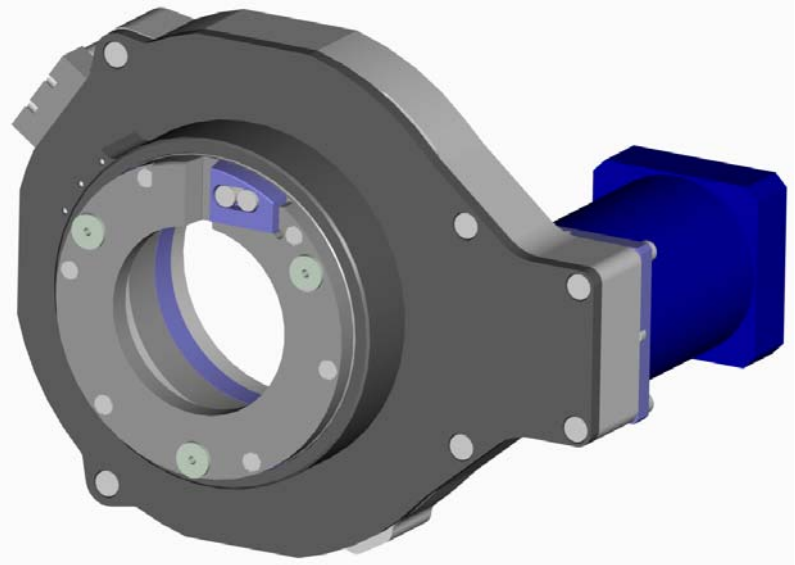
C AXIS

COD. 29L0078730E

Rev. 00 (01/14)



Use and maintenance handbook

CE

SCM GROUP SpA HITECO
SS 258 Marecchina, 18/30/34
47826 Villa verucchio RN – Italia
tel. +39 0541 674940
info@hiteco.net
www.hiteco.net

INFORMATIONS ON DOCUMENT

MANUFACTURER:	**SCM GROUP Spa HITECO**
ADDRESS:	**SS 258 Marecchia 34**
TYPE OF DOCUMENT:	**USER'S TECHNICAL MANUAL FOR C AXIS**
DOCUMENT CODE:	
EDITION:	**00 (01/14)**
RELEASED BY:	**HITECO TECHNICAL OFFICE**
PRODUCT CODE:	**29L0078730E**
MODEL:	

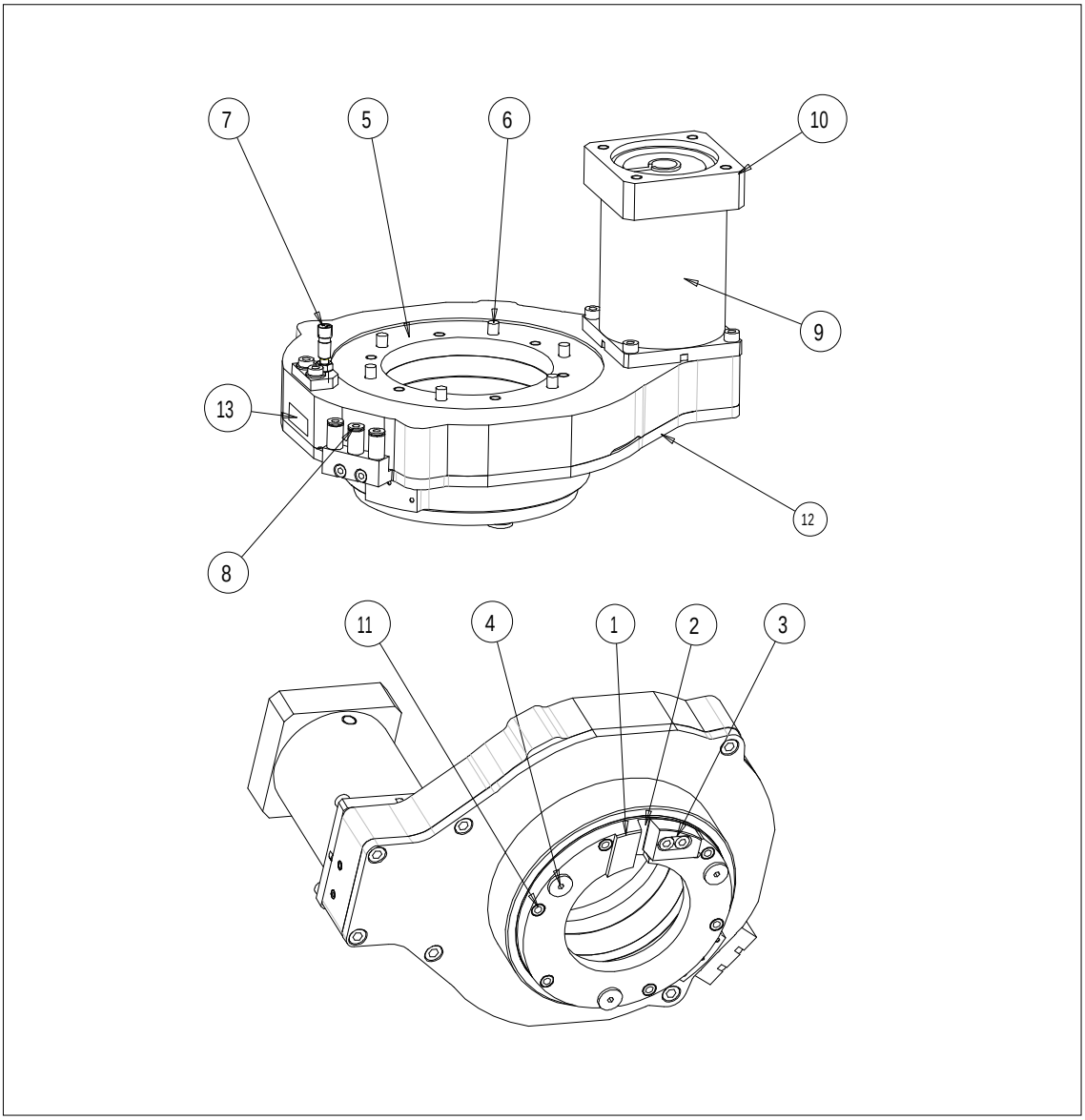
INDEX

INDEX

INDEX

1.1 Main parts

(1.1 (30e))



1	**Angular positioner**
2	**Heads reference pin slot**
3	**Wedge for slot adjustment**
4	**Pneumatic feed dish**
5	**Upper flange**
6	**M6 screws for securing unit to electro-spindle**
7	**Inductive zeroing sensor**
8	**Pneumatic supply system connections**
9	**Epicycloidal gearbox**
10	**Servomotor securing flange**
11	**M8 dowel for wrench access**
12	**Lower flange**
13	**Registration number**

1.2 Main technical data

(1.2 (30e))

Total reduction ratio	**-**	**1:100**
Weight	**Kg**	**12,2**
Gearbox input nominal torque	**Nm**	**0,90**
Gearbox input acceleration torque	**Nm**	**2,70**
Nominal input speed	**RPM**	**4400**
Maximum input speed	**RPM**	**6000**
Friction torque at acceleration	**Nm**	**0,2-0,3**
Maximum inversion play	**deg**	**0,07**

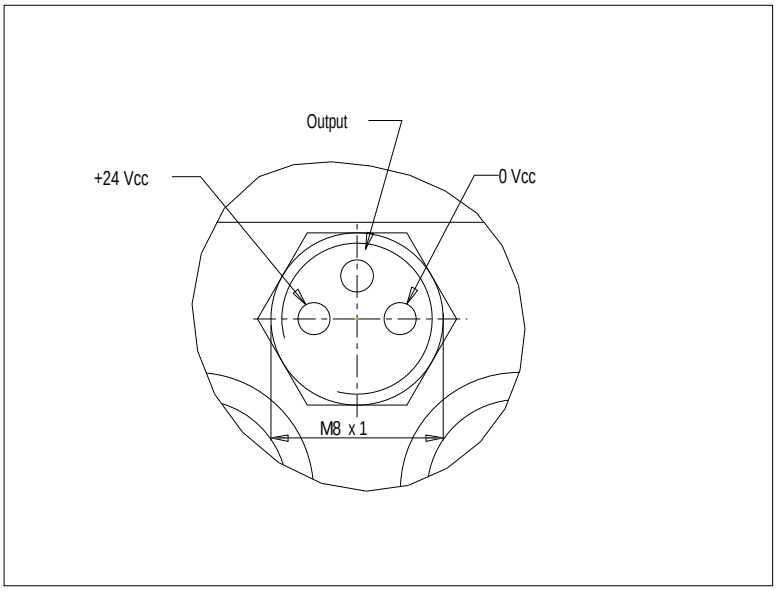
1.3 Inductive sensor

(1.3 (30e))

Type: PNP proximity normally open (N.O.)	
Supply voltage	10 ÷ 30 V CC
Nominal sensitivity	1 mm
Maximum load	200 mA
No load current	< 10 mA

1.3.1 Layout of contacts

(1.3.1 (30e))



The sensor has a threaded output for connecting the M8x1 connector.
The layout of the contacts is shown in the figure below.

1.3.2 Securing the sensor

(1.3.2 (30e))

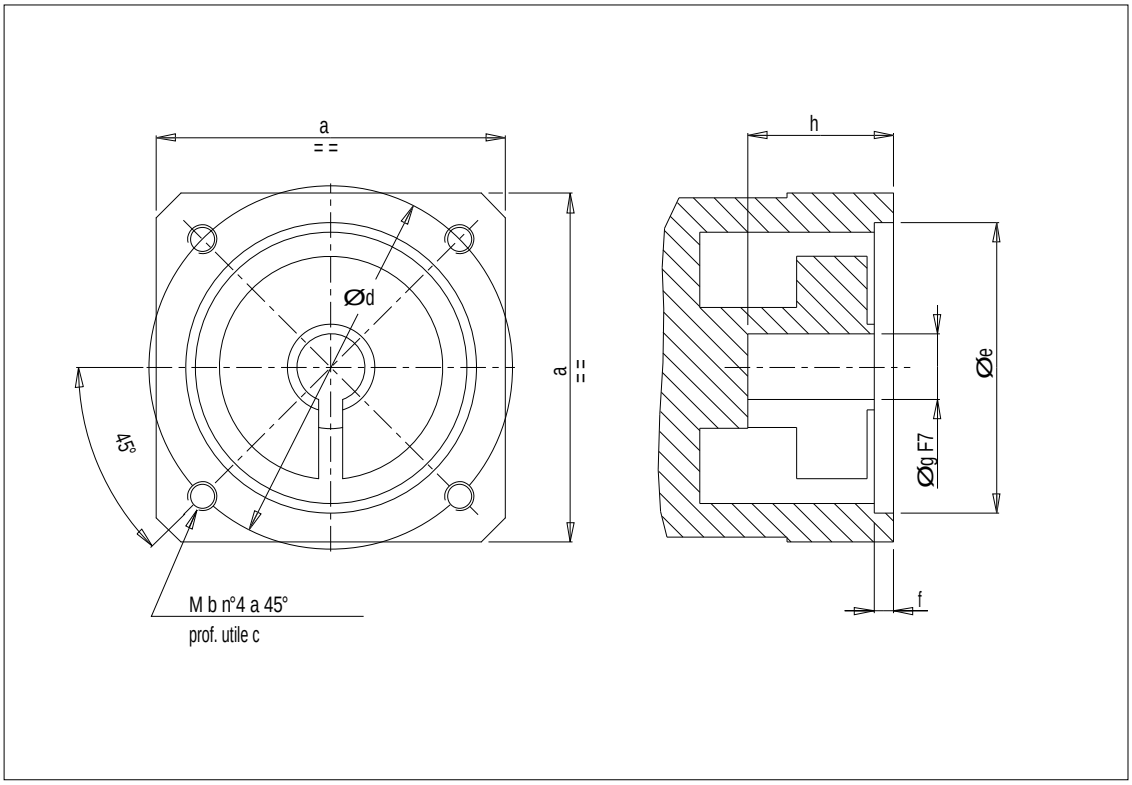
The sensor should be secured using a M5x0.5 nut: the nut lock torque should not exceed 2 Nm. Check the nut is tightened correctly using a medium thread locker.

