

# Product Specification/ Spare Parts List

Torch cleaner

*TC96*

501 105-502  
1999-04-22



**ABB Flexible Automation AB  
Welding Systems**



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Welding Systems

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# 1 General

Dear customer,

These operating instructions are intended to make the owner/user familiar with the safety aspects, design, function as well as servicing and maintenance of the torch cleaner TC 96.

**The safety instructions contained in these operating instructions must be observed by all persons who work on this machine. It is essential that these operating instructions are available to the operating personnel at all times and that they are kept at the place of operation so that they are easily accessible.**

The torch cleaner system "TC 96" is a tool of the robot and is also controlled by the robot. The robot manuals must also be available to the reader of this description.

The necessary safety information in this document is indicated by the pictogram



The description is directed at the owner/user of this equipment and is written for trained personnel who have experience with mechanical and electrical installations.



**All persons working with the robot welding system must be familiar with the "Safety instructions" provided in the individual chapters of the overall system documentation in order to use the TC 96. Incorrect operation can lead to damage to the machine and injuries to personnel.**

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## 1.1 Designated use

The TC 96 is intended only for:

- automatic cleaning of the contact tip and gas nozzle to remove welding spatter from the torch of a MIG/MAG robot torch unit
- automatic spraying of the contact tip and gas nozzle with a liquid weld spatter release agent
- automatic cut-off of the welding wire (optional)

Any other use or additional use (e.g. performance of machining operations) is deemed as not in accordance with the designated use.

No modifications must be made to the torch cleaner TC 96 which permit misuse of any kind in the sense of the designated use.

Use in accordance with the designated use also includes:

- observance of all instructions in the operating instructions
- performance of the inspection and maintenance work

## **1.2 Warranty**

ABB will provide warranty services upon notification of a fault by customer.

This consists of the rectification of defects, respectively the replacement of components, which are shown to have become faulty or unusable due to material, design or production defects. Replaced components become the property of the supplier.

The right to the warranty can only be claimed during designated use, proper operation and maintenance as well as the use of original spare parts.

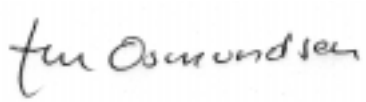
Transportation and packaging expenses must be borne by the customer.

Where a servicing technician needs to visit the customer, the travel expenses according to the ABB Service Tariff shall be borne by the customer.

The following items are not covered by the warranty: Wearing components, lubricants, external cable connections, cable subjected to torsion and bending, etc. The same applies for damage from causes beyond the control of the supplier, such as force majeure, natural wear, improper use, intervention by a third party, excessive use, unsuitable operating media and ambient conditions, which contradict the ABB guidelines.

In the event of functional disturbances during the warranty period, please send the faulty machine to ABB Flexible Automation. Please enclose a description of the fault that has occurred, since this will simplify the repair work to be carried out by our service department.

### 1.3 Manufacturer's declaration

<b>EC Manufacturer's Declaration</b> <b>in the sense of the EC Directive Machines 89/392/EEC, Annexe II B</b>	
Manufacturer:	ABB Flexible Automation GmbH  Assar Gabriëlsson Straße 3-5 63128 Dietzenbach
We hereby declare that the machine described below is an incomplete machine. It is intended for installation in a machine or for assembly with other machines to build a machine. Putting into operation is prohibited until all requirements of the EC Directive 89/392/EEC have been met.	
Machine designation:	<b>Torch Cleaner TC 96</b>
Machine No.:/ Year	from 1996
Additionally applied EC directives:	
Applied harmonized standards, particularly:	
EN 292-1 11/91	Safety of machines, basic terminology
EN 292-2 11/91	Safety of machines, technical principles
prEN 983 12/92	Fluid engineering systems and components, pneumatics
DIN EN 60 204-1 VDE 0113 T1 6/93	Safety of machines, Electrical equipment of machines, General requirements
Dietzenbach, 06.02.97 <i>Place and date</i>	 <i>Signature</i>
Information on signatory:	Mr Tor Morten Osmundsen is Head of the Robot Welding Systems Division

*Torch cleaner TC 96*

***General***



## 2 Technical Data

Control voltage	24V DC
Air connection	G 1/4" / DN 6.3; 5-10 bar
Clamping cylinder	Ø 45 x 36 mm stroke F= 790 N at 5 bar
Gas nozzle (outer diameter)	min Ø 20 mm - max Ø 34 mm by means of different shim plate thicknesses per Ømm

Milling cutter, V-block and shim plate for standard torches PKH and PKI 500 with torch outer diameter Ø 28 mm.

(Please enquire about milling cutters, v-blocks and shim plates for special torches)

Air motor	n= 950 rpm Md= 3 Nm Stroke= 45 mm Shaft end Ø 9x16 length	
Air consumption	25 litres/cycle	
max. welding wire diameter for cutting:	d= 1.0 mm, steel d= 1.2 mm, steel d= 1.2 mm, aluminium	min. air pressure 5 bar min. air pressure 6 bar min. air pressure 5 bar
Dimensions	approx. 430x300x1300 mm height	
Weight	28 kg	

### Selection table

Shim plate thickness:

f. gas nozzle external diameter	h = [mm]	f. gas nozzle external diameter	h = [mm]
Ø 20	9,91	Ø 21	9,25
Ø 22	8,60	Ø 23	7,95
Ø 24	7,30	Ø 25	6,64
Ø 26	5,99	Ø 27	5,34
Ø 28	4,68	Ø 29	4,03
Ø 30	3,38	Ø 31	2,73
Ø 32	2,07	Ø 33	1,42
Ø 34	0,80		

