INSTRUCTION FOR THE USE

Toolholder turret series TB

24.0120
24.0160
24.0200
24.0250
24.0320
24.0400

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:

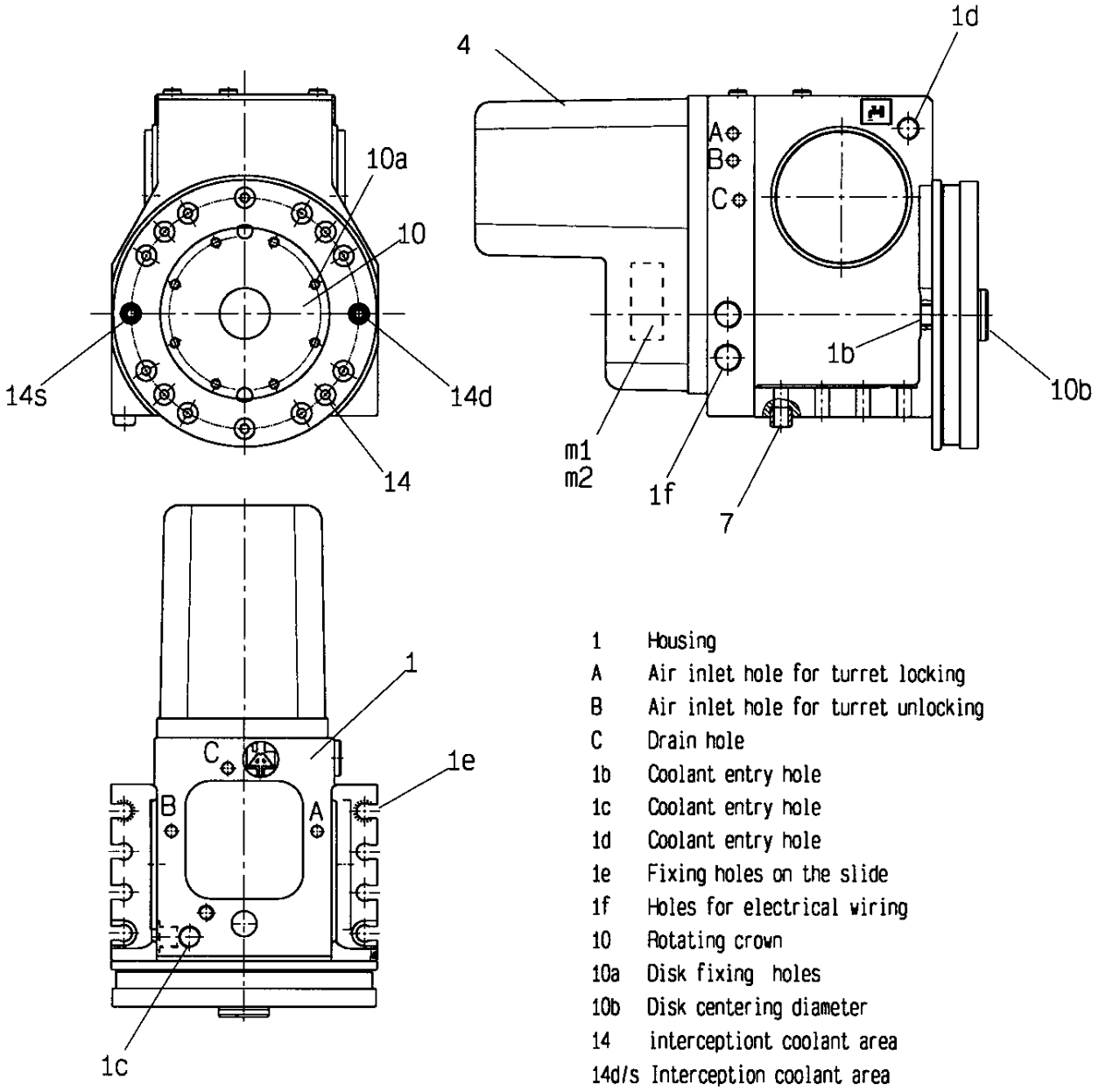
- the instructions of use are not followed
- the turret is not operated in the correct way
- the maintenance of the turret is not performed correctly
- functional changes of any type are brought without the consent of the manufacturer
- original spare parts are not used

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 the work
- the not observance can jeopardize the safety of the operator

INDEX	Toolholder turret series TB	TB002-e

1.1 TB120-TB160-TB200-TB250 "pneumatic" locking/unlocking



1	Housing
A	Air inlet hole for turret locking
B	Air inlet hole for turret unlocking
C	Drain hole
1b	Coolant entry hole
1c	Coolant entry hole
1d	Coolant entry hole
1e	Fixing holes on the slide
1f	Holes for electrical wiring
10	Rotating crown
10a	Disk fixing holes
10b	Disk centering diameter
14	interceptiont coolant area
14d/s	Interception coolant area
4	Back cover
7	Reference pin

The housing 1 that contains all the indexing elements, must be fixed on the machine with the necessary screws (seat 1e) and with the reference of the pin 7

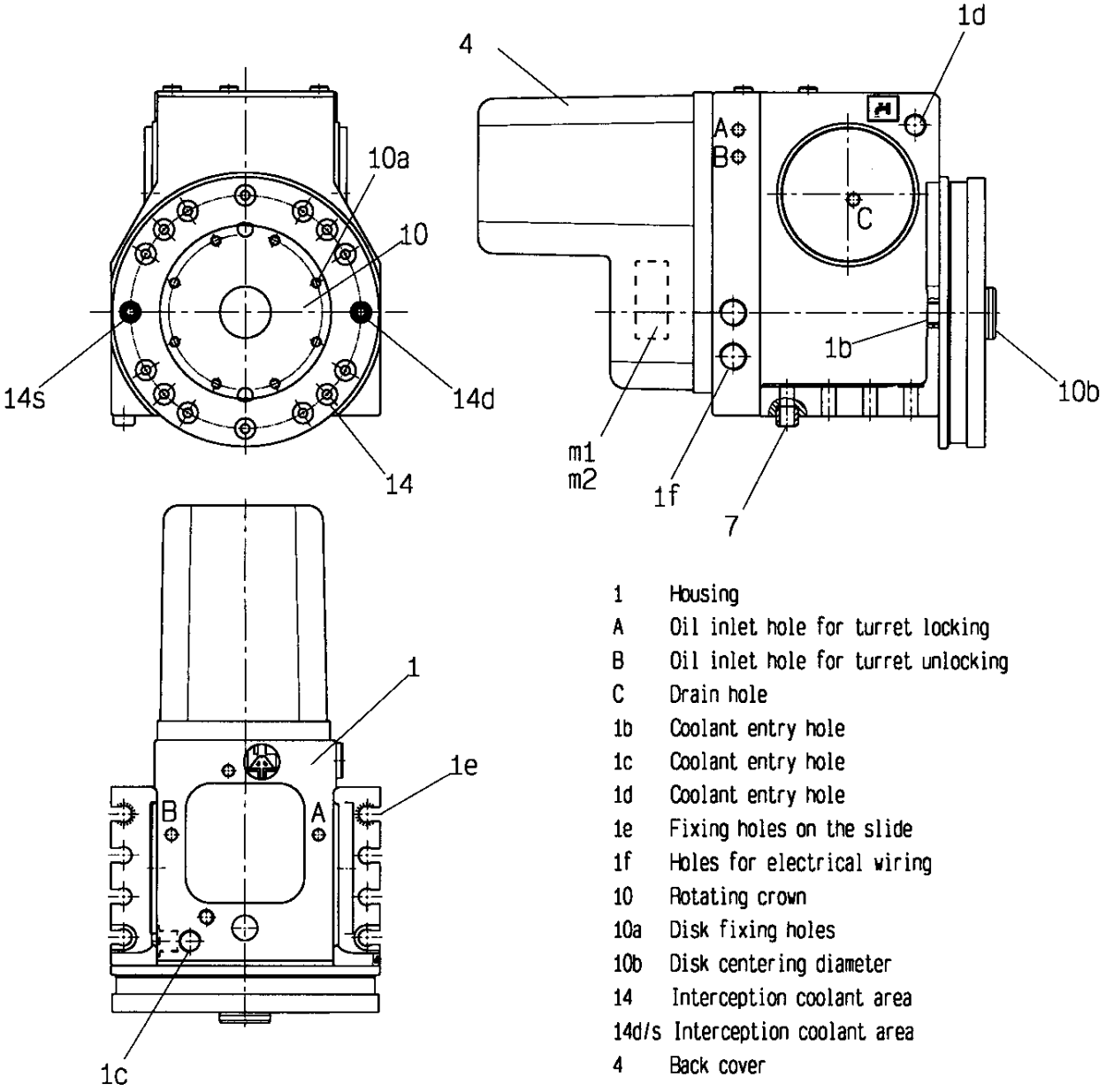
On the rotating crown 10 must be fixed the toolholder disk.

The electric connection must be made on the terminal block m1-m2

The connection for the coolant must be done on one of the holes (1b-1c-1d).

The use is in correspondence of the valve: zone (14s) or (14d)

1.2 TB120-TB160-TB200-TB250 "hydraulic" locking and unlocking



1	Housing
A	Oil inlet hole for turret locking
B	Oil inlet hole for turret unlocking
C	Drain hole
1b	Coolant entry hole
1c	Coolant entry hole
1d	Coolant entry hole
1e	Fixing holes on the slide
1f	Holes for electrical wiring
10	Rotating crown
10a	Disk fixing holes
10b	Disk centering diameter
14	Interception coolant area
14d/s	Interception coolant area
4	Back cover

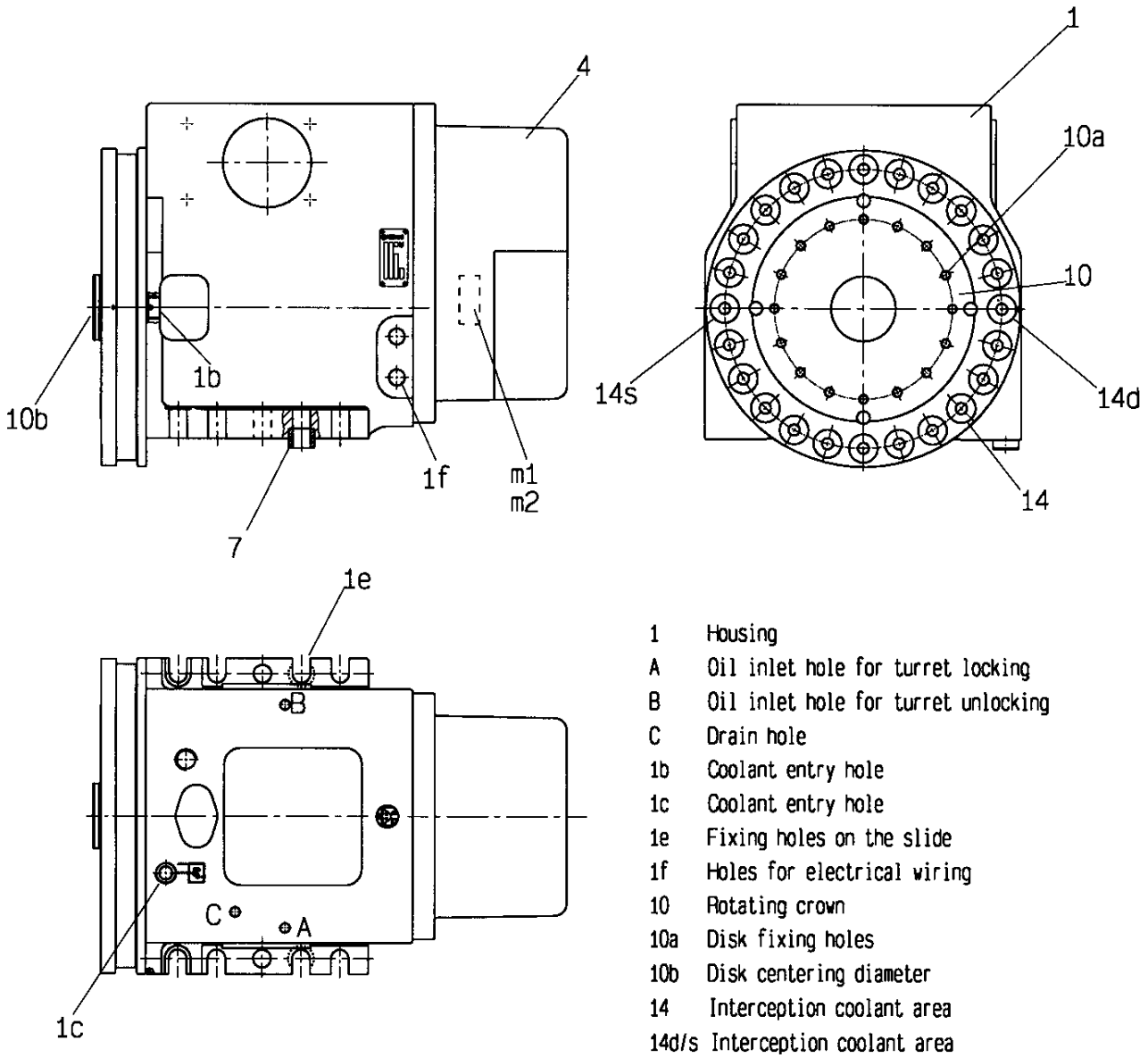
The housing 1 that contains all the indexing elements, must be fixed on the machine with the necessary screws (seats 1 e) and with reference pin 7

On the rotating crown 10 must be fixed the toolholder disk

The electric connection must be made on the terminal block m1-m2

The connection for the coolant must be done on one of the holes (1b-1c-1d). The use is in correspondence of the valve: zone (14s) or (14d).

1.3 TB320-TB400 "hydraulic" locking and unlocking

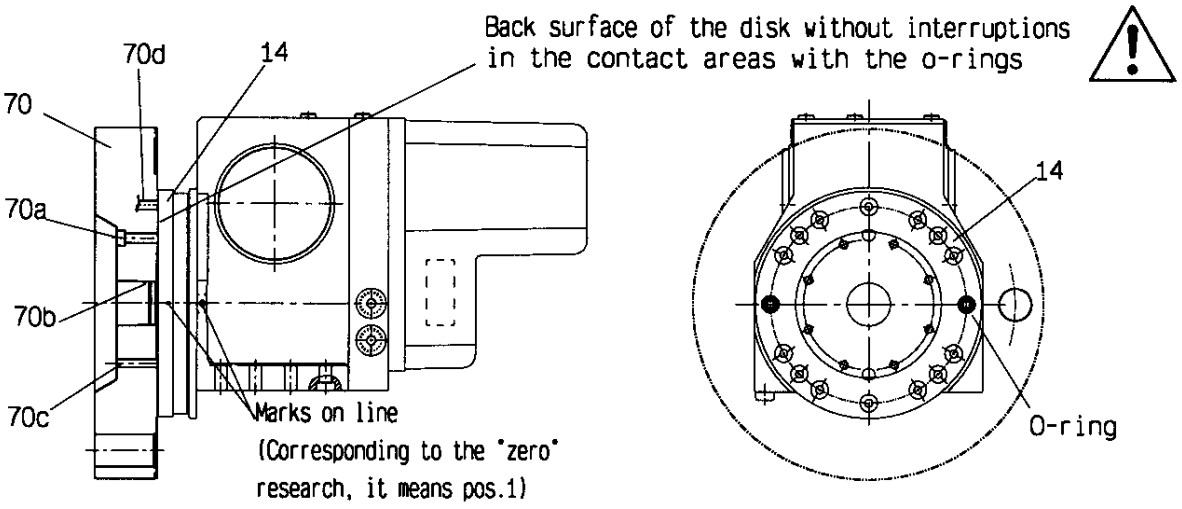


1	Housing
A	Oil inlet hole for turret locking
B	Oil inlet hole for turret unlocking
C	Drain hole
1b	Coolant entry hole
1c	Coolant entry hole
1e	Fixing holes on the slide
1f	Holes for electrical wiring
10	Rotating crown
10a	Disk fixing holes
10b	Disk centering diameter
14	Interception coolant area
14d/s	Interception coolant area
4	Back cover
7	Reference pin

The housing 1 that contains all the indexing elements, must be fixed on the machine with the necessary screws (seats 1 e) and with the reference pin 7.
On the rotating crown 10 must be fixed the toolholder disk.
The electric connection must be made on the terminal block m1-m2.
The connection for the coolant must be done on one of the holes (1b-1c-1d). The use is in correspondence of the valve: zone (14s) or (14d).