Exceeding the lock torque specified above, may break the sensor.

1.4 Servomotor securing flange

(1.4 (30e))

The C axis can be supplied in various different versions depending on the servomotor used to generate movement.
The figure below shows a diagram of the Servomotor securing flange on the epicycloidal gearbox.
The following table shows the effective flange measurements that depend on the servomotors which can be fitted on the product.

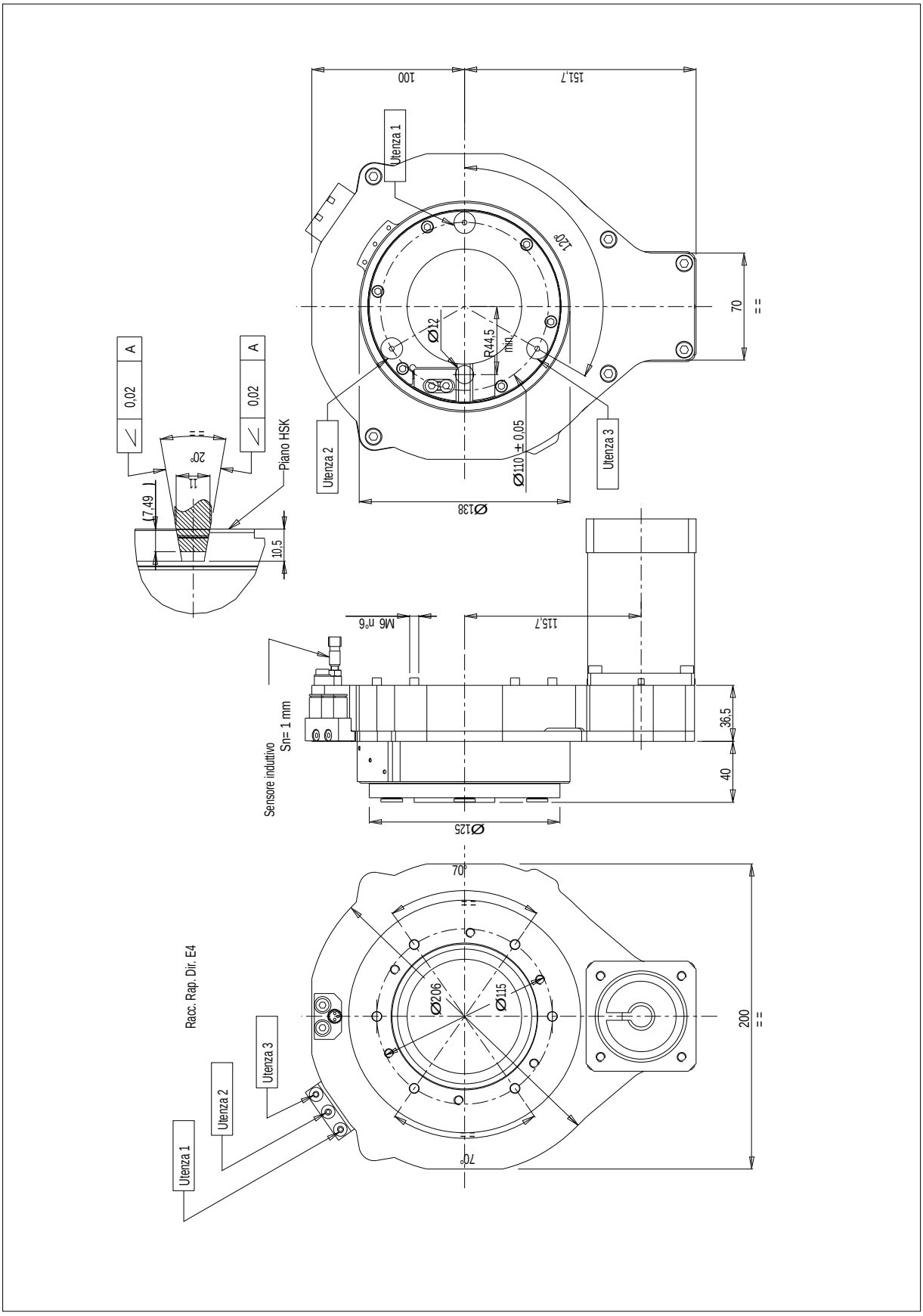


Servomotor	Siemens 1FK7032-5 AK1-1	Yaskawa SGMAH-03DAA61	MPC TETRA 56 0.9
Nom. torque (Nm)	1,1	1,27	0,9
Nom. Speed (RPM)	6000	3000	3000
a (mm)	72	70	70
b (mm)	M6	M5	M5
c (mm)	12	12	10
d (mm)	Ø75	Ø70	Ø65
e (mm)	Ø60	Ø50	Ø50
f (mm)	4	4,5	4
g (mm)	Ø14	Ø14	Ø14
h (mm)	30	32	23

On request, gearboxs can be supplied with different flange measurements so they can be fitted on other servomotors not included on this list.

1.5 Size lay-out

(1.5 (30e))



INDEX

(-30e)

The installation and assembly operations should be carried out by skilled personnel.

2.1 Handling

(2.1 (30e))

Hoisting and handling the product are potentially hazardous operations:
we therefore recommend that suitable equipment is used

Please take care not to knock the product either when handling it, as you may damage it.

Choosing hoisting equipment that can lift and move the product in complete safety is the user's responsibility.

2.2 Overall size and weight

(2.2 (30e))

The weight of the product when packed is specified on the size layout.
Given that the product is delivered wrapped in sheets of pluriball, for the dimensions of the packed product, refer to the size layout.

2.3 Packing

(2.3 (30e))

The product is delivered wrapped in sheets of pluriball.

2.4 Unpacking

(2.4 (30e))

Before unpacking the product, make sure that the packaging is in good condition.
Unpack the product using scissors and taking the utmost care.

2.5 Storing

(2.5 (30e))

If the product needs to be stored, leave it in its packing, which will protect it from the weather, damp, dust and atmospheric and environmental agents.

MAXIMUM STORAGE TEMPERATURE: +55°C (+131 °F) maximum.

UNCONDENSED RELATIVE HUMIDITY : between 5% and 55%.

We strongly suggest that the product is not stored for more than 12 months.

INDEX

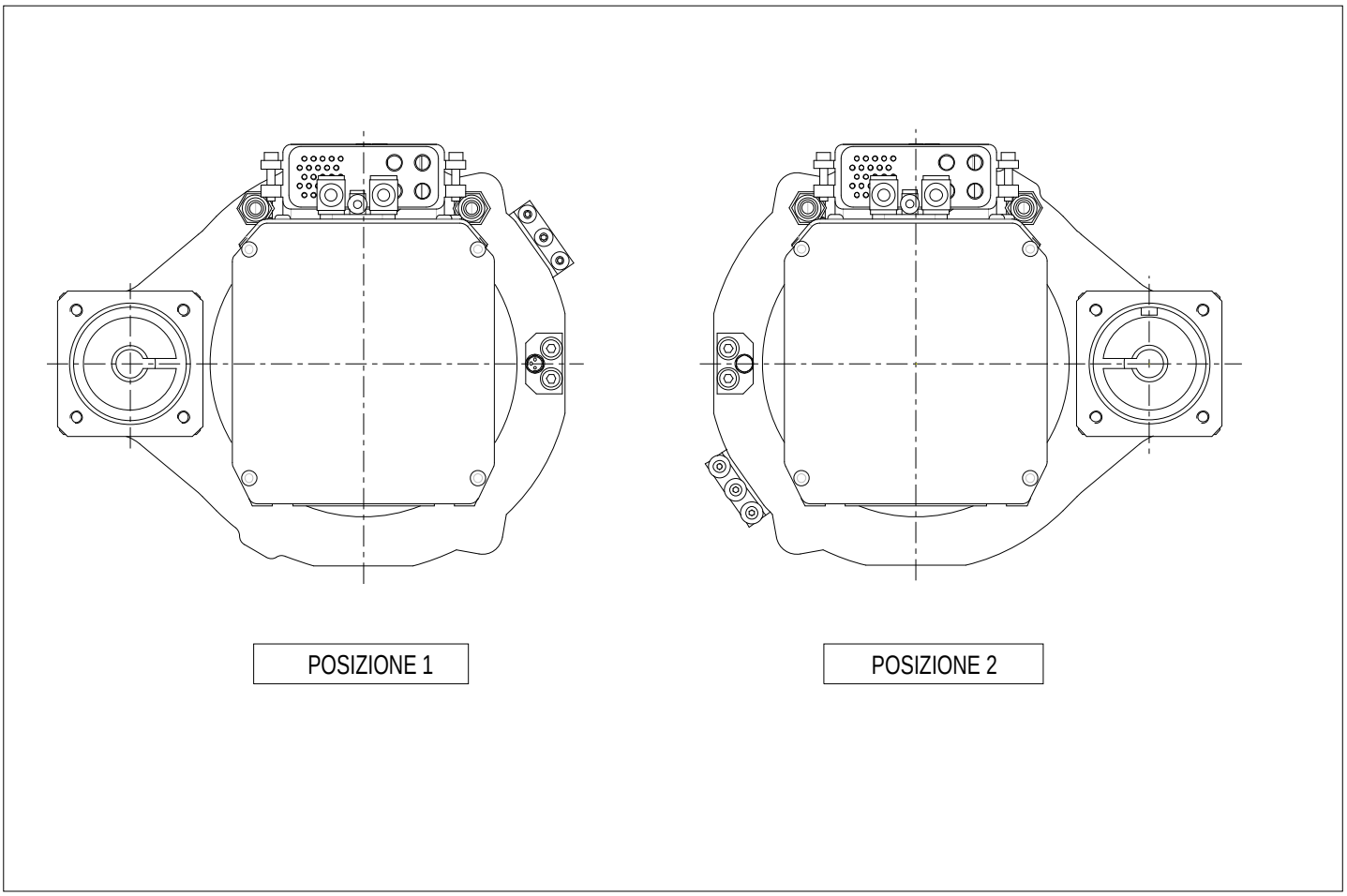
(.30e)

The installation and assembly operations should be carried out by skilled personnel.