## 2.1 Dimension sheet TC 96

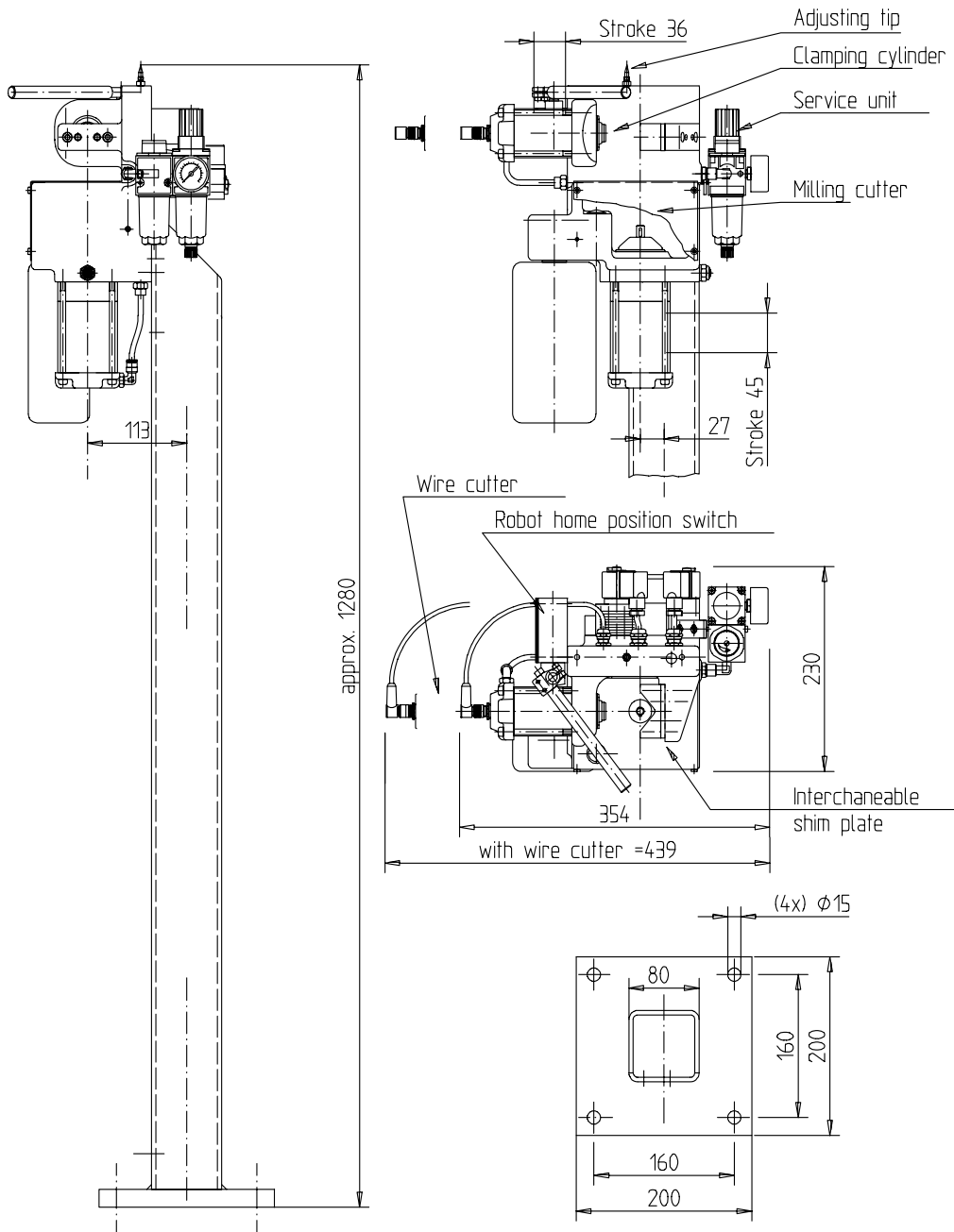


Figure 1. Dimension sheet TC 96 (Drawing No. 81-0383.01.00 "a")

Built :	for robot control :	Overall height "H" :
Until October 1998	S 4	about 1,280 mm
From November 1998	S 4 C	about 935 - 1,330 mm

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## 3 Safety

- The content of the recommendations described here must be seen as additional to the normal regulations valid at a workplace.
- The owner of the torch cleaner TC 96 is responsible for proper erection, installation and use of the equipment in accordance with the manufacturer's instructions. The standards and safety regulations of the country of installation must be observed.
- The TC 96 must be used only for its designated purpose. A prerequisite for use is that the installed and delivered parts have not been damaged and are functional before operation.
- The owner of the TC 96 is responsible for safety precautions for the personnel who work with the system or who are in its proximity.
- The following must be observed for all work on the TC 96:
  - The TC 96 is normally integrated in a welding robot system. The welding robot system must be seen as a unit and consists of many different parts which may include positioning systems and other related devices in addition to the TC 96 and the welding robot.
  - All the equipment of a welding robot system is linked by means of an electric signal circuit. This means that movements can be initiated in completely different parts than those which are directly influenced by signals.
- Commissioning must be performed only by corresponding specialist personnel. Putting into operation is prohibited until it has been established that the installation is ready for use and complies with EU directive 89/392 EEC.
- Personal protective equipment, such as welding helmet with anti-glare glass, safety shoes, protective clothing and gloves for protection against radiation and burn injuries, must be worn.
- There is always a risk relating to being in the working area of a robot installation. The robot and positioning unit possess considerable forces even at reduced speeds.



### **Fire hazard**

- When carrying out welding work there is a fire hazard. For this reason, no other spray fluid than that specified by the manufacturer may be used. The corresponding order number is included in the spare parts list in this manual.



- Do not touch the torch head or other hot work pieces directly after welding work under any circumstances. Use protective gloves!

**Safety**



**Possible hazards from spray fluid:**

The manufacturer has a safety data sheet in accordance with 91/155/EEC for the spray fluid available from the manufacturer. This is defined as follows:

- Hazard designation: not applicable
- Hazard instructions for humans and the environment: not applicable
- First aid measures:
  - Inhalation: no special measures necessary.
  - Eye contact: Rinse out with plenty of water, consult a doctor if necessary.
  - Skin contact: Wash with water and soap, cream skin.
  - Swallowing: Induce vomiting.
- Measures for firefighting: Extinguishing agent: CO2 extinguishing powder or water spray jet

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## 4 Transport

- The complete torch cleaner unit is:
  - packed horizontally in a cardboard box, when supplied as a single unit. The filling material is CFC-free and can be recycled.
  - screwed vertically onto pallets, when several units are supplied
- The transport unit is therefore suitable for transport by means of a fork-lift truck.
- When packed, the torch cleaner unit corresponds to the general transportation profile for road transport .
- The transport weight is approx. 35 kg.
- Only approved specialist freight forwarding agents may be used for transport.