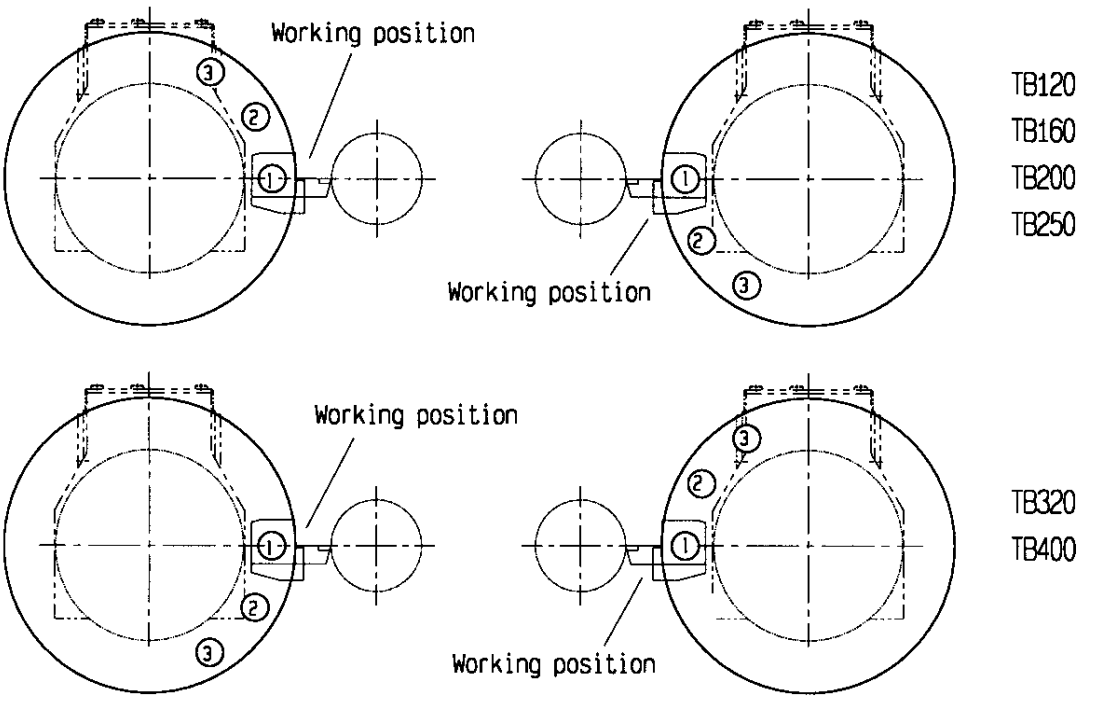
1.4 Indications for the construction of the toolholder disk

70 Disk
70b Disk centering hole (tolerance h5)
70a Fixing screws holes
70c Pre-holes for possible pins (for the position see the catalogue)
70d Holes for the interception of the coolant (their position,on the back of the disk have to coincide with the zone of interception delimited by the o-rings)
14 Coolant distributor

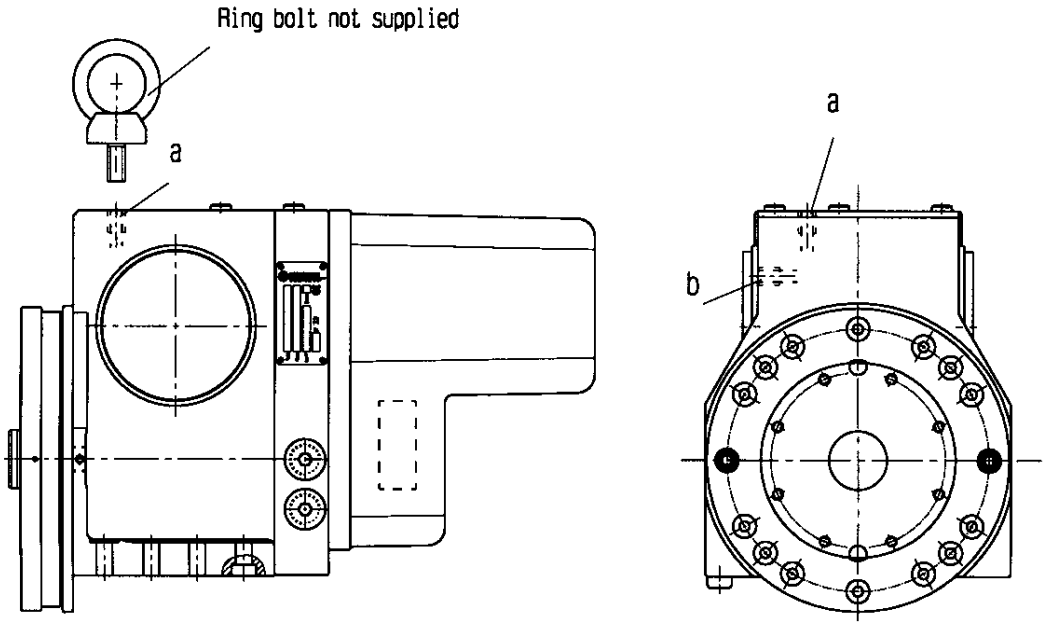


1.5 Progressive numeration for the toolholder seats

The numeration must be done departing from the working position with turret corresponding to search of "zero" and with equal progression to the schemes underlyng



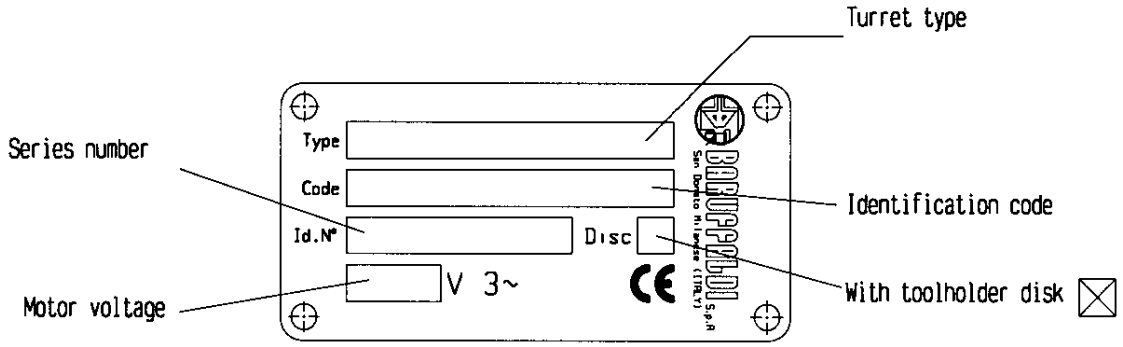
2.1 Advice during transportation



Schedule

SIZE	TB120	TB160	TB200	TB250	TB320	TB400
Turret weight Without toolholder disk KP	44	50	100	120	295	370
Dimension hole a	M 12	M 12	M 16	M 16	M 27	M 27
Dimension hole b					M 27	M 27

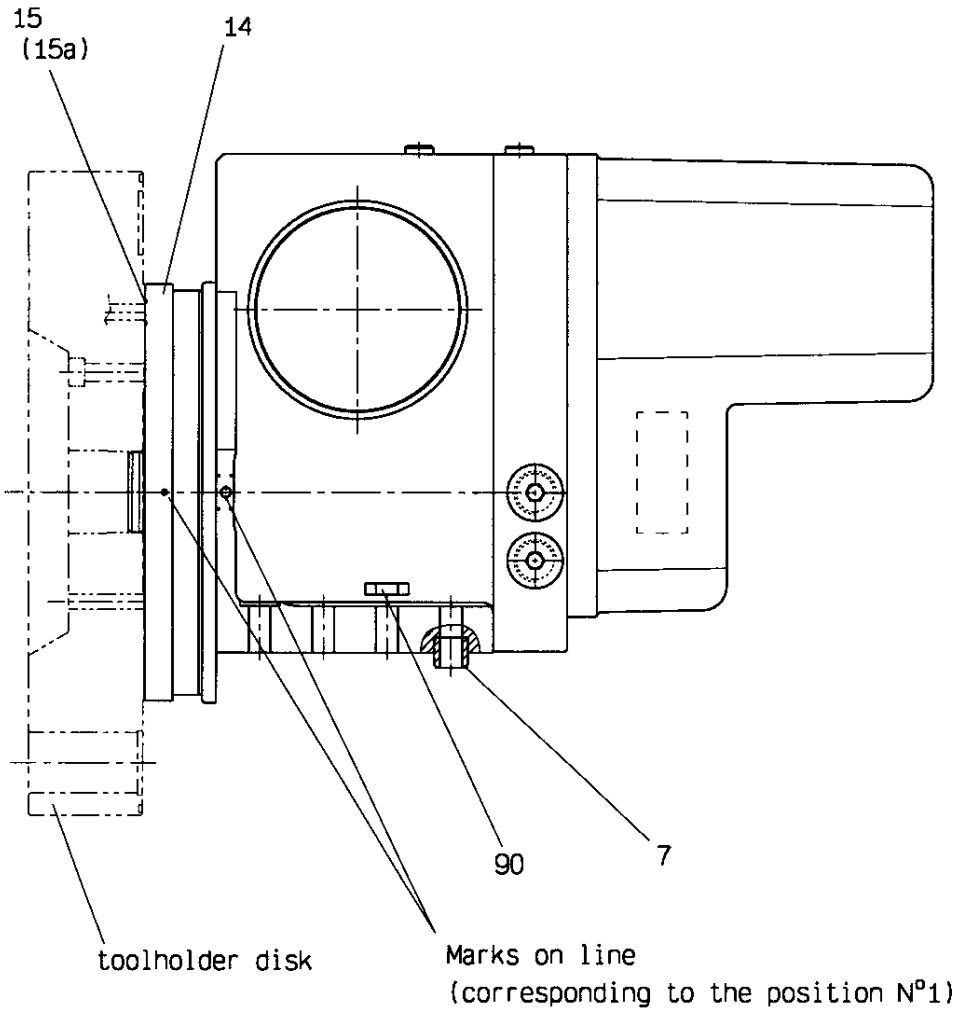
2.2 Data plate



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 (7)
-Locking washers (90)
-Coolant (14) with relative O-Ring (15) or gaskets (15a)
-Coolant ring corresponding to the order
-Possible toolholder disk, (if required)
-Servo amplifier SA-01A-TB
-The turret is delivered in locked conditions, the position 1 corresponding to the position of the search of zero



2.4 Technical data

SIZE		TB120	TB160	TB200	TB250	TB320	TB400
N°of division		8-12 (24)	8-12 (24)	8-12 (24)	8-12 (16-24)	8-12 (16-24)	8-12 (16-24)
Moment of inertia	kgm2	1,2	2,2	5	8	32	70
Working pressure locking/unlocking	bar	Pneumatic version 5±1					
		Hydraulic version 30±3					
Indexing frequency	n/h	800	800	750	750	600	600
Max tangential torque	Nm	1100	1900	4000	7500	16000	26000
Max overturning torque in pressing direction	Nm	1200	2100	6000	12000	25000	41400
Max overturning torque in lifting direction	Nm	700	1600	3500	6500	13000	20000
Max out of balance torque	Nm	10	15	40	60	160	470

2.5 Assembly of the toolholder disk on the turret

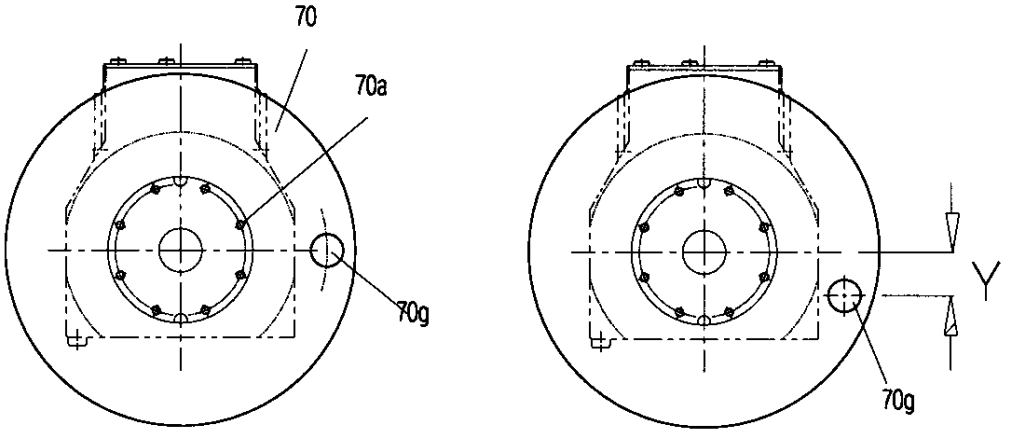
-Assembly the disk 70 on the turret with tighten screws 70a

-Orientate the disk, positioning the seats 70g to the given dimension Y

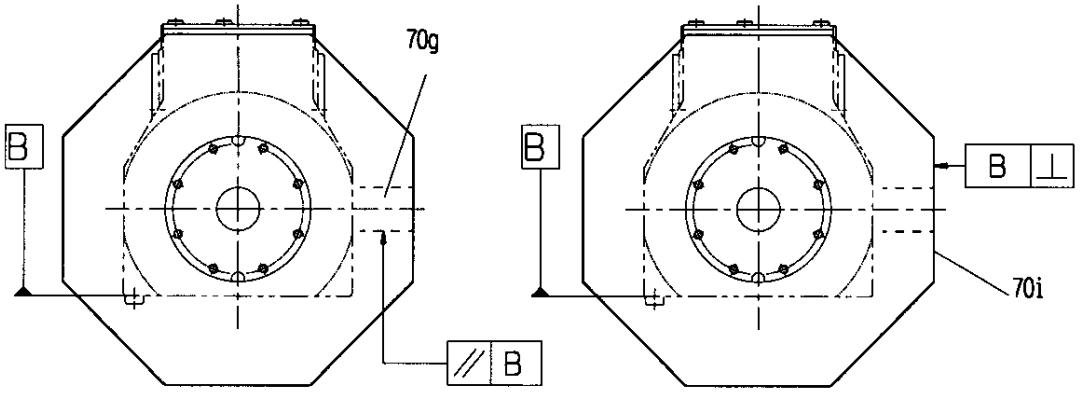
-Lock the screws 70a

-Control again the position of the seats 70g

-Eventually perform to pin



-For poligonal disks line up the seats 70g or the surfaces 70i in comparison to the surface of the turret



Data table for the disk fixing screws

SIZE	TB120	TB160	TB200	TB250	TB320	TB400
Quality screws 12.9	M 8	M 8	M 10	M 12	M 12	M 16
Tightening torque Nm	39	39	77	135	135	350

NOTE

All the controls and operations during the installation must be done with locked turret

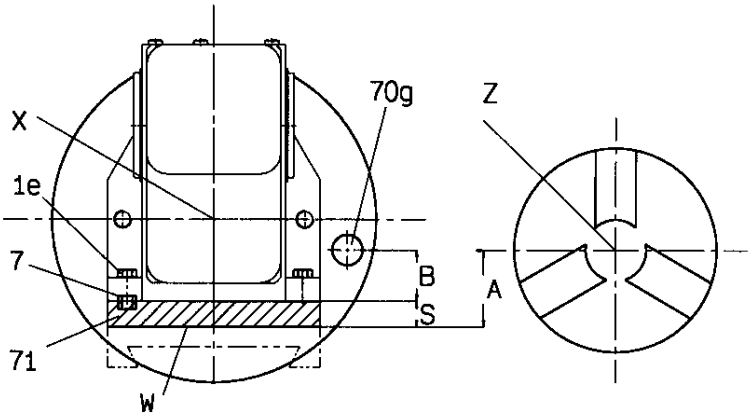
2.6 Assembly of the turret on the machine