3.1 Assembly positions

(3.1 (30e))

The C axis can only be fitted on the electro-spindle in the 2 positions shown below.



3.2 Pre-installation inspections

(3.2 (30e))

Before installing the product, inspect it to make sure there are no traces of it being knocked or damaged.

3.3 Availability of auxiliary systems in the factory

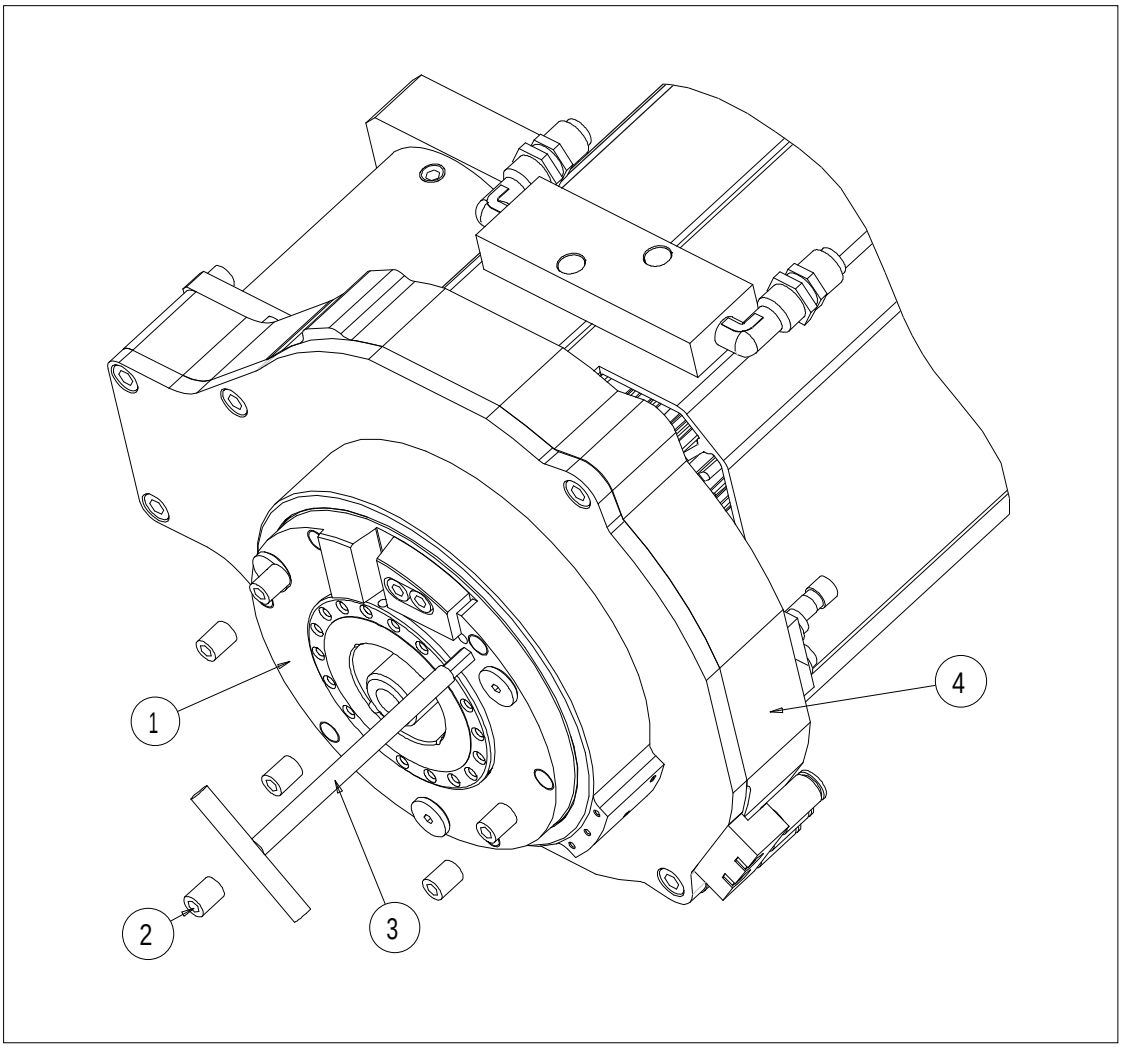
(3.3 (30e))

It is the user's responsibility to supply the necessary auxiliary systems in the factory (electricity, compressed air etc.).

3.4 Securing the unit to the electro-spindle

(3.4 (30e))

The unit should be secured to the electro-spindle by tightening the M6 screws already fitted on the unit.



1	**Angular position**
2	**M8 dowel wrench access**
3	**Ch5 hexagonal wrench**
4	**Upper flange**

Perform the following procedure referring to the figure above.

3 - Installation EN

1) Unscrew the M8 wrench access hole stopper dowels (2) on the angular positioner.

2) Check that the positioner(1) is at the correct angle in relation to the fixed upper flange by inserting a sufficiently long Ch5 hexagonal wrench (3) for M6 screws into it. The positioner is in the correct position if you can insert the wrench and turn the screw.

If this is not the case, adjust the angle of the positioner so that the head of the screw can be reached, by turning the gearbox input shaft manually or using a screwdriver.

The unit is supplied with the positioner already correctly positioned.

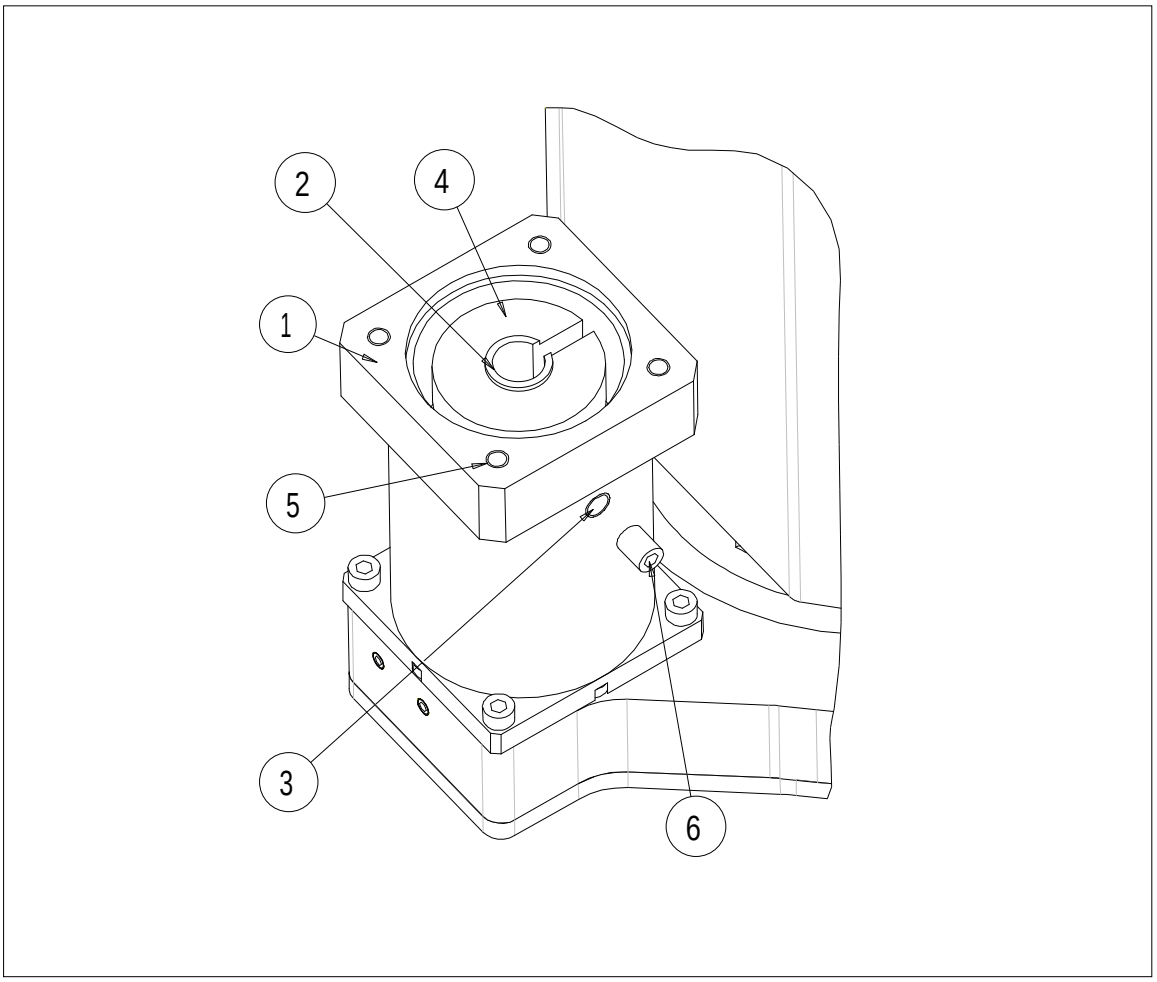
3) Fit the unit over the tip of the electro-spindle until the M6 securing screws can be tightened.

4) Tighten the screws carefully in a criss-cross pattern. Maximum lock torque: 8 Nm MAX.

5) Close the wrench access holes using the M8 dowels removed previously.

3.5 Servomotor assembly

(3.5 (30e))



1	**Stop flange**
2	**Gearbox hub**
3	**Wrench passage hole**
4	**Sleeve**
5	**Hole for securing screws**
6	**Closure dowel**

Perform the following procedure referring to the figure above:

The gearbox input shaft consists of a hub (2) fitted with a sleeve (4) and a screw for securing it to the servomotor shaft.

1) Clean, wash and dry the gearbox hub (2), sleeve and servomotor shaft with a damp cloth soaked in acetone.

2) Manually align the screw inserted in the sleeve (4) with the wrench passage hole (3) on the gearbox body.

3) Insert the motor, taking care to position the gearbox stop flange (1) so it is perfectly flush with the servomotor flange. This inserts the servomotor shaft automatically into the sleeve.

4) Insert the Ch5 hexagonal wrench in the hole (5) and tighten the screw in the sleeve with a maximum torque of 8 Nm.

5) Fix the servomotor onto the gearbox with the 4 grip screws (5).

6) Close the wrench passage hole again using the stopper dowel (6).

3.6 Pneumatic connection points

(3.6 (30e))

The C axis can power units using the 3 pneumatic supplies located on the positioner.
These supplies are totally autonomous as they can be operated completely independently.
The pneumatic connection points where the air is fed in are located on the side o the C axis next to the inductive sensor (see (8) in the "main parts" figure 1 in section 2.1).
The pneumatic supplies and air feed connection points and their relative numbers are indicated in the unit layout points in section 2.5. This layout is included to show how air can be fed to an individual pneumatic supply point.

3.6.1 Air purity in the pneumatic circuit

(3.6.1 (30e))

DRY air is the type of compressed that should be fed to the C axis.