- **The transported goods must be secured on the loading surface so that they cannot slip. Packaged items which are particularly at risk of tipping must be additionally secured.**

*Torch cleaner TC 96*  
***Transport***

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## 5 Technical description

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### 5.1 Assemblies and accessories

The torch cleaning unit TC 96 primarily consists of the following components:

- Stand
- Pneumatic clamping cylinder
- **Motor pack** (Motor/feed unit)
- Milling cutter
- Spray device
- **Ventilation circuit** with valves and maintenance unit
- **Wire cutter**
- **TCP gauging**

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### 5.2 Torch cleaning unit

The torch cleaning unit TC 96 is highly suitable for cleaning the gas nozzle fouled by welding spatter of robot inert gas welding units. The special feature of this type of cleaning has been patent protected since 1983, and has been repeatedly adapted to market requirements since that time.

*TC 96 implies: T = Torch; C = Cleaner; 96 = Generation 1996*

In conjunction with a TCP measuring device, the unit is known as TSC.

*TSC implies: T = Torch; S = Service; C = Centre*

#### **Stand**

The TC 96 is fitted as standard with a stand for floor fitment. It consists of a square tube with base fastener for base assembly.

- **On units built up to October 1998 :**  
the stand has a predefined height up to the measuring tip of about 1,280 mm.
- **On units built up to November 1998 :**  
the stand is height adjustable, with a height up to the measuring tip of about 1,280 mm - 1,330 mm.

## Technical description

### Height adjustment

- Upon delivery as an individual component, the TC 96 is supplied with a height of 1,330 mm. The customer must set the optimum height in situ, which must **subsequently be pegged!**

Adjust the height as follows:

#### **On TC 96, without TCP:**

Initially leave height at 1.330 mm. Then adjust the height of the stand so that the robot reaches the TC 96 along the shortest (and thus the fastest) route, i.e. horizontal swivelling in of the robot arm with minimum height movement.

#### **On TC 96, with TCP:**

Normally, about 200 mm lower than described above.

- Where the TC 96 is integrated in a welding unit by ABB, the height is adjusted by ABB and is then pegged after it has been taken into use.

### Motor pack

The air motor is integrated in the pneumatic feed cylinder to form a joint motor pack. The end of the shaft of the air motor carries the milling cutter.

### Milling cutter

Suitable **milling cutters** are available for the pertinent weld torch nozzles for internal, external, respectively internal and external cleaning. The milling cutters are customer dependent and a separate order must therefore be placed for these.

### Spray device

The spray device consists of a 3/2-way valve, the spray head and the spray fluid tank. The spray device moistens the cleaned contact and gas nozzle with silicone-free weld spatter release agent, thus preventing a premature deposition of weld spatter.

### Clamping cylinder with V-block

The welding torch is pressed against the tensioning V-block by the pneumatic clamping cylinder and is thus firmly clamped during milling. So that the welding torch is clamped **centrally** to the milling cutter, the V-block must be set up to the pertinent torch diameter by means of a suitable shim plate.

### Ventilation circuit with valves and maintenance unit



## **Exchangeable components**

The exchangeable components include:

- **Milling cutters** for internal, external, respectively internal and external cleaning (order specific).
- **Exchangeable shim plate** for the clamping V-block (order specific).

Adjustment of the milling cutter and clamping V-block to the pertinent welding torch is made by means of just 2 components

- the cleaning tool (milling cutter)
- and the clamping device (V-block shim plate)
- **Weld spatter release fluid:** 1 litre silicone and CFC-free spray fluid  
or
- **Weld spatter release fluid:** 5 litres silicone and CFC-free spray fluid

## **Function of torch cleaning**

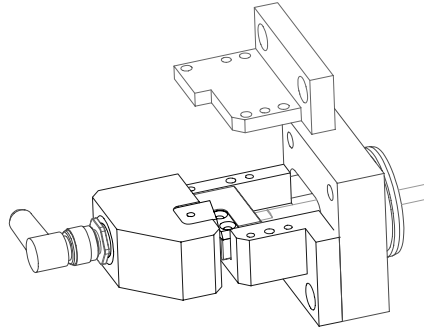
The cleaning process of the TC 96 is carried out automatically by a rotating tool (milling cutter); the welding torch to be cleaned is clamped for this a retainer fixture (V-block). This has the advantage that the reaction forces of the cleaning tool cannot be transferred to the robotic wrist. In a single process, the external surface of the contact tip and the inner surface of the gas nozzle is freed from welding spatter. On request, the external surface of the gas nozzle can also be cleaned.

Of particular important here is that the cleaning process can be set within the standstill period of the robot, so as to achieve short cycle times. The cleaning cycle and the cleaning time are set in the robot program. The feed velocity for the cleaning tool can be adjusted by means of a damper on the feed cylinder. A particularly effective cleaning result is achieved through the use of the spraying device which moistens the contact tip and gas nozzle with silicone-free weld spatter release agent thus preventing a premature deposition of weld spatter.

## 5.3 Wire cutter

### Description of the wire cutter

The wire cutter is an attachment for the torch cleaning unit TC 96.



*Figur 2. Wire Cutter*

With this accessory, you can cut the welding wire electrode to the required length.

You can improve the ignition behaviour and availability of your welding system by:

- cutting off bent or excessively projecting wire
- cutting off the end of the wire prior to every cleaning of the torch and prior to every TCP gauging
- cutting off the splatter formation on the end of the wire.

The cutting plate is mechanically linked with the clamping cylinder of the TC 96 and does not need any additional control elements.

You can also retrofit your TC 96 with the wire cutter.

### Retrofitment



A separate product specification with servicing instructions and a spare and wearing parts list is available for the "wire cutter".

This will provide you with further information as well as retrofitment instructions.

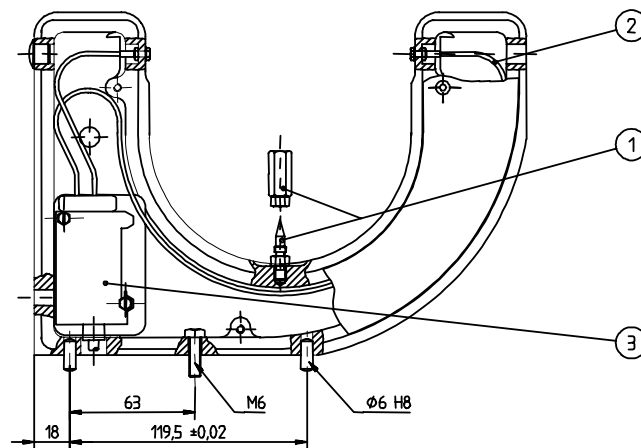
## 5.4 TCP gauging

### Description

The automatic TCP gauging is an attachment for the torch cleaning unit TC 96 and is used for quality assurance purposes.

