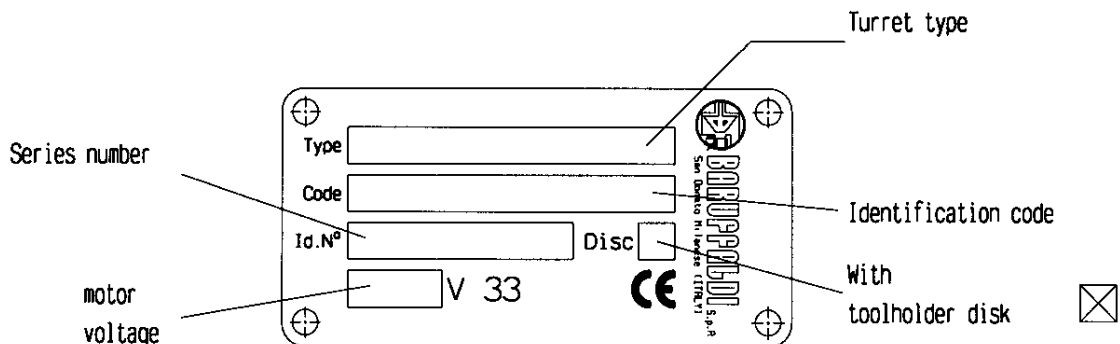
2.1 Advice during transportation



Schedule

Size	TEMA120	TEMA160		TEMA200		TEMA250		TEMA320	TEMA400
Take power pitch diameter (Ø)mm	240	270	300	340	380	400	445.5	490	620
Turret weight without toolholder disk Kp		80		140				426	
Dimension holes for ring bolt	a = M12 b = M8	a = M12 b = M12		a = M12 b = M12		a = M16 b = M12		a = M27 b = M27(M16)	a = M27 b = M27

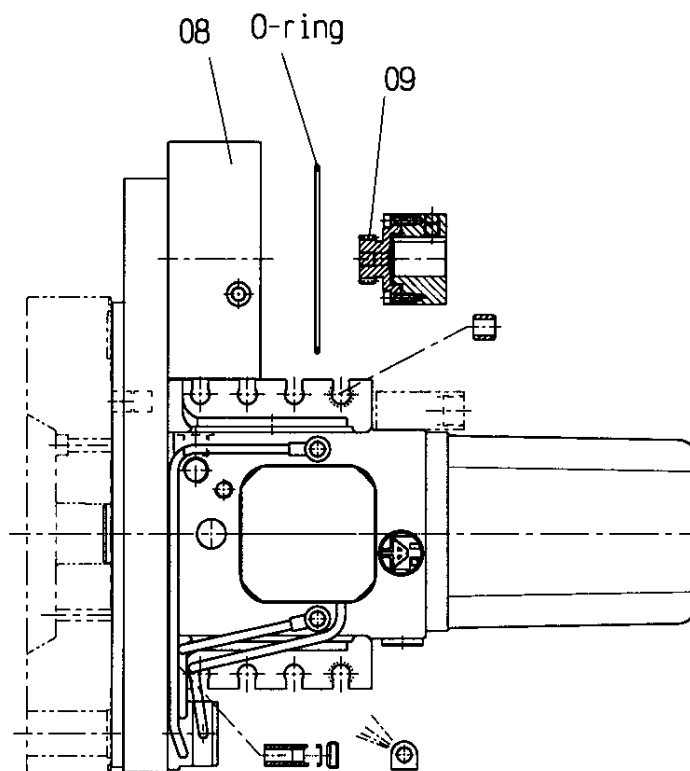
2.2 Data plate



### 2.3 Conditions at the delivery

Besides the manual of use, the turret is delivered complete of:

- Test report
- Coolant valve complete of o-ring and relative spring
- Bolt for coolant complete of o-ring and relative spring
- Reference pin
- Locking washers
- Evtl toolholder disk
- Flange (08) and O-ring for the adaptation of the motor for the rotating tools (as per order)
- Gear (09) for the above mentioned motor (as per order)
- Servo amplifier SA-01A-TB
- The turret is delivered in locked conditions, in the position 1 corresponding to the position of "search zero" and complete with oil.



## 2.4 Technical data

Size	TEMA120	TEMA160	TEMA200	TEMA250	TEMA320	TEMA400
Max power (motor for rotating tools) (S3 40% ED 10min) Kw (the real value depends on the utilized motor)	4	5	9	12	15	18.5
Max torque Nm (the real value depends on the utilized motor)	15	20	50	55	100	130
Max. motor speed rpm/min (the real value depends on the utilized motor)	6000	6000	5000	5000	3000	3000
Ratio (RPM motor / RPM take power)	1:1	1.25:1 (1:1)	1.315:1 (1:1)	1.52:1 (1:1)	1.45:1	1.85:1

## 2.5 Instructions

**Motor for rotating tools**

To simplify the engagement of the take power with the relevant toolholder's teeth clutch, during the turret's indexing, the motor for the rotating tools can run at 800/1000 RPM

## 2.6 Description of the operation

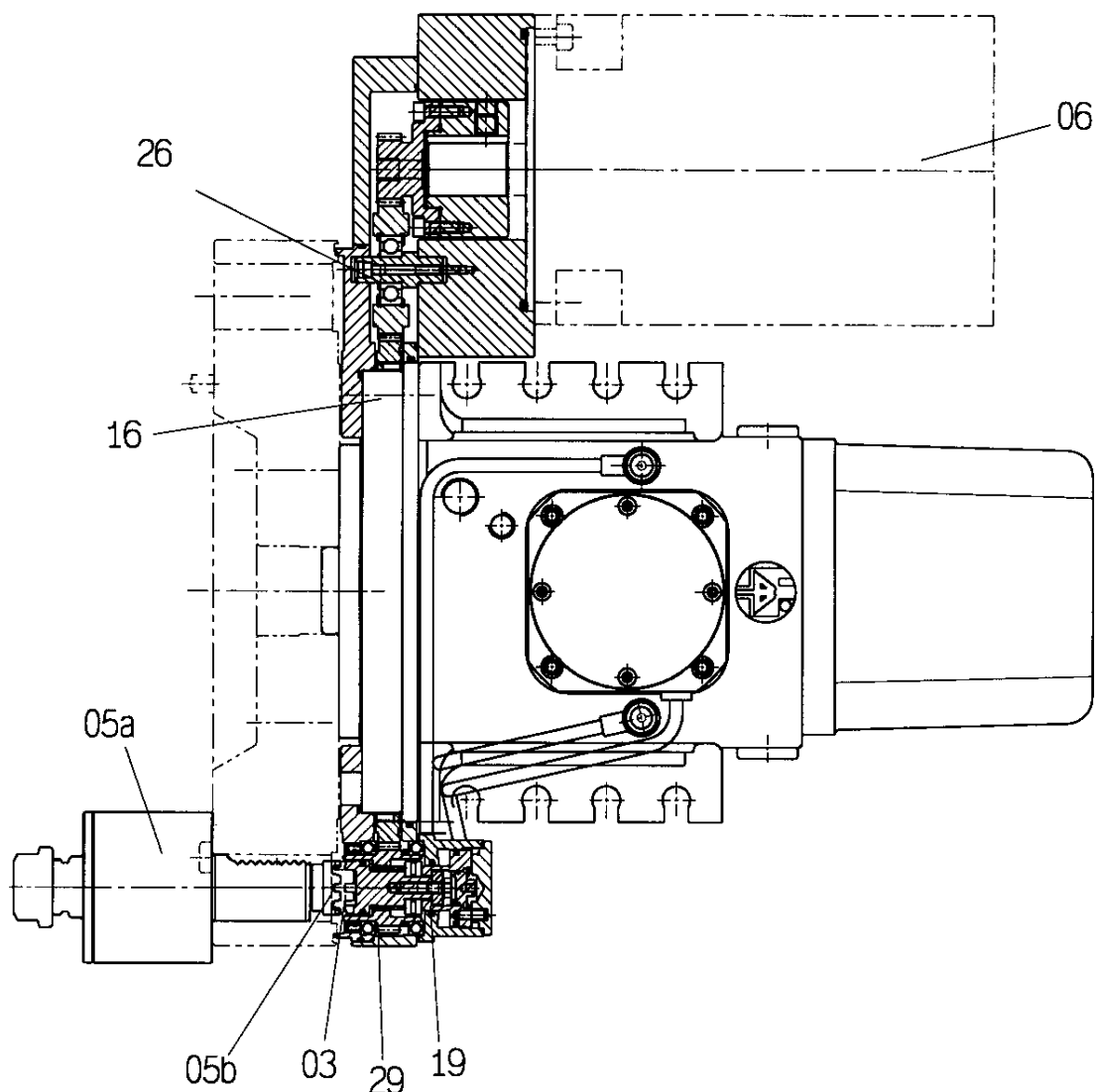
**-Starting contitions**

- Turret locked with the rotating toolholder (05) faced to the take power in working position
- Take power (03) engaged with the corresponding clutch of the rotating toolholder
- The movement of the motor (06) is transferred, through the gears (26), (16) and (29) to the take power (03) and than to the rotating toolholder

Disengagement of the take power (03) from the toolholder and re-engagement with a new toolholder in a new position

Simultaneously to the unlocking of the turret, the piston (19), makes possible the pull back of the take power (03) obtaining the disengagement from the clutch (05b) from the toolholder (05a).