The purity of the air should satisfy the 2-4-3 classes indicated in the ISO8573-1 normative:

- Class 2: solid particles < 1 [u]m

- Class 4: humidity - dew point < 3 °C (37,4 °F)

- Class 3: oil - concentration < 1 mg/m3

Feeding dry air into the device that does not comply with the specifications indicated above may seriously damage the product and cause it to malfunction.

INDEX

4.1 Adjustments

(4.1 (30e))

The product is already adjusted when supplied. Therefore the only adjustments required are those that recover the play between the reference pin on the units and the relative reference slot on the C axis as described and illustrated in section 5.3.
Any other unauthorised tampering with the product will invalidate the guarantee.

4.2 Environmental conditions

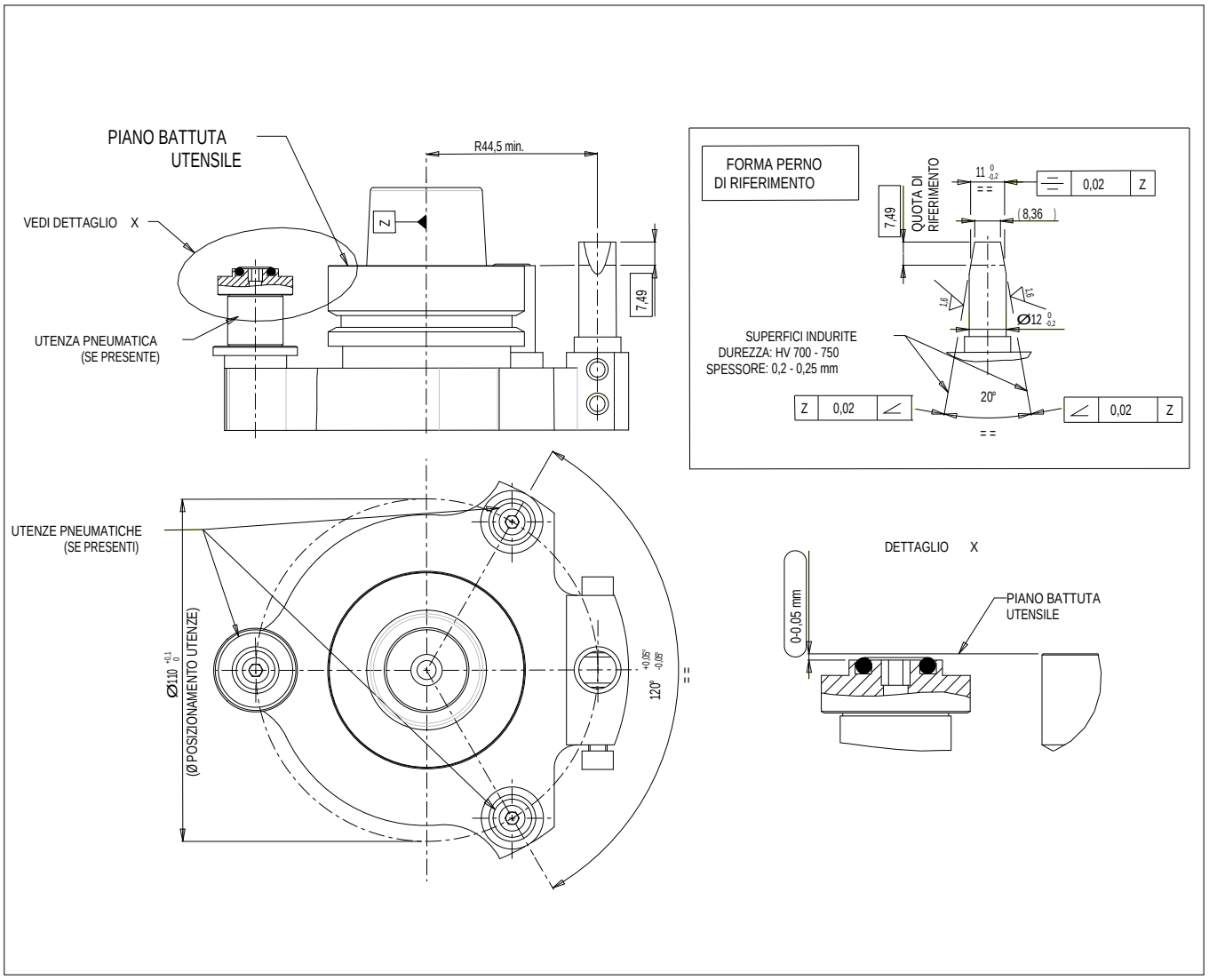
(4.2 (30e))

The product has been tested and inspected in standard environmental conditions.
If the product needs to be used in conditions that do not comply with these standards, contact the Service Department.

4.3 Types of units that can be used and how to adjust them

(4.3 (30e))

The C axis can be used with units that comply with the specifications indicated in the figure below.


PIANO BATTUTA UTENSILE
R44,5 min.
VEDI DETTAGLIO X
Z
7,49
UTENZA PNEUMATICA (SE PRESENTE)
FORMA PERNO DI RIFERIMENTO
QUOTA DI RIFERIMENTO
7,49
11 0 -0,2
0,02 Z
8,36
1,6
1,6
Ø12 0 -0,2
SUPERFICI INDURITE
DUREZZA: HV 700 - 750
SPESSORE: 0,2 - 0,25 mm
20°
Z 0,02
0,02 Z
UTENZE PNEUMATICHE (SE PRESENTI)
Ø110 +0,1 0
(Ø POSIZIONAMENTO UTENZE)
120° +0,05° -0,05°
DETTAGLIO X
0-0,05 mm
PIANO BATTUTA UTENSILE

4 - Use and adjustments EN

The units can be split into two different types:

A) Units with a fixed reference pin: i.e. when the [diam]12 reference pin for moving the unit is fixed and cannot be adjusted at all.

B) Units with an adjustable reference pin: i.e. when the [diam]12 reference pin for moving the unit can be moved axially once the various threaded parts that lock it in position have been loosened and it is pressed against the C axis by a pre-load spring.

Always follow the adjustment procedures illustrated in sections 5.3.1, 5.3.2 and onwards, with great care. Failure to observe these procedures may damage the unit, the C axis and the electro-spindle or even cause the unit to become detached from the electro-spindle.

The spring that preloads the reference pin against the C axis should press with a force of not more than 13 Kg on all the securing points of the fitted pin.

The standard adjustment for the C axis made during manufacture ensures that units with a position between 11 and zero on the tool stop table can be fitted to the axis with no play at all.

In any case, before fitting a new unit, ALWAYS follow the adjustment procedures illustrated in sections 5.3.1, 5.3.2 and onwards.

We firmly advise you to use units with adjustable reference pins. This will allow you to handle complex situations where 2 or more units can be used on the same electro-spindle without having to diminish the manufacturing tolerances of the unit in order to obtain the same axial position for the reference pin.

4.3.1 Recovering play on units with a fixed reference pin

(4.3.1 (30e))

Before performing this adjustment, make sure that:

1) the head of the reference pin on the unit is clean, free of sawdust, resin etc. and is not dented, damaged or marked. Clean the pin and if necessary, replace it;

2) the front of the dishes, that the gaskets are pressed up against, are clean, free of sawdust, resin etc. and are not dented, damaged or marked. Clean the dishes and if necessary, replace them.

3) the reference slot (3) on the C axis positioner (4) is clean and free of sawdust, wood chips and resin: clean it carefully, using a damp cloth soaked in acetone if necessary. Remove any other residues too.

To adjust play at the point where the reference pin and the C axis join, there is a mobile reference wedge that is locked into position by securing screws.

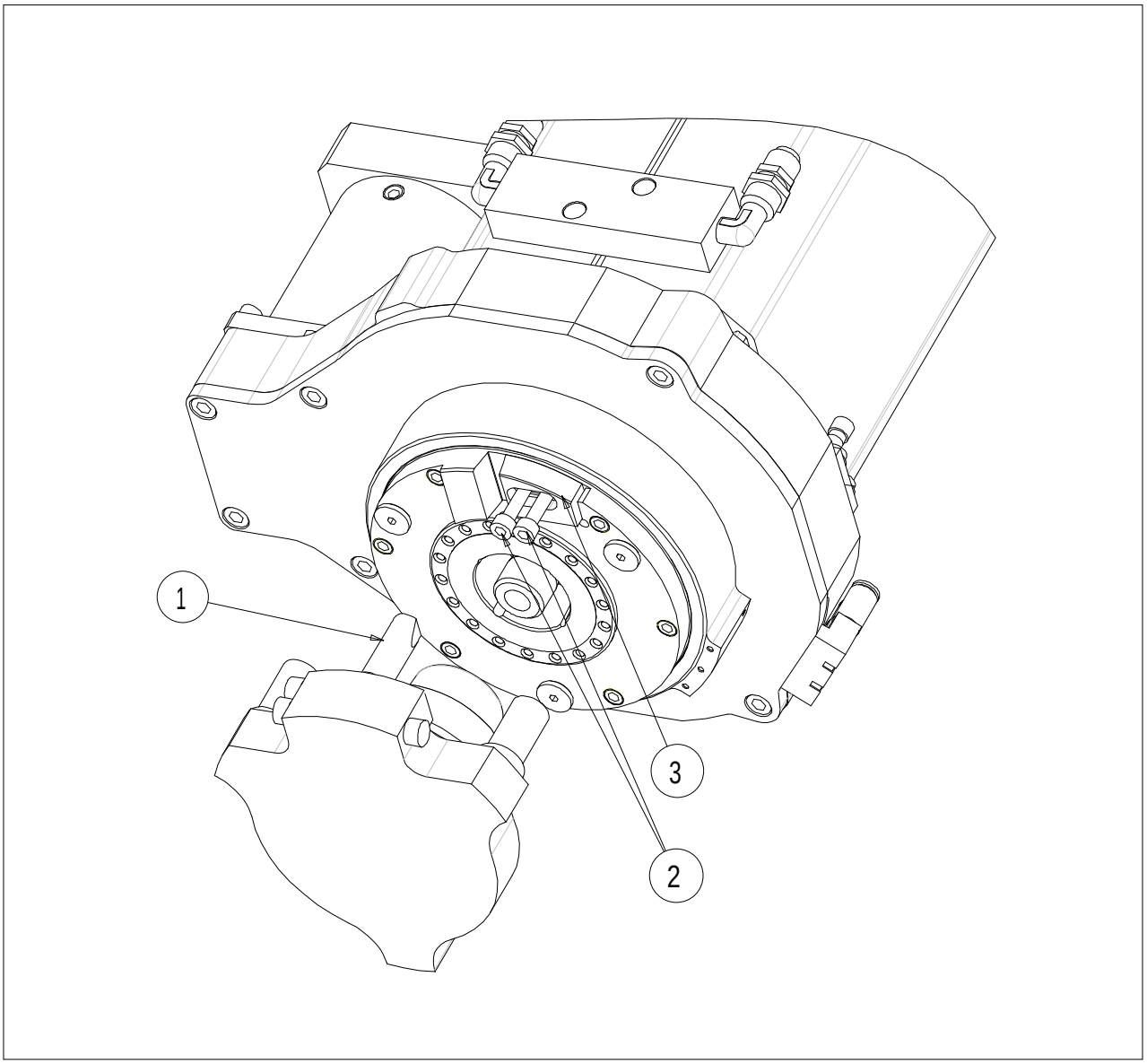
Before performing this adjustment, having loosened the securing screws (2), make sure that the wedge (3) is free to move towards the reference pin and in the opposite direction.