Deviations in the torch TCP's are gauged and where the tolerance is exceeded, the torch coordinates system is automatically corrected.

You can also retrofit your TC 96 with the automatic TCP gauging.



Figur 3. TCP gauging.

### Fitment of the TCP to the torch cleaning unit

To attach the TCP gauging unit, you require:

1. Hexagonal bolt    M6 x 20        DIN 931
2. Parallel pins        dia. 6<sub>m6</sub> x 16    DIN 7

The hole pattern of the gauging unit and of the torch cleaning unit is drilled precisely at  $\pm 0.02$  mm.

- Initially, knock both parallel pins into the TC 96 to such a depth that they only project above the supporting surface by **max. 9 mm (!)**.  
**Otherwise there is a risk of damage to the electronics in the TCP !**
- Then join the gauging device onto both parallel pins and screw tight with the hexagonal bolt.



A separate product specification with servicing instructions and a spare and wearing parts list is available for the "automatic TCP gauging".

This will provide you with further information as well as installation and alignment instructions for the TCP.

*Torch cleaner TC 96*

***Technical description***

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## 6 Erection

- After the delivery is received, the complete torch cleaner unit must be inspected for any transport damage and checked for completeness by reference to the delivery note.
- Before starting erection work, secure the danger area "Construction site" to prevent unauthorized persons from entering the area.
- The torch cleaner TC 96 must be positioned vertically at a suitable location in way of the robot welding station. Suitable means:
  - Within the working area of the robot  
for IRB 1400 within R= 750 mm up to max. 1000 mm  
for IRB 2400 within R= 770 mm up to max. 1100 mm  
for IRB 2400L within R= 760 mm up to max. 1350 mm
  - Outside the interference edges of the workpiece chucking fixture
  - Outside the interference edges of the swivelling locator, turntable, swivel attachment, ...
  - Determine the optimum height of the TC 96 and subsequently peg the height adjustable stand!
  - The position of the robot home position should preferably be defined when deciding on the position of the TC 96.



-  When erecting the torch cleaning unit, make sure that you do not block any escape routes for the personnel.



-  **There is a risk of the torch cleaning unit tipping. It must therefore be bolted to the foundation immediately after erection!**

The required foundation is a steel plate or a concrete floor with a quality of at least B 25. The foundation must be an integral unit. Erection over an expansion joint is not permitted.

- Connect earthing cable.  
A thread, M8, is available for this purpose on the side, in the lower section of the stand.
- Remove combustible packaging material from the robot inert gas welding system (Fire Hazard!). Material which can be recycled, such as cardboard boxes, wood and CFC-free filling material, must be deposited accordingly in a recycling facility.

*Torch cleaner TC 96*

***Erection***

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## 7 Installation and commissioning

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### 7.1 Torch cleaning unit TC 96

- When installing the TC 96, make sure that cables do not come into contact with sharp edges. **Cables should be routed** in cable ducts wherever possible. The risk of tripping over cables should be minimised.
- For **electrical installation**, the mains voltage of the control section which controls the TC 96 must be disconnected and the existing mains switch locked before work starts on the TC 96. The air supply for the TC 96 must be reliably shut off and the system kept in depressurised condition.
- The electrical control cable and the compressed air may only be connected by **trained personnel**.
- The **compressed air connection** is made via a hose nozzle, diameter 10 or by means of a threaded insert R 1/4" in way of the filter controller. The air pressure must be at least 5 bar and must not exceed 10 bar.
- The operating pressure is adjusted for the complete unit on the maintenance unit and should be adjusted. The **operating pressure** for the TC 96 must be at least 5 bar and must not exceed 7 bar. This applies equally for all air consumers in the unit.
- The **oil quantity flow rate** in way of the oil-mist lubricator should be 1 drop per 6-10 cleaning cycles, so as to adequately lubricate the air motor and the pneumatic cylinder.



-  Since the TC 96 is designed for operation in a system (protected installation cell), there is no direct risk to personnel during operation. The TC 92 must be connected so that the valves are de-energized upon activation of the **EMERGENCY STOP functions**.
- The machining time and **tool feed** are directly related to each other. If the tool feed is fully extended, the machining time should be programmed one second longer. Cleaning will not be complete if a shorter machining time is programmed.
  - The tool feed is set at the exhaust check valve, item 15 on the pneumatic circuit diagram.
  - The machining time is controlled by the robot control by means of the cleaning program.
  - The feed velocity is about 20 mm/sec., i.e. for the 45 mm stroke, set at about 2 - 2.5 sec.

## Installation and commissioning

- **Spraying device**
  - Prior to taking into use, fill the **fluid tank** with the original spray fluid.
  - The **spray quantity** is adjusted by means of the spray head screw (item 52), located axially below the spray head (item 51).  
The following is recommended as a rough setting:
    - 1 Close setting screw completely.
    2. Open setting screw by a ¼ turn.During the starting-up phase, the optimum spray quantity should then be adjusted.
- If parts belonging to the TC 96 are to be used either individually or together with other equipment, the conversion work required for this must be carried out by trained specialist personnel.



- All the protective and safety equipment must be present before the TC 96 is taken into use. This must be observed particularly for servicing and maintenance work.
- When carrying out test or programming work, make sure that the welding torch is correctly inserted in the TC 96 by the robot.
- When testing the TC 96 in conjunction with a welding torch, make sure that no ejected welding spatter, metal swarf or spray fluid can come into contact with the eyes during the cleaning process.



- Make sure that no fingers get caught in the rotating milling cutter or the holding fixture (V-block).



- Make sure that the protective cap is screwed onto the measuring tip before taking the TC 96 into use or after calibration or adjustment work. If this is not observed, there is a risk of injury from the measuring tip.
- **After installation**, the following points must be checked before putting into operation:
  - Is enough oil present in the oil mist tank?
  - Is there sufficient spray fluid in the fluid tank?
  - Are all parts and covers in their correct place?  
(e.g. protective cap for measuring tip)
  - Is the TC 96 functional?
  - Have any tools been forgotten?



### **7.1.1 Converting to a different type of torch**

Where the type of torch on the robot is changed, and the gas nozzle diameter and length change accordingly, the TC 96 must be re-equipped:

#### **Replace the milling cutter and V-block spacer plate:**

- To replace the milling cutter and V-block spacer plate, please remove the safety cover.
- Unscrew the tapped stud M 5x6 in way of the milling cutter, and remove the milling cutter.
- Insert the new type of milling cutter and clamp with the tapped stud M 5x6.