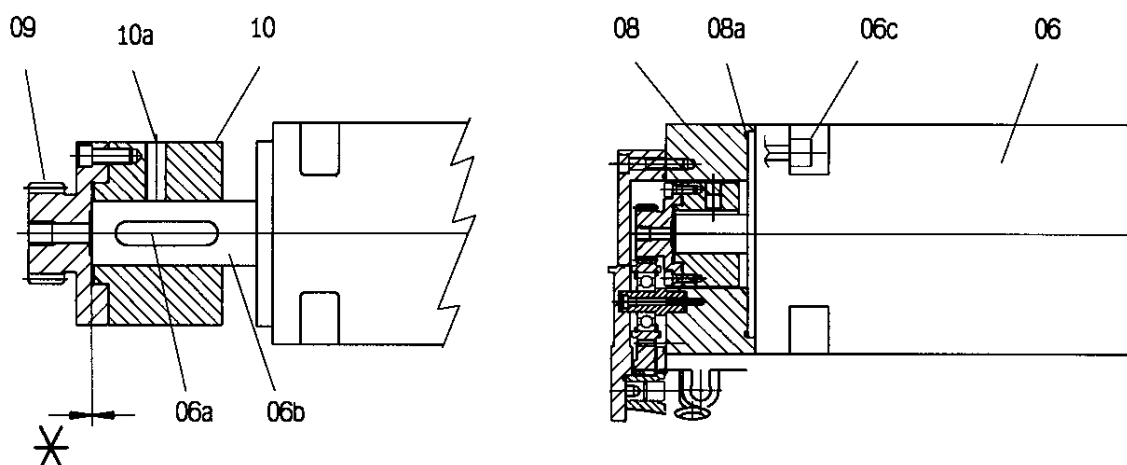
During locking, the contrary movement of the piston (19), permits the putting forward of the clutch of the take power (03) with the logic engagement with the new rotating toolholder (05a).



## 2.7 Assembly procedure of the motor for the rotating tools

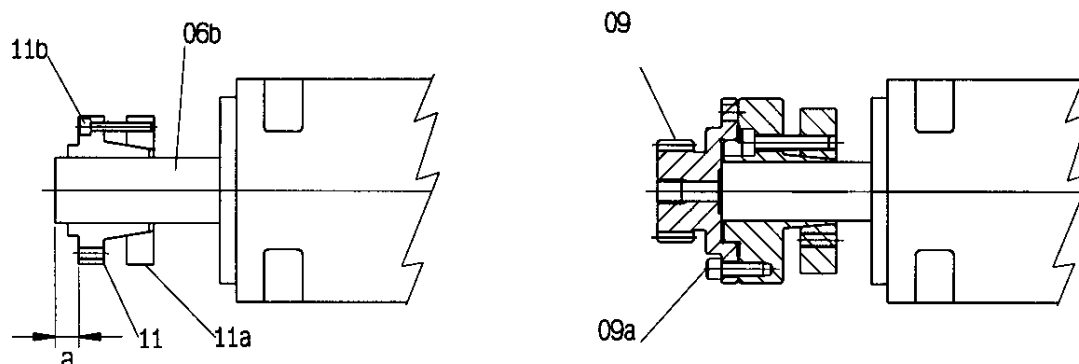
## Procedure for motors with shaft with keyway

- insert the key (06a) on shaft's seat (06b)
- assembly the motor's gear complete with hub on the shaft, till the surfaces \* are in contact
- lock till end the dowel (10a) using loctite
- verify that the o-ring (08a) is in good conditions and well seated
- assembly the motor (06) on the flange (08), using the relevant screws



## Procedure for motors with shaft without key

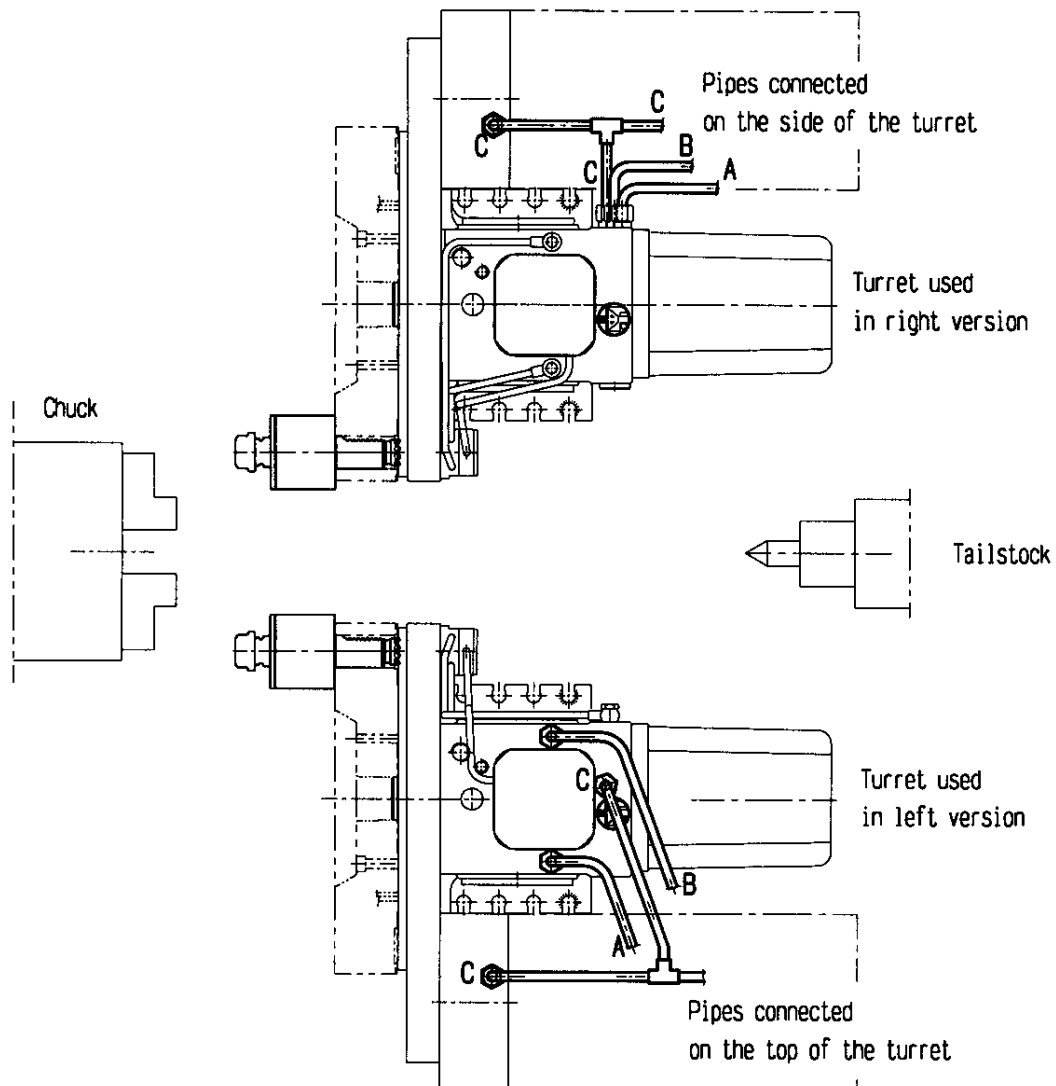
- Assembly the elements (11) and (11a) on the motor shaft (06b) till the dimension (a) given on the data sheet
- lock the screws (11b) till the end
- assembly the gear (09) and fix it with the screws (09a)
- verify that the o-ring (08a) is well seated
- assembly the motor (06) on the flange (08), using the relevant screws.



SIZE	TBMA120	TBMA160	TBMA 200	TBMA 250	TBMA 320	TBMA 400
dimension a mm.	9.5	6.5	6.5	6.5	6	6



