



TSC – Torch Service Centre

Process equipment



Torch Service Centre – Makes your robot welding more effective and accurate

Robot welding stations are today a common and well known tool in the industry. The continuous development of robots, welding equipment and work piece positioners has dramatically decreased the cycle time and increased the uptime.

The worst load in a robot welding cell has the welding torch. It is exposed for heat, welding spatter and in worst case, collisions. Welding torches are made for such environment but need regular cleaning, measuring and TCP-definition in order to weld with good quality and accuracy.

It consists of two main units – a mechanical torch cleaner and a tool center point definer including a wire cutter.

Spatter – a production problem

It is impossible to avoid spatter during welding operations. Hot particles from the arc easily adhere into the gas nozzle. The problem is familiar to all

welders – a gradual build up of spatter in the nozzle leading to blocked wire feed and absence of shielding gas or short circuiting make the torch useless.

Even relatively small amounts of spatter in the gas nozzle affects the operation, giving poor starting and low quality weld as a result. But what is a nuisance to welders becomes a potentially serious problem to welding robots.

The Torch Service Centre is an integrated system for mechanically removing spatter from welding torches. The robot control system operates and supervises the cleaning operation to make sure that it will not start until the torch is clamped in the correct position.

This ensures that no vibration or shocks reach the robot and the torch is locked in the same position every time for more precise cleaning and less wear on the parts cleaned. The entire cleaning operation is automatic in one sequence, including mechanically cleaning, pneumatic cleaning and finally oil injection into the gas nozzle.

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“BullsEye” Accurate Tool Centre Point – absolute necessary at any robot operations

The Tool Centre Point, TCP, called BullsEye is the robot-motions centre point. In arc welding applications means a correct defined TCP that all robot motions starts from the wire stick-out at the contact tip. Consequently a bad defined TCP makes the robot not to follow the programmed path. Creating an accurate TCP is time demanding and the accuracy is depending on how careful the person doing the job is. Regular TCP confirmation is necessary because there are a number of things that can cause the welding torch to be out-of-position:

- A collision with the work piece, ex the robot hitting a fixture clamp which was left in the wrong position.
- In-correct Defined TCP.
- After exchange of the welding torch.
- After exchange of the swan neck.

The TSC provides completely automated Tool Centre Point definition. While setting up the robot station the TSC automatic define the tool centre point. During production running the robot can be programmed to go to the TSC at regular intervals, check the tool centre point, automatically make any necessary adjustments and go back to work with accurately defined tool centre point. The wire cutter ensure exact and consistent wire stick out length and make it possible for the TSC to define the tool centre point to the end of the wire and to the center of its diameter.

Real customer feed back information tell us that after introducing our automatic Tool Centre Point feature on exiting robot station have gain following benefits:

- Better up-time in the robot station, giving more production hours
- Improved welding quality, resulting in reduced repair cost to all most zero
- As they now can trust the TCP in their robot system, they faster locate other tolerance problems in their own part production.

Torch Service Centre – design

The mechanical torch cleaning system has a modular design and consists of:

- Torch cleaner unit TC 96 (gas nozzle cleaning)
- Tool Centre Point gauging and calibrating system
- Wire cutter
- Robot home position switch (optional) mounted on an adjustable stand
- Oil injection

TECHNICAL DATA, TSC

Weight	35 kg
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TC 96

Control voltage	24 V DC
Compressed Air	1/4 inch. Min. 6 bar
Control System	S4 with software 2.0 and later
Required memory	250 kB

WIRE CUTTER

Max. wire diameter to be cut	1,2/1,0 mm steel and aluminium
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TCP SYSTEM

Precision	+/- 0,16 mm
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Data and dimensions may be changed without notice.

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