When the first milling cutter is fitted in the factory, the core hole M5 is drilled about 1 mm deep in the motor shaft, so as to absolutely prevent axial movement of the milling cutter.

When changing the milling cutter, ensure that the shaft on your unit is drilled. If this has not been done (in an older unit), you yourself can retro-drill the shaft.

- The V-block is screwed on with 2 cheese-head bolts M6 and is pegged. The correct V-block spacer plate thickness is determined by the gas nozzle diameter.
- After exchanging the milling cutter, reattach the safety cover.
- In the robot program, correct the centre offset of the torch nozzle!

*Torch cleaner TC 96*

***Installation and commissioning***

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## 8 Functional sequence

The robot is in the home position. The welding torch is normally located inside the torch cleaner unit above the spray head.

### Cleaning

After launching of a cleaning program stored in the robot

- the welding torch travels to the cleaning position of the torch cleaner.
- As soon as the welding torch has reached the cleaning position, the clamping cylinder fixes the torch in the V-block.
- The air motor of the tool starts to rotate.
- The tool unit with the milling cutter travels vertically upward into the torch and cleans the welding spatter on the torch.

*The machining time and tool feed are directly related to each other. If the tool feed is fully extended, the machining time should be programmed one second longer. Cleaning will not be complete if a shorter machining time is programmed.*

- When the cleaning time defined in the cleaning program has elapsed, the tool unit, the tool motor and the clamping cylinder travelled back to their home positions.

### Blowing out

- The swarf remaining in the torch can now be blown out by means of the blow-off valve.

### Spraying

The program receives a signal from a reed switch when the clamping cylinder is in home position. This feedback signal starts the following spraying program:

- The robot moves the cleaned welding torch into spraying position at a height of approx. 34 mm above the spray head.
- The spraying device moistens the torch head with an anti-stick fluid which prevents the premature deposit of welding spatter.
- The duration of spraying is defined in the program. Spraying briefly twice is better than spraying once for a long time. Spraying is terminated when the defined time elapses.
- If there is no wire cut-off program, the robot travels to home position and signals the end of the program as well as the start condition for further execution of the welding program.

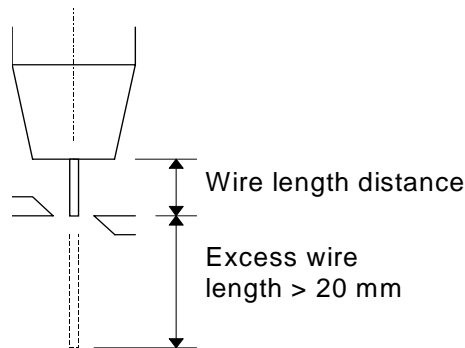
## Functional sequence

### Wire cut-off

The robot is in home position. The welding torch is normally located inside the torch cleaner above the spray head.

After launching of a wire cut-off program stored in the robot,

- the cutting blade opens (the clamping cylinder thus closes automatically because both movements are coupled with each other).
- The welding torch moves to the desired wire length distance (e.g. 10 mm) above the blade to the wire cutting position of the torch cleaner unit.
- The wire feed supplies an excess length of welding wire of **at least 20 mm**. (An excess wire length of at least 20 mm is necessary in order to prevent malfunctions due to the wire waste.)



- The cutting blade closes and cuts the welding wire to the desired wire length distance. The cutting blade and the clamping cylinder then return to their home positions.
- The robot traverses to the home position and signals the end of the program and that it is ready to continue with the remainder of the welding program.



**The TC 96 must be retooled if the torch type on the robot is changed (milling cutter and V-block spacer plates), and the robot program must be corrected.**

(see Chapter 7.1.1)

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## 9 Program example

### For ABB robots, System 4

Program example 9-1 : TC 96

```
MODULE TC98(SYSMODULE)
  VAR num nuReinZaehl:=0;
  VAR num nuReinZykl:=0;
  VAR bool boSpan:=FALSE;
  VAR num nuFKSpan:=0;
  CONST num nuReinZ:=2.5;

  PROC OrgTC98()
    Decr nuReinZaehl;
    IF nuReinZaehl<=0 THEN
      Reinigen;
      nuReinZaehl:=nuReinZykl;
      Spruehen;
    ELSE
      Spruehen;
    ENDIF
  ENDPROC

  PROC Reinigen()
    MoveL pSprue,vmax,fine,tool0;
    SpanTest;
    IF RunMode()==RUN_INSTR_FWD THEN
      MoveL pRein,v100,fine,tool0;
    ELSE
      MoveL pRein,v100,fine,tool0;
      Set doBrnAusbl;
      Set doRein;
      WaitTime nuReinZ;
      Reset doRein;
      Reset doBrnAusbl;
      SpanTest;
    ENDIF
    MoveL pSprue,vmax,fine,tool0;
  ENDPROC
```

**Program example**

```
PROC Spruehen()
    MoveL pSprue,vmax,fine,tool0;
    PulseDO doSprue;
    WaitTime 0.5;
ENDPROC

PROC SpanTest()
    WaitDI diSpan,1\MaxTime:=5\TimeFlag:=boSpan;
    WHILE diSpan=0 DO
        TPreadFK nuFKSpan," Clamping element not OK
        Rectify fault, press OK","OK","","","";
    ENDWHILE
ENDPROC
ENDMODULE
```

**Comments:**

This program is an example only!

The customer-specific program depends on the respective installation type.

**Trial run:**

Make sure that there is no compressed air connected to the TC 96 so that no uncontrolled movements occur.

Then run the subroutine for torch cleaning step-by-step. After the trial run, connect the compressed air supply again and run the program in automatic mode.



**Please check the welding torch position in the torch cleaner!  
(Danger of milling cutter breaking!)**

- **The contact tip, gas nozzle and milling cutter must be flush in clamped condition.**
- **The contact tip, gas nozzle and milling cutter must not jam!**

## 10 Maintenance

Please clean the unit with a brush to remove dirt. Do not use compressed air.

(Please use only the spray fluid offered by us. This fluid is silicone-free and guarantees that the nozzles do not become blocked.)

The quantity in the oil mist tank and in the spray fluid tank must be checked at regular intervals.

### Maintenance table

The following maintenance table shows the routine inspections and steps which must be performed during normal operation.