-Notice the dimension a between the axle of the lathe and the surface of the slide

-Notice the dimension B among the center of the toolholder seats and the surface of the turret

-Adapt the thickness of the shim (71) to the dimension (S): difference between (A) and (B)

Z	Machine axle
X	Turret axle
71	Shim
W	Slide's surface
7	Reference pin
70g	Toolholder seats
1e	Fixing screws



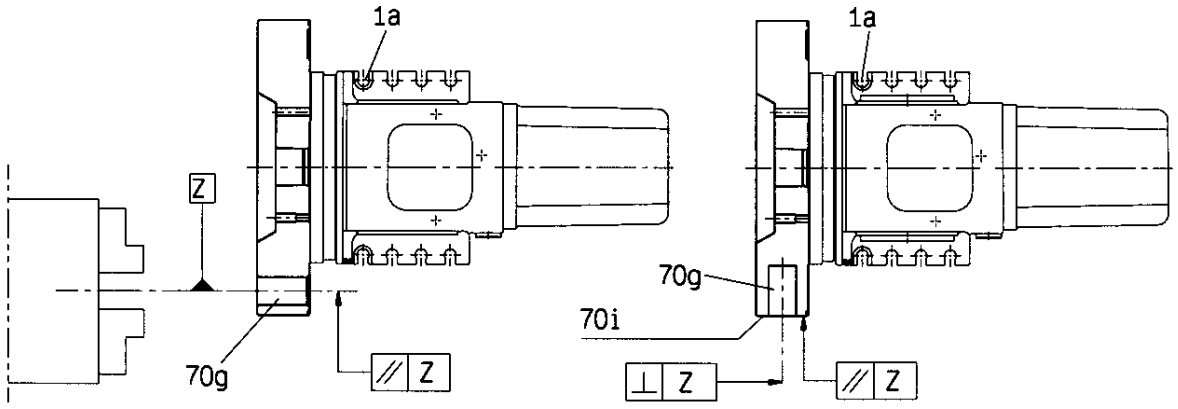
Data table for the turret fixing screws on the lathe

SIZE	TB120	TB160	TB200	TB250	TB320	TB400
Quality screws 12.9	M 8	M 10	M 12	M 16	M 20	M 24
Tightening torque Nm	39	77	135	280	700	1200

-Assembly the turret complete of disk 70, bush 7, and shim 71 on the slide of the machine

-With screws 1e slightly in tension,line up the seats 70g or the surface

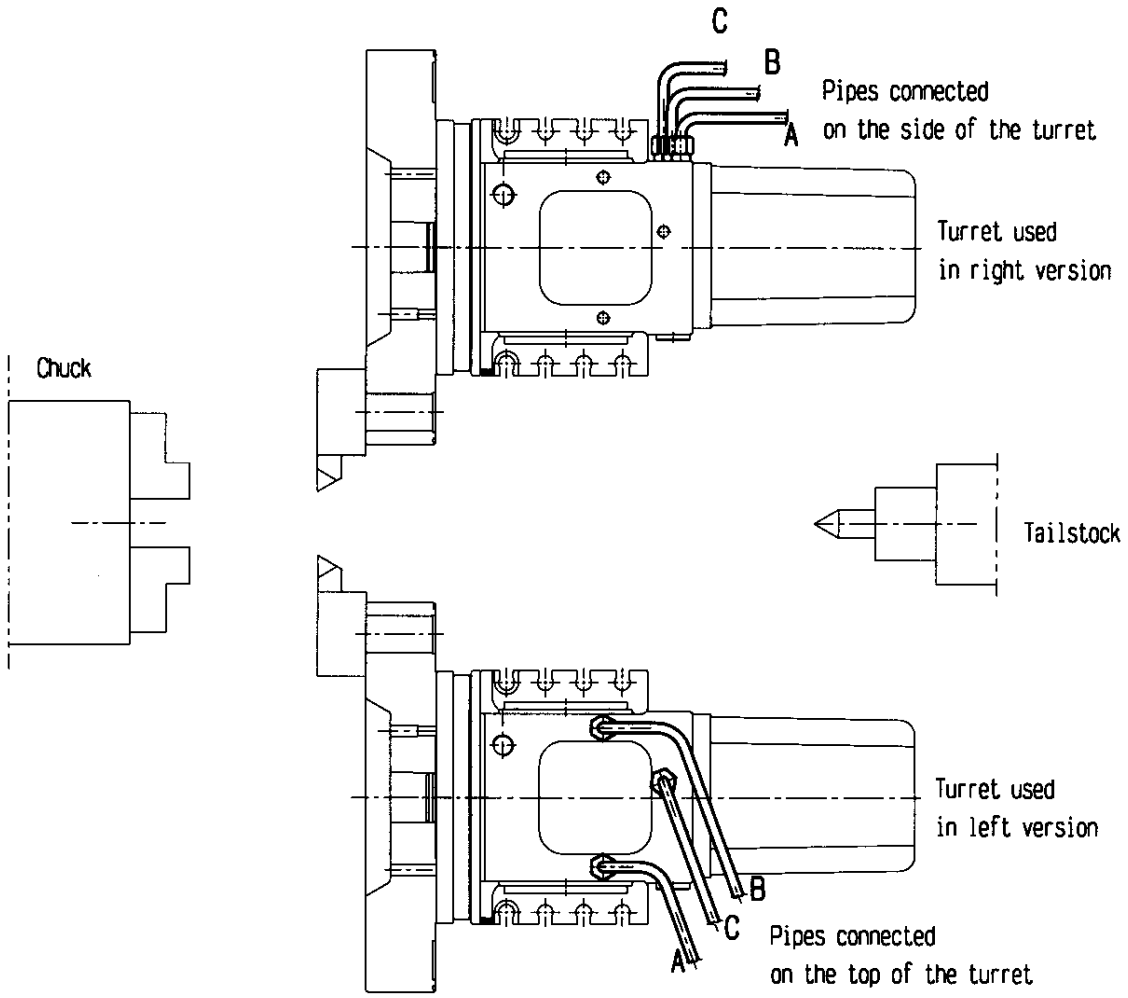
-Lock the screws 1e, than control again the alignement of the disk



NOTE

All the controls must be done with locked turret; the turret's surface has to be clean and without deformations and with planarity of 0.01/100mm

2.7 Pneumatic connection: TB120/TB160/TB200/TB250



-The turrets are prepared with double holes for the pneumatic connections (A),(B),(C)

-The choice of the holes to be used depends from the assembly position of the turret on the slide

-The scheme indicate the best way to use the holes

-The holes not used have to be tightly closed with special plug

-Use internal diameter pipes 6 mm

-Protect the pipes from probable excision 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 infiltration of coolant or extraneous bodies

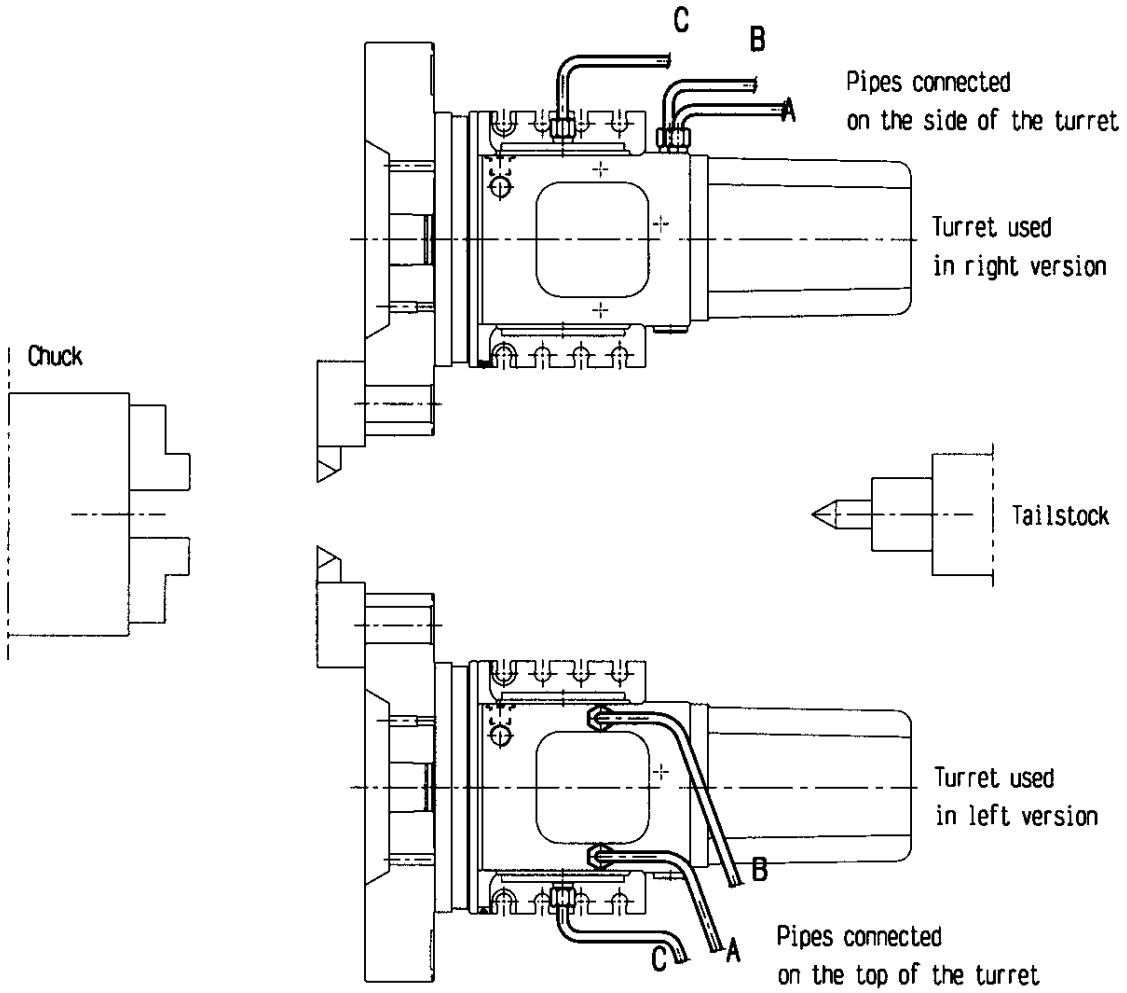
-For the individualization of the function of the pipes (opening, closing, drain) we suggest to use pipes of different colors, or to mark them with letters (A,B,C)

-Function and dimension of the holes: A (G1/8") locked turret, B (G1/8") unlocked turret, C (1/8") vent hole

Note

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

2.8 Hydraulic connections: TB120/TB160/TB200/TB250



-The turrets are prepared with double holes for the hydraulic connections of opening (B) and locking (A) an with one drain hole (C)

-The choice of the holes to be used depends from the assembly position of the turret on the slide

-The scheme indicates the best way to use the holes

-The holes not used have to be tightly closed with special plugs

-Use internal diameter pipe 6 mm

-Protect the pipes from probable excision or grazes due to metallic chips (employ protection carters)

-The drain pipe has to the brought to the tank of the hydraulic pump

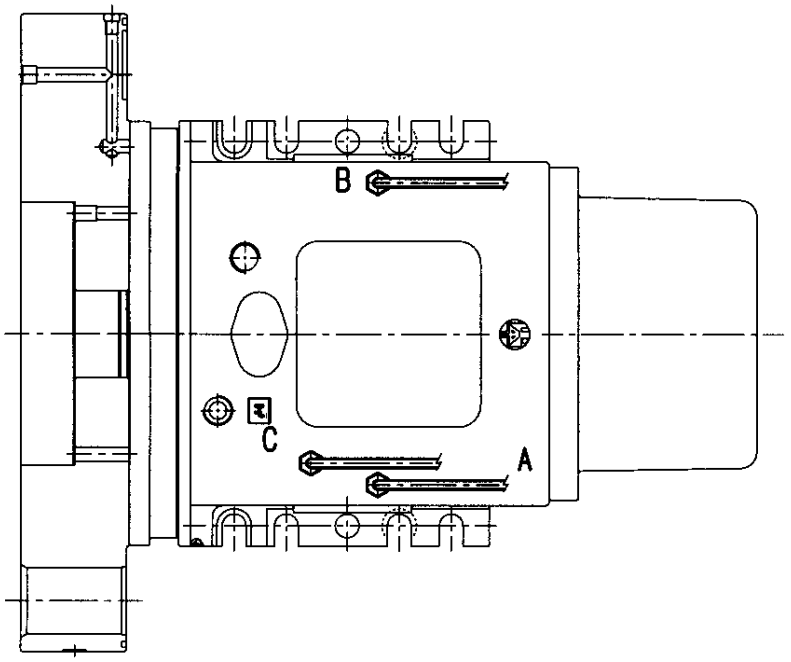
-For the individualization of the function of the pipes (opening, closing, drain) we suggest to use pipes of different colors, or to mark them with letters (A,B,C)

-Function and dimension of 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 valve very near to turret

2.9 Hydraulic connections: TB320/TB400



-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 8mm

-Protect the pipes from probable excision 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 color, or to mark them with letters (A,B,C)

-Function and dimension of the holes: A(G1/4")=locked turret, B(G1/4")=unlocked turret; C(G1/8")vent hole

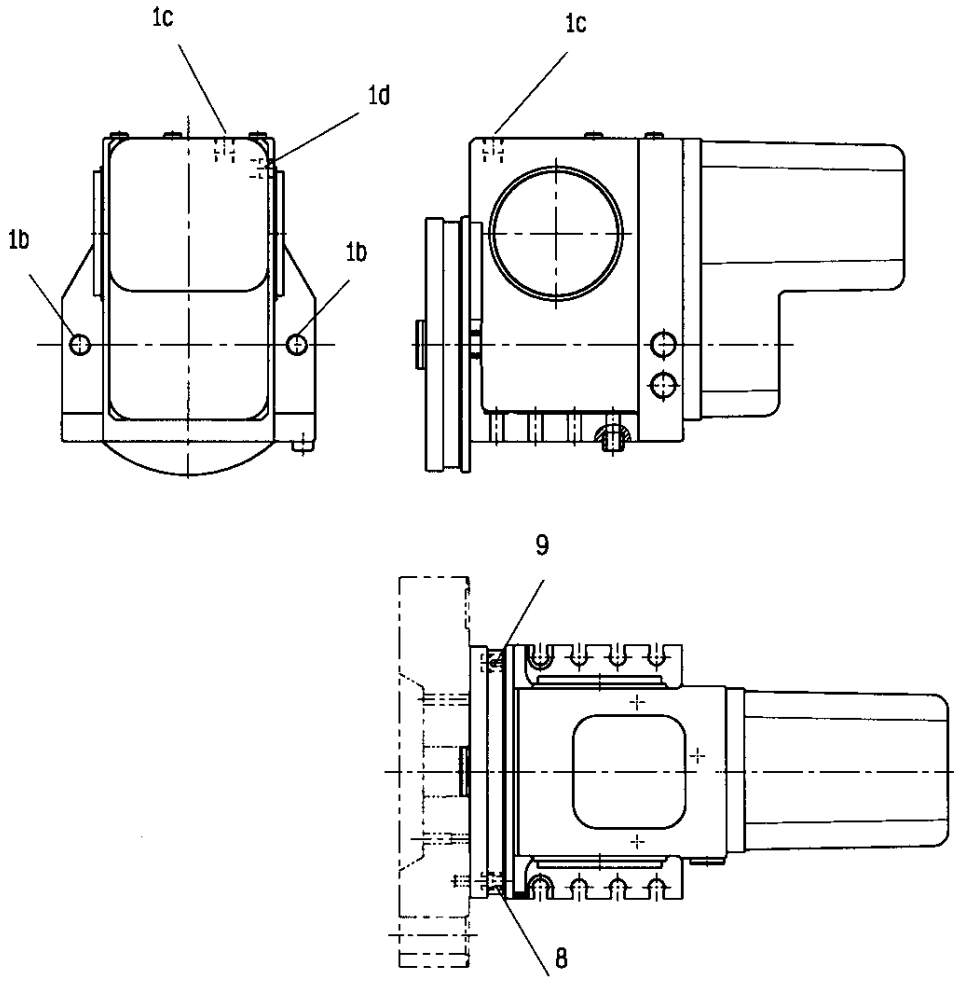
Note

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

2.10 Feeding of the coolant

-Connect to one of the holes (1b-1c-1d) the pipe for the coolant (plug the others)

