Assembly and Operating Manual

CGH

2-finger parallel gripper

Superior Clamping and Gripping

SCHUNK®

Imprint

Technical changes:

We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

SCHUNK GmbH & Co. KG
Spann- und Greiftechnik

Bahnhofstr. 106 – 134
D-74348 Lauffen/Neckar

Tel. +49-7133-103-0
Fax +49-7133-103-2399

info@de.schunk.com
schunk.com

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

In addition to these instructions, the documents listed under Applicable documents [▶ 6] are applicable.

1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.

⚠ DANGER

Danger for persons!

Non-observance will inevitably cause irreversible injury or death.

⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.

⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

NOTICE

Material damage!

Information about avoiding material damage.

1.1.2 Applicable documents

- General terms of business*
- Catalog data sheet of the purchased product *
- Assembly and operating manuals of the accessories *

The documents marked with an asterisk (*) can be downloaded on our homepage **schunk.com**

1.1.3 Variants

This operating manual applies to the following variations:

- CGH 80-100 ⇒ ID number 0370430
- CGH 80-120 ⇒ ID number 0370431
- CGH 80-140 ⇒ ID number 0370432
- CGH 80-160 ⇒ ID number 0370433

1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

1.3 Scope of delivery

The scope of delivery includes

- 2-finger parallel gripper CGH in the version ordered
- Assembly and Operating Manual
- Accessory pack

1.4 Accessories

A wide range of accessories are available for this product

For information regarding which accessory articles can be used with the corresponding product variants, see catalog data sheet.

1.4.1 Accessories kit

Contents of the accessory pack:

- 8 x centering sleeve Ø8x5.35
- 2 x cylindrical pin Ø5x22

1.4.2 Seal kit

Content of the sealing kit:

- 2x piston seal
- 2x shock absorber

ID.-No. of the seal kit

Seal kit for	ID number
CGH 80	5522649

1.4.3 Sensors

Overview of the compatible sensors

Designation	Type
Inductive proximity switches	IN

- Exact type designation of the compatible sensors see catalog.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.
- Sometimes mounting kits are needed in order to install additional sensors.

2 Basic safety notes

2.1 Intended use

The product is designed exclusively for gripping and temporarily holding workpieces or objects.

- The product may only be used within the scope of its technical data, Technical Data [▶ 15].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/system. The applicable guidelines must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.3 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Gripper fingers

Requirements for the gripper fingers

Stored energy within the product creates the risk of serious injuries and significant property damage.

- Arrange the gripper fingers in a way that the product reaches either the position "open" or "closed" in a de-energized state.
- Only exchange the gripper fingers when no residual energy remains in the product.
- Make sure that the product and the top jaws are a sufficient size for the application.

2.6 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, Technical Data [▶ 15].
- Make sure that the product is a sufficient size for the application.
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.7 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician
Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.

Qualified personnel
Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.

Instructed person
Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.

Service personnel of the manufacturer
Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.8 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

2.9 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.10 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.11 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.12 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.13 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.13.1 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.13.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.13.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

2.13.4 Protection against electric shock

Possible electrostatic energy

Components or assembly groups may become electrostatically charged. When the electrostatic charge is touched, the discharge may trigger a shock reaction leading to injuries.

- The operator must ensure that all components and assembly groups are included in the local potential equalisation in accordance with the applicable regulations.
- While paying attention to the actual conditions of the working environment, the potential equalisation must be implemented by a specialist electrician according to the applicable regulations.
- The effectiveness of the potential equalisation must be verified by executing regular safety measurements.

2.14 Notes on particular risks

- The gripper must be fastened on the base side prior to it being actuated (opened or closed). Use of the ISO flange plate is recommended Mechanical connection [▶ 16].

⚠ WARNING

Risk of injury from crushing and impacts!

Serious injury could occur during the base jaw procedure and when breaking or loosening the gripper fingers.

- Wear suitable protective equipment.
- Do not reach into the open mechanism or the movement area of the product.

⚠ WARNING

Rotating belt deflection

Danger of fingers or other body parts becoming trapped and pulled in when the gripper jaws are moving

3 Technical Data

Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:7 4 4
Nominal working pressure [bar]	6
Min. pressure [bar]	2
Max. pressure [bar]	6
Noise emission [dB(A)]	≤ 70

More technical data is included in the catalog data sheet. Whichever is the latest version.

4 Assembly

4.1 Mechanical connection

⚠ WARNING

The gripper must be fastened on the base side prior to it being actuated!

- Mounting via customer construction
  OR
- Mounting via ISO flange (separately available)