#### Attention

**The main switch must be switched off before the start of all service and maintenance work!**

Item	Machine part	Interval	Type of maintenance	Lubricant or other
-	Spraying and milling chamber	weekly	clean from chips	
64	Service unit Air filter	monthly	check for soiling	
64	Service unit Pressure regulator	weekly	Check pressure	Min. pressure = 5 bar
64	Service unit Oil mist reservoir	weekly	Check fill quantity	Mineral oil with 2-4° Engler at 50°C
56	Spray fluid tank 1 litre	weekly	Check fill quantity	ABB Order No. 0.743.505.003
var.	Cables and plug connections	monthly	Check for damage and kinks	
2	V-block	monthly	Check for wear	
6+7	Cut-off blade	weekly	a) Clean with brush and grease lightly. b) Check for wear.	Grease
-	Milling cutter	weekly	Check	for wear, damage and secure fit

***Maintenance***



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## 11 Disposal

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### 11.1 Overview of regulations in German waste disposal law

- Waste disposal law (AbfG)
- Waste and residual material monitoring directive
- Recycling and waste disposal law (KrW-/AbfG)
- Waste transport law
- Waste determination regulations
- Residual material determination regulations

There are a number of important ordinances and administrative regulations in addition to the Federal Waste Disposal Law and the waste disposal laws of the individual Laender.

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### 11.2 German recycling and waste disposal law (KrW-/AbfG)

The "Law to promote recycling and to ensure environmentally-friendly disposal of waste" (KrW-/AbfG) superseded the existing Waste Disposal Law when it came into force in October 1998. According to this law, waste is "all movable items which fall into the categories listed in Annexe A and which the owner disposes of, intends to dispose of or has to dispose of". The law makes a distinction between waste for disposal and waste for recycling, i.e. residual materials which are recycled are also covered by the recycling and waste disposal law. Disposal of waste must take place primarily within Germany. Waste avoidance has priority over waste recycling.

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### 11.3 Dismantling and scrapping

The installation can be scrapped after careful material sorting into the following categories

- Iron
- Aluminium
- Non-ferrous heavy metals
- Plastics
- Electric cables
- Oils and release agents

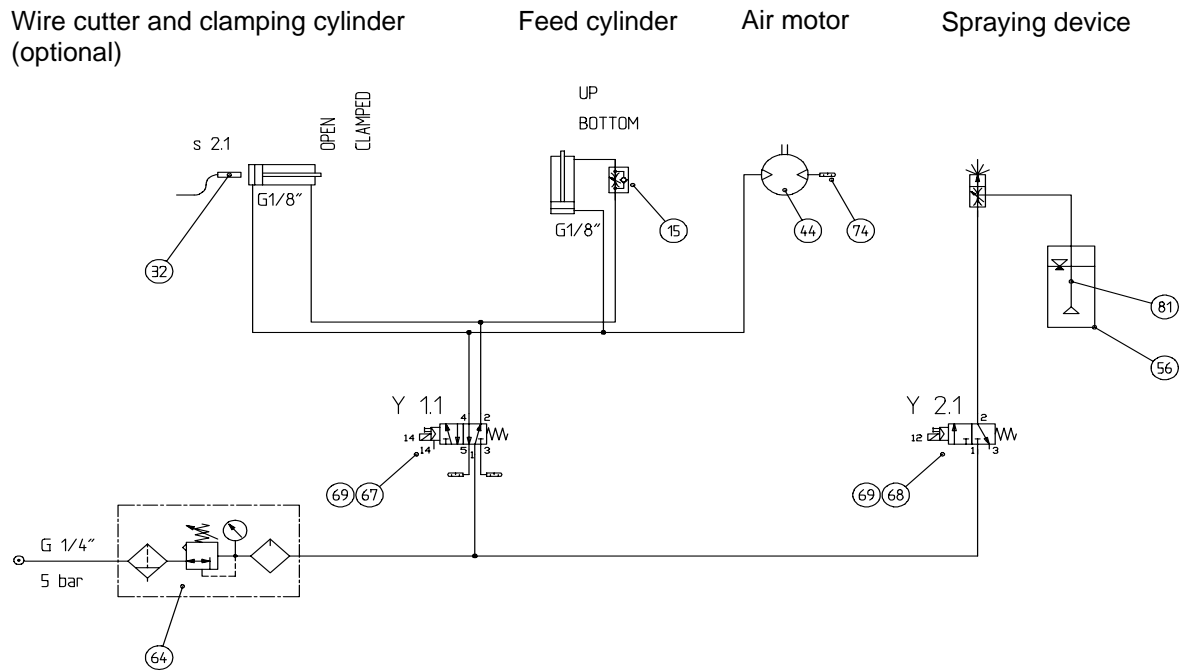
The owner is obliged to observe the valid national, state and municipal regulations.