-Make sure that the valve (8) of interception , is assembled on the side where is foreseen the coolant outlet; on the other side must be installed the plug (9)



Schedule coolant feeding

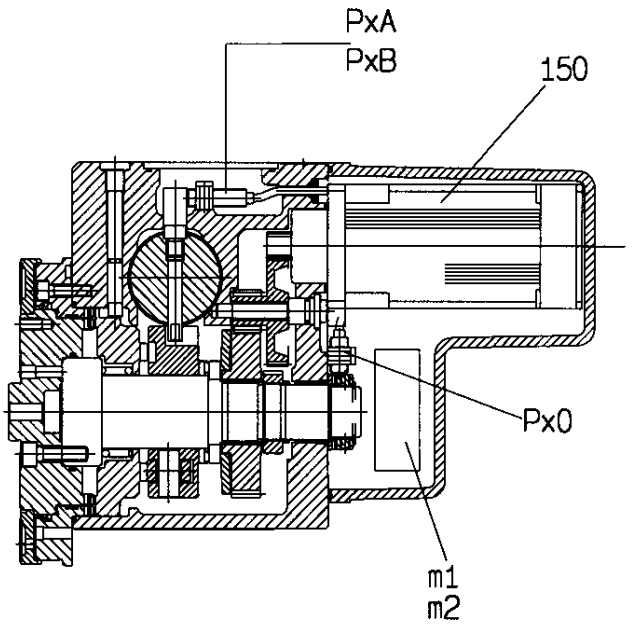
Size	TB120	TB160	TB200	TB250	TB320	TB400
Holes dimension 1b	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 3/4"	G 3/4"
Holes dimension 1c	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 3/4"	G 3/4"
Holes dimension 1d	G 1/4"	G 3/8"	G 3/8"	G 1/2"		

-The drawing represents the use of the coolant outlet on the right side

-For the use on the left side reverse the assembly of the valve (8) with the plug (9)

2.11 Electric section

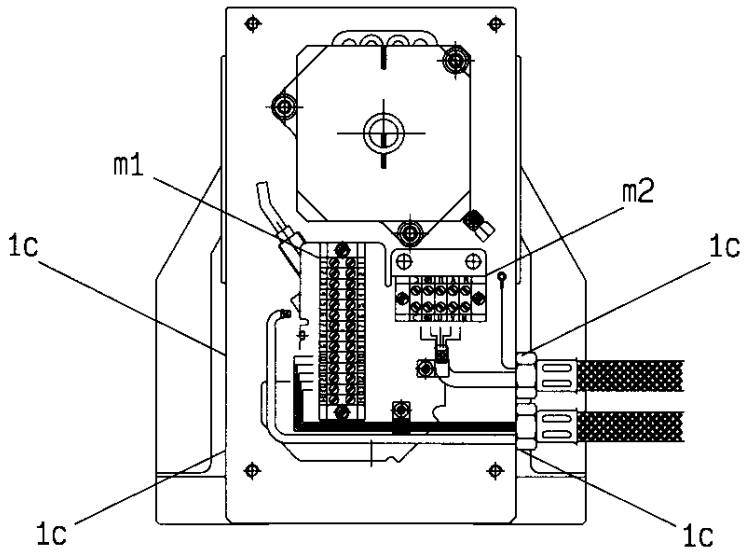
2.11.1 Electrical components



150	Brushless motor
m1	Connection terminal-signal
m2	connection terminal-power
PxA	Locked turret proximity switch
PxB	Unlocked turret proximity switch
PxO	Proximity switch of zero

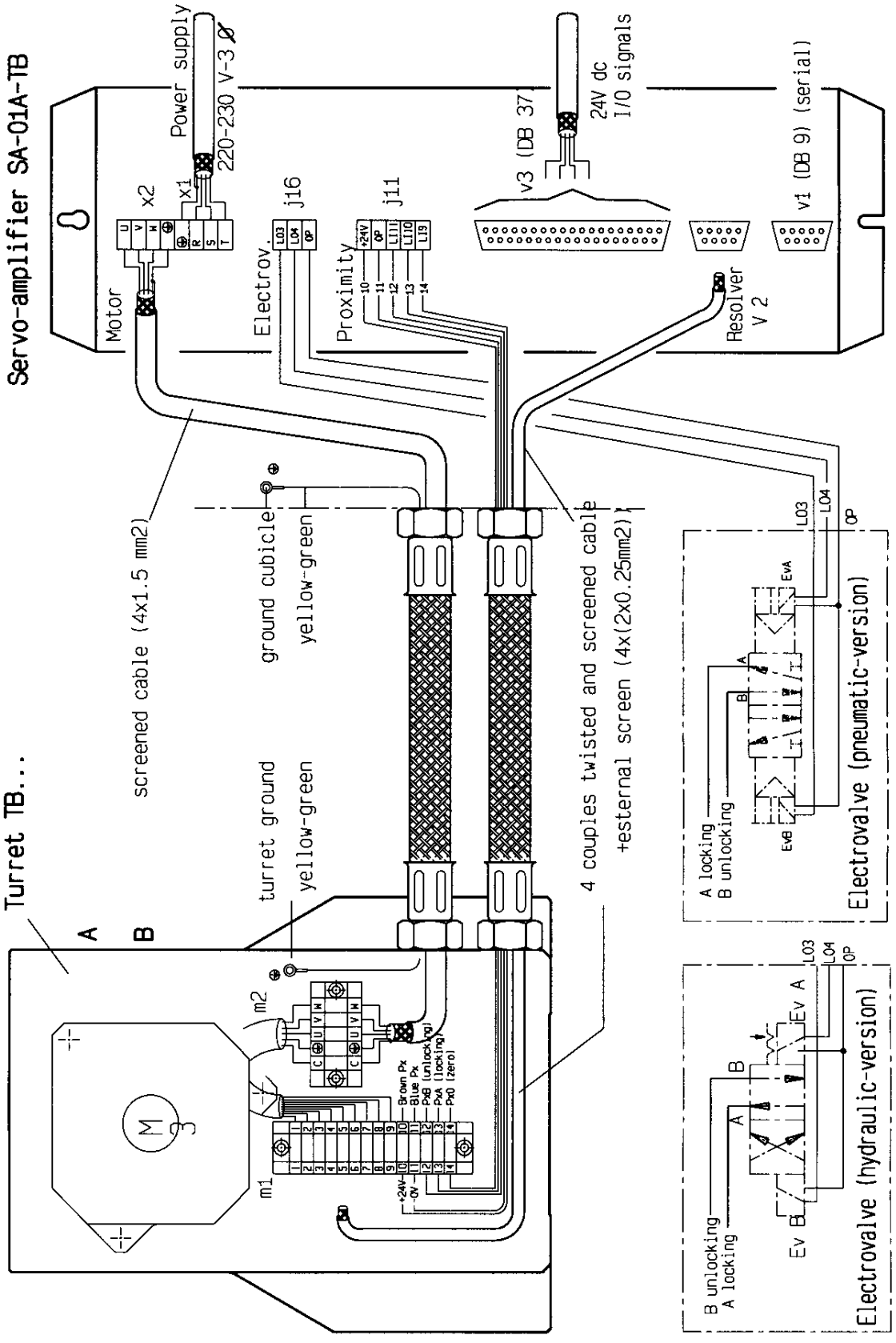
2.11.2 Electric wiring

The electric wiring on board of the turret must be done according to the electric scheme (2.11.4)
The cables must be placed in way that cannot be damaged, particulary during the final assembly of the back cover. To such intention there have been foreseen opportune clamps for the clamping of the cables; it's hardly recommended to use them.
The cables along the edges of the turret must be kept stretched; evtl extra lenghts have to be placed accordingly using clamps.
On the side of the turret there are 2 thread holes (1c) for the wiring outlet and its protection cables.
The links, the cables for the protection of the wires, their setup,must guarantee the impermeability of coolant liquid into the turret.
The holes not used for the wiring outlet, must be tightly plugged.

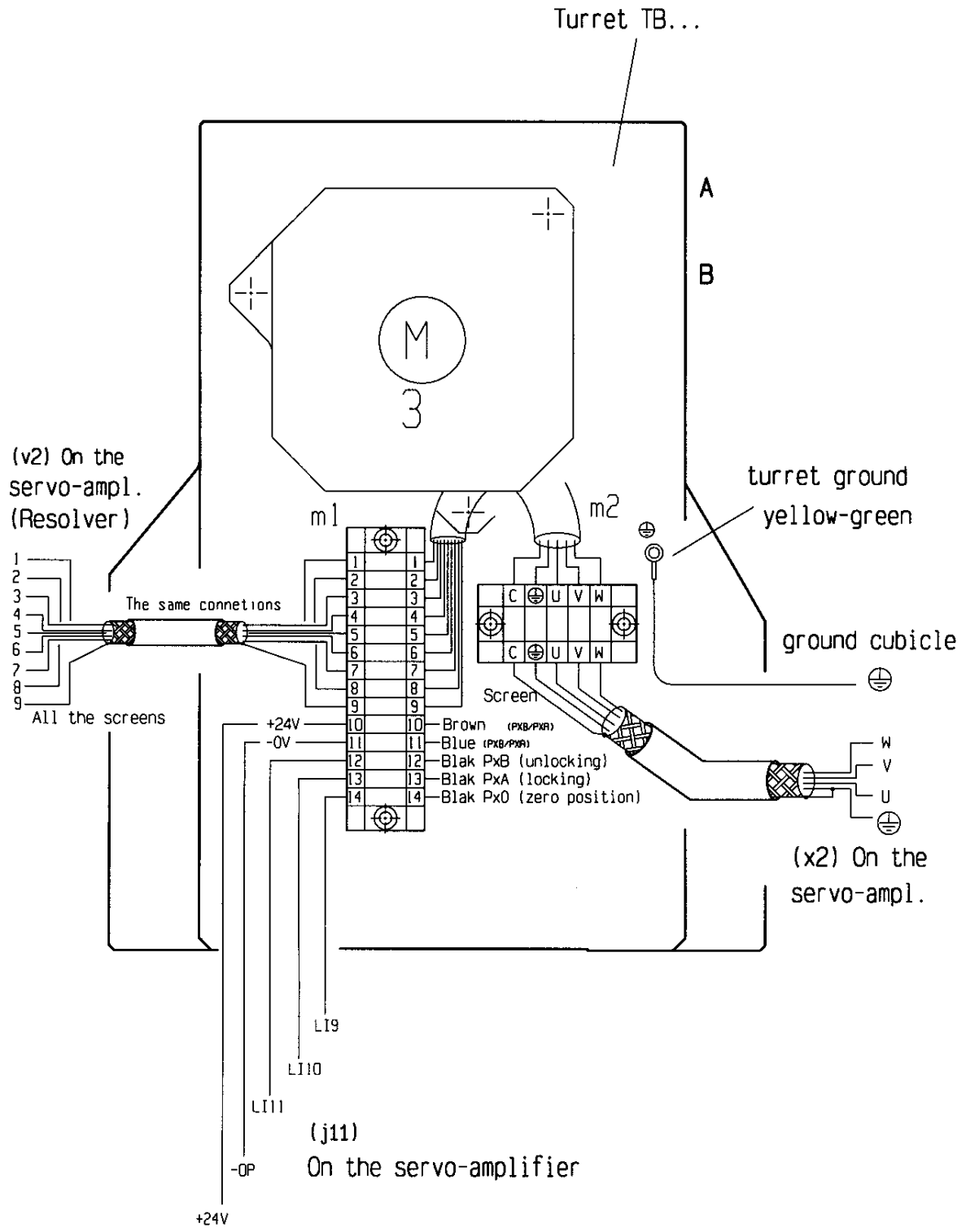


After finishing all the connections, reassembly the back cover and its O-ring.

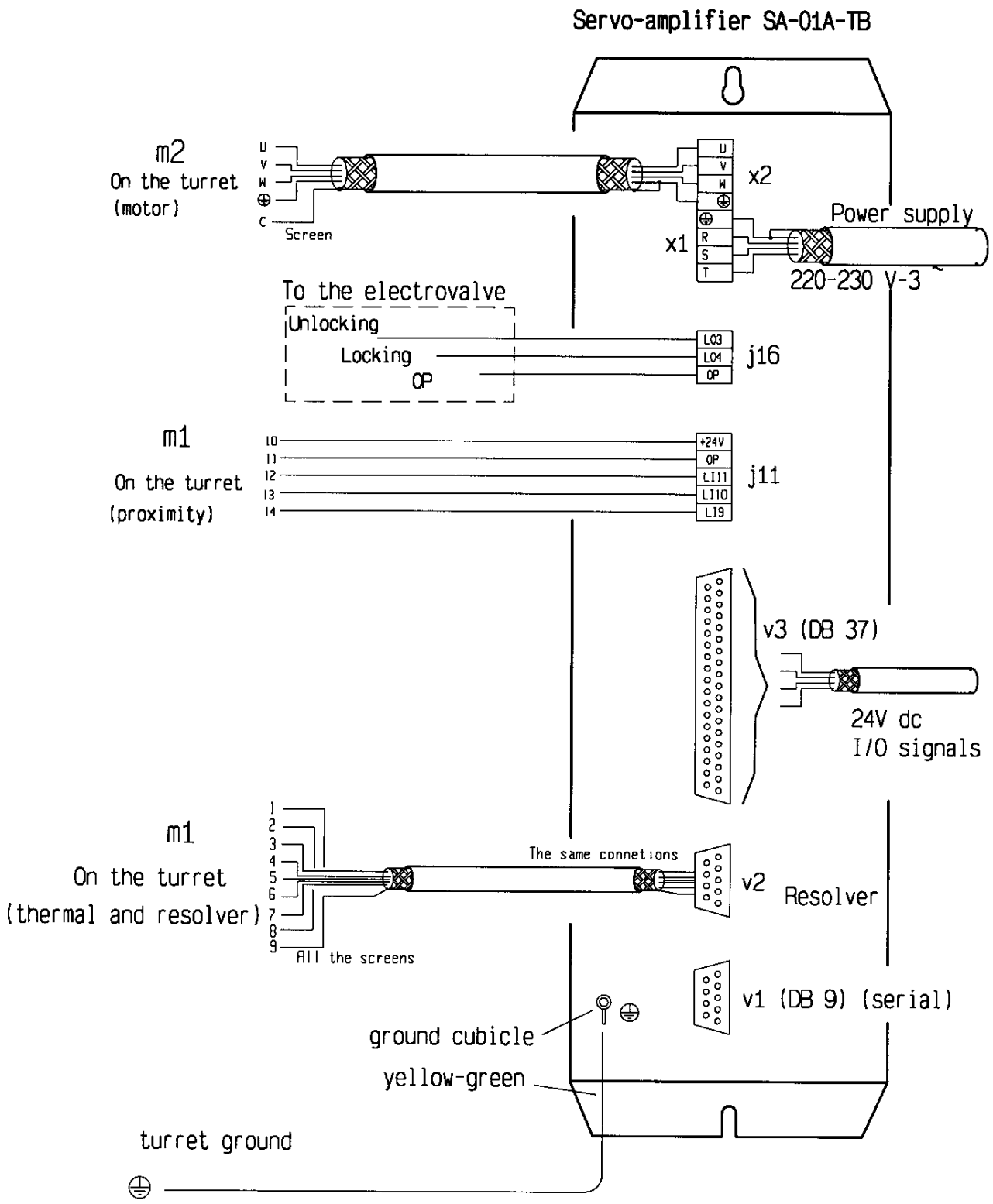
11.3 Electrical connections (topographic: turret/serv-amplifier/electro-valves)