If necessary, use a screwdriver to help you check this.

If there is a build-up of dust, sawdust or resin that interferes with the wedge stroke, remove it, by disassembling the wedge, if necessary

(see section 6.2.1 planned maintenance).

Observe the following procedure:



1	**Fixed reference pin**
2	**Wedge securing M6 screws**
3	**Adjustable stop wedge**

1) Slacken the wedge securing screws (2). A spring fitted in the wedge will push it forward by about 1 mm. Use a Ch4 wrench.
2) Shift the wedge (3) to the end-of-stroke position against the positioner, by moving it in the opposite direction to the reference slot.
3) Make sure that the screws (2) hold the wedge in this position.
4) Insert a unit manually so it is gripped by the electro-spindle.
5) Slacken the screws (3).
6) Check that the wedge is flush against the reference pin of the head pressed by the pre-load spring fitted in it: this operation will recover any play in the join.
7) Secure the mobile wedge (3) using the screws (2).

4.3.2 Recovering play on units with an adjustable reference pin

(4.3.2 (30e))

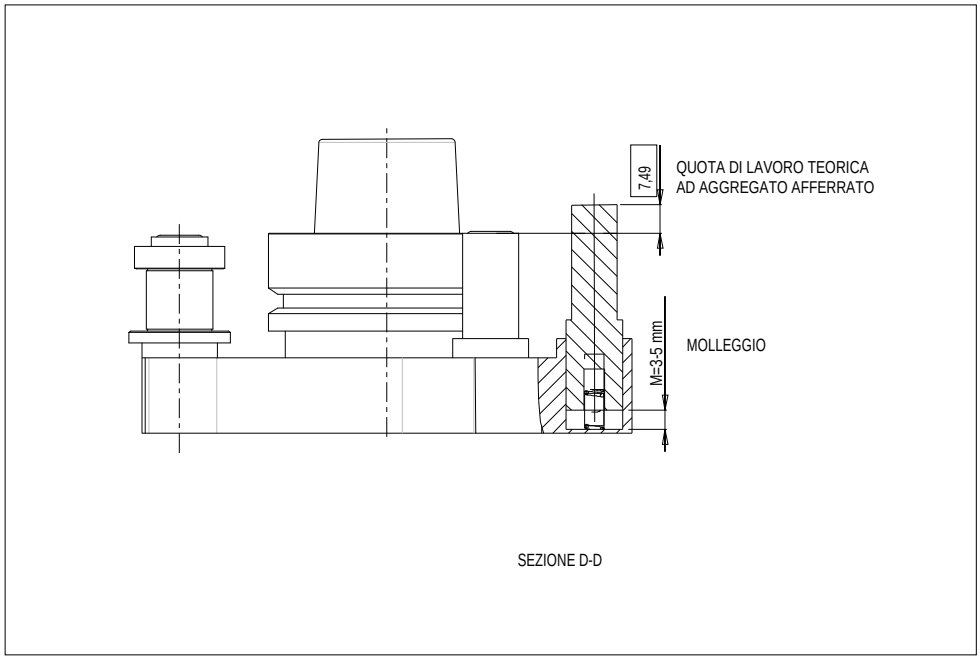
Before performing the adjustment, make sure that the unit reference pin is free to move axially. If it is not, consult the unit use and maintenance manual to make sure the pin can move along its axis again.

Before performing the adjustment, make sure that:

1) the head of the reference pin on the unit is clean, free of sawdust, resin etc. and is not dented, damaged or marked. Clean the pin and if necessary, replace it;

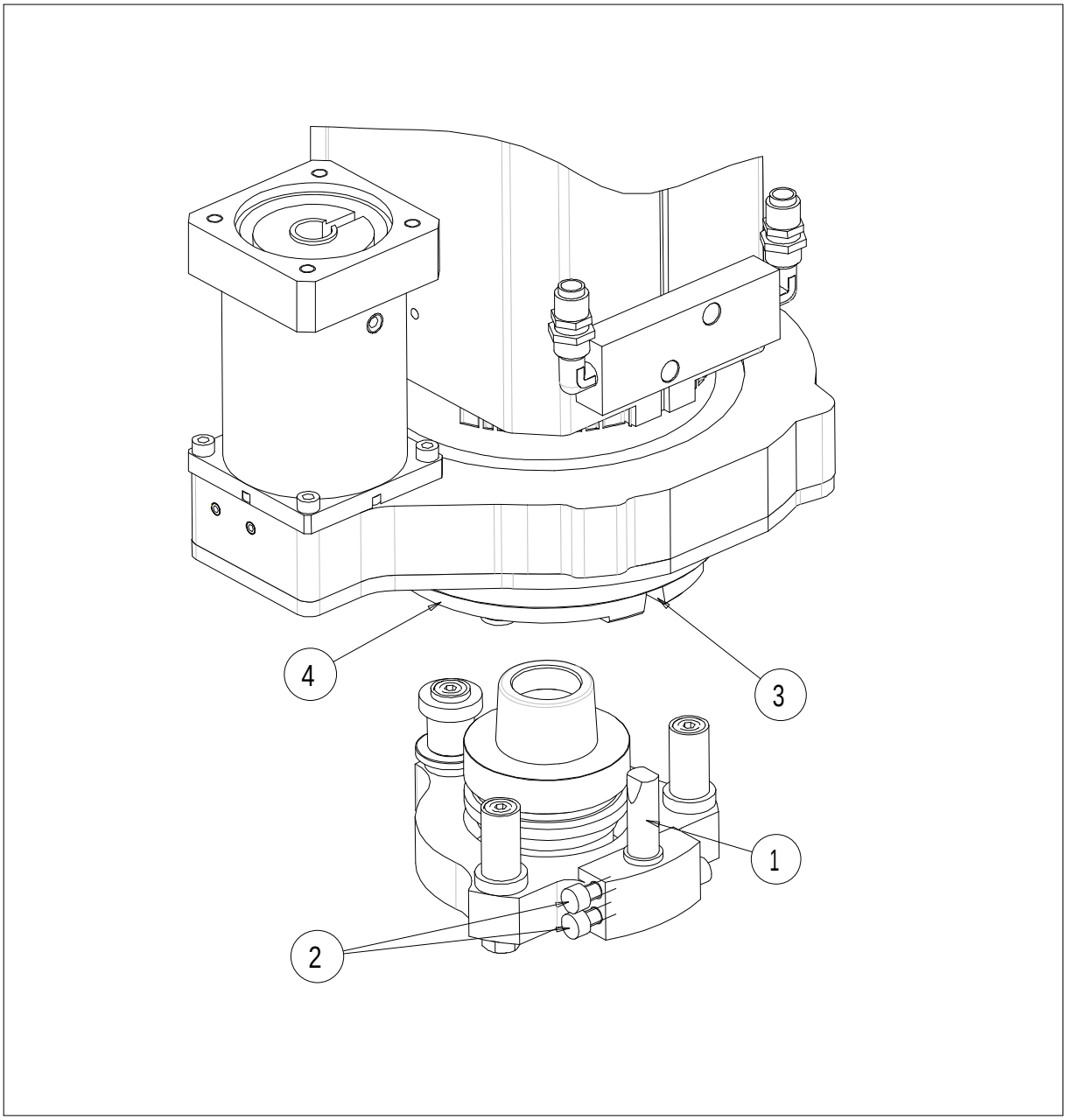
2) the front of the dishes, that the gaskets are pressed up against, are clean, free of sawdust, resin etc. and are not dented, damaged or marked. Clean the dishes and if necessary, replace them.

3) the reference slot (3) on the C axis positioner (4) is clean and free of sawdust, wood chips and resin: clean it carefully, using a damp cloth soaked in acetone if necessary. Remove any other residues too.



Units with adjustable reference pins should be designed so that when the securing screws are loosened and the unit is inserted in the electro-spindle, the pin should still be free to spring. (see figure above).

This adjustment should be made by adjusting the unit only.
To do this, follow the procedure below:



1	**Axially-adjustable reference pin**
2	**Pin securing screws**
3	**Reference slot**
4	**Positioner**

1) Slacken the reference pin (1) securing screws (2) on the unit. The pin moves axially and is pushed upwards by a spring fitted in it.

2) Rest the unit on a table, taking care not to damage it. Push the reference pin (1) to the end-of-stroke position, lowering the pin as far as possible towards the unit.

The spring that preloads the pin against the C axis should press with a force of not more than 13 Kg on all the pin securing points.

3) Tighten the securing screws (2) so that the pin is fixed in the end-of-stroke position.

4) Check that the reference slot (3) on the C axis positioner (4) is clean and free of sawdust, wood chips and resin: clean it carefully, using a damp cloth soaked in acetone if necessary. Remove any other residues too.

5) Insert the unit manually, so it is gripped by the electro-spindle.

6) Slacken the reference pin securing screws (2) on the unit: the pin will rise until it joins with the surfaces of the slot (3).

7) Make sure that there is no play in the join by trying to rotate the unit manually around the electro-spindle axis.

8) Fix the pin in position on the unit with screws (2) slackened previously.

4.3.3 Using the same unit on several electro-spindles

(4.3.3 (30e))

This situation may occur when:
a) there are several electro-spindles on the same machine that use the unit to perform certain machining operations;
b) the same unit is used on several machines.

With a unit fitted with a fixed reference pin
Before using the unit, the procedure described in section 5.3.1
should be performed on each of the electro-spindles.

With a unit fitted with an adjustable reference pin
Perform the procedure illustrated in section 5.3.2 on the first electro-spindle.
At the end of this procedure a "master" calibrated unit is obtained that does not need to be adjusted again.
Repeat the procedure described in section 5.3.1 on all of the remaining electro-spindles by manually inserting the "master" unit in all of the electro-spindles. Be careful NOT to move the "master" reference pin and do NOT loosen the axial pin securing screws (2).

4.3.4 Using two or more units on the same electro-spindle

(4.3.4 (30e))

With a unit fitted with a fixed reference pin
Make sure that the units are calibrated by the manufacturer so that below a hundredth of the 11 quota of the reference pin width they are perfectly interchangeable.

If the instructions given above are not observed, the unit may become detached and the C axis and electro-spindle may be damaged.

Given that calibrating the reference pin with the required tolerance margins may prove problematical and costly, we strongly suggest that you use several units with a fixed reference pin on the same electro-spindle. In any case, axially adjustable reference pins are always preferable.