## 2.8 Pneumatic connections: TBMA120/TBMA160/TBMA250/TBMA250

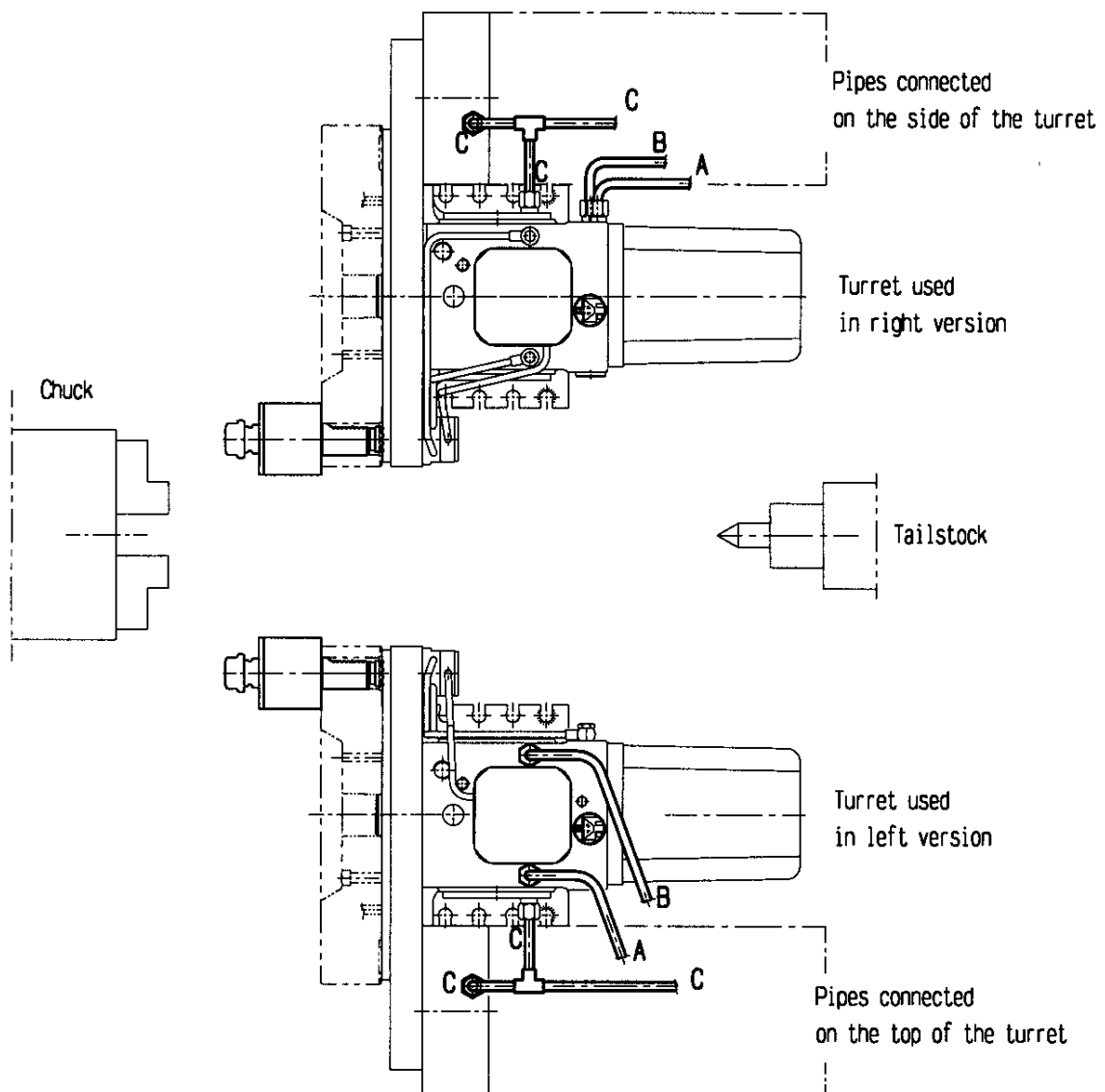


- The turret are prepared with holes for the pneumatic connections (A),(B),(C)
- The scheme indicates the best way to use the holes
- Use pipes of internal diameter 6 mm
- Protect the pipes from possible excisions or grazes due to metallic chips (employ protection carters)
- The vent pipe has to be sufficiently long so that to bring its extremity in the dry zone with impossibility of infiltrations of coolant or extraneous bodies
- For the individualization of the function of the pipes (opening, closing, drain) we suggest to use pipes of different colors, or to mark them with letters (A,B,C)
- Function and dimension of the holes: A(G1/8")=locked turret; B(G1/8")=unlocked turret; C(G1/8")=vent hole

**Note**

For a more immediate answer of the of locking/unlocking piston, we advise to position the valves very near to the turret

## 2.9 Hydraulic connections: TBMA120/TBMA160/TBMA200/TBMA250

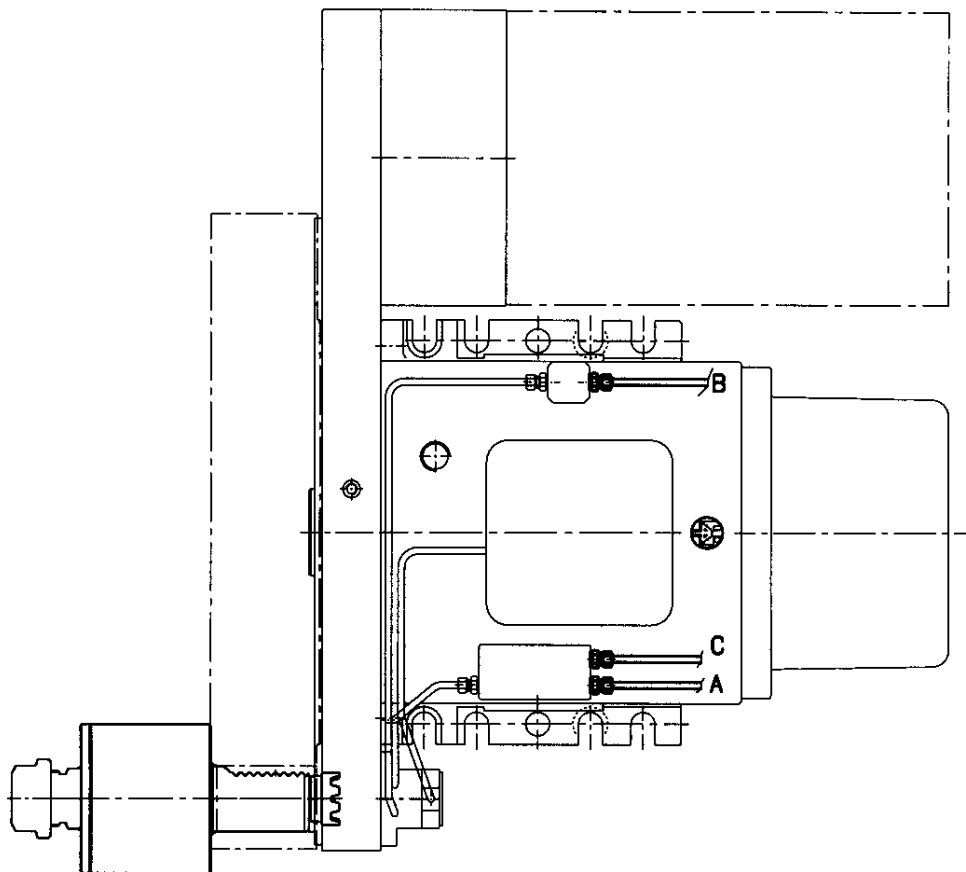


- The turret are prepared with double holes for the Hydraulic connections of opening (B) and locking (A) and with one drain hole (C)
- The scheme indicates the best way to use the holes
- Use pipes of internal diameter 6 mm
- Protect the pipes from possible excisions or grazes due to metallic chips (employ protection carters)
- The drain pipe has to be brought to the tank of the hydraulic pump
- For the individualization of the function of the pipes (opening, closing, drain) we suggested to use pipes of different colors, or to mark them with letters (A,B,C)
- Function and dimension of the holes: A( $G1/8''$ )=locked turret, B( $G1/8''$ )=unlocked turret, C( $G1/8''$ )=vent hole

**Note**

For a more immediate answer of the of locking/unlocking piston, we advise to position the valves very near to the turret

## 2.10 Hydraulic connections: TBMA320/TBMA400



- The turrets are prepared on the superior surface, with holes for the hydraulic connections of opening (B), locking (B), and drain holes (C)
- For the locking and unlocking use pipes of inside diameter of at least 8 mm
- Protect the pipes from possible excisions or grazes due to metallic chips (employ protection carters)
- The drain pipe has to be brought to the tank of the hydraulic pump
- For the individualization of the function of the pipes (opening, closing, drain) we suggest to use pipes of different colors, or to mark them with letters (A,B,C)
- Function and dimension of the holes: A(1/8")=locked turret, B(1/8")=unlocked turret, C(1/8")=vent hole

**Note**

For a more immediate answer of the of locking/unlocking piston, we advise to position the valves very near to the turret

**3 Maintenance**

Any kind of maintenance or disassembly must take place with locked gears, cold surfaces and de-energized motor

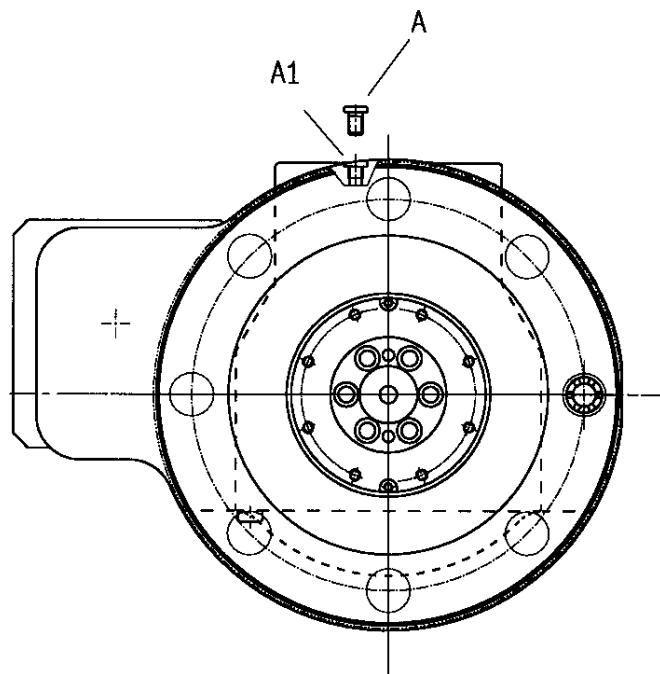
**3.1 Lubrication**

The mechanical parts related to the transmission of the movement of the rotating tool are lubricated with oil with viscosity 80 SW 90

The use of new lubricant can be made through the filling hole (A1)