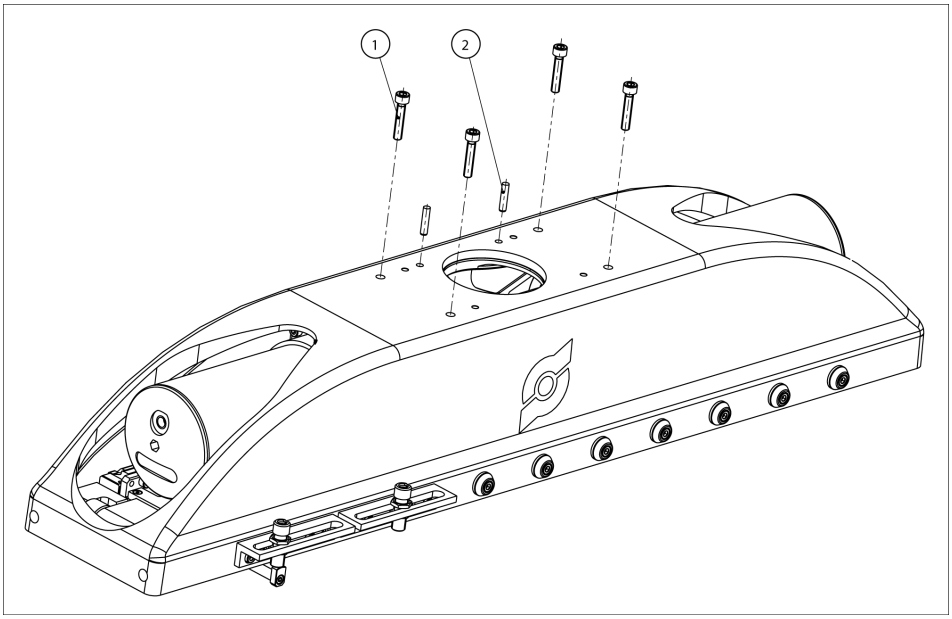
Evenness of the mounting surface

The values apply to the whole mounting surface to which the product is mounted.

Requirements for evenness of the mounting surface (Dimensions in mm)

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

Assembly without ISO flange



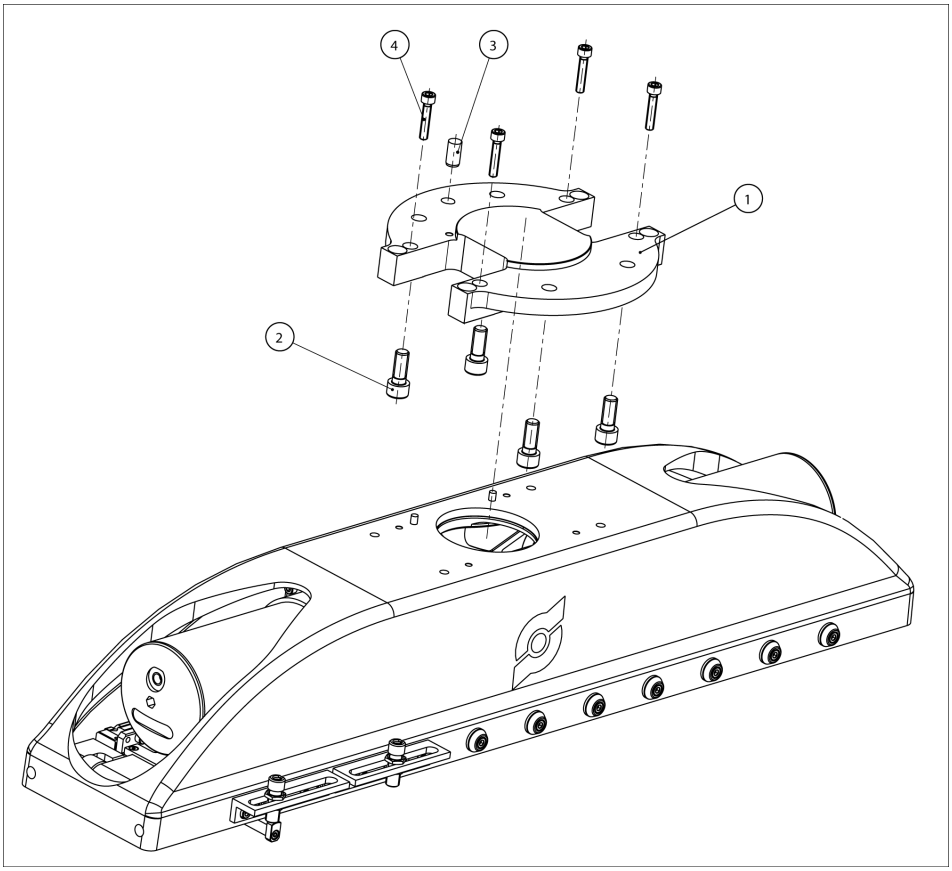
Item	Designation		
1	Screw (4x) provision by customer	Thread diameter	M6
		Depth of engagement	Min. 16.5 mm Max. 22 mm
2	(2x) cylindrical pin DIN 6325 included in the accessory pack		5.0 m6 x 22 mm

Assembly with ISO flange

SCHUNK recommends the use of the ISO flange for mounting of the gripper. All necessary screws and centering elements are atached to the respective ISO flange (sold separately) and the enclosed pack of the gripper.

