

SCREW SYSTEMS

- » Screw technology
- » Screw tools
- » Measurement technology
- » Messtechnik
- » Visualizations
- » Rental models

System Setup

EVO Line

System Setup

Basic Function

TC-HC

TC-HF

TC-Ax

Feature Expansion

COMMUNICATION

Communication
ModuleModbus
ModuleExternal Start
Module

PROCESS

RELIABILITYHose
Sensor
ModuleSeparation
Sensor
ModulePressure
Monitor Module

FUNCTIONALITY

Vacuum ModuleDepth
Stop ModuleFeed
Stroke ModuleScrew
Counter ModuleFill
Level Control Module

ACCESSORIES

Hopper Module
TC-HF Holder
ModuleEC-COM
ModuleMaintenance
Unit Module



TCF-EVO Line

The basis for all screw feeders is always a single housing size.

- TCF-EVO-S
Pot diameter: 260 mm
Fill volume: 1 liter
- TCF-EVO-L
Pot diameter: 365 mm
Fill volume: 3 liters

Series Components TCF-EVO Line

The HMI includes a high-performance processor for the entire device control to optimize short cycle times.

High-efficiency noise protection hood.

A housing shape and size for all variants and types.

Configurable software-based feeding system including data backup and error memory.



Made in Germany

Stable design

Plug & Play System

100% testing before delivery.

Licensing system via modules and software keys.

4 connection points for the hose package, optionally at the front, right, left, or bottom.

Series Components TCF-EVO Line

Electrobox



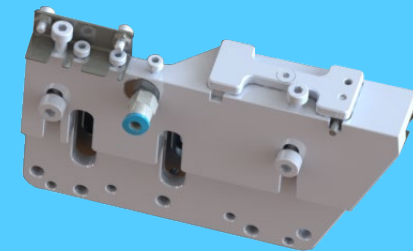
Enclosed electrical box including all electrical connections for all optional modules.

Valve Island



Expandable valve island.

Blow air nozzle.

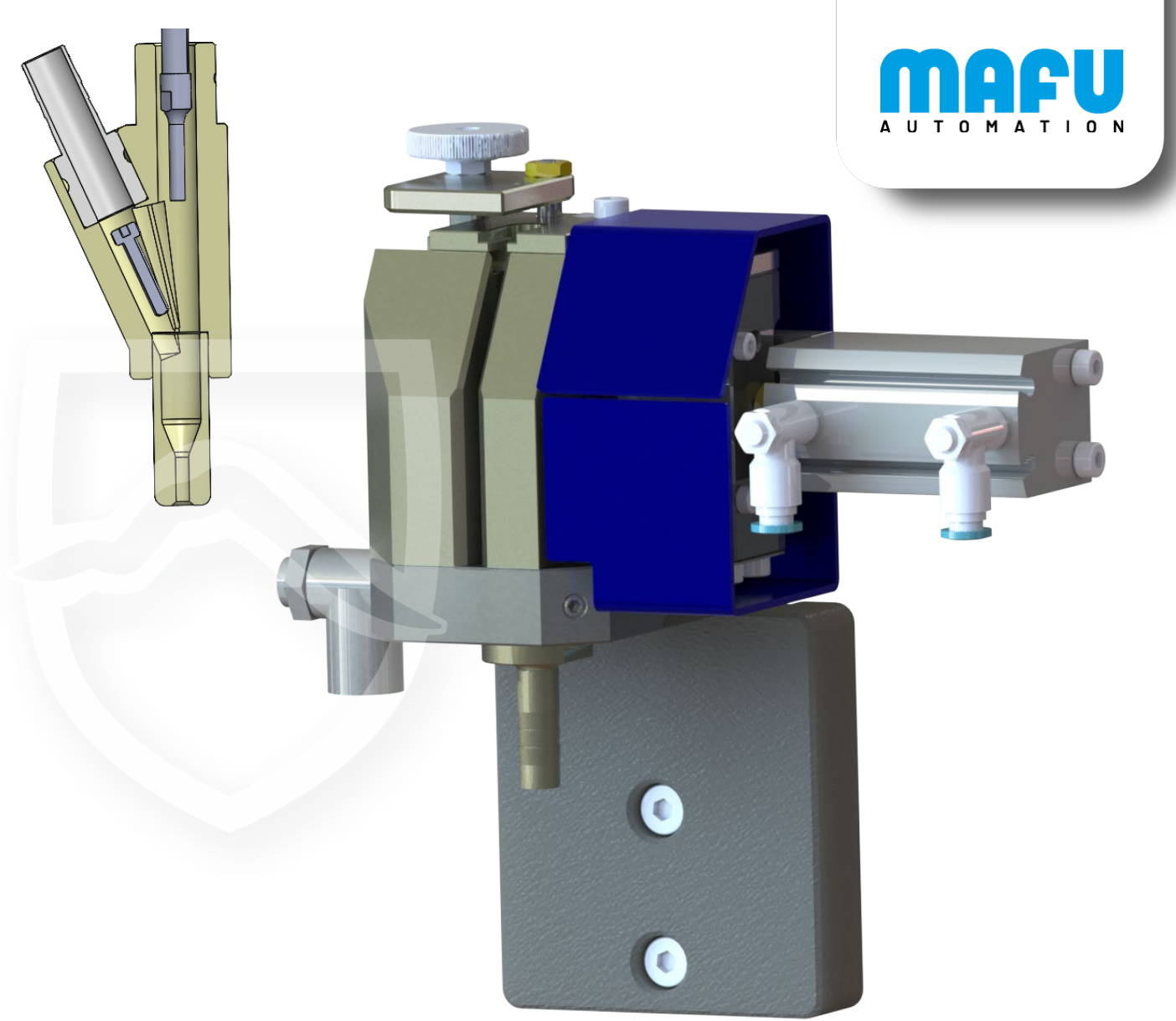


Adjustable blow air nozzle in the separation rail.

Series Components

TCE-EVO Line

- 5% custom parts 95% are standard parts