The lubricant, with viscosity 80SW90, must be compatible with rubber and teflon

In the data sheet underneath is indicated the max quantity of oil which can be filled



Size turret

Quantity lubricant

TBMA120	0,120 l
TBMA160	0,150 l
TBMA200	0,200 l
TBMA250	0,250 l
TBMA320	0,300 l
TBMA400	

Attention: after filling oil, close the hole (A1) with the relevant plug (A)



For turrets with letter 'G' at the end of the code (Es. K24. ....G)  
the lubrication is with grease (Kluber NBU 15)



## 3.2 Breakdown search an repair

Any kind of maintenance or disassembly must take place with locked gears,  
cold surfaces and de-energized motor

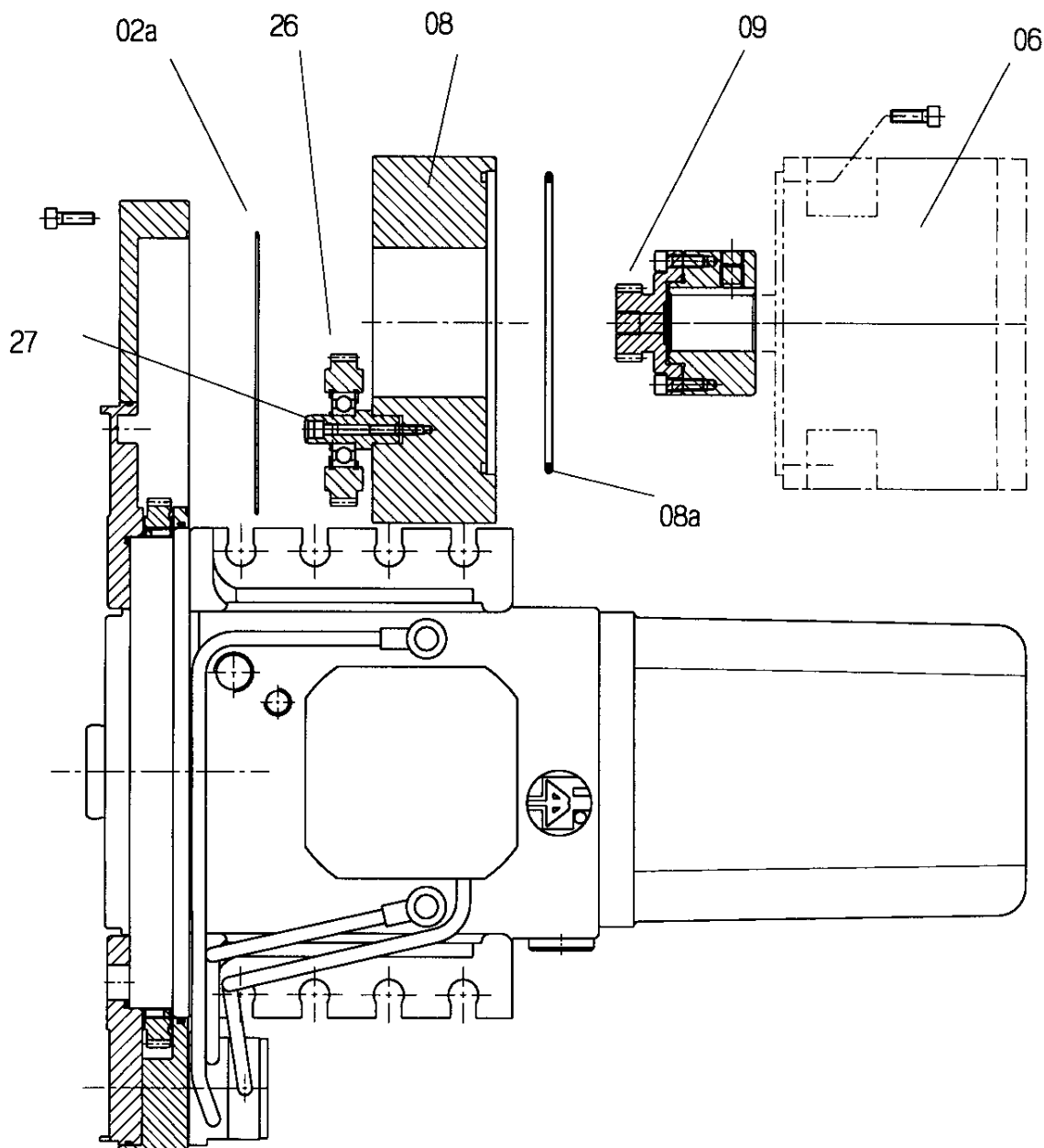


Anomalies	Probable causes	Cheking	Remedies
The rotating tools do not rotate	The feeding of the supplementary motor is missing	Verify under machine manufacturer indications	Restore the motor feeding
	the supplementary motor is broken	Verify under machine manufacturer indications	Change/restore the motor
	Does not engage the take power with the toolholder	Verify the presence of chips/dirty in the area of the take power	Clean and oil the area of the take power
		Verify the good functioning of the mechanical rotating tools system	Restore the good functioning of the mechanical system
		Verify the allignement at toolholders seats	Restore the disk allignement
The disk cannot rotate	The take power does not come back during station change	Verify the presence of chips/dirty in the area of the take power	Clean and oil the area of the take power
		Verify the good functioning of the mechanical rotating tool system	Restore the good functioning of the mechanical system

## 3.3 Disassembly/Assembly of the supplementary motor and motor gear

## Operations:

- remove the supplementary motor (06) complete with gear (09)
- remove the flange (08) complete with the intermediate gear (26) and pin (27)



When re-assembling

Verify presence and integrity of the o-rings

### 3.4 Disassembly/assembly of the take power's elements

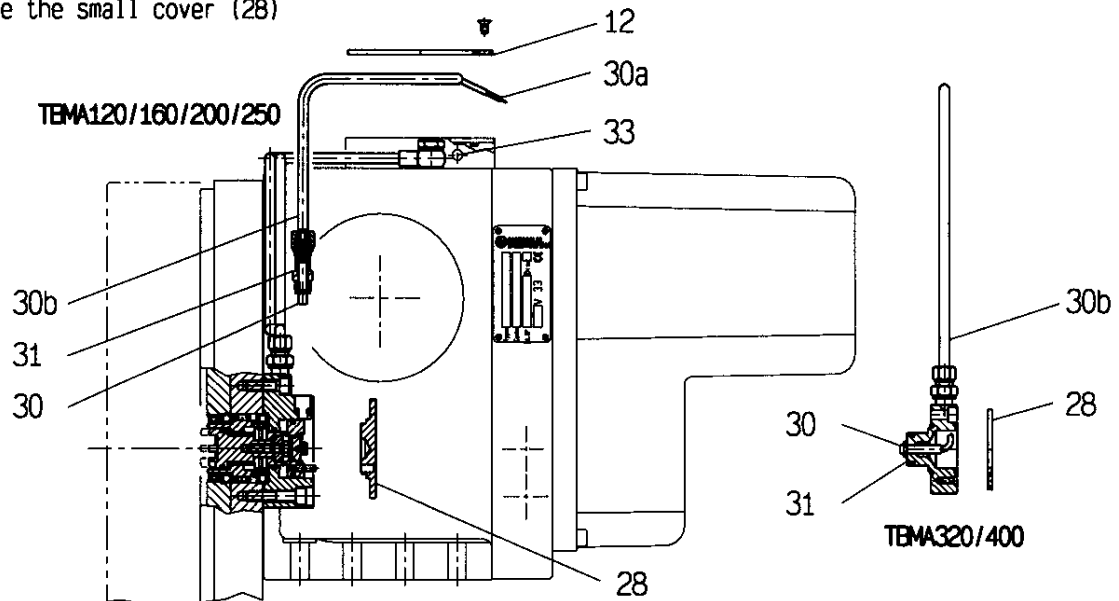
This operations has to be made with locked turret and without pressure in the circuit



#### 3.4.1 Disassembly of the proximity of the take power (if exiting)

##### Operations

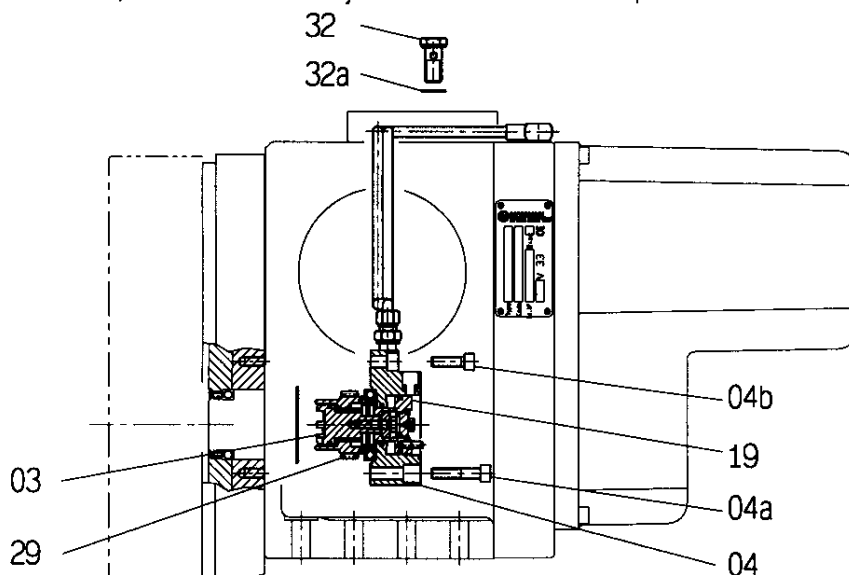
- remove the top cover (12)
- disconnect the proximity wirings (30a) from the connection box (33)
- remove the proximity (30) complete with connector (31) and protection pipe (30b)
- remove the small cover (28)