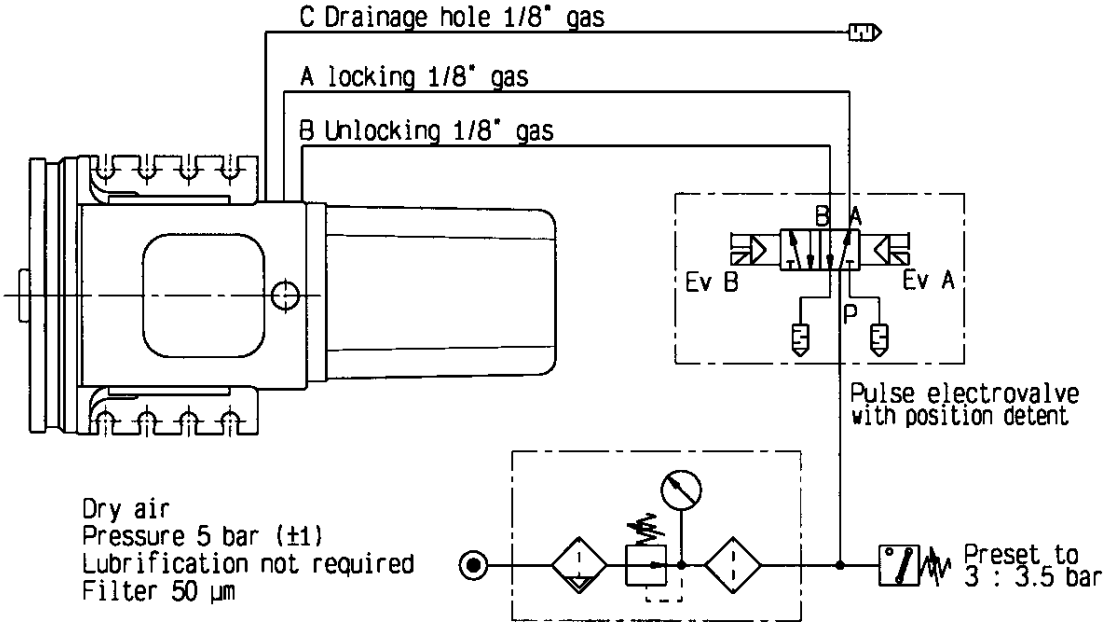
2.11.4 Electrical connections on the turret



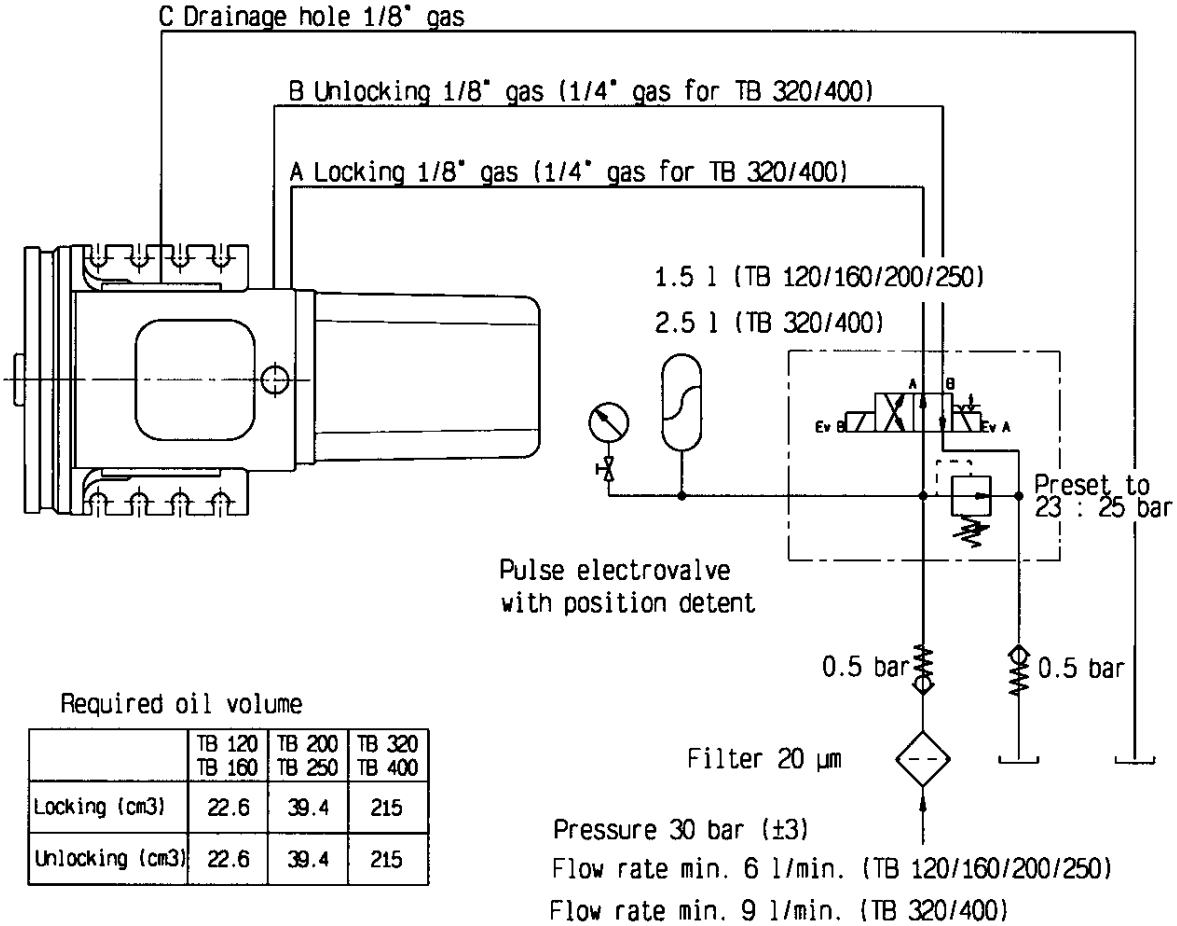
2.11.5 Electrical connetions on the servo-amplifier



2.12 Pneumatic version (circuit)



2.13 Hydraulic version (circuit)

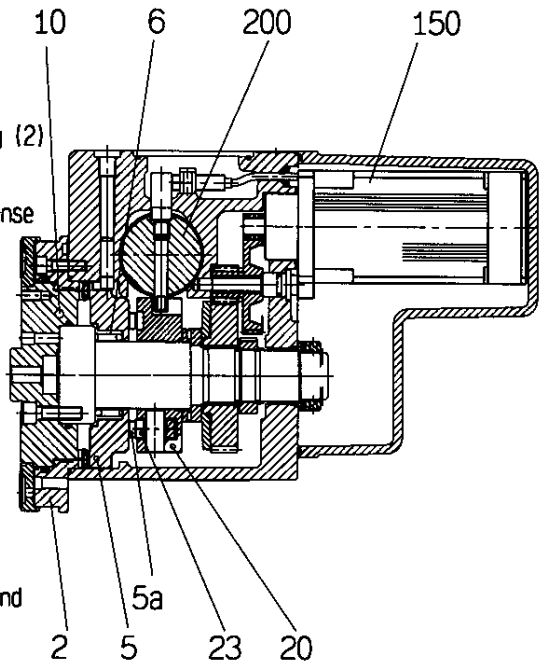


Required oil volume

	TB 120 TB 160	TB 200 TB 250	TB 320 TB 400
Locking (cm3)	22.6	39.4	215
Unlocking (cm3)	22.6	39.4	215

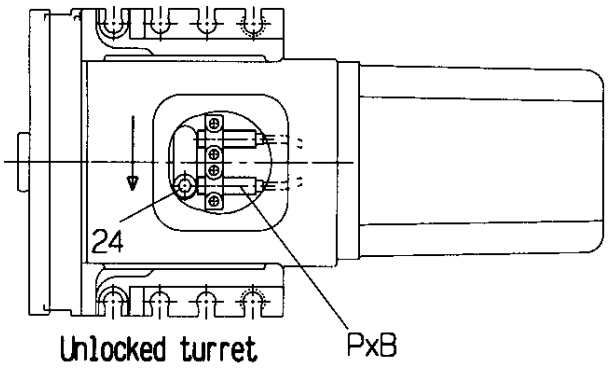
3.1 Description of the operation of the turret

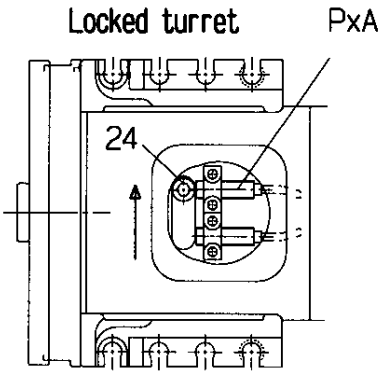
Condition of locked turret
-rollers(23) on the top of the cams (5a)
-short circuiting ring (5) engaged with
the teeths of the rotating disc (10) and of the fixed coupling (2)
The lateral movement of the piston (200) provokes
the oscillation of the roller-carrier (20) obtaining the descense
of the rollers (23) from the cams (5a).
The shortcircuiting ring (5) pushed by the spring (6)
goes back releasing the rotating disc(10) from
the fixed coupling (2).
The motor (150) through the gears,
bring in rotation the disc (10) till the requested position.
The movement in the opposite of the piston (200) makes to go
up again to rollers (23) on the cams (5a) and pushing
the shortcircuiting (5) enables the engagement of the
teeths of the rotating disc (10)an of the fixed coupling (2) and
therefore the locking of the system.



3.2 Manual unlocking/rotation/locking of the turret (with not connected drive)

Act on the unlocking valve to enable the opening of the turret
The pin(24) goes in correspondence of the unlocked turret proximity switch (PxB).
When the turret is unlocked, directly acting on the toolholder disk is possible to rotate and orientate it
Act on the valve in order to lock the turret
The pin goes back in correspondence of the locked turret proximity switch(PxA)





In case the pin (24) should make a limited movement due to the not perfect coincidence
of the disk with real position (the frontal teeths are set crest to crest), force the toolholder disk in the
correct position so to provoke the correct complete locking. (The pin goes in correspondence of the
locked turret proximity switch (PxA)

3.3 Change of the coolant valve

-Remove the hermetic plug (8b)

-Remove the spring (8c)

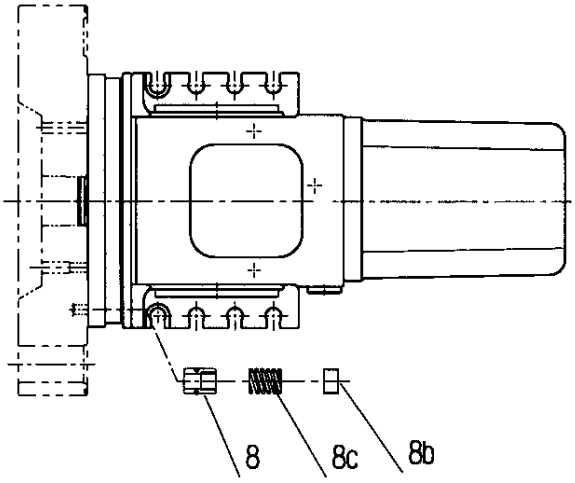
-Take out the valve(8) complete of O ring

-Clean the set

-Grease the O ring of the new plug

-Insert the plug in its own seat

-Reassemble the spring and the plug (8c) (8b)



3.4 Lubrication

The mechanical parts of the turret are lubricated for life.

The substitution of the lubricant must be done only after possible complete disassemblies of the turret.

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

Underneath is indicated the suitable oil quantity to be used.

Lubricant sheet

SIZE	TB120	TB160	TB200	TB250	TB320	TB400
Quantity Kg	0.20	0.25	0.60	1	2.5	4

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

3.5 Breakdown searches and remedies

Any maintenance or disassembly operation must be done with the parts not in movement, cold surfaces and disconnected motor

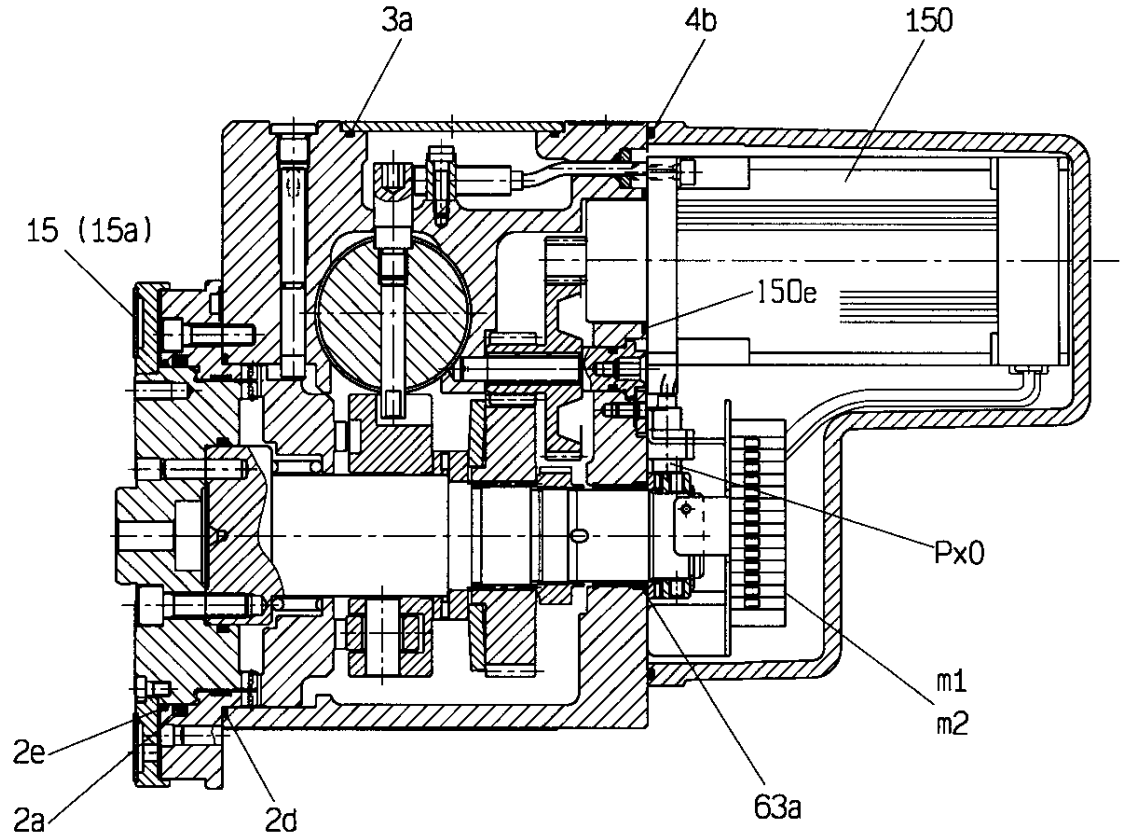
Anomalies	Possible causes	Control	Remedies
The turret does not open	Pressure is missing or is not enough	Verify pneumatic hydraulic circuit	Restore the pressure
	The electro-valve is damaged	Verify the tension at the output of the drive and control the cables	Restore the valve or the cables
	The valve is without voltage or is not enough	Verify the tension at the output of the drive and control the cables	Restore the valve or the cables
	There is an alarm	Verify in the screen the presence of an alarm	Perform a reset and a ZERO search
	After the switch on,it has been performed a "ZERO" search without the necessary delay time	For software 11,6: time=30sec For software 11,7: time =5 sec	Perform a reset Perform a "ZERO" Search
The turret opens, but does not rotate	There is an alarm	Verify in the screen the presence of an alarm	Perform a reset and a "ZERO" search
		Verify the cause of the alarm	Eliminate the cause of the anomaly
	Motor without tension	Verify the tension at the output of servo amplifier an control the cables	Restore the voltage or the cables
	Servo amplifier with problem	Verify the correct function	Restore or change the servo amplifier