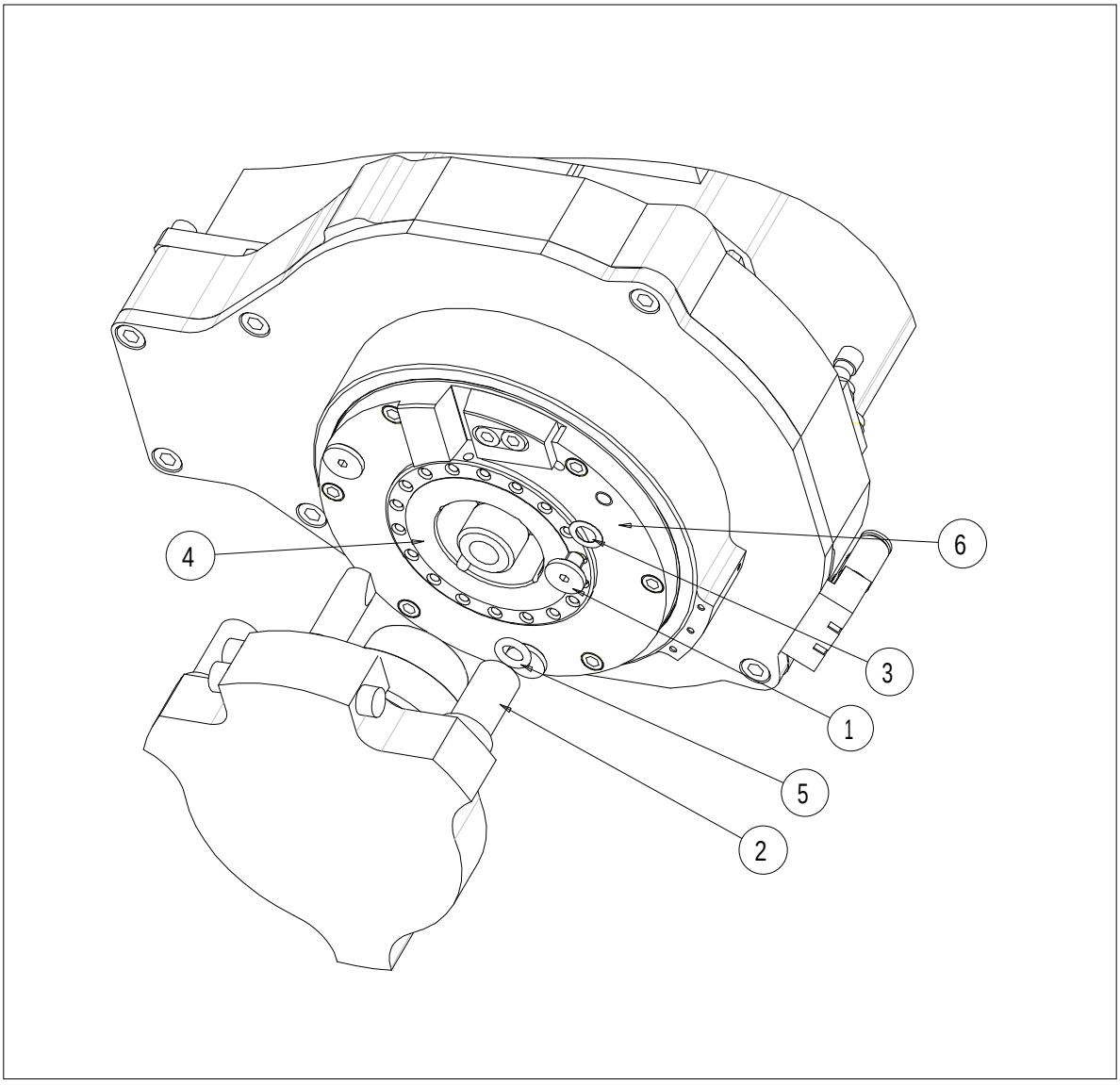
With a unit fitted with a mobile reference pin
Perform the procedure described in section 5.3.2 for both units.

4.3.5 Adjusting the pneumatic supply dishes

(4.3.5 (30e))

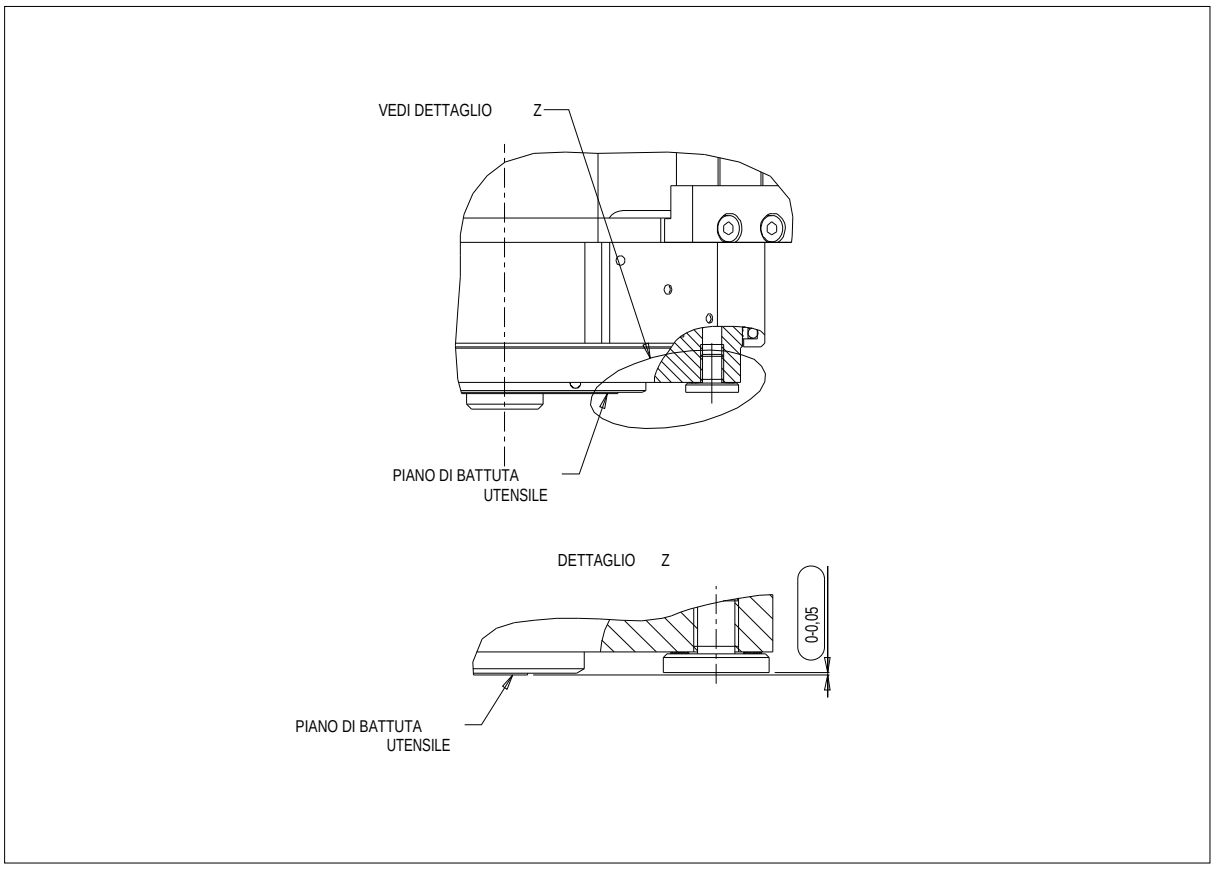
Here, certain adjustments may need to be made to make sure that the 3 dishes (1) situated on the positioner in order to feed air to the pneumatic supply points (2), remain above the tool stop table (4).
In this way, if the unit complies with the diagram shown in section 5.3, the gaskets (5) will guarantee a correct pneumatic seal.

Perform the following procedure:



1	**Adjustable dish**
2	**Pneumatic supply on unit**
3	**RAM thickness for dish**
4	**Tool stop table**
5	**Gasket on unit**
6	**Positioner**

First take a centesimal depth gauge and rest the bottom of it on the tool stop table (4) on the electro-spindle shaft and zero it.
Then test the the pneumatic supply dishes, checking that the offset quota between the table and the dish is 0.+0.05 mm. When taking this measurement make sure that the bottom of the depth gauge always rests on the tool stop table.
- If the position indicated is <0.
  . Unscrew the dish (1). Remove one or more of the RAM spacers located between the dish (1) and the positioner (6).
  . Screw the dish back on and take the measurement again.
  . When you have obtained an offset that is within the tolerance margin for the dish (1) unscrew it again and secure it with a medium thread locker.
- If the position indicated is >0.05 mm.
  . Unscrew the dish (1). Add one or more RAM spacers between the dish (1) and the positioner (6).
  . Screw the dish back on and take the measurement again.
  . When you have obtained an offset that is within the tolerance margin for the dish (1) unscrew it again and secure it with a medium thread locker.
An offset quota of > 0 means that with the electro-spindle in a vertical position and the tool and the C axis pointing at the ground, the fronts of the dishes (1) are positioned above the tool stop table (4).



If the procedure for adjusting the dishes described in section 5.3.5 is not observed, the unit may become detached and the C axis and electro-spindle may be damaged.

4.4 Cleaning air blow during a tool change for the pneumatic supplies

(4.4 (30e))

In order to guarantee a high standard of cleanliness on the pneumatic supply dishes both on the C axis and on the unit, during a tool change, each C axis pneumatic supply unit should be cleaned with an air blow that should be blasted at the same time as the air blow used to clean the electro-spindle tool.
This should take place even if inserting a unit is not part of the tool change.
The machine logic should be adjusted as a consequence.
In the event of the units using the pneumatic supplies to perform movements or other operations that may conflict with the cleaning air blow requested above, disable the dish cleaning air blows before gripping the unit (minimum 20 mm in the Z axis above the toolholder carousel).

If the instructions given above are not observed, the unit may become detached and the C axis and electro-spindle may be damaged.

4.5 Zeroing the C axis

(4.5 (30e))

The C axis is fitted with an inductive zeroing sensor (no. 7 in section 2.1) that when used together with the signals coming from the encoder in the servomotor, enables the position of the unit to be established in relation to the rotation axis of the electro-spindle.

The sensor is NC.
The "OFF" condition corresponds to an output voltage of 0 Vcc.
The "ON" condition corresponds to an output voltage equal to the power feed voltage.

To zero the sensor, perform the following procedure:

1) If the sensor output is "OFF", go straight to point 3.

2) If the sensor output is "ON", turn the axis in a positive direction until the sensor output switches to "OFF".

3) Turn the C axis very slowly in a negative direction.

4) When the sensor output switches to "ON", the next signal coming come from the encoder should be established as the axis "home position".

INDEX

(* (30e))

To operate a product installed on the machine in perfect safety, always consult the manual belonging to the machine that the product is to be operated on.

To ensure that the C axis operates correctly, it is essential to observe all the planned maintenance operations.