#### 3.4.2 Disassembly of the housing of the take power

##### Operations

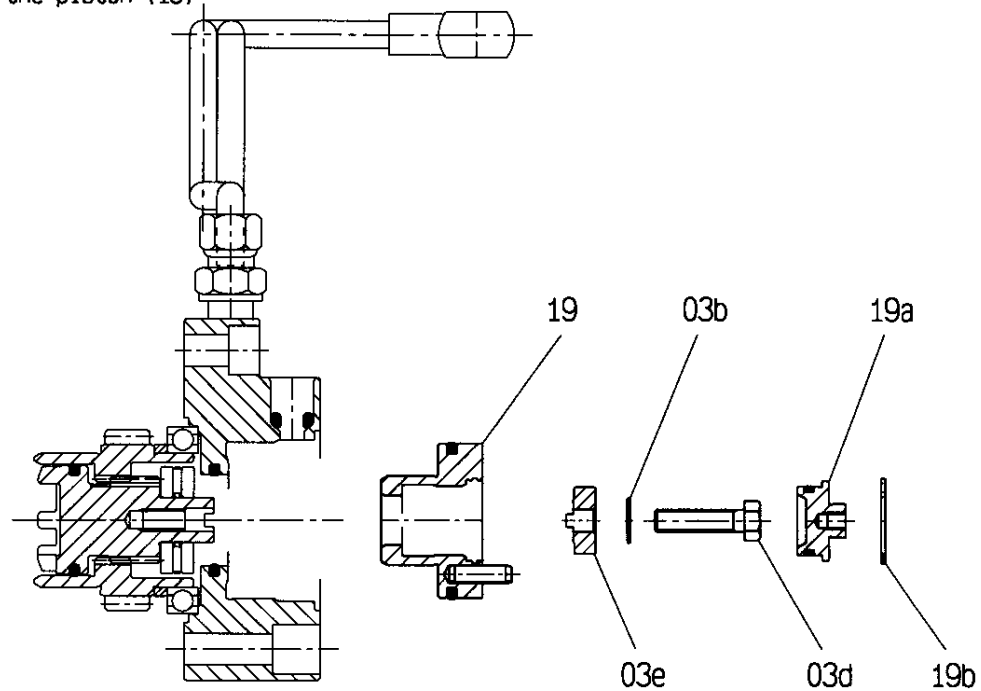
- remove the connectors (32) and relevant washers (32a)
- remove the screws (04a) e (04b)
- remove the housing (04) complete of piston (19), gear (29) and clutch (03): in order to facilitate the extraction, hit the extremity of the clutch with a plastic tool or similars



## 3.4.3 Disassembly of the piston for the feed of the clutch

## Operations

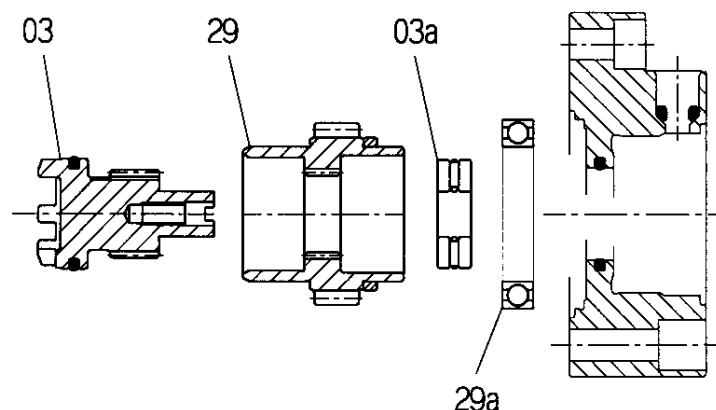
- only for TBMA120/160/200/250 pneumatic version:
- remove the seeger ring (19b) and take away the plug (19a)
- take away screws (03d), the security washer (03b) and the washer (03e)
- take away the piston (19)



## 3.4.4 disassembly of the take power's clutch

## Operations

- take away the clutch (03), the gear and the bearing (29a) and (03a)



## When reassembly:

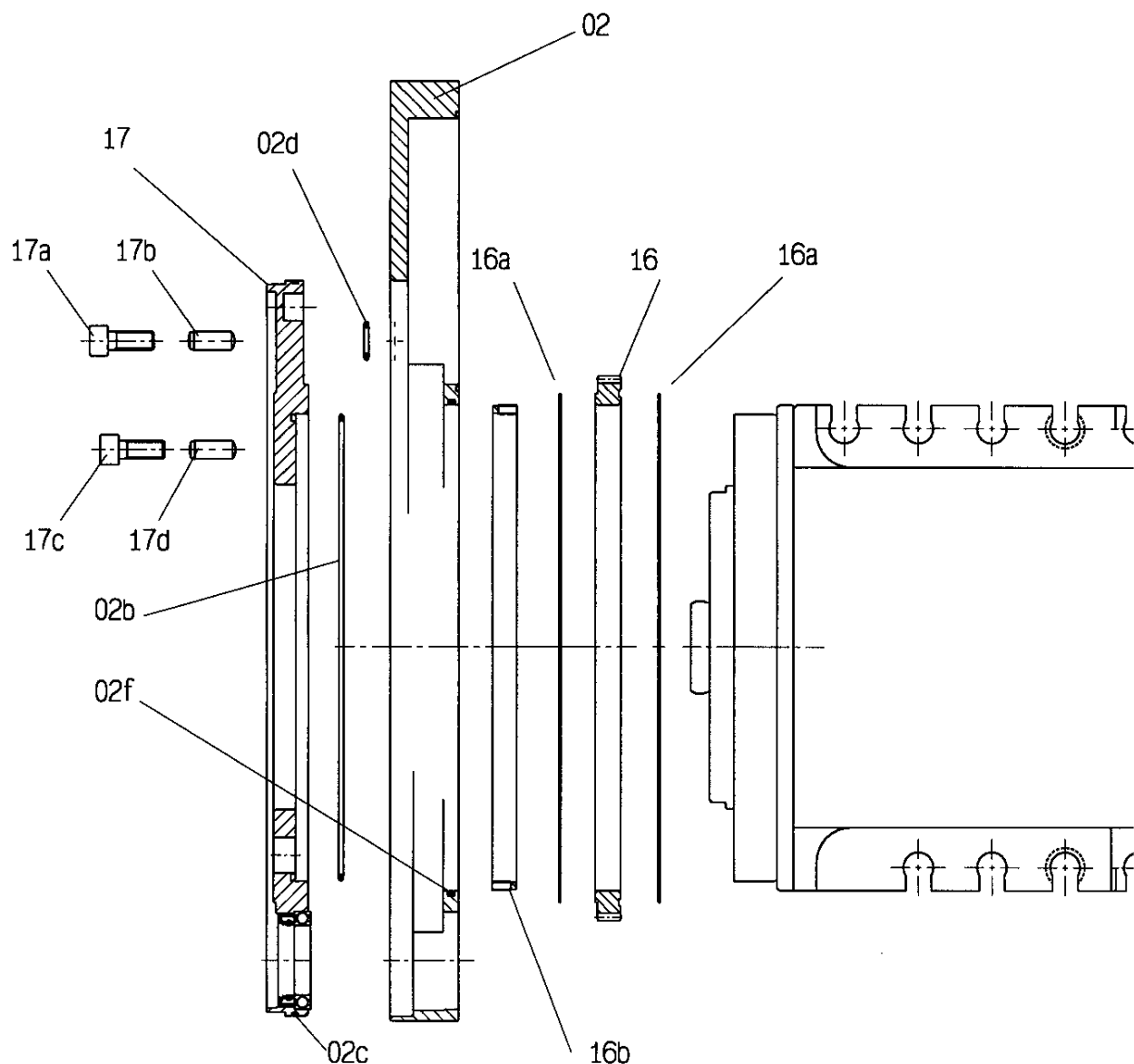
- Verify the O-ring integrity
- grease all the O-ring with thick grease and place them correctly
- lock till the end the screw (03d), and fix with loctite



## 3.5 Disassembly/assembly of the transmission's gears

## Operations

- take away the pins (17b) and (17d) the screws (17a) and (17c)
- remove the flange (17), the gear (16), the bearing (16b), complete of rollers and thrusts (16a)
- remove the counter thrust (02)



## When re-assembling:

- verify the integrity of the O-rings and of the seats
- oil all the O-rings with grease and place them correctly on their seats