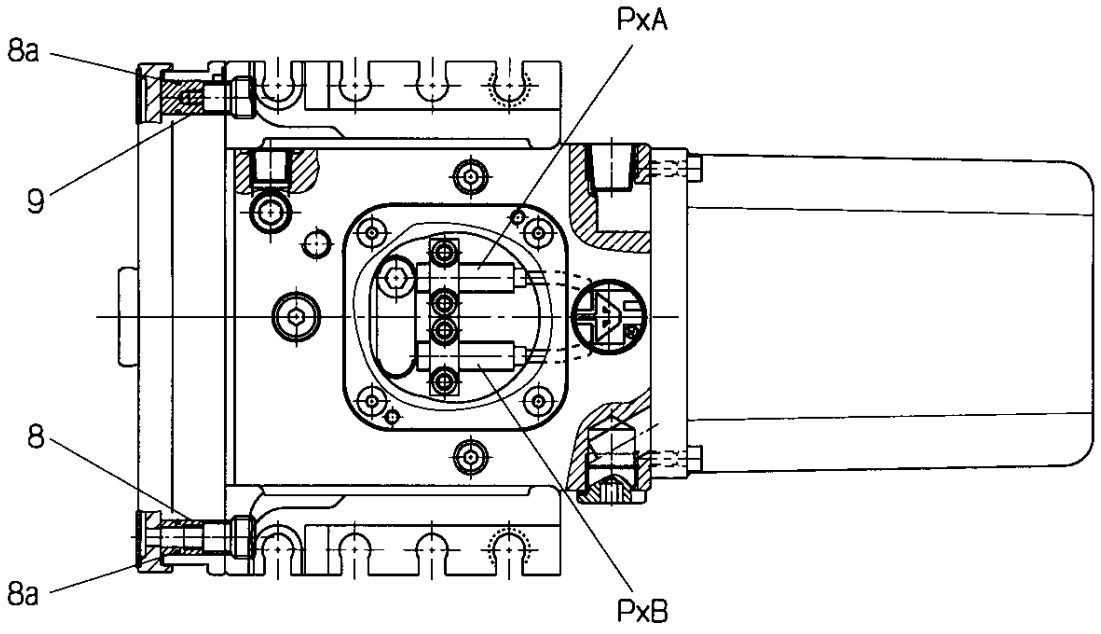
3.5 Breakdown searches and remedies

Anomalies	Possible causes	Control	Remedies
The turret does not open	Pressure is missing or is not enough	Verify pneumatic hydraulic circuit	Restore the pressure
	The electro-valve is damaged	Verify the tension at the output of the drive and control the cables	Restore the valve or the cables
	The valve is without voltage or is not enought	Verify the tension at the output of the drive and control the cables	Restore the valve or the cables
	There is an alarm	Verify in the screen the presence of an alarm	Perform a reset and a ZERO search
	After the switch on it has been performed a "ZERO" search without the necessary delay time	For software 11,6: time=30sec For software 11,7: time =5 sec	Perform a reset Perform a "ZERO" Search

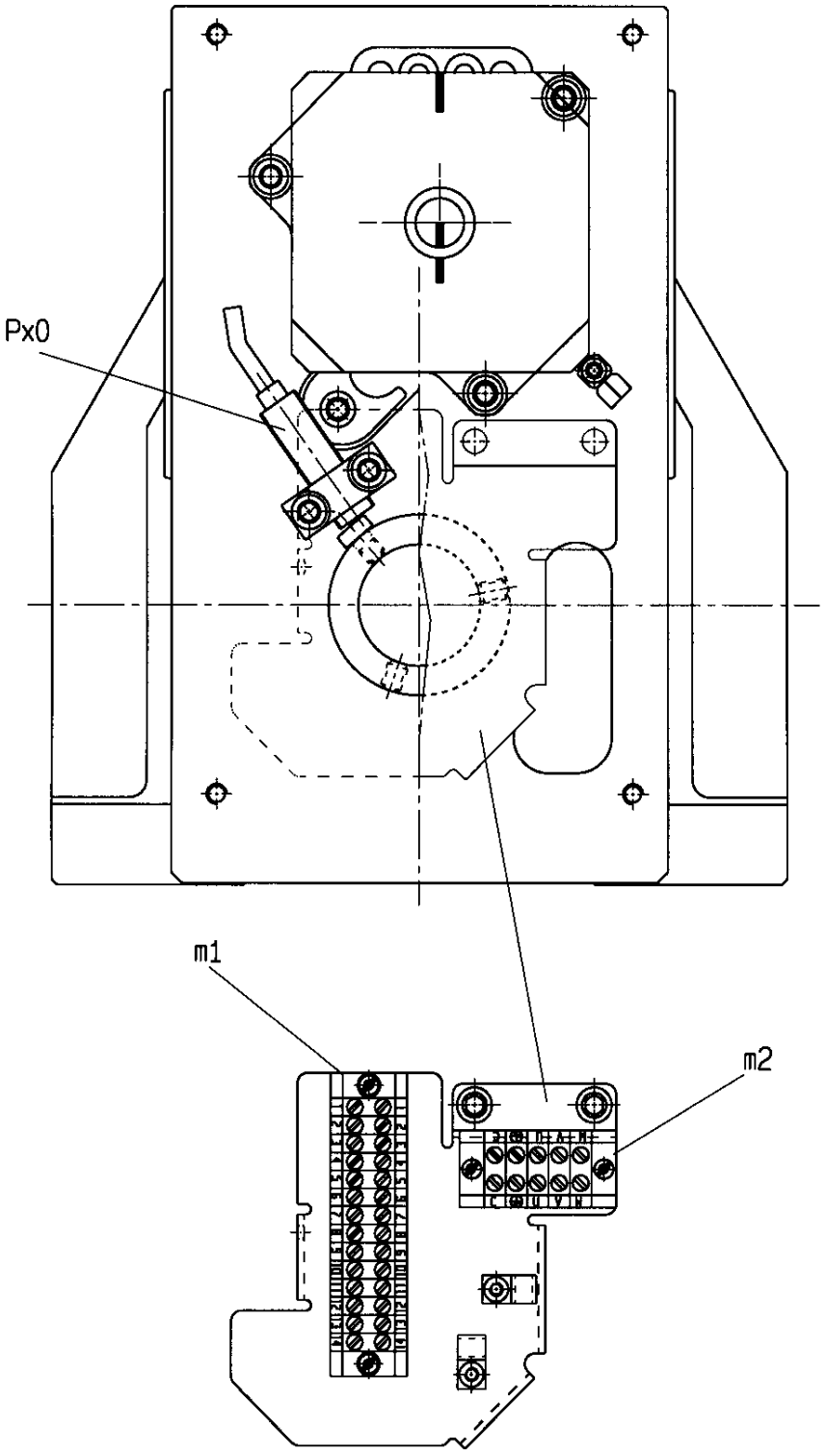
3.6 Turret chart

3.6.1 Section



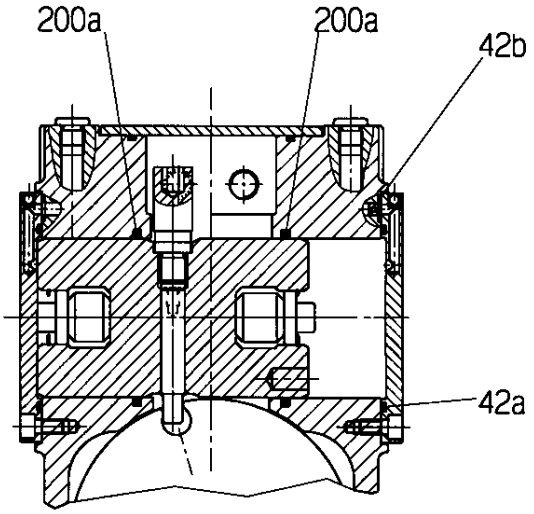


3.6.2 Rear view: motor, terminal board, "ZERO" proximity

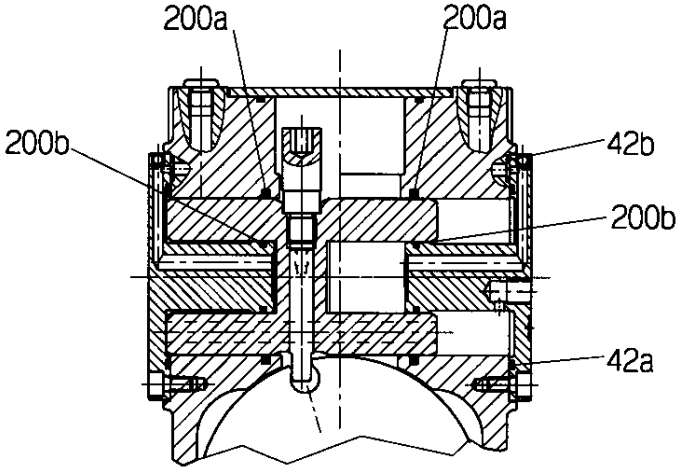


3.6.3 Locking/unlocking actuators

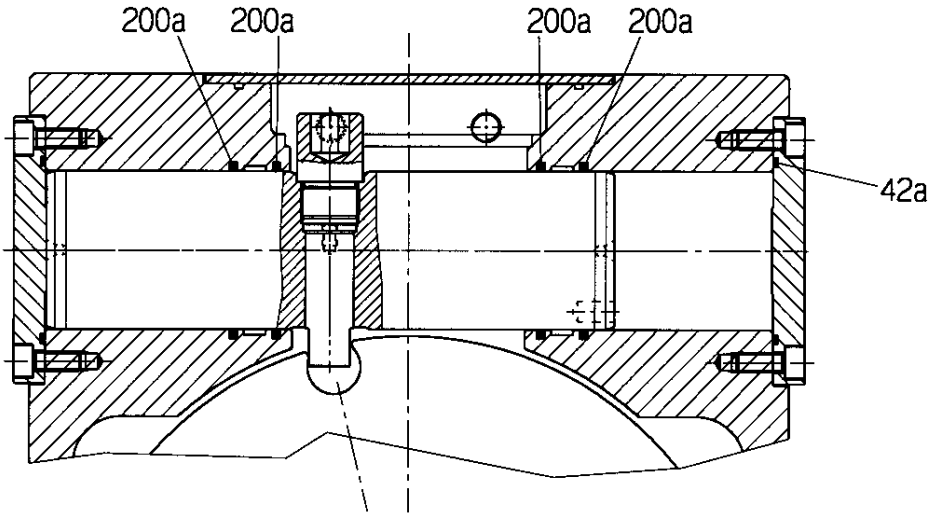
TB120-TB160-TB200-TB250
pneumatic



TB120-TB160-TB200-TB250
hydraulic

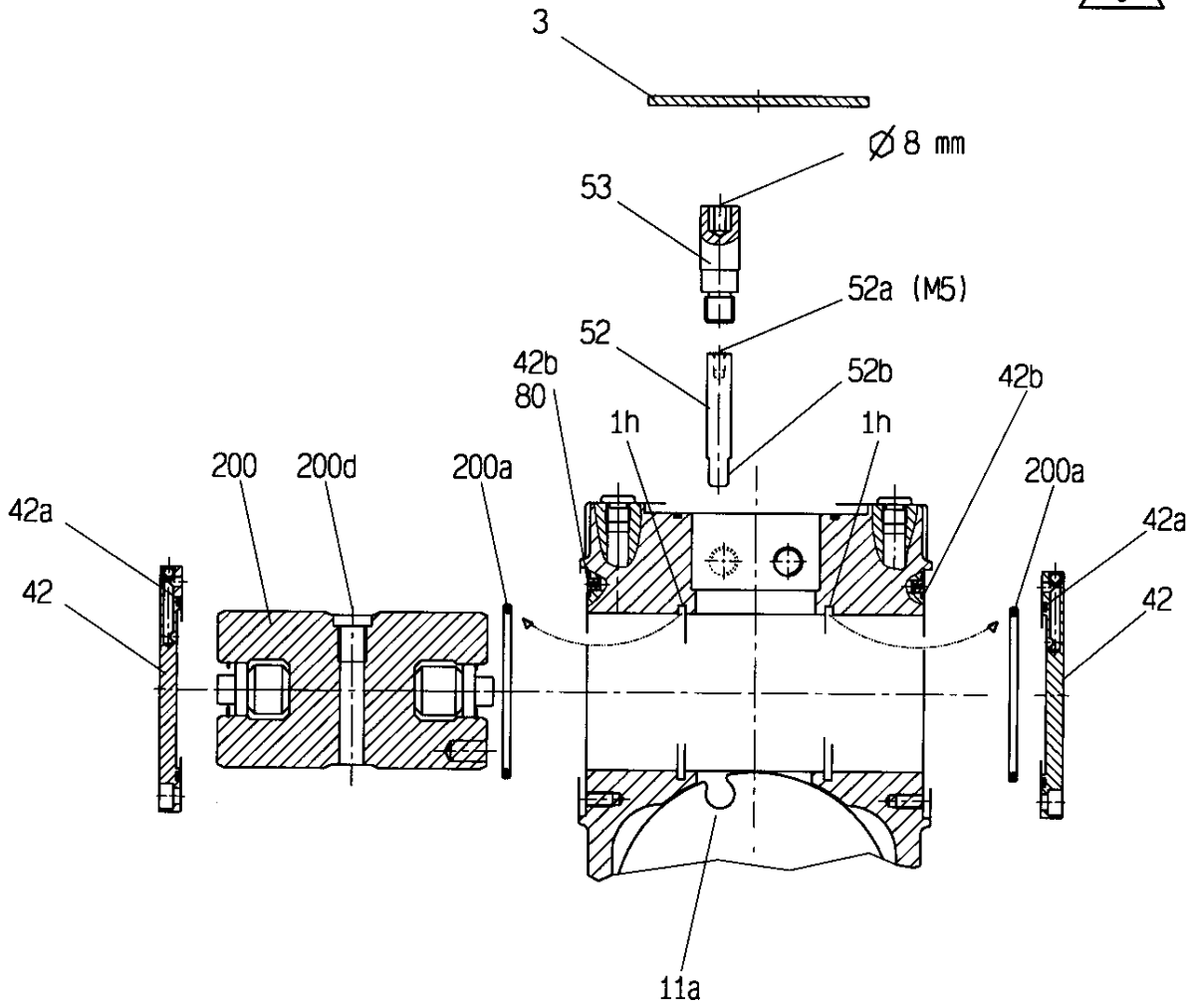


TB320-TB400
hydraulic



3.7 Substitution of the gaskets of the pneumatic piston: TB120/160/200/250

This operation must be made with locked turret and in absence of pneumatic pressure



Operations

-Remove the top cover (3)

-Unscrew the pin (53)

-Using the hole of extraction (52a), take out the pin (52)

-Remove the lateral covers (42)

-Take out the piston (200)

-Remove the gaskets (200a)

-Reassembly carefully the new gaskets (200a) in its seat (1h)

-Insert the piston (200) in its seat, in the housing

-Line up the hole(200d) with the nut (11a) underneath

-Insert the pin (52) till the surfaces (52b) are in the nut (11a)