*Torch cleaner TC 96*

***Disposal***

# 12 Diagram

## 12.1 Pneumatic circuit diagram

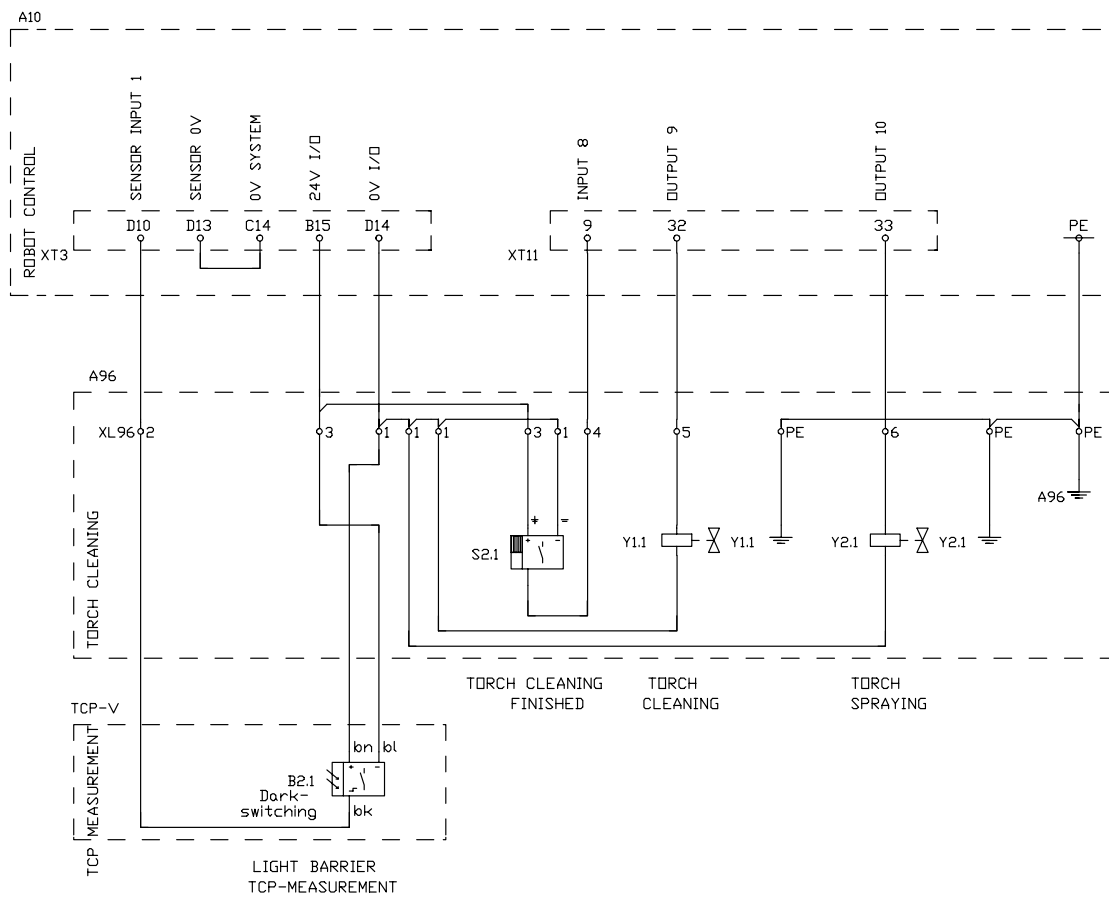


**Diagram**

**12.2 Electrical circuit diagram**

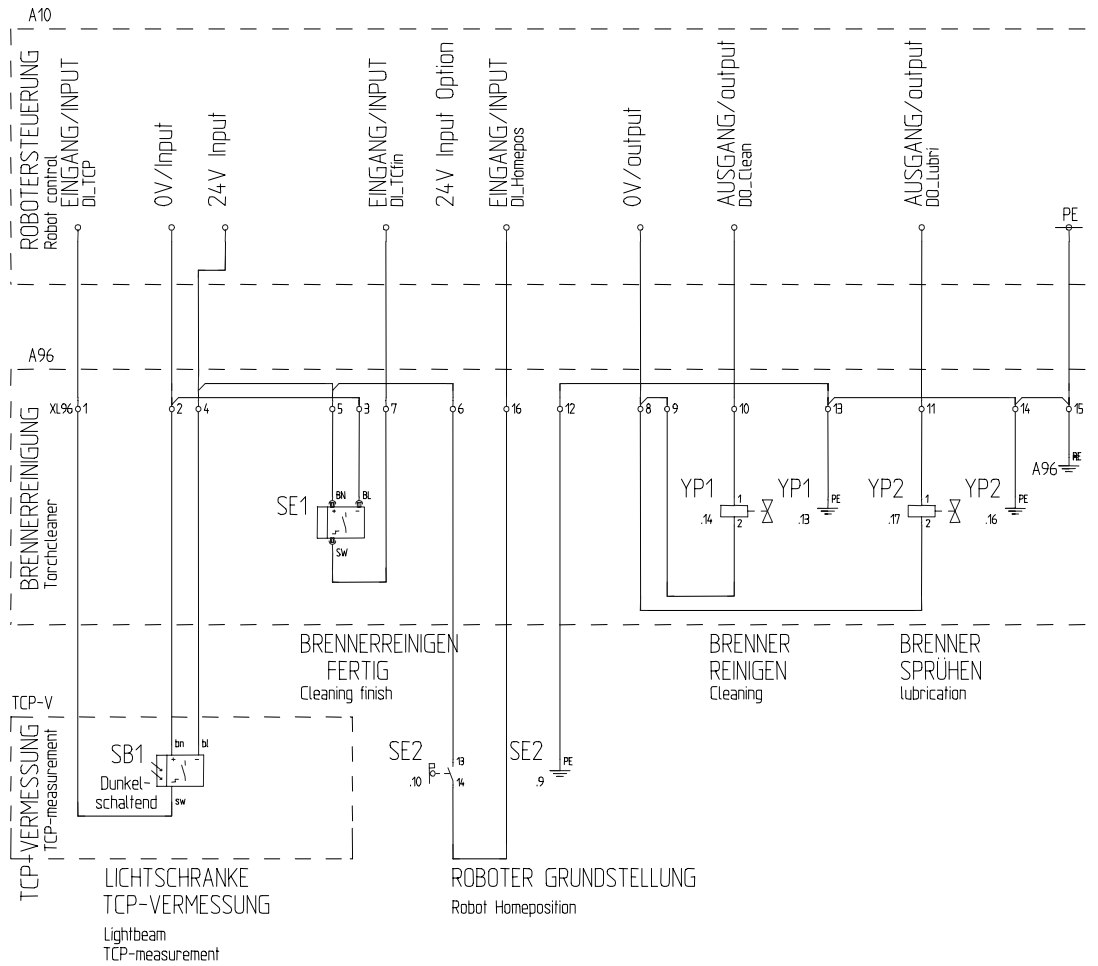
**For robot control S4**

Electric circuit diagram for TC 96 in conjunction with the option TCP gauging = (TSC)  
(built until October 1998)



**For robot control S4C**

Electric circuit diagram for TC 96 in conjunction with the option TCP gauging (= TSC)  
(built from November 1998)



*Torch cleaner TC 96*

***Diagram***

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## **13 Reservdelsförteckning/Spare Parts List**

Reservdelar beställs genom ABB Flexible Automation AB. Vid beställning var vänlig uppge typ och tillverkningsnummer samt benämningar och beställningsnummer enligt reservdelsförteckningen.

Rätt till ändring av specifikationer utan avisering förbehålles.