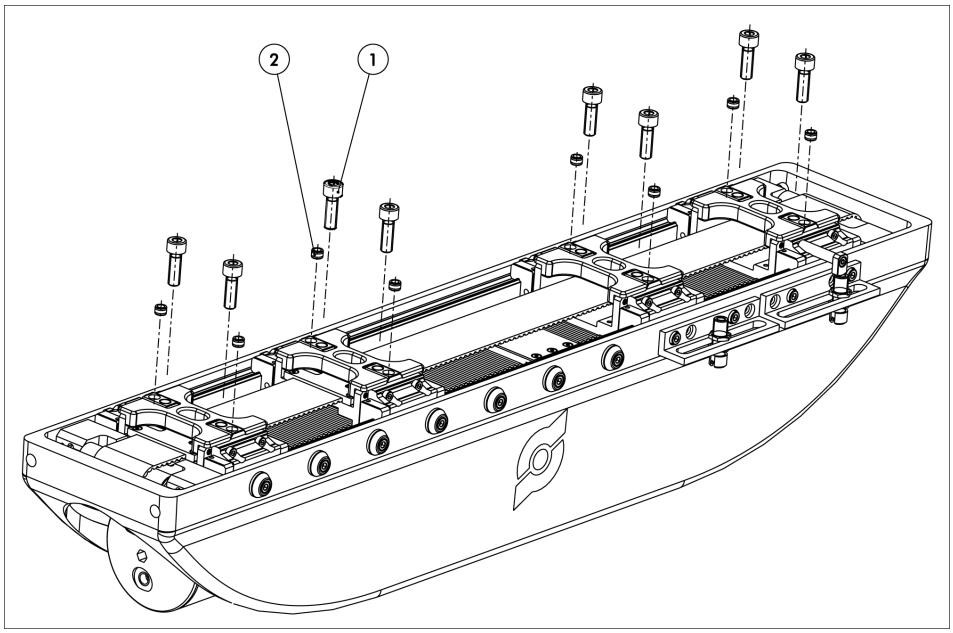
The connection dimensions of the ISO flange can be found in the catalog.

ID number	Designation ISO flange
0308092	ADF-ISO-9409-1-A-100
0308093	ADF-ISO-9409-1-A-125
0308094	ADF-ISO-9409-1-A-160



Item	Designation	
1	ISO flange ADF-ISO-9409-1-A-xxx	
2	Screw (4x) for assembly of the ISO flange on the robot	ISO flange 100: M8x25 ISO flange 125 / 160: M10x25
3	Cylindrical pin DIN 6325 (1x)	ISO flange 100: 8m6 x 20 mm ISO flange 125 / 160: 10m6 x 20 mm
4	Screw (4x) for mounting the gripper on the ISO flange	ISO flange 50 / 63: M6x25 ISO flanges 100, 125 / 160: M6x30

4.2 Assembly of the top jaws



Item	Mounting	
1	Screw (8x) provision by customer	M8 / 12 deep
2	Centering sleeve (8x) contained in accessory pack	Ø 8 x 5.3

4.3 Air connection

NOTICE

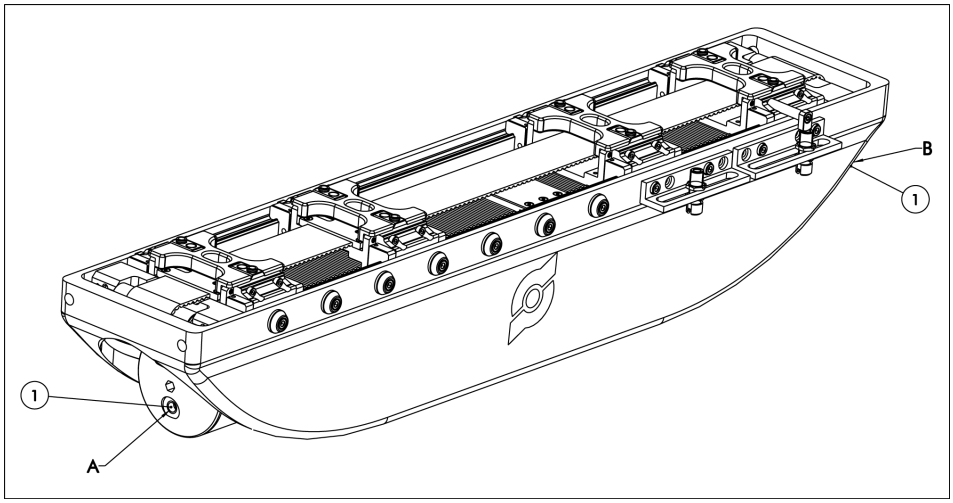
Damage to the gripper is possible!

If the maximum permissible finger weight or the permissible mass moment of inertia of the fingers is exceeded, the gripper can be damaged.

- A jaw movement always has to be without jerks and bounce.
- You must therefore implement sufficient reduction and/or damping.
- Observe the diagrams and information in the catalog data sheet.

NOTE

- Observe the requirements for the compressed air supply, Technical Data [▶ 15].
- In case of compressed air loss (cutting off the energy line), the components lose their dynamic effects and do not remain in a secure position. However, the use of a SDV-P pressure maintenance valve is recommended in this case in order to maintain the dynamic effect for some time. Product variants are also offered with mechanical gripping force via springs, which also ensure a minimum clamping force in the event of a pressure drop.