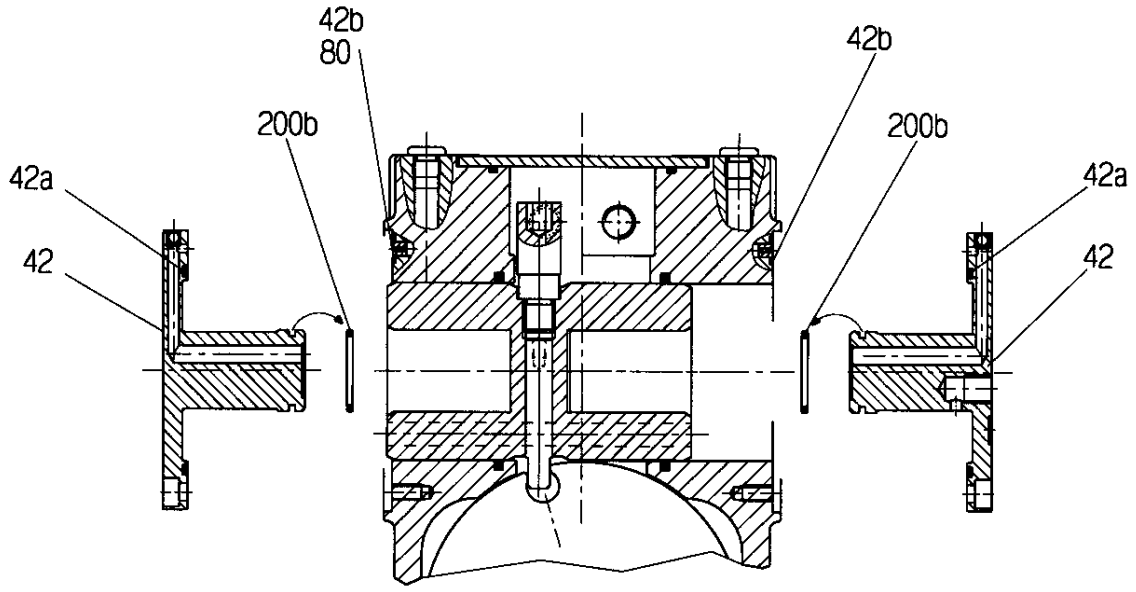
-Screw the pin (53)

-Reassembly the lateral covers (42) complete of all O-rings (42a-42b) and eventual chokes (80)

-Reassembly the top cover (3) complete with O-ring

3.8 Substitution of the gaskets of the hydraulic piston: TB120/160/200/250

This operation must be made with locked turret and in absence of pneumatic pressure.



Operations

-Remove the lateral covers (42)

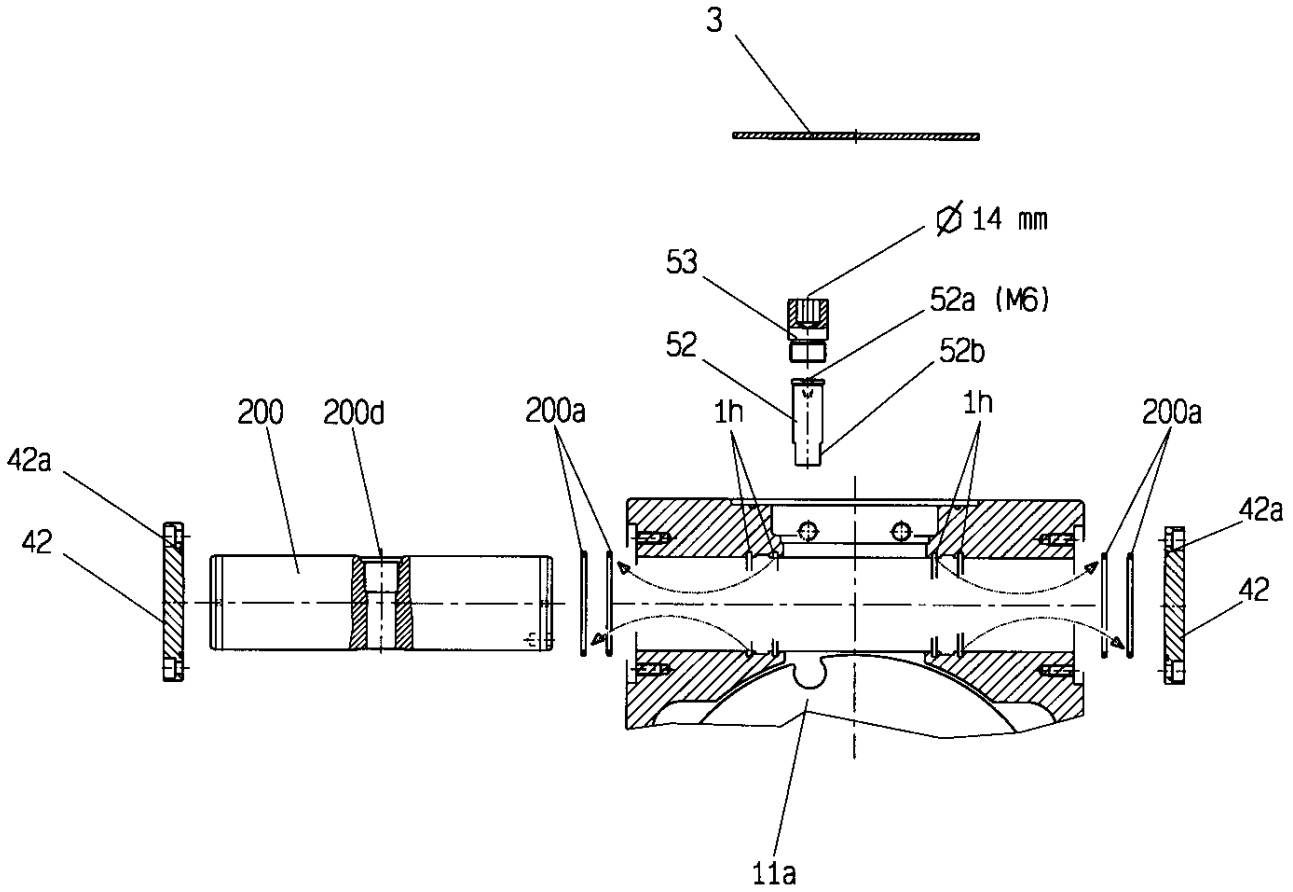
-Remove the gaskets (200b)

-Reassembly the new gaskets (200b)

-Reassembly the lateral covers (42) complete of all O-rings (42a-42b) and eventual chokes (80)

3.9 Substitution of the gaskets of the hydraulic piston: TB320/400

This operation must be made with locked turret and in absence of hydraulic pressure



Operations

-Remove the top cover (3)
-Unscrew the pin (53)
-Using the hole of extraction (52a), take out the pin (52)
-Remove the lateral covers (42)
-Take out the piston (200)
-Remove the gaskets (200a)
-Reassembly carefully the new gaskets (200a) in its seat (1h)
-Insert the piston (200) in its seat, in the housing
-Line up the hole(200d) with the nut (11a) underneath
-Insert the pin (52) till the surfaces (52b) are in the nut (11a)
-Screw the pin (53)
-Reassembly the lateral covers (42) complete of all O-rings (42a-42b) and eventual chokes (80)
-Reassembly the top cover (3) complete with O-ring

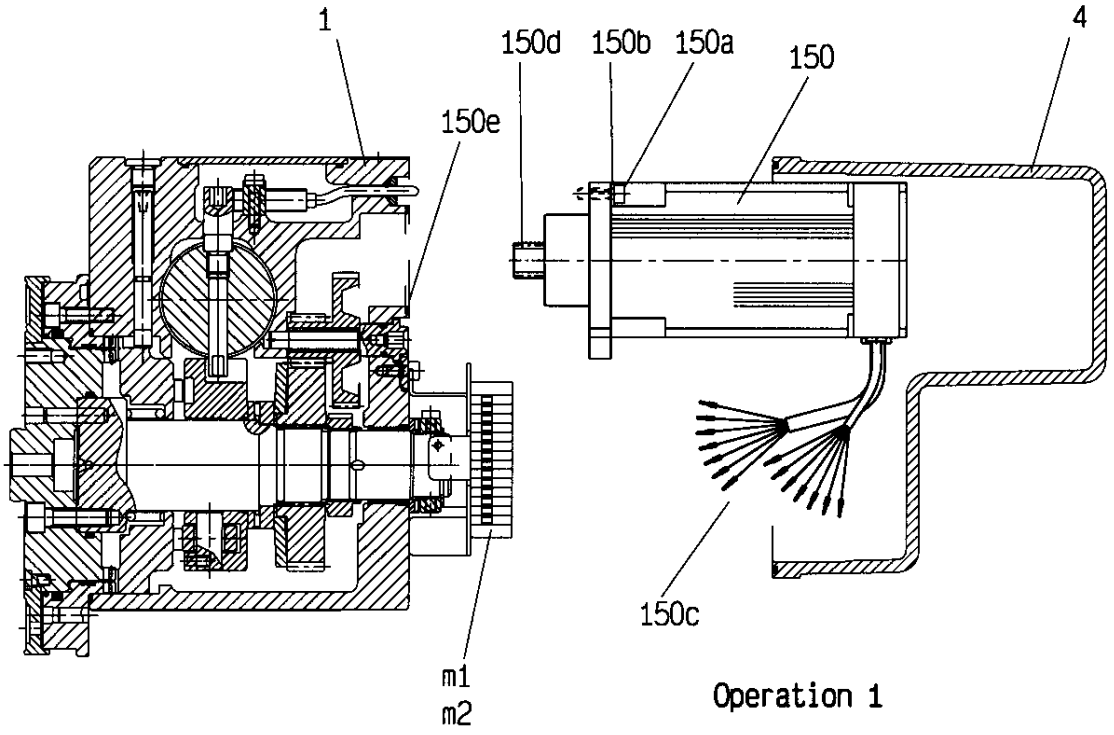
3.10 Substitution of the electric motor

This operation must be made in the following conditions:.

- without tension
- turret locked in the position corresponding to the "ZERO" search (pos. 1)

in case of impossibility to call the position 1, bring the turret in such position manually with the following operations:

- unlock the turret with formalities foreseen by the machine, or acting on the valve
- rotate the toolholders disk, bring it in position 1, (marks on line)
- lock the turret with formalities foreseen by the machine or acting on the valve
- verify that the turret is really locked in position 1



Operation 1

Operation 1

- Remove the back cover (4)
- Disconnect the motor's cables (150c) from the terminal blocks (m1), (m2)
- Unscrew the screws (150a) and its washers (150b) which fix the motor to the housing (1)
- Take out the motor

3.10 Subsitution of the electric motor

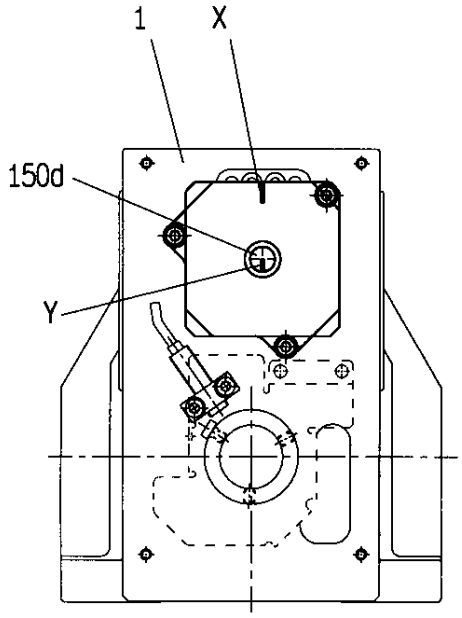
Operation 2

-Take the new motor (150)

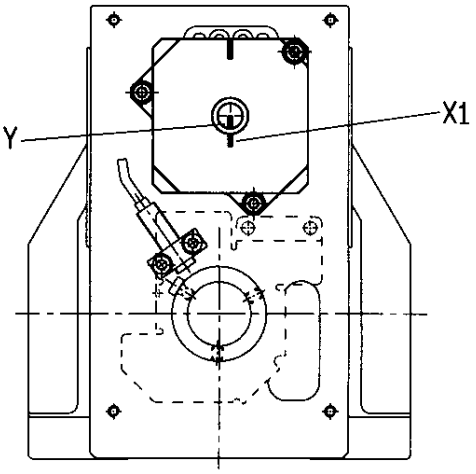
-Rotate the motor's shaft (150d) bringing the mark (Y) on its end at about 180°
from the mark (X) on the external part of the motor's cover

-Assembly in such conditions the motor on the housing (1) and verify that the O-ring (150e)
is correctly fitted in its own seat

-Locking the screws (150a), slightly force the motor's housing clockwise, in order to reduce the
clearance between the motor's pinion and its seat in the housing (1)



Operation 2



Operation 3

Operation 3

-After having locked the screws, perform with an indelible pen, a mark (X1)
on the cover in correspondence of the which one on the motor shaft (Y)

-Perform the cable connections on the terminal blocks (m1) (m2) as per electic scheme

-Clip the cables as originally made

-Reassembly the back cover (4) with its O-ring

-Restore tension

-Perform the "acquirement resolver's position" (mode 7 as the instructions)

-perform the "Zero research"

3.11 Substitution of the locking/unlocking proximity switch

This operation must be made in the following conditions:

-without tension

-Turret locked in the position corresponding to the "ZERO" search (pos.1)

Operations

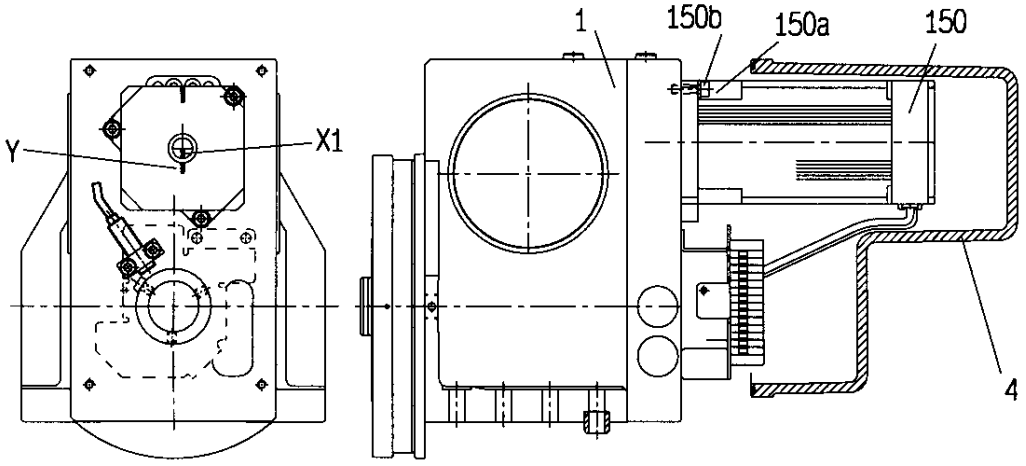
-Remove the back cover (4)

The following supplementary operations have to be made on the TB120/160/200/250 turrets:

-verify the motor's shaft position: marks (X1) and (Y) on line

-remove the 3 screws (150a) and its washers (150b) which fix the motor on the housing (1)

-take out the motor (150)



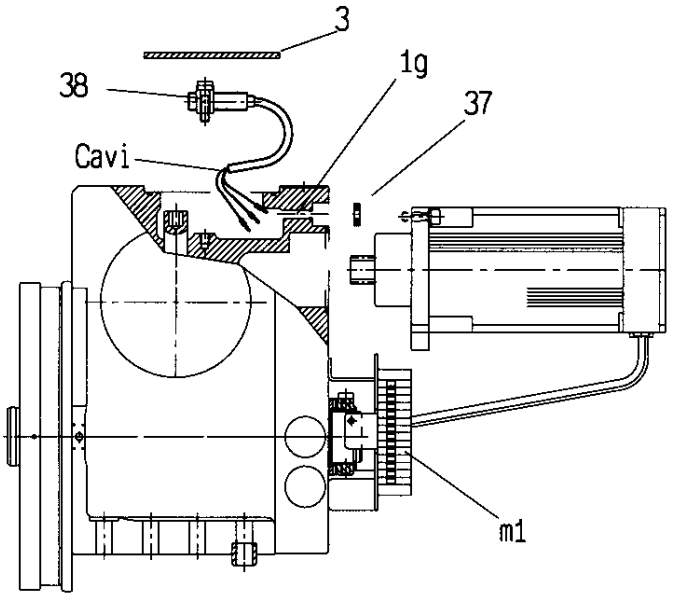
-remove the top cover (3)