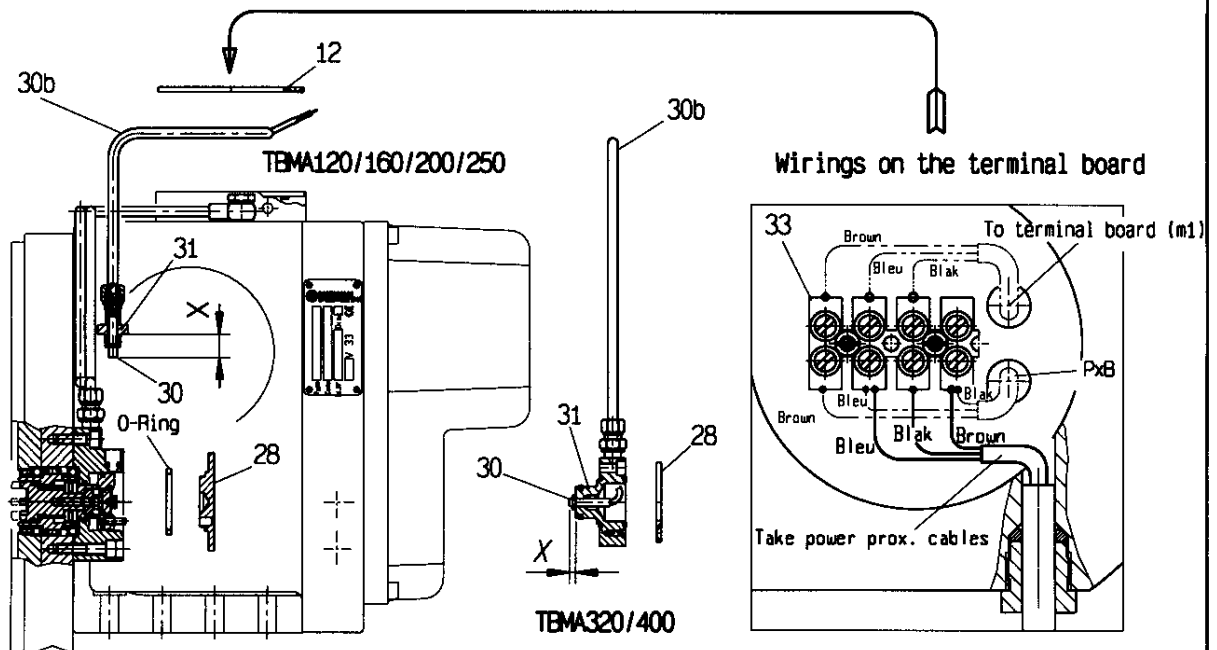
## 3.6 Substitution of the take power's proximity switch

This operation must be done with locked turret and without pressure in the circuit

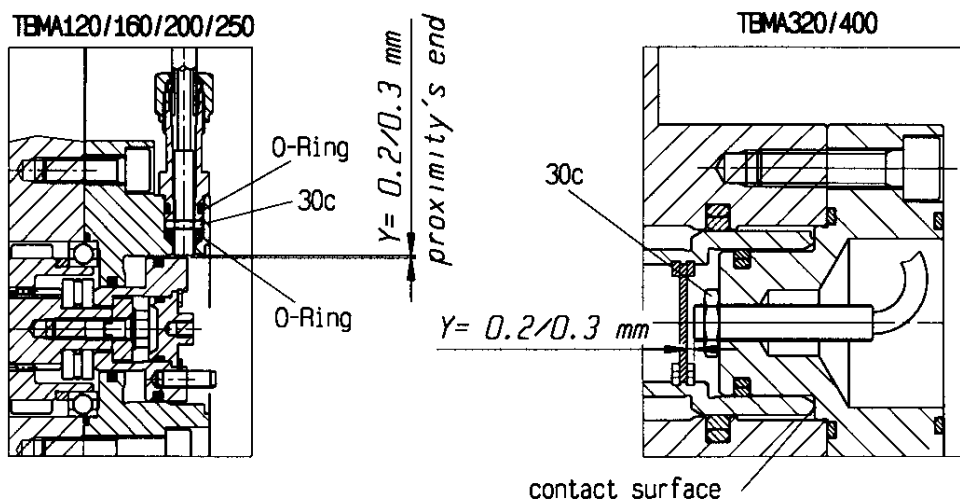


## Operations

- remove the small cover (28)
- remove the top cover (12)
- disconnected the proximity's wirings (30) from the connection box (33)
- remove the proximity with its support (31), connectors and protection pipe (30b)

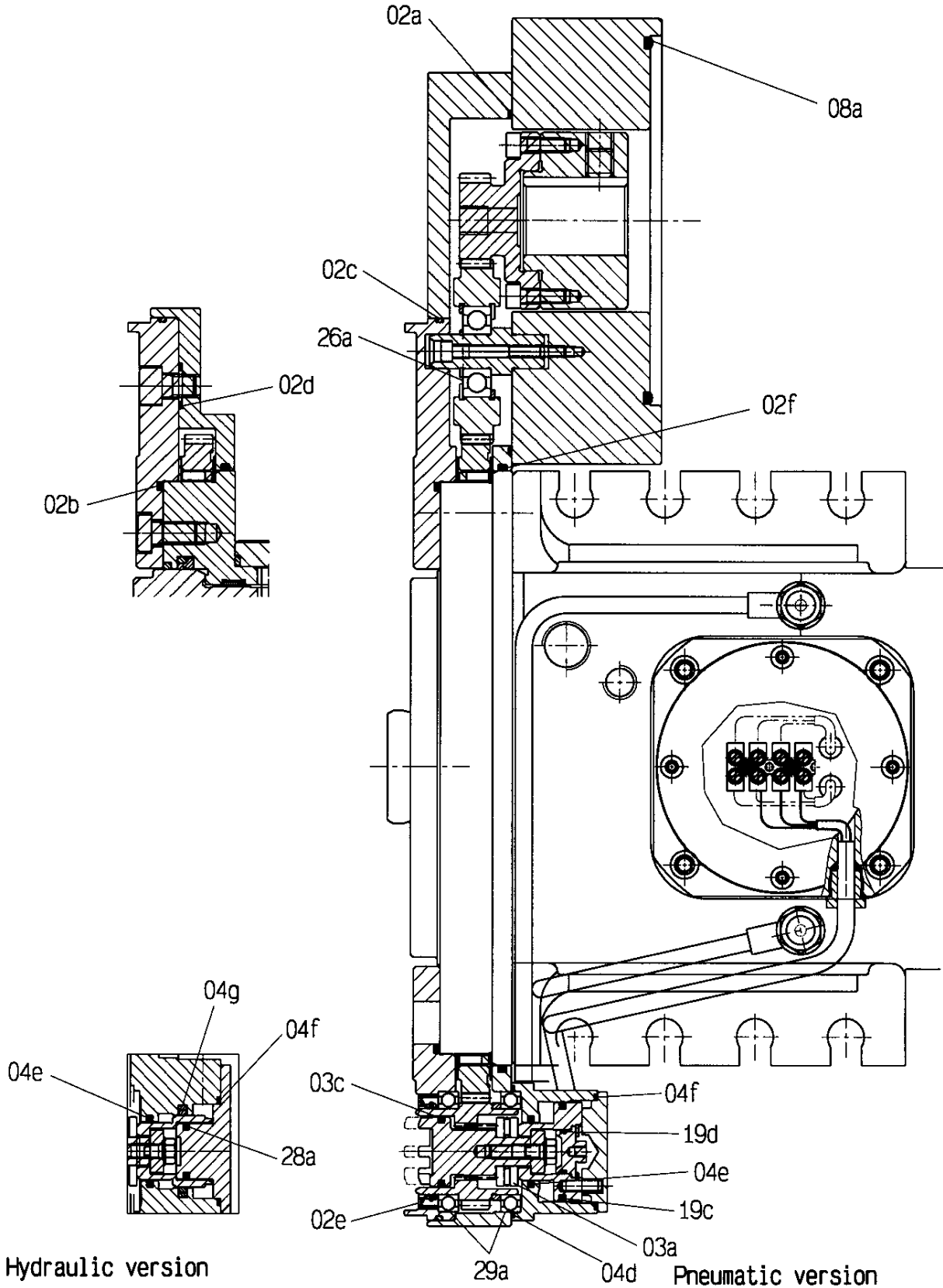


- note the value (X) of the proximity's projection from the support
- remove the broken proximity
- prepare and assembly the new proximity on the support with the same projection value
- lock the nut (30c)
- reassembly everything on the turret verifying that the dimension ' Y ' is within 0,2-0,3mm
- execute the connections on the connection box as originally was