1	Main connections (Hose connection) (A = open, B = close)

4.4 Stroke adjustment

⚠ WARNING

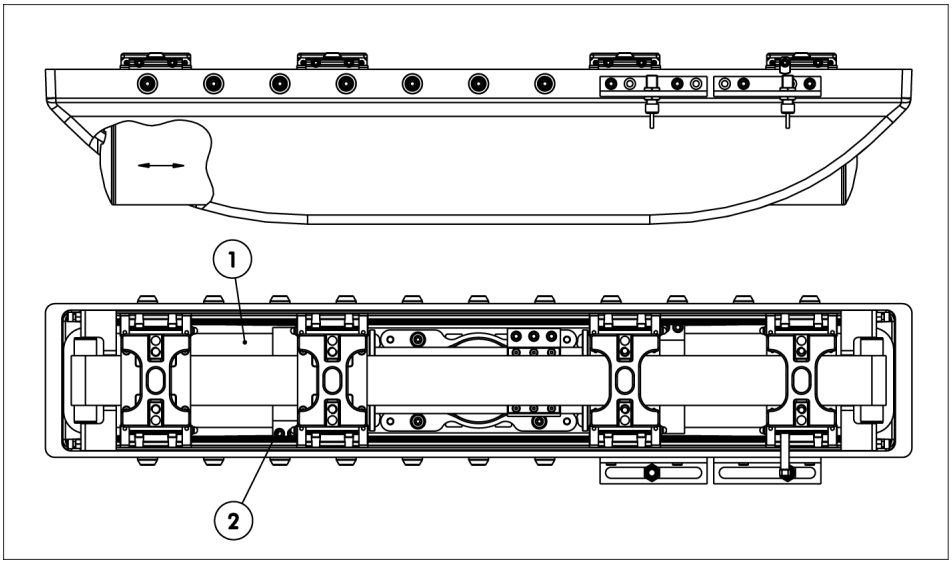
Incorrect assembly may lead to failure in the pipe clamping.

The gripper provides the option of making a separate stroke adjustment for the "Open" and "Closed" positions. This reduces the cycle time and optimizes the fluid consumption.

The base jaws must not move to their limit against the belt tension when "opening" and not hit each other when "closing".

NOTE

Heavy tops jaws cause more severe deformation of the inside absorber than light top jaws.
This is why, depending on the load build-up and finger mass, it may be necessary to adjust the gripper in terms of the stroke adjustment before delivery from the factory.



- Remove the compressed air lines.
- Move the base jaws by hand until the screws (2) for the stroke adjustment can be accessed from above.
  NOTICE! It is not necessary to disassemble parts of the gripper. The screws can be accessed from above
- Undo the screws (2) (do not remove) using a long Allen key until the cylinder pipe (1) can be moved axially.
  - ✓ If the "gripper open" position is to be set, then the cylinder pipe needs to be adjusted on the "B" air connection side.
  - ✓ If the "gripper closed" position is to be set, then the cylinder pipe needs to be adjusted on the "A" air connection side Air connection [▶ 19].

- Move the cylinder pipe (1) into the position at which it is going to be clamped.
  - ✓ For a reduced stroke, push the cylinder pipe inwards.
  - ✓ For a larger stroke, pull the cylinder pipe outwards.

NOTICE

The base jaws can hit each other at the side or in the center.

When pulling the pipe outwards, please make sure that the inside absorber can still reach the end position and has a stroke reserve, since it still continues to press the base jaws several millimeters depending on the operating pressure.

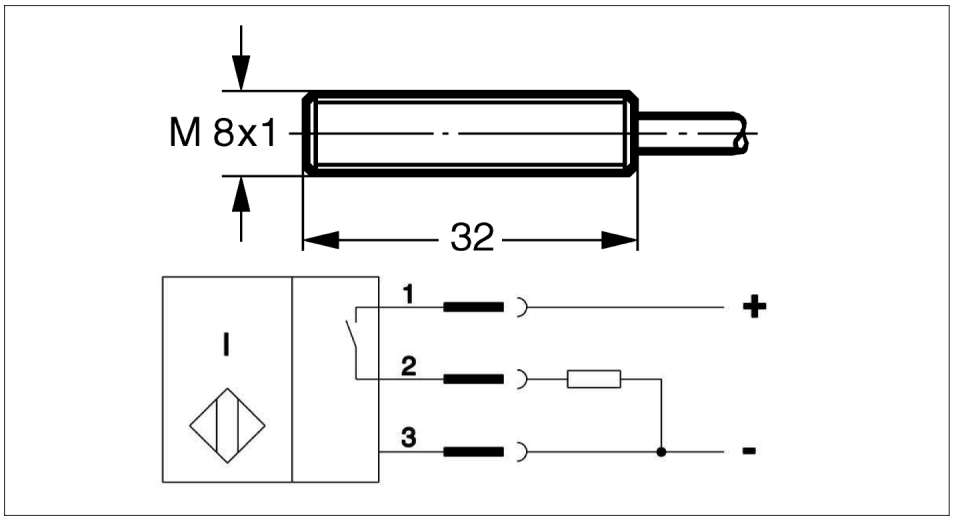
- When the required position of the cylinder pipe has been set, slightly screw in all screws (2) evenly by hand.
- Tighten all screws (2) with torque (10 Nm).
- Attach the compressed air lines again and test the set end position. **NOTICE! Test initially using a reduced pressure in order to rule out any collisions.**

4.5 Sensors

The module is ready to use the IN80 sensor. More sensors can be used with a mounting kit.

- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.
- Technical data for the sensors can be found in the data sheets (included in the scope of delivery).

4.5.1 Inductive proximity switch IN 80



Connection example for IN 80

1	brown	2	black	3	blue

The inductive proximity switches used are equipped with reverse polarity protection and are short-circuit-proof.

Make sure that you handle the proximity switches properly:

- Do not pull on the cable.
- Do not allow the sensor to dangle from the cable.
- Do not overtighten the mounting screw or mounting clip.
- Please adhere to a permitted bend radius of the cable. (☞ catalog)
- Avoid contact of the proximity switches with hard objects and with chemicals, in particular nitric acid, chromic acid and sulphuric acid.

The inductive proximity switches are electronic components, which can react sensitively to high-frequency interference or electromagnetic fields.

- Check to make sure that the cable is fastened and installed correctly. Provide for sufficient clearance to sources of high-frequency interference and their supply cables.
- Parallel switching of several sensor outputs of the same type (npn, pnp) is permissible, but does not increase the permissible load current.
- Note that the leakage current of the individual sensors (ca. 2 mA) is cumulative.