-disconnect from the terminal block (m1) the cables of the proximity to be changed

-remove the washer (37) and its O-ring

-remove the block (38) complete with the proximity

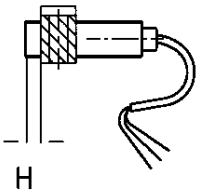
-remove the cables from hole (1g)



3.11 Substitution of the loking/unlocking proximity switch

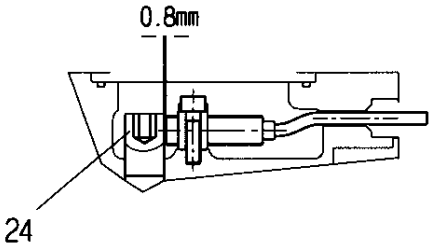
-Change the proximity assembling it in the block at the same dimension (H) of the previous

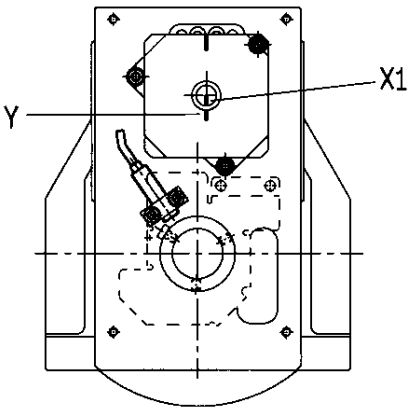
SIZE	TB120/160	TB200/250	TB320/400
H mm	5	3	3



-insert the cable through the hole (1g)

-position the extremity of the proximity at 0.8 mm respect to the pin (24)





-reassembly the washer (37) and its O-ring

The following supplementary operations have to be made on the TB120/160/200/250

-reassembly the motor (150) with its marks (X1) and (Y) on line and with the O-ring (150e) in its seat

-Locking the screw (150a), slightly force the motor's housing clockwise, in order to reduce the clearance between the motor's pinion and its seat in the housing (1)

-Cut the proximity wirings at the requested length

-Insert the marks on the wirings respecting the original colors

-Fix at the end of the wirings the necessary cable terminal

-Perform the cable connections on the terminal blocks (m1), (m2) as per electric scheme

-Clip the cables as originally made

-Reassembly the back cover (4) and its top cover (3) with its O-ring

3.12 Substitution of the"ZERO" proximity switch

This operation must be made in the following conditions:

-without tension

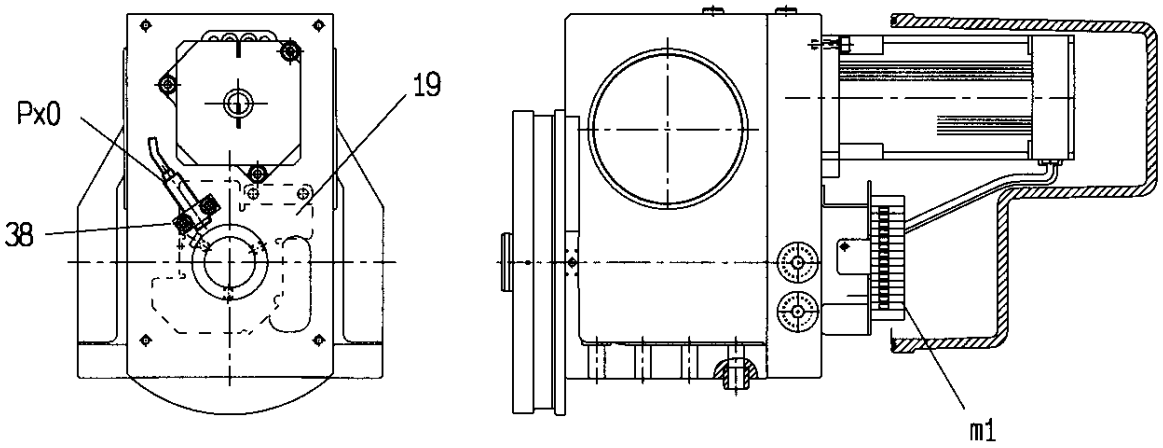
-turret locked in the position corresponding to the "ZERO" search (pos.1)

Operations

-Remove the back cover (4)

-Disconnect from the terminal block (m1) the wirings of the proximity to be changed

-Remove the screws which fix the support (19)



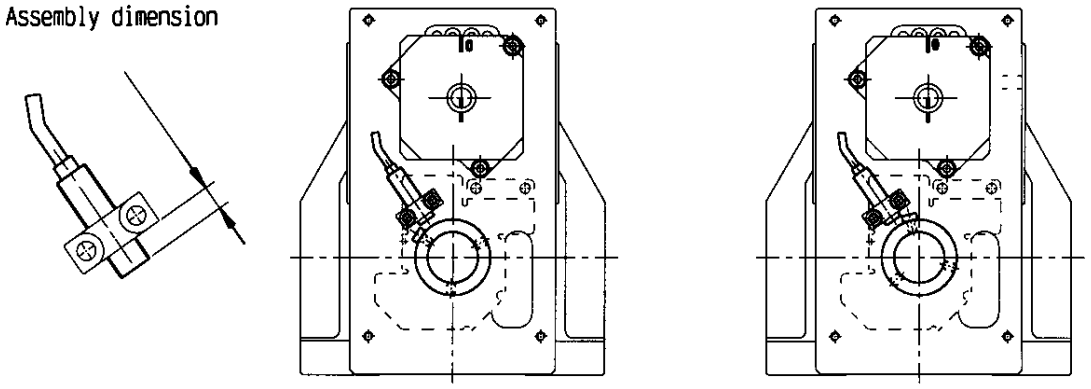
-Space the support (19)

-Remove the block (38) complete of proximity (Px0)

-Assembly the new proximity on the block at the same dimension of the previous one

-Assembly the block on the housing

-Cut the proximity wirings at the requested lenght



-Reassembly the support (19) complete with terminal blocks

-Perform the cable connections on the terminal blocks (m1) , (m2) as per wiring diagram

-Give power and feed the servo amplifier

-Perform the "ZERO" research

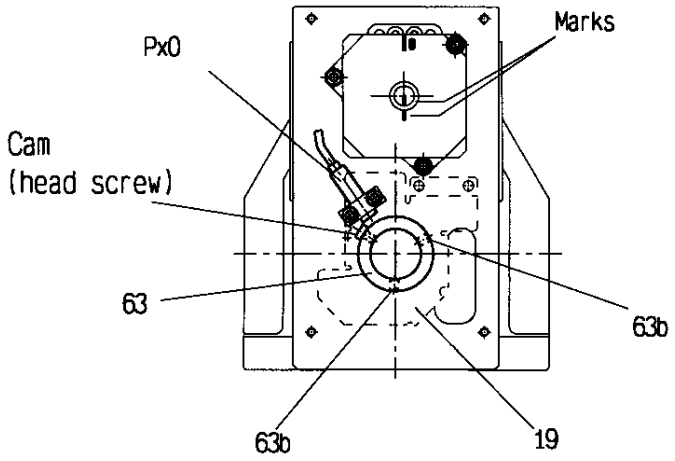
-Reassembly the cover (4) with its O-ring

3.13 Put in phase,cams of "ZERO" proximity

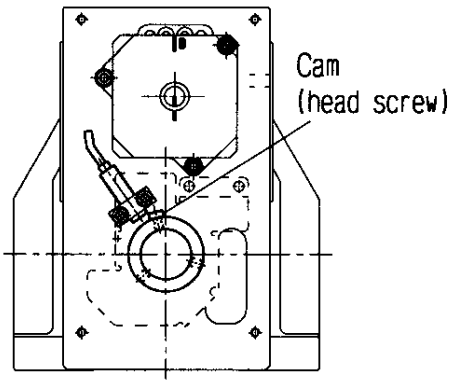
This operation has to be made whenever there is phase difference, because of a wrong disassembly/assembly of the ring (63) or a loosening of the doweles which fix the ring itself.

Operations

-Be sure that the turret is locked in the position corresponding to the "ZERO" research (pos.1)
-Remove the back cover (4)
-Take out the screws which fix the support (19)
-Space the support (19)
-Loose the 2 dowels (63b) which fix the ring (63)
-Unlock the turret (with the valve)
-With a screwdriver,rotate the motor's shaft 1 turn clockwise; (look at the marks on the motor's cover and on the end on the shaft); in case of difficulty act directly on the disc



Cam positioning for TB 120/160/200/250)



Cam positioning for TB 320/400)

-At the end of the motor's turn, rotate the ring (63) till the proximity (PxO) is actuated, signalized by the led (for TB120/TB160/TB200/TB250 the proximity has to be activated rotating the ring (63) clockwise, for the TB320/400 anticlockwise)
-Keeping the ring (63) in standstill in this position, lock the dowels (63b)
-Take the motor's shaft back 1 turn (anticlockwise and in the original position)
-Lock the turret (with the valve)
-Reassembly the support (19) complete with terminal blocks
-Give power and feed the servo-amplifier
-Make the "ZERO" research
-Reassembly the cover (4) with its O-ring

3.14 Change of the servo-amplifier SA-01-TB

This operations has to be made without tension and after a waiting time from desactivation of the power (220-230Volt)
(Follow the manufacturer's instructions)

Operations:

-Disconnect all the wirings from terminals (R-S-T/U-V-W/terra): see chapter. 2.11.5
-Remove all the flying connectors (j16),(j11),(v2),(v3)
-Remove the servo-amplifier from cubicle
-Assembly in the cubicle the new servo-amplifier
-Connect all the connectors
-Perform the connection of all flying cables respecting the original colors
-Give power anf feed the servo-amplifier

-If the new servo-amplifier has been ordered and delivered with the setting corresponding to the value of the resolver (given on the motor of the turret) and the turret has not had any change, it is possible to effect "ZERO" research

-In case this conditions are not valid, will be necesary to make the "Acquirement resolver's position"(Mod 7) following the manufacturer's instructions

The acquirement has to be made absolutely with the turret in position "ZERO" research (it means pos.1)
Note: without this procedure is not possible to effect position researches

-Make the "ZERO" search

4.1 Spare parts for TB120-TB160 (see turret chart chapter 3.6)

Rif.	Code	Denomination	Type	Qtt.y
150	24.0120.230.01	Motor unit	Baruffaldi	1
Px...	999.231.07505	Proximity PNP-NO-24V	M12x1-50mm max	3
3a	999.223.01558	O-Ring	OR 152	1
4b	999.223.04570	O-Ring	OR 266	1
42a	999.223.04508	O-Ring	OR 148	2
42b	999.223.02358	O-Ring	OR 010	2
150e	999.223.04121	O-Ring	OR 138	1
63a	999.223.06263	O-Ring	OR 222	1

Pneumatic version

200a	999.305.06464	Gasket	01A01 0648 A 24	2

Hydraulic version

200a	999.305.06464	Gasket	01A01 0648 A 24	2
200b	999.305.07451	Main gasket	S.55046.0300.A46N	2

only TB120

2a	999.305.02560	Main gasket	2S.56202.1120.A46	1
2d	999.223.04131	O-Ring	OR 156	1
2e	999.223.01006	O-Ring	OR 157	1
8	17.0120.033	Cooling bush	Baruffaldi	1
8a	999.223.02358	O-Ring	OR 010	2
15	999.223.05853	O-Ring	OR 113	16
15a	17.0120.196	Frontal gasket 8 pos.	Baruffaldi	1
15a	17.0120.195	Frontal gasket 12 pos.	Baruffaldi	1

only TB160

2a	999.305.07132	Main gasket	2S.56202.1400.A46	1
2d	999.223.01018	O-Ring	OR 161	1
2e	999.223.01018	O-Ring	OR 161	1
8	34.0200.039.01	Cooling bush	Baruffaldi	1
8a	999.223.00792	O-Ring	OR 012	2
15	999.223.03525	O-Ring	OR 115	16
15a	17.0160.196	Frontal gasket 8 pos.	Baruffaldi	1
15a	17.0160.195	Frontal gasket 12 pos.	Baruffaldi	1

4.1 Spare parts for TB200-TB250 (see turret chart chapter 3.6)

Rif.	Code	Denomination	Type	Qtt.y
150	24.0120.230.01	Motor unit	Baruffaldi	1
Px...	999.231.07505	Proximity PNP-NO-24V	M12x1-50mm max	3
3a	999.223.04990	O-Ring	OR 155	1
4b	999.223.04570	O-Ring	OR 266	1
42a	999.223.01558	O-Ring	OR 152	2
42b	999.223.02358	O-Ring	OR 010	2
150e	999.223.04121	O-Ring	OR 138	1
63a	999.223.02109	O-Ring	OR 226	1

Pneumatic version

200a	999.305.06465	Gasket	01A01 0798 A 24	2

Hydraulic version

200a	999.305.06465	Gasket	01A01 0798 A 24	2
200b	999.305.07459	Main gasket	S.55046.0350.A46N	2

only TB200

2a	999.305.02561	Gasket	2S.56202.1750.A46	1
2d	999.223.02711	O-Ring	OR 167	1
2e	999.223.02711	O-Ring	OR 167	1
8	34.0200.039.01	Cooling bush	Baruffaldi	1
8a	999.223.00792	O-Ring	OR 012	2
15	999.223.05348	O-Ring	OR 118	16
15a	17.0200.196	Frontal gasket 8 pos.	Baruffaldi	1
15a	17.0200.195	Frontal gasket 12 pos.	Baruffaldi	1

only TB250

2a	999.305.07455	Main gasket	2S.56202.2200.A46	1
2d	999.223.03438	O-Ring	OR 173	1
2e	999.223.04295	O-Ring	OR 269	1
8	34.0250.039.01	Cooling bush	Baruffaldi	1
8a	999.223.00561	O-Ring	OR 014	2
15	999.223.02153	O-Ring	OR 122	16
15a	17.0250.196	Frontal gasket 8 pos.	Baruffaldi	1
15a	17.0250.195	Frontal gasket 12 pos.	Baruffaldi	1

4.1 Spare parts for TB3200-TB400 (see turret chart chapter 3.6)

Rif.	Code	Denomination	Type	Qtt.y
150	24.0120.230.01	Motor unit	Baruffaldi	1
Px....	999.231.07505	Proximity PNP-NO-24V	M12x1-50mm max	3
200a	999.305.06464	Gasket	01A01 0648 A 24	4
8	24.0320.051.01	Cooling bush	Baruffaldi	1
3a	999.223.02707	O-Ring	OR163	1
4b	999.223.02689	O-Ring	OR280	1
8a	999.223.02080	O-Ring	OR017	2
42a	999.223.04508	O-Ring	OR148	2
150e	999.223.04121	O-Ring	OR138	1
63a	999.223.07362	O-Ring	OR232	1

Only 320

2a	999.305.07456	Main gasket	2S.56202.2900.A46	1
2d	999.223.01020	O-Ring	OR277	1
2e	999.223.01020	O-Ring	OR277	1
15	999.223.05145	O-Ring	OR128	24

Only 400

2a	999.305.07457	Main gasket	2S.56203.3600.A46	1
2d	999.223.02689	O-Ring	OR280	1
2e	999.223.02689	O-Ring	OR280	1
15	999.223.05145	O-Ring	OR128	24