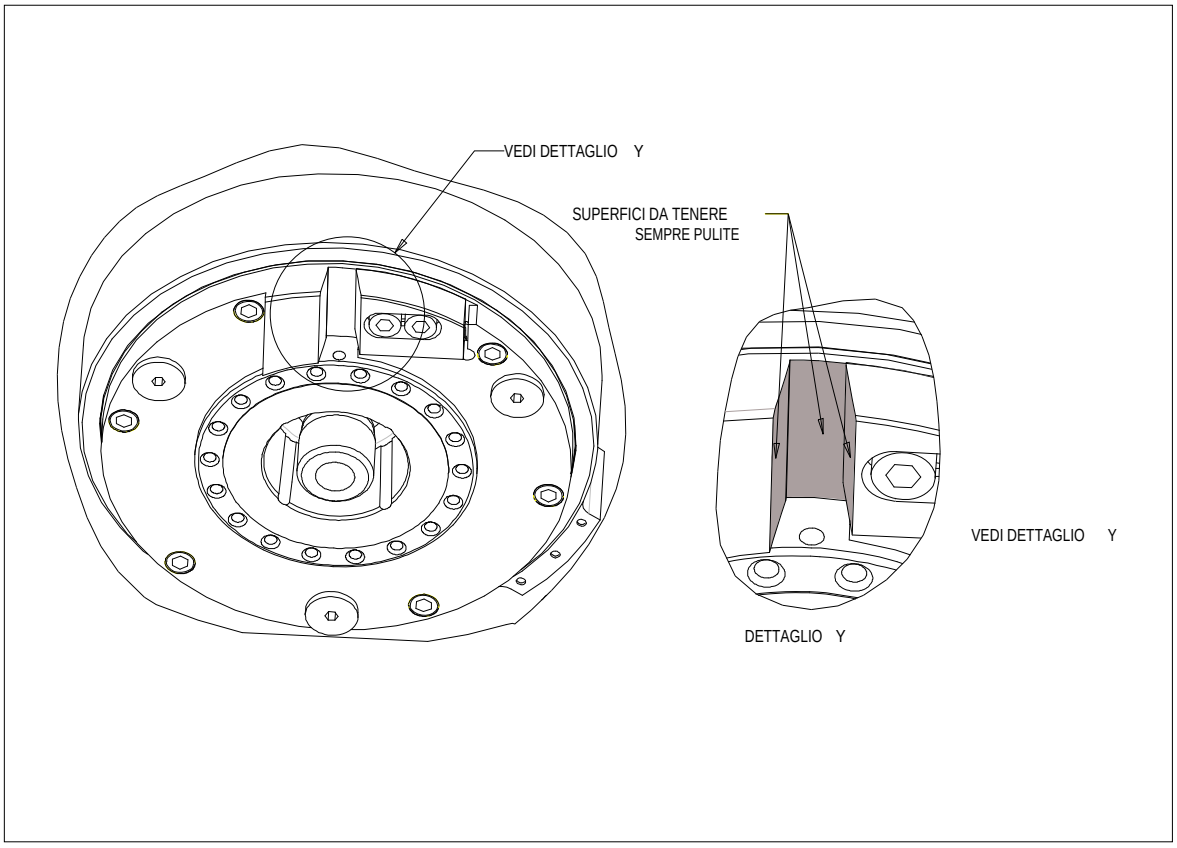
The C axis is lubricated for life: no extra periodic lubrication is required.

5.1 Daily maintenance

(5.1 (30e))

5.1.1 Cleaning the reference slot on the positioner

(5.1.1 (30e))

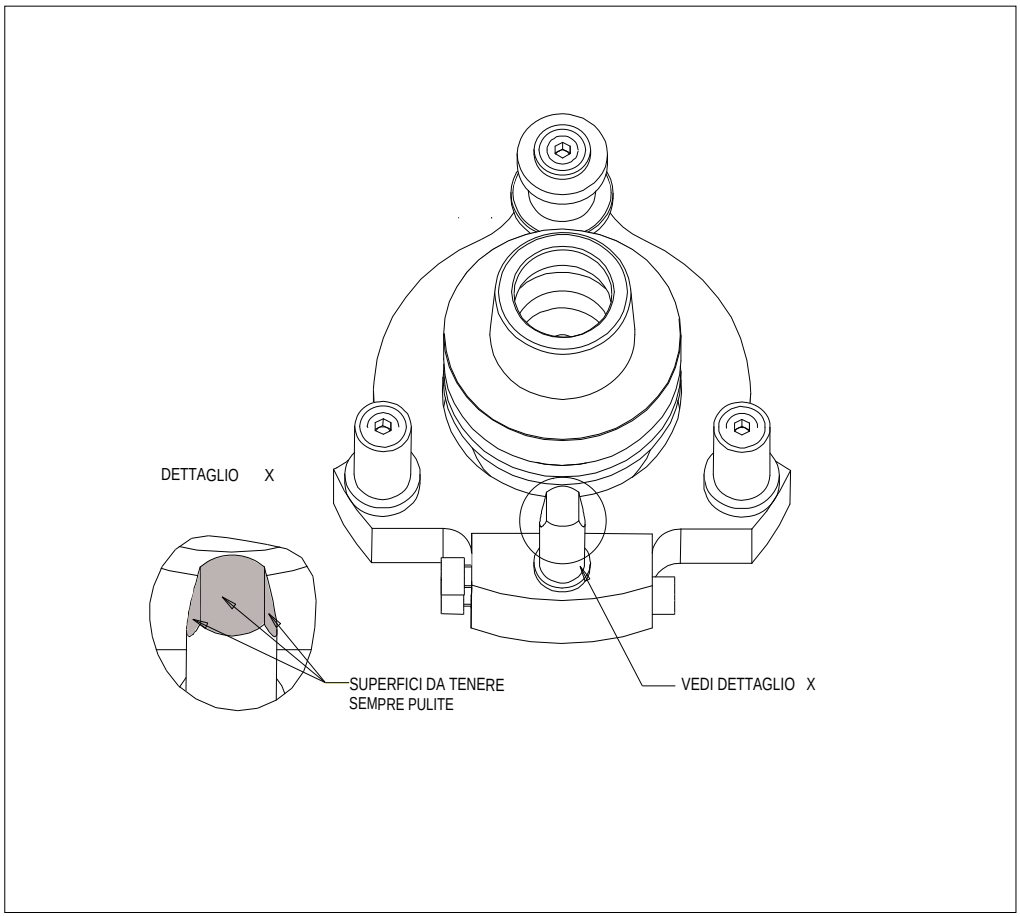


Clean the surfaces indicated in the figure every day. Remove any dust, chips, machining fragments and resin residues etc.
Do this with a damp cloth soaked in acetone, if necessary, and make sure you clean along the whole length of the slot.

When cleaning, take care not to point blasts of compressed air directly at the C axis, as this may blow dust into the machine and cause harmful dirt to build-up inside the product.

5.1.2 Cleaning the reference pin on the unit

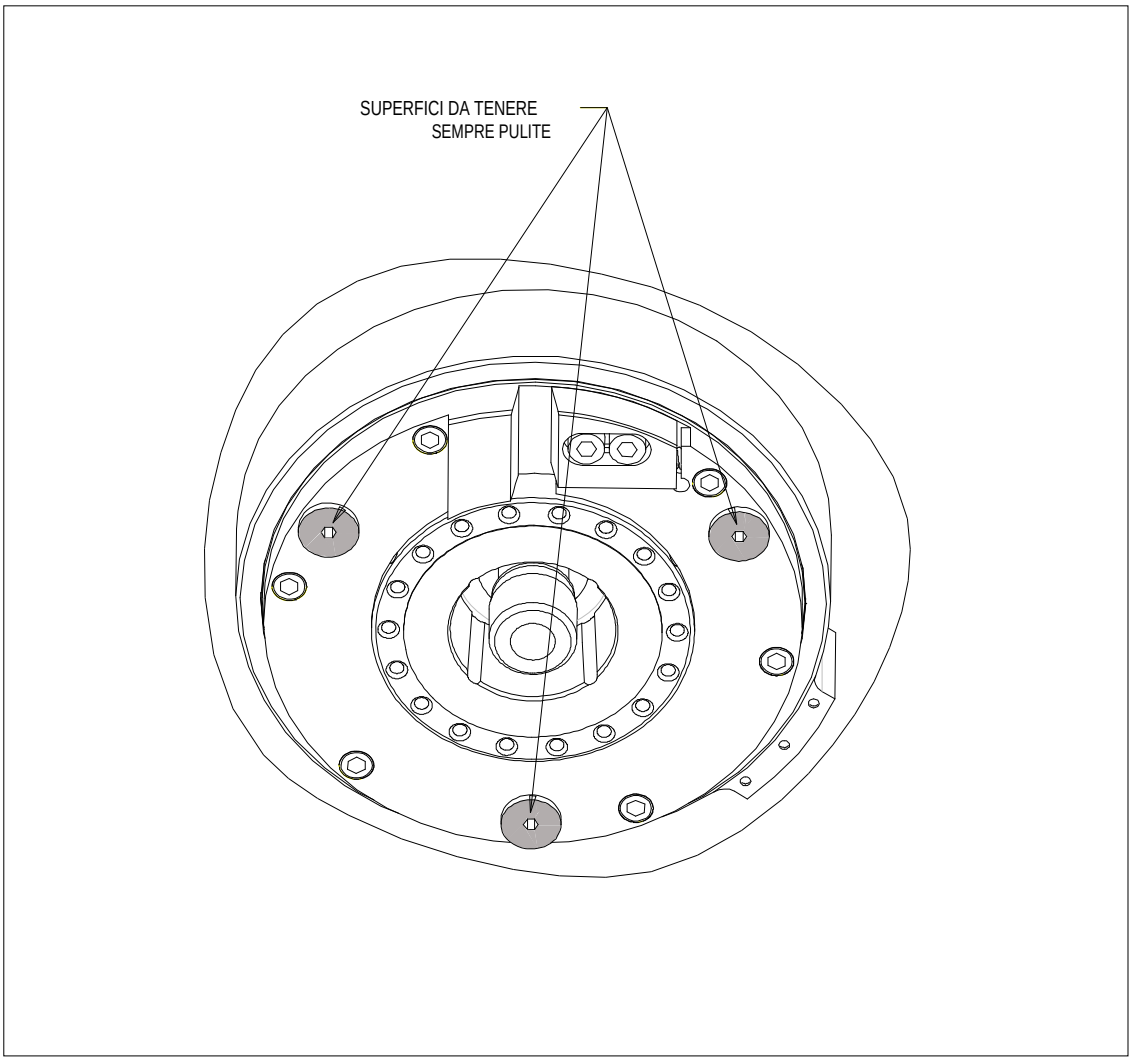
(5.1.2 (30e))



Clean the surfaces indicated in the figure every day. Remove any dust, chips, machining fragments and resin residues etc.
Do this with a damp cloth soaked in acetone, if necessary.