Assembly

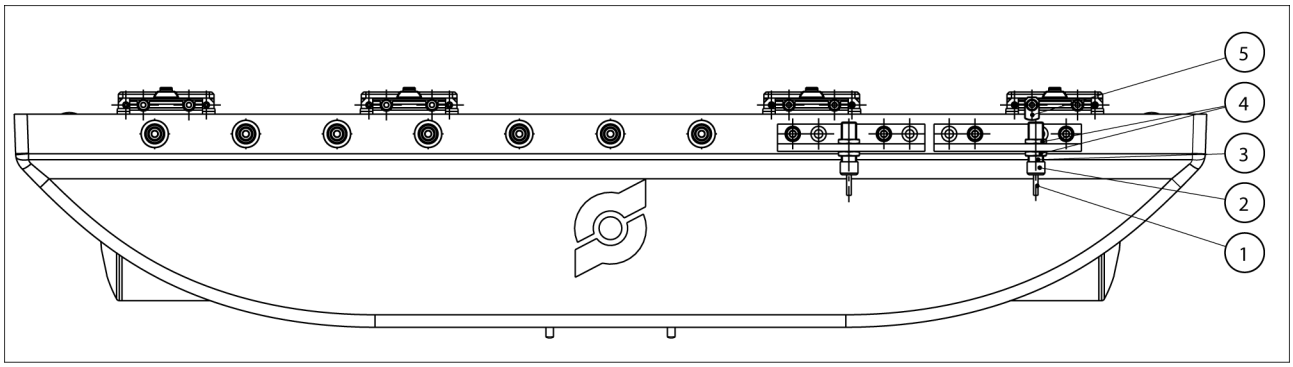
The gripper is already prepared for using the IN 80. For assembly, the proximity switch needs to be inserted in the bracket and the switching points need to be set.

NOTE

To set the switching points, the top jaws have to be installed already.

⚠ WARNING

Danger of crushing when adjusting the proximity switch!



Gripper open

- Undo the cap nut on the bracket (2).
- Push the proximity switch (1) to the stop of the bracket (3).
- Fasten the proximity switch by tightening the cap nut (2) in the bracket.
- Set the gripper to "open" position.
- Releasing the two counter nuts (4) (wrench size 14) allows the whole bracket to be moved with the clamped proximity switch and positioned.
- Set the distance between the control cam (5) and proximity switch (1) to approx. 0.5 mm (max. 1.5 mm).
- Tighten the two counter nuts (4) (wrench size 14).
- Move the gripper to the "Open" position and test the function.

Gripper closed

- Undo the cap nut on the bracket (2).
- Push the proximity switch (1) to the stop of the bracket (3).
- Fasten the proximity switch by tightening the cap nut (2) in the bracket.
- Set the gripper to the "closed" position.
- Releasing the two counter nuts (4) (wrench size 14) allows the whole bracket to be moved with the clamped proximity switch and positioned.
- Set the distance between the control cam (5) and proximity switch (1) to approx. 0.5 mm (max. 1.5 mm).
- Tighten the two counter nuts (4) (wrench size 14).
- Move the gripper to the "Closed" position and test the function.

Part gripped (O.D. gripping)

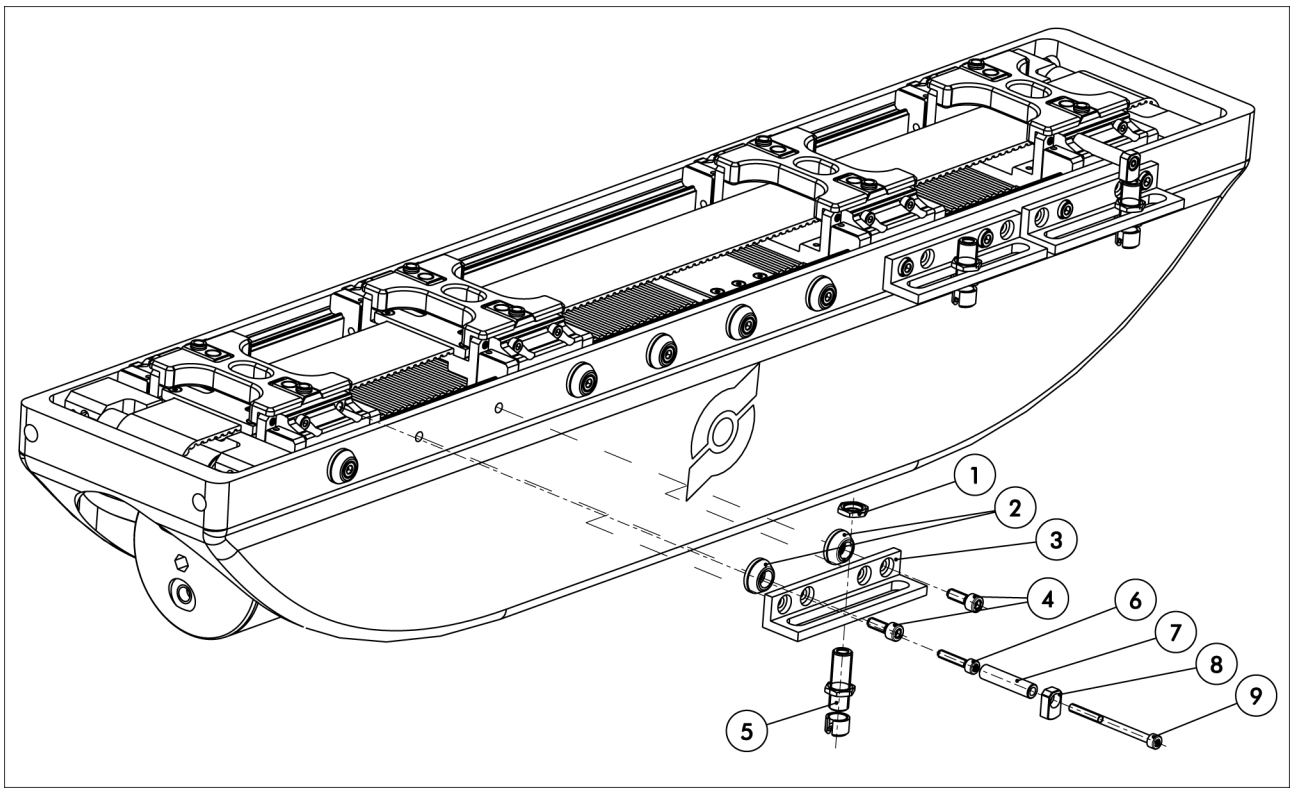
- Undo the cap nut on the bracket (2).
- Push the proximity switch (1) to the stop of the bracket (3).
- Fasten the proximity switch by tightening the cap nut (2) in the bracket.
- Clamp the part to be gripped.
- Releasing the two counter nuts (4) (wrench size 14) allows the whole bracket to be moved with the clamped proximity switch and positioned.
- Set the distance between the control cam (5) and proximity switch (1) to approx. 0.5 mm (max. 1.5 mm).
- Tighten the two counter nuts (4) (wrench size 14).
- Open the gripper and close it again in order to check its function.