*Spare parts are to be ordered from ABB Flexible Automation AB. Kindly indicate type of unit, serial number, denominations and ordering number according to the spare parts list.*

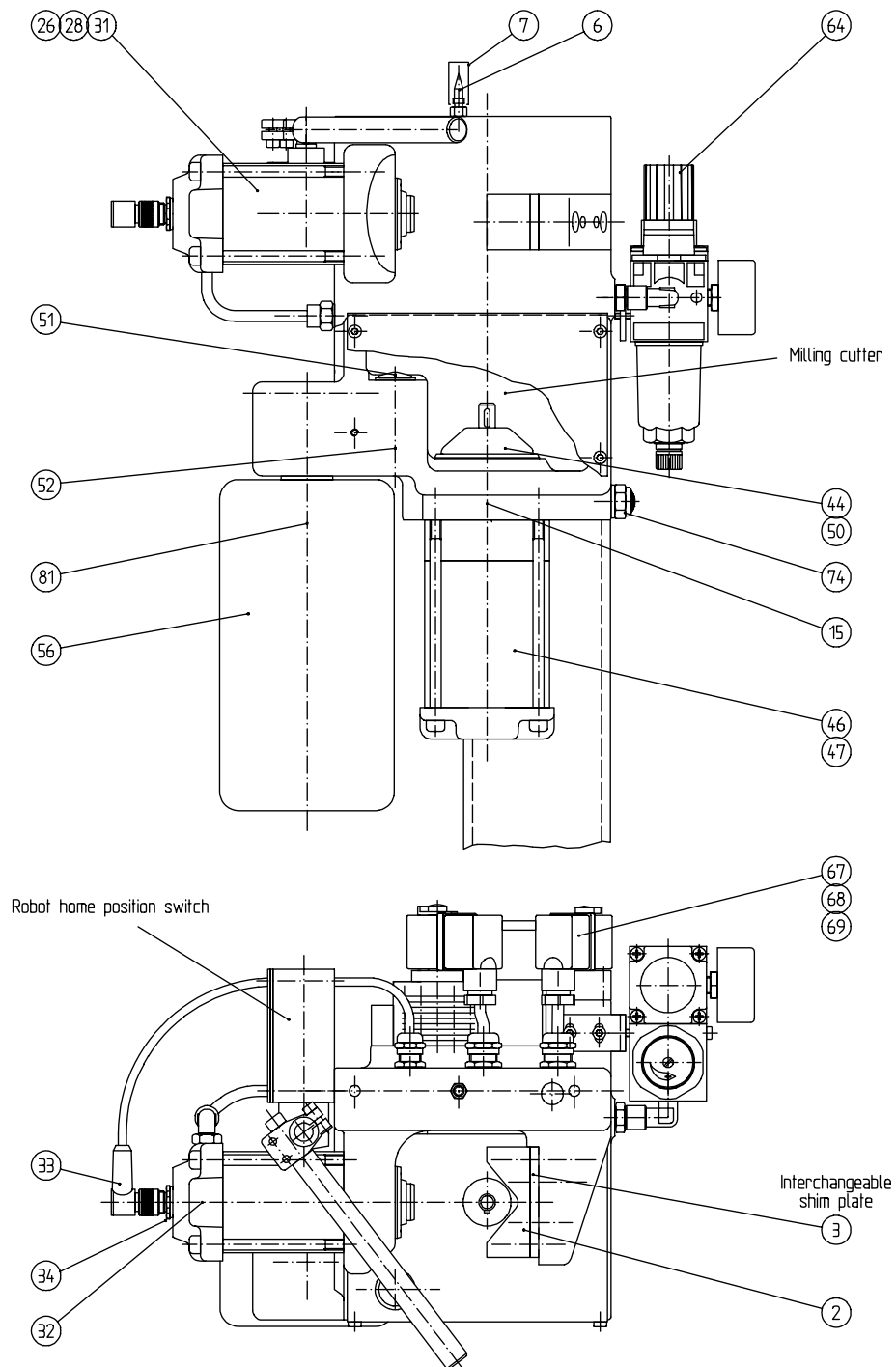
*Rights to reserved to alter specifications without notice.*

### 13.1 Torch cleaner with spraying device

Torch cleaner TC 96, complete with spraying device, stand and service unit, with milling cutter and V-block for standard torch Dinse + Binzel  
Ordering number: 0.746.800.004

Positionsnummer Position number	Antal Quantity	Beställningsnummer Ordering number	Benämning	Denomination	Anmärkingar Remarks
	1		Fräs (slitdel beroende på svetspistol)	Milling cutter (torch dependent wearing part)	
2	1	0.743.800.040	V-format block	V-block	
3	1		Distansplatta för följande gashylsor: (bytesdel beroende på svetspistol)	Spacer plate for the following gas nozzles (torch dependent replacement part)	
		0.746.124.005	gashylsa	gas nozzle	Ø 20 mm
		0.746.124.008	gashylsa	gas nozzle	Ø 23 mm
		0.746.124.009	gashylsa	gas nozzle	Ø 24 mm
		0.746.124.011	gashylsa	gas nozzle	Ø 26 mm
		0.746.124.013	gashylsa	gas nozzle	Ø 28 mm
		0.746.124.019	gashylsa	gas nozzle	Ø 34 mm
6	1	0.746.335.025	Mätspets	Measuring tip	
7	1	0.746.335.026	Skyddshylsa	Protective sleeve	
15	1	0.744.800.087	Kontrollventil	Throttle valve	1/8"
17-31	1	0.746.800.010	Spännacylinder, kompl.	Clamping cylinder, compl.	
33	1	0.742.800.437	Rund kontakt	Circular connector	
34	1	0.742.800.438	Flänskontakt	Flange plug	
44-45	1	0.745.700.004	Luftmotor, kompl. m passkil	Air motor, compl. with adjusting spring	
50	1	0.743.212.003	Tätningring för motor	Gaskets for motor	
51-55	1	0.741.800.005	Sprayhuvud, kompl.	Spray head	
56	1	0.743.505.003	Sprayvätska	Spray fluid	1 l.
64	1	0.744.800.088	Serviceenhet, kompl.	Servicing unit, compl.	1/8"
67	1	0.744.700.019	5/2-vägs magnetventil, med spole	5/2-way solenoid valve, with coil	
68	1	0.744.104.009	3/2-vägs magnetventil, med spole	3/2-way solenoid valve, with coil	
69	2	0.742.800.440	Kontakt med LED	Connectors with LED	
74	1	0.744.341.005	Stötdämpare	Silencer	G 1/4"
94	1	0.742.800.506	PVC-styrledning	PVC control cable	





*Torch cleaner TC 96*

***Reservdelsförteckning/Spare Parts List***