4 Spare parts

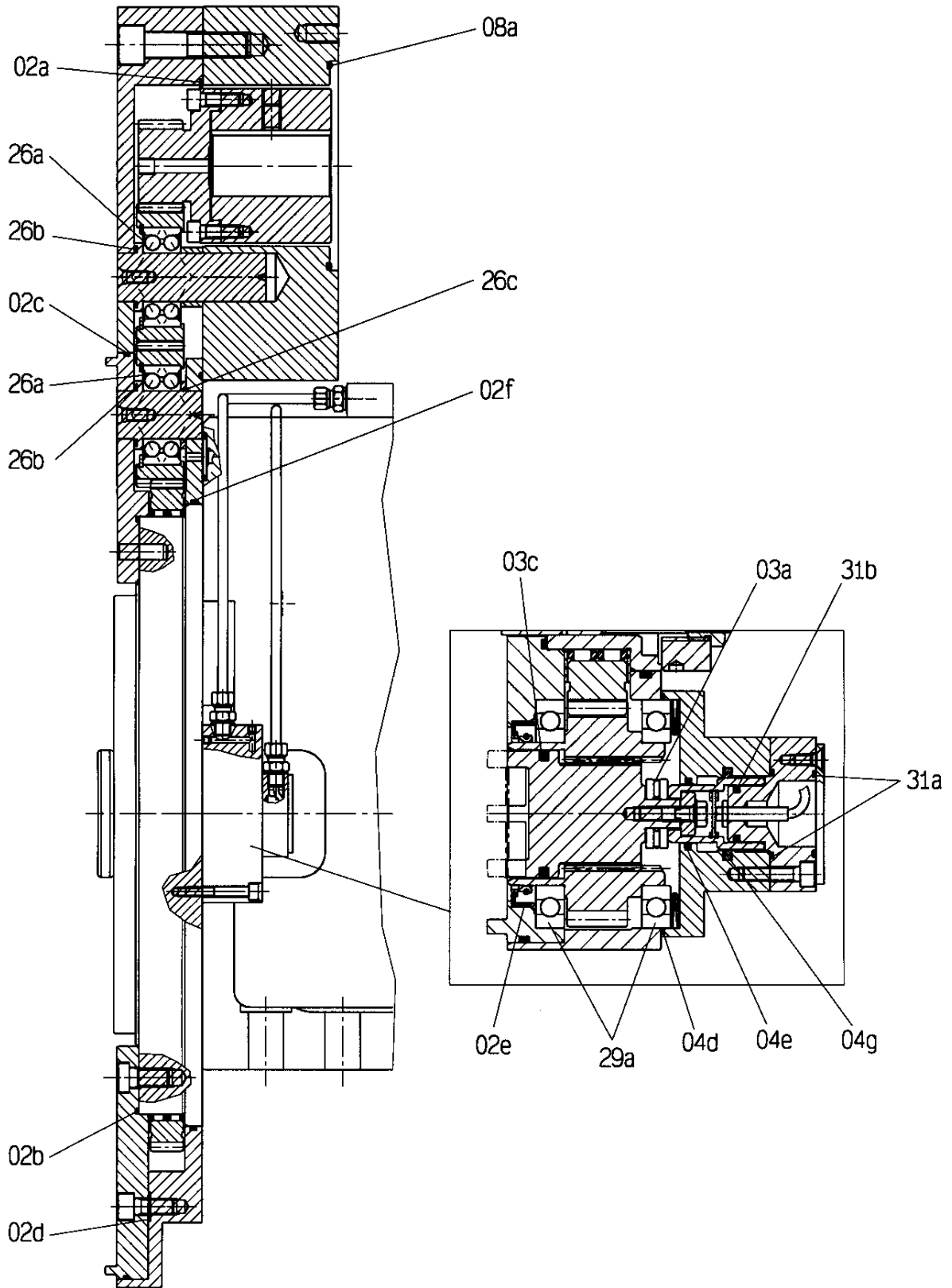
4.1 Spare parts for (TBMA120/160/200/250)



Hydraulic version

Pneumatic version

4.2 Spare parts for (TBMA320/400)



## 4.3 Spare parts for TBMA120 (see frame of reference chapter 4/1)

## Common parts

Rif.	Code	Denomination	Type	Qtty
02a	999.223.03437	O-Ring	O-ring048	1
02b	999.223.04316	O-Ring	O-ring165	1
02d	999.223.00561	O-Ring	O-ring014	8
02e	999.263.07398	Seal (Viton)	MIM 25x35x5	1
02f	999.223.02711	O-Ring	O-ring167	1
03a	999.149.00785	Cage	AXK 0821	1
03c	999.305.07508	Seal glyd-ring	S550460200A46N	1
26a	999.149.07496	Bearing	6202	1
29a	999.149.07439	Bearing	61805	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1

For model 01 (pcd Ø 225) and similar

02c	10.0120.065.02	Seal	Baruffaldi	1
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For model 04 (pcd Ø 240) and similar

02c	26.0120.065.04	Seal	Baruffaldi	1
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Pneumatic version

04d	999.223.01939	O-Ring	O-ring029	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05094	O-Ring	O-ring028	1
19c	999.305.07459	Seal glyd-ring	S550460350A46N	1
19d	999.223.00561	O-Ring	O-ring014	1

Hydraulic version

04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05142	O-Ring	O-ring027	1
04g	999.305.06476	Seal glyd-ring	01A010250A24N	1
28a	999.305.07508	Seal glyd-ring	S550460200A46N	1

## 4.4 Spare parts for TBMA160 (see frame of reference chapter 4/1)

## Common parts

Rif.	Code	Denomination	Type	Ott.y
02a	999.223.03437	O-Ring	O-ring048	1
02b	999.223.07334	O-Ring	O-ring170	1
02d	999.223.00561	O-Ring	O-ring014	7
02e	999.263.07359	Seal (Viton)	MIM 30x40x7	1
02f	999.223.05858	O-Ring	O-ring172	1
03a	999.149.04059	Cage	AXK 1024	1
03c	999.305.07458	Seal glyd-ring	S550460250A46N	1
26a	999.149.03539	Bearing	6201	1
29a	999.149.07494	Bearing	61806	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1

For model 01 (pcd Ø 270) and similar

02c	10.0160.065.05	Seal	Baruffaldi	1
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For model 04 (pcd Ø 300) and similar

02c	10.0160.065.06	Seal	Baruffaldi	1
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Pneumatic version

04d	999.223.05181	O-Ring	O-ring030	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05094	O-Ring	O-ring028	1
19c	999.305.07459	Seal glyd-ring	S550460350A46N	1
19d	999.223.00561	O-Ring	O-ring014	1

Hydraulic version

04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05142	O-Ring	O-ring027	1
04g	999.305.06476	Seal glyd-ring	01A010250A24N	1
28a	999.305.07508	Seal glyd-ring	S550460200A46N	1

## 4.5 Spare parts for TBMA200 (see frame of reference chapter 4/1)

## Common parts

Rif.	Code	Denomination	Type	Ott.y.
02a	999.223.04886	O-Ring	O-ring160	1
02b	999.223.04087	O-Ring	O-ring176	1
02d	999.223.00561	O-Ring	O-ring014	9
02e	999.263.07363	Seal (Viton)	MIM 35x47x5	1
02f	999.223.00097	O-Ring	O-ring178	1
03a	999.149.04059	Cage	AXK 1024	1
03c	999.305.07451	Seal glyd-ring	S550460300A46N	1
26a	999.149.07546	Bearing	6302	1
29a	999.149.07484	Bearing	61907	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1

For model 01 (pcd Ø 340) and similar

02c	10.0200.065.13	Seal	Baruffaldi	1
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For model 06 (pcd Ø 380) and similar

02c	10.0200.065.04	Seal	Baruffaldi	1
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## Pneumatic version

04d	999.223.03451	O-Ring	O-ring034	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05193	O-Ring	O-ring032	1
19c	999.305.07474	Seal glyd-ring	02A010450A24N	1
19d	999.223.00561	O-Ring	O-ring014	1

## Hydraulic version

04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05142	O-Ring	O-ring027	1
04g	999.305.06477	Seal glyd-ring	01A010280A24N	1
28a	999.305.07508	Seal glyd-ring	S550460200A46N	1

## 4.6 Spare parts for TBMA250 (see frame of reference chapter 4/1)

## Common parts

Rif.	Code	Denomination	Type	Ott.y
02a	999.223.02707	O-Ring	O-ring163	1
02b	999.223.01020	O-Ring	O-ring277	1
02d	999.223.01928	O-Ring	O-ring015	9
02e	999.263.07361	Seal (Viton)	MIM 40x52x7	1
02f	999.223.07385	O-Ring	O-ring310x3	1
03a	999.149.04059	Cage	AXK 1024	1
03c	999.305.02700	Seal glyd-ring	02A010350A24N	1
26a	999.149.07545	Bearing	6303	1
29a	999.149.07503	Bearing	61908	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1

For model 01 (pcd Ø 400) and similar

02c	10.0250.065.04	Seal	Baruffaldi	1
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For model 04 (pcd Ø 445.5) and similar

02c	10.0250.065.06	Seal	Baruffaldi	1
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Pneumatic version

04d	999.223.00470	O-Ring	O-ring037	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05193	O-Ring	O-ring032	1
19c	999.305.07474	Seal glyd-ring	02A010450A24N	1
19d	999.223.00561	O-Ring	O-ring014	1

Hydraulic version

04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04f	999.223.05142	O-Ring	O-ring027	1
04g	999.305.06477	Seal glyd-ring	01A010280A24N	1
28a	999.305.07508	Seal glyd-ring	S550460200A46N	1



## 4.7 Spare parts for TBMA320 (see frame of reference chapter 4/2)

For model 01 (pcd Ø 490) and similar

Rif.	Code	Denomination	Type	Qtt.y.
02b	26.0320.006.01	Seal	Baruffaldi	1
02c	26.0320.005.01	Seal	Baruffaldi	1
02d	999.223.01928	O-Ring	O-ring015	10
02e	999.263.07372	Seal (Viton)	MIM A50x65x8	1
02f	999.223.07386	O-Ring	O-ring390x3	1
03a	999.149.04059	Cage	AXK1024	1
03c	999.305.07474	Seal glyd-ring	02A010450A24N	1
04d	999.223.07185	O-Ring	O-ring041	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04g	999.305.06476	Seal glyd-ring	01A010250A24N	1
26a	999.149.05551	Bearing	3206 A TN9	2
26b	999.223.07096	O-Ring	O-ring124	2
26c	999.223.01932	O-Ring	O-ring025	1
29a	999.149.04347	Bearing	16010	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1
31a	999.223.05399	O-Ring	O-ring023	2
31b	999.305.07508	Seal glyd-ring	S550450200A46N	1