Assembly of IN 80 mounting kit

If other gripper positions are going to be queried, then additional holders can be fastened to the gripper (order an additional mounting kit).

ID number	Designation
0370439	Mounting kit for IN 80

The mounting kit includes a holder with bracket and counter nut for the inductive proximity switch and also an additional switching lug.



Installation of holder

The holder (3) can be attached to any position on the gripper.

- Unscrew the screws (4) and remove the spacer (2) at that point where the additional holder is going to be installed.
- Install the holder (3) on the gripper using the two screws (4). Tighten the screws (4) using a 10 Nm torque.
- From below, push the bracket (5) into the holder and fasten it from above using the counter nut (1).

✓ The proximity switch can now be installed, Inductive proximity switch IN 80 [▶ 22].

Installation of switching lug

The switching lug (7, 8, 9) can be attached to any position on the gripper.

- ➢ Undo the screw (6) and remove it (at that point where the additional switching lug is going to be installed).
  (The screw (6) is no longer needed).
- ➢ Install the spacer sleeve (7) together with control cam (8) and screw (9); the control cam must be pointing downwards.
  Tighten the screw (9) using a 5.1 Nm torque.
- ✓ The proximity switch can now be installed, Inductive proximity switch IN 80 [▶ 22].

5 Troubleshooting

5.1 Product is not moving

Possible cause	Corrective action
Base jaws jam in housing, e.g. mounting surface is not sufficiently even.	Check the evenness of the mounting surface. Mechanical connection [▶ 16]
	Loosen the mounting screws of the product and actuate the product again.
Pressure drops below minimum.	Check air supply. Air connection [▶ 19]
Compressed air lines switched.	Check compressed air lines. Air connection [▶ 19]
Proximity switch defective or set incorrect.	Readjust or change sensor.
Unused air connections open.	Close unused air connections.
Flow control valve closed.	Open the flow control valve.
Component part defective.	Replace component or send it to SCHUNK for repair.

5.2 Gripper does not execute a complete stroke

Possible cause	Corrective action
Depending on the operating pressure and load build-up (gripper finger mass), the absorbers used can bring about a varying stroke.	The stroke can be seperately limited and adjusted for opening and closing., Stroke adjustment [▶ 20]
Pressure drops below minimum.	Check air supply., Air connection [▶ 19]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface., Mechanical connection [▶ 16]
Component part defective.	Send the product to SCHUNK with a repair order.

5.3 Gripping force is dropping

Possible cause	Corrective action
Compressed air can escape.	Check seals, if necessary, disassemble the product and replace seals.
Too much grease in the mechanical movement space.	Clean and lubricate product.
Pressure drops below minimum.	Check air supply. Air connection [▶ 19]
Component part defective.	Replace component or send it to SCHUNK for repair.

5.4 Product is creating "too much" stroke - collision of the base ja

Possible cause	Corrective action
Depending on the operating pressure and load build-up (gripper finger mass), the absorbers used can bring about a varying stroke.	The stroke can be seperately limited and adjusted for opening and closing. Stroke adjustment [▶ 20].
Component part defective.	Replace component or send it to SCHUNK for repair.

5.5 Product is opening or closing abruptly

Possible cause	Corrective action
Too little grease in the mechanical guiding areas.	Clean and lubricate product.
Compressed air lines blocked.	Check compressed air lines of damage.
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface.