5.1.3 Cleaning the pneumatic supply dishes

(5.1.3 (30e))



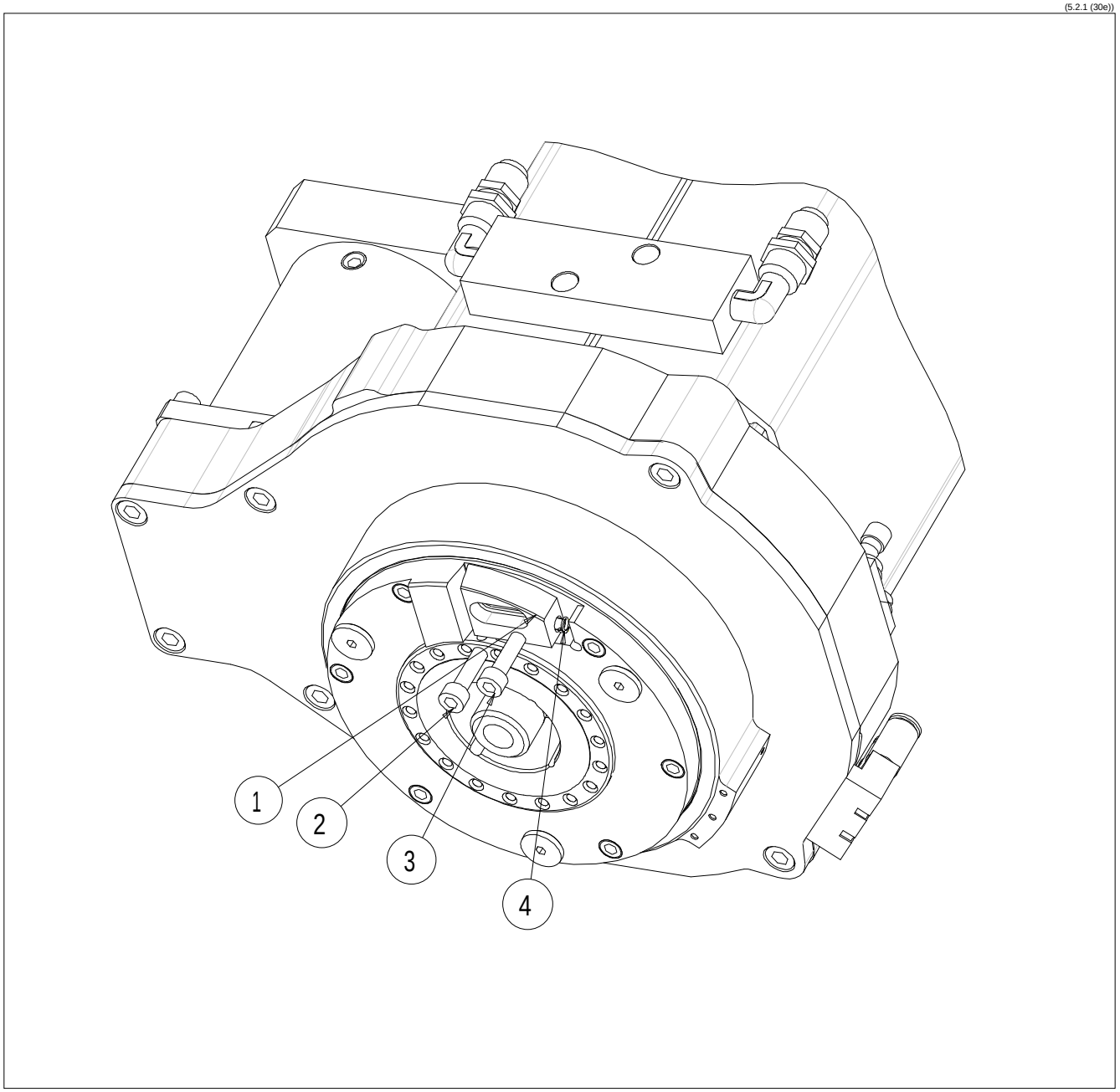
Clean the surfaces indicated in the figure every day. Remove any dust, chips, machining fragments and resin residues etc.
Do this with a damp cloth soaked in acetone, if necessary.

5.2 Six-monthly maintenance

(5.2 (30e))

5.2.1 Cleaning the adjustable wedge on the positioner

(5.2.1 (30e))



1	**Adjustable wedge**
2	**“A” securing screws**
3	**“B” securing screws**
4	**Wedge preload spring**

Every 6 months clean the adjustable pin housing on the positioner in order to ensure correct, long-lasting mobility.

When cleaning, take care not to point blasts of compressed air directly at the C axis, as this may blow dust into the machine and cause harmful dirt to build-up inside the product.

Perform the following procedure:

1) Undo screw (3) using a Ch4 wrench.
2) Undo screw (2) using a Ch4 wrench.
3) Remove the wedge (1) and the preload spring (4) fitted in it. Put all the components in a safe place.

Clean the adjustable wedge housing using a damp cloth soaked in acetone, if necessary.
Remove all dirt and residues.

To refit the wedge perform the following procedure:

1) Reposition the wedge and the spring.
2) Move the wedge and preload the spring until the screw (2) can be inserted into the slot in the wedge. Use a large, flat-tipped screwdriver to move the wedge, if necessary.
3) Insert screw (2) until the head of the screw fits inside the slot in the wedge.
Do not tighten the screw completely.
4) Insert screw (3) moving the adjustable wedge up to the end-of-stroke stop against the positioner shoulder.
5) Tighten both screws to lock the wedge (1) against the end-of-stroke stop on the positioner.
6) Grip a unit that has been used normally on the C axis in question.
7) Slacken the wedge securing screws, making sure that the adjustable wedge moves up correctly flush against the reference pin.
8) Tighten the screws again to lock the wedge into position. All play has now been recovered.

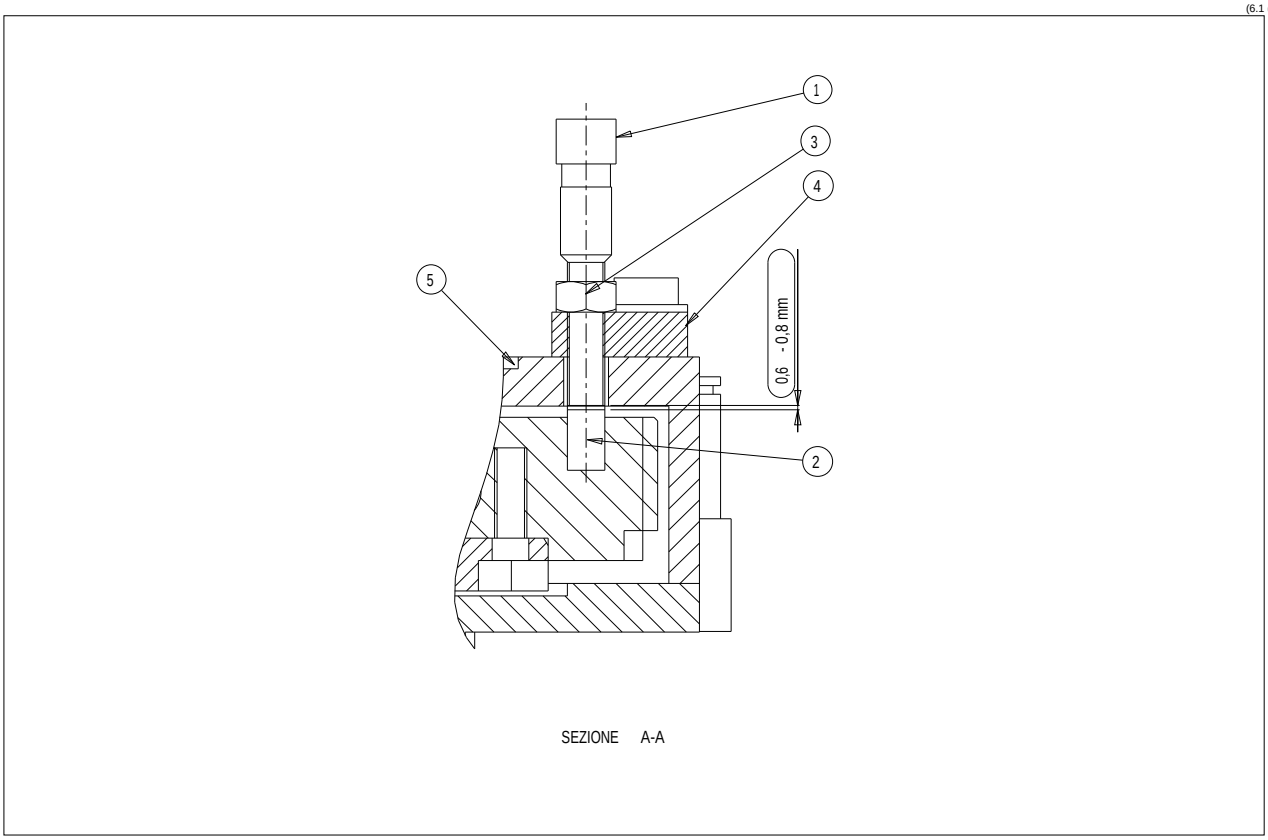
INDEX

(. (30e))

To operate a product installed on the machine in perfect safety, always consult the manual belonging to the machine that the product is to be operated on.

6.1 Replaying and adjusting the inductive sensor

(6.1 (30e))



1	**Zeroing sensor**
2	**Zero reference pin**
3	**M8x1 lock nut**
4	**Sensor securing block**
5	**Upper flange**

To replace the sensor, follow the procedure below:

1) Slacken the M5x0.8 lock nut (3) .
2) Remove the faulty sensor (1) by unscrewing it from its threaded housing.
3) Move the C axis until you can see the zeroing reference pin (2) on the wheel from the threaded hole in the sensor housing. This should be done so that the pin is facing the threaded hole.
4) Check that the new sensor (1) operates correctly: check that the sensor switches to "ON" when it faces a metal surface.
5) Screw the sensor into its housing (1), turning it in a clockwise direction until the sensitive face is flush against the reference pin. Mark the position on the cylindrical surface of the sensor and on the securing block with a marker pen.
6) Unscrew the sensor (1) by 3/4 - 1 turn, by rotating it in an anticlockwise direction.

7) Tighten up the locknut (3) without exceeding the specified torque measurement of 2 Nm, and securing the thread with a medium thread locker.

To adjust the sensor, perform the procedure outlined above using the same sensor that is already there, i.e without replacing it.

INDEX

7.1 Dismantling the device

(7.1 (30e))

Disconnect the C axis:
- from the electrical power supply
- from the compressed air supply network

Follow the installation instructions in reverse order.
Clean the surfaces. Oil the parts that may be subject to oxidization.
Package up the C axis so it is properly protected against dust and dirt.

7.2 Disposing of the device

(7.2 (30e))

Dismantle the C axis as described above.
Split up the parts according to type and dispose of them according to the legislation in force in the country in which the device was installed.
For instructions regarding the transport and removal of the C axis, see Chapter 3: Transport and Packaging.
Disposing of the device correctly is the responsibility of the user.

INDEX

8.1 Problems - Causes - Solutions

(8.1 (30e))

Before using a product read all the SAFETY and MAINTENANCE warnings and instructions and put them into practice.

Problems	Causes	Solutions
The sensor does not supply the output requested.	**Sensor disconnected or faulty.**	• **Check the connectors.** • **Check the continuity and condition of the electrical connections.** • **Adjust the sensor as described in section 8.1.** • **Replace the faulty sensor, following the procedure outlined at section 8.1.**
The bearings are noisy.	**Bearings are damaged.**	**Contact the service dept.**
The C axis is not turning.	**C axis has seized up**	• **Remove the C axis from the electro-spindle and clean it.** • **Contact the service dept.**
	Servomotor sleeve is not tightened properly.	• **Tighten the sleeve as described in section 4.5.**