For model 01 (top motor)

02a	999.223.02028	O-Ring	O-ring168	1
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For model 05 (side motor)

02a	999.223.05147	O-Ring	O-ring164	1
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## 4.8 Spare parts for TBMA400 (see frame of reference chapter 4/2)

Forr model 01 (pcd Ø 620) and similar

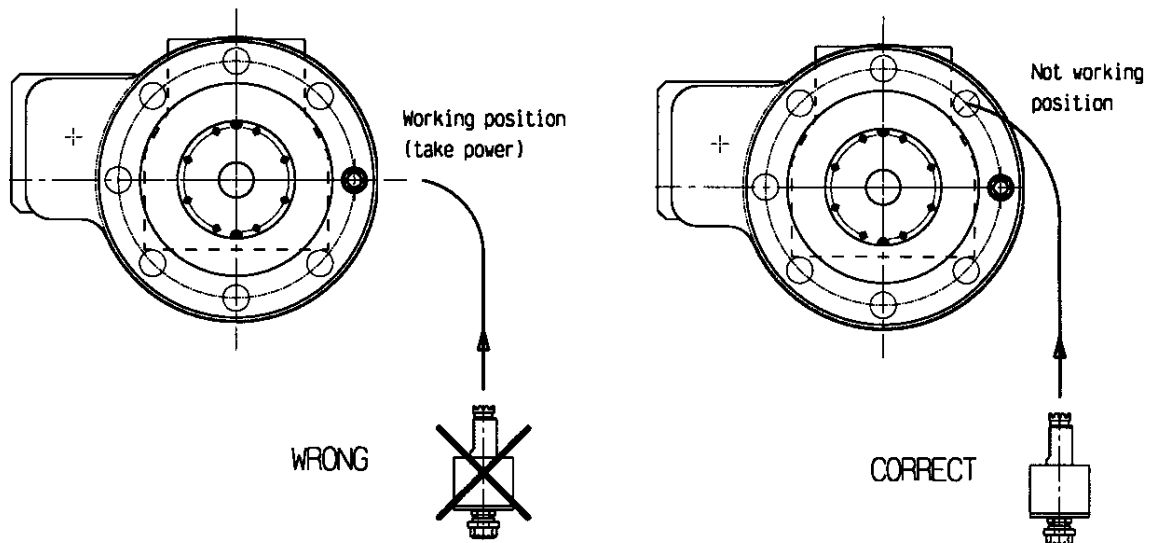
Rif.	Code	Denomination	Type	Ott.y.
02a	999.223.02028	O-Ring	O-ring168	1
02b	26.0400.006.01	Seal	Baruffaldi	1
02c	26.0400.005.01	Seal	Baruffaldi	1
02d	999.223.01928	O-Ring	O-ring015	10
02e	999.224.07318	Seal (Viton)	MIM A65x85x10	1
02f	26.0400.007.01	Seal	Baruffaldi	1
03a	999.149.04059	Cage	AXK1024	1
03c	999.305.06479	Seal glyd-ring	02A010580A24N	1
04d	999.223.04888	O-Ring	O-ring045	1
04e	999.305.06469	Seal glyd-ring	01A000200A24N	1
04g	999.305.06476	Seal glyd-ring	01A010250A24N	1
26a	999.149.05551	Bearing	3206 A TN9	2
26b	999.223.07096	O-Ring	O-ring124	2
26c	999.223.01932	O-Ring	O-ring025	1
29a	999.149.00866	Bearing	16013	2
30	999.231.04801	Proximity PNP-NO-24V	M5x0.5 - 25mm max	1
31a	999.223.05399	O-Ring	O-ring023	2
31b	999.305.07508	Seal glyd-ring	S550460200A46N	1


## 5 Use advices

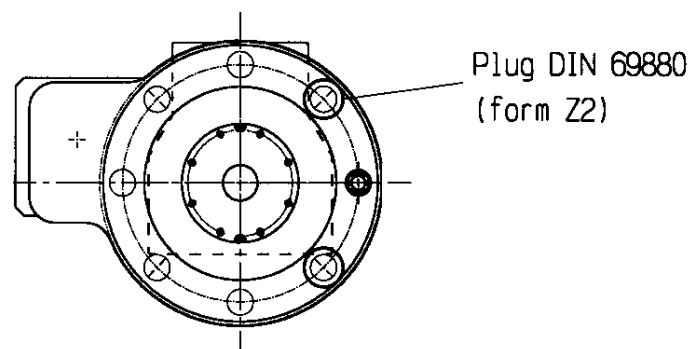
## 5.1 Assembly of the rotating toolholder on the disk


When equipping the disk, the fixing of the rotating toolholder it must not be made in the working position (where there is the clutch, but in another position) 

This instruction is not valid for sizes TBMA 320/400



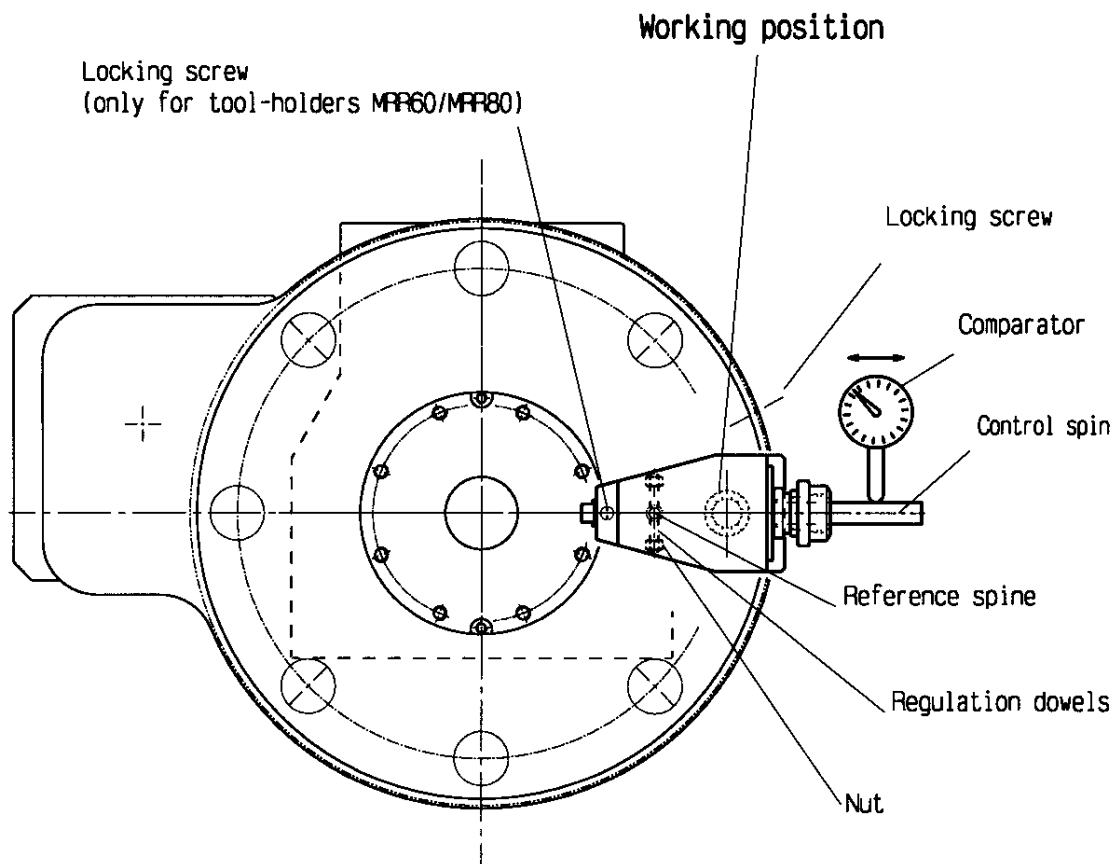
At the end of the equipment, all the DIN 69880 seats, which are not occupied, by static or rotating toolholder, must be closed with plugs DIN 69880 (Z2) and with its locking screws. 



It's compulsory to avoid that chips, go through the VDI or its screw seat.  
Before remove the toolholders from the disk, clean the area with air.  
If these rules are not followed, it could be damaged the correct functioning of the turret. 

## 5.2 Rotating toolholders regulation

- Verify on the toolholder disk, the presence of the reference pins, in the positions, where is intended to use the rotating toolholder. On the Baruffaldi disk the reference pins are assembled, normally, in all the positions thought to be used with rotating toolholders
- Loose the dowels and assembly the radial toolholder in the requested position as per description in chapter 5,1; tighten the DIN 69880 screw (it's not possible to assembly the rotating toolholder directly in the working position)
- Rotate the disk till the radial toolholder is in the working position
- Assembly a control pin in the toolholders collet
- Using a comparator verify the pin's alignment



- In case of an angular run out bigger than requested, use the two dowels in order to obtain, the requested allignement (Both dowels have to touch the refernce pin)
- When the allignement is finished, tighten the nuts, lock the DIN 69880 screws an verify the correct allignement of the comparator
- Remove the control pin from the toolholder and assembly the requested tool