5.6 Module does not achieve the opening and closing times?

Possible cause	Corrective action
Compressed air lines are not installed optimally.	If present: Open the flow control couplings on the product to the maximum that the movement of the jaws occurs without bouncing and hitting.
	Check compressed air lines.
	Inner diameters of compressed air lines are of sufficient size in relation to compressed air consumption.
	Keep compressed air lines between the product and directional control valve as short as possible.
	Flow rate of valve is sufficiently large relative to the compressed air consumption.

5.7 Product opens with heavy impacts in the end position

Possible cause	Corrective action
Mass moment of inertia of the top jaw too great.	Use lighter gripper finger and attach the flow control couplings.

6 Maintenance

6.1 Notes

Original spare parts

Use only original spare parts of SCHUNK when replacing spare and wear parts.

Maintenance

It is recommended that you have maintenance work and change of seals carried out at SCHUNK. However, you can also do the maintenance work and change the seals yourself.

6.2 Maintenance interval

NOTICE

Material damage due to hardening lubricants!

Lubricants harden more quickly at temperatures above 60°C, leading to possible product damage.

- Reduce the lubricant intervals accordingly.

Interval [Mio. cycles]	1

6.3 Grease/greasing areas

SCHUNK recommends the lubricants listed.

Verifiable equivalent lubricants can also be used.

Lubricant point	Lubricant
8x guide carriage using the PB1021B (THK) lubrication nipples	AFC lubricating grease (THK)
All seals	Renolit HLT 2
Cylinder pipe	Renolit HLT 2

NOTE

- Please take care to ensure that always the same lubricant is used in order to avoid gumming in the lubrication channels.
- Should a different grease be used, a compatibility test must be carried out.

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

NOTE

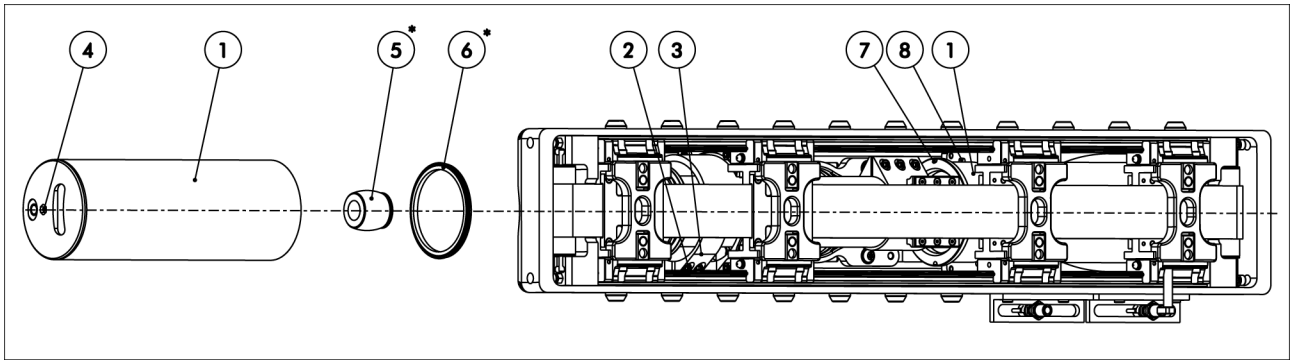
Lubrication nipples are attached at the side in order to relubricate the linear guide or the guide carriages. Each guide carriage has to be equipped with one lubrication nipple. The lubrication nipples must be obtained separately.

6.4 Disassembly of the module

NOTICE

The module must not be completely disassembled.

In order to be able to implement the maintenance interval, the cylinder pipe needs to be removed on both sides.



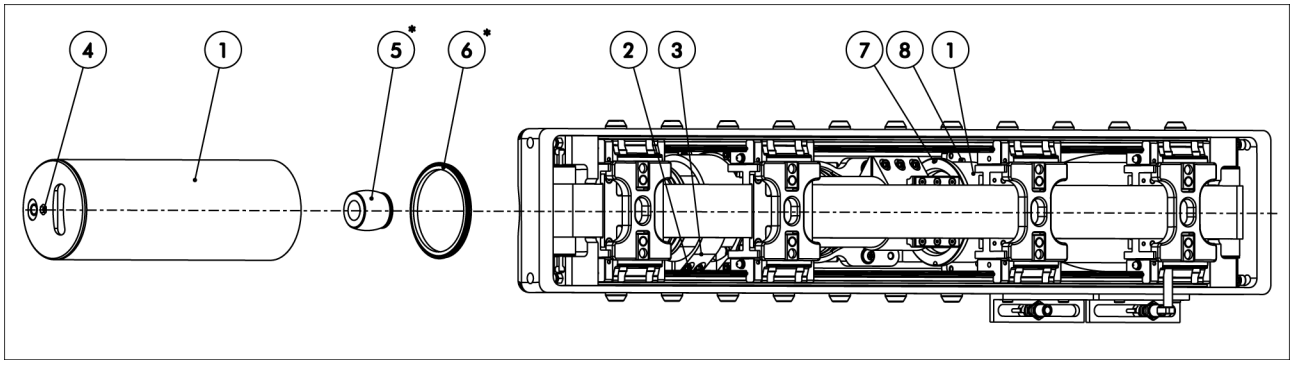
* Wearing part, replace during maintenance.

NOTICE

Incorrect assembly may lead to failure in the pipe clamping.

- Remove the compressed air lines.
- Move the base jaws by hand until the six screws (2) are freely accessible.
- Mark the current clamping position on the cylinder pipe (1) on both sides using a waterproof felt tip pen.
- Undo (do not remove) the screws (2) on the clamping (3) using a long Allen key until the cylinder pipe (1) can be moved axially.
- Pull the cylinder pipe (1) out until it makes contact with the safety ring (7) on the back stop.
- Turn the cylinder pipe (1) and pull it until the recesses in the safety ring (7) engage in the cylindrical pins (8).
- Use an Allen key on the cover (4) to unscrew the cylinder pipe. (Cover and cylinder pipe form one unit and cannot be disassembled).

6.5 Servicing and assembling the module



Maintenance

- Clean all parts thoroughly and check for damage and wear.
- Treat all greased areas with lubricant. Maintenance [▶ 30]
- Oil or grease bare external steel parts.
- Replace the absorber (5) and seal (6) on both sides.

Assembly

- Tighten the screw on the absorber (5) using a 10 Nm torque.
- Install the cylinder pipe (1) again. Make sure that the seal is not damaged.
- Install the cylinder pipe on the safety ring (7) in the reverse order to disassembly.
- Set the position of the cylinder pipe using the mark and tighten all six screws (2) evenly by hand.
- Tighten all screws (2) using a 10 Nm torque.
- Attach the compressed air lines and test the set end position. Test initially using a reduced pressure in order to rule out any collisions.

Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.

7 Translation of original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1.B of the European Parliament and of the Council on machinery.

Manufacturer/ Distributor	SCHUNK GmbH & Co. KG Spann- und Greiftechnik Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar

We hereby declare that on the date of the declaration the following partly completed machine complied with all basic safety and health regulations found in the directive 2006/42/EC of the European Parliament and of the Council on machinery. The declaration is rendered invalid if modifications are made to the product.

Product designation:	2-finger parallel gripper / CGH / pneumatic
ID number	370430, 370431, 370432, 370433

The partly completed machine may not be put into operation until conformity of the machine into which the partly completed machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction

The manufacturer agrees to forward on demand the relevant technical documentation for the partly completed machinery in electronic form to national authorities.

The relevant technical documentation according to Annex VII, Part B, belonging to the partly completed machinery, has been created.

Person authorized to compile the technical documentation:
Robert Leuthner, Address: see manufacturer's address

Signature: see original declaration

Lauffen/Neckar, June 2019

p.p. Ralf Winkler,
Manager for development
of gripping system components

7.1 Annex to Declaration of Incorporation

according 2006/42/EG, Annex II, No. 1 B

1.Description of the essential health and safety requirements pursuant to 2006/42/EC, Annex I that are applicable and that have been fulfilled with:

Product designation	2-finger parallel gripper
Type designation	CGH
ID number	370430, 370431, 370432, 370433

To be provided by the System Integrator for the overall machine			⇓
Fulfilled for the scope of the partly completed machine		⇓	
Not relevant	⇓		

1.1	**Essential Requirements**			
1.1.1	Definitions		X	
1.1.2	Principles of safety integration		X	
1.1.3	Materials and products		X	
1.1.4	Lighting		X	
1.1.5	Design of machinery to facilitate its handling		X	
1.1.6	Ergonomics		X	
1.1.7	Operating positions			X
1.1.8	Seating			X

1.2	**Control Systems**			
1.2.1	Safety and reliability of control systems		X	
1.2.2	Control devices		X	
1.2.3	Starting		X	
1.2.4	Stopping		X	
1.2.4.1	Normal stop		X	
1.2.4.2	Operational stop		X	
1.2.4.3	Emergency stop		X	
1.2.4.4	Assembly of machinery		X	
1.2.5	Selection of control or operating modes		X	
1.2.6	Failure of the power supply			X

1.3	Protection against mechanical hazards			
1.3.1	Risk of loss of stability			X
1.3.2	Risk of break-up during operation			X
1.3.3	Risks due to falling or ejected objects			X
1.3.4	Risks due to surfaces, edges or angles		X	
1.3.5	Risks related to combined machinery			X
1.3.6	Risks related to variations in operating conditions			X
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements			X

1.4	Required characteristics of guards and protective devices			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X

1.5	Risks due to other hazards			
1.5.1	Electricity supply		X	
1.5.2	Static electricity		X	
1.5.3	Energy supply other than electricity		X	
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures			X
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise			X
1.5.9	Vibrations			X
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine	X		
1.5.15	Risk of slipping, tripping or falling	X		
1.5.16	Lightning			X

1.6	Maintenance			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources		X	
1.6.4	Operator intervention		X	
1.6.5	Cleaning of internal parts		X	

1.7	Information			
1.7.1	Information and warnings on the machinery		X	
1.7.1.1	Information and information devices		X	
1.7.1.2	Warning devices		X	
1.7.2	Warning of residual risks		X	
1.7.3	Marking of machinery	X		
1.7.4	Instructions	X		
1.7.4.1	General principles for the drafting of instructions	X		
1.7.4.2	Contents of the instructions	X		
1.7.4.3	Sales literature	X		

	The classification from Annex 1 is to be supplemented from here forward.			
2	Supplementary essential health and safety requirements for certain categories of machinery			X
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products			X
2.2	Portable hand-held and/or guided machinery			X
2.2.1	Portable fixing and other impact machinery			X
2.3	Machinery for working wood and material with similar physical characteristics			X
3	Supplementary essential health and safety requirements to offset hazards due to the mobility of machinery		X	
4	Supplementary essential health and safety requirements to offset hazards due to lifting operations		X	
5	Supplementary essential health and safety requirements for machinery intended for underground work			X
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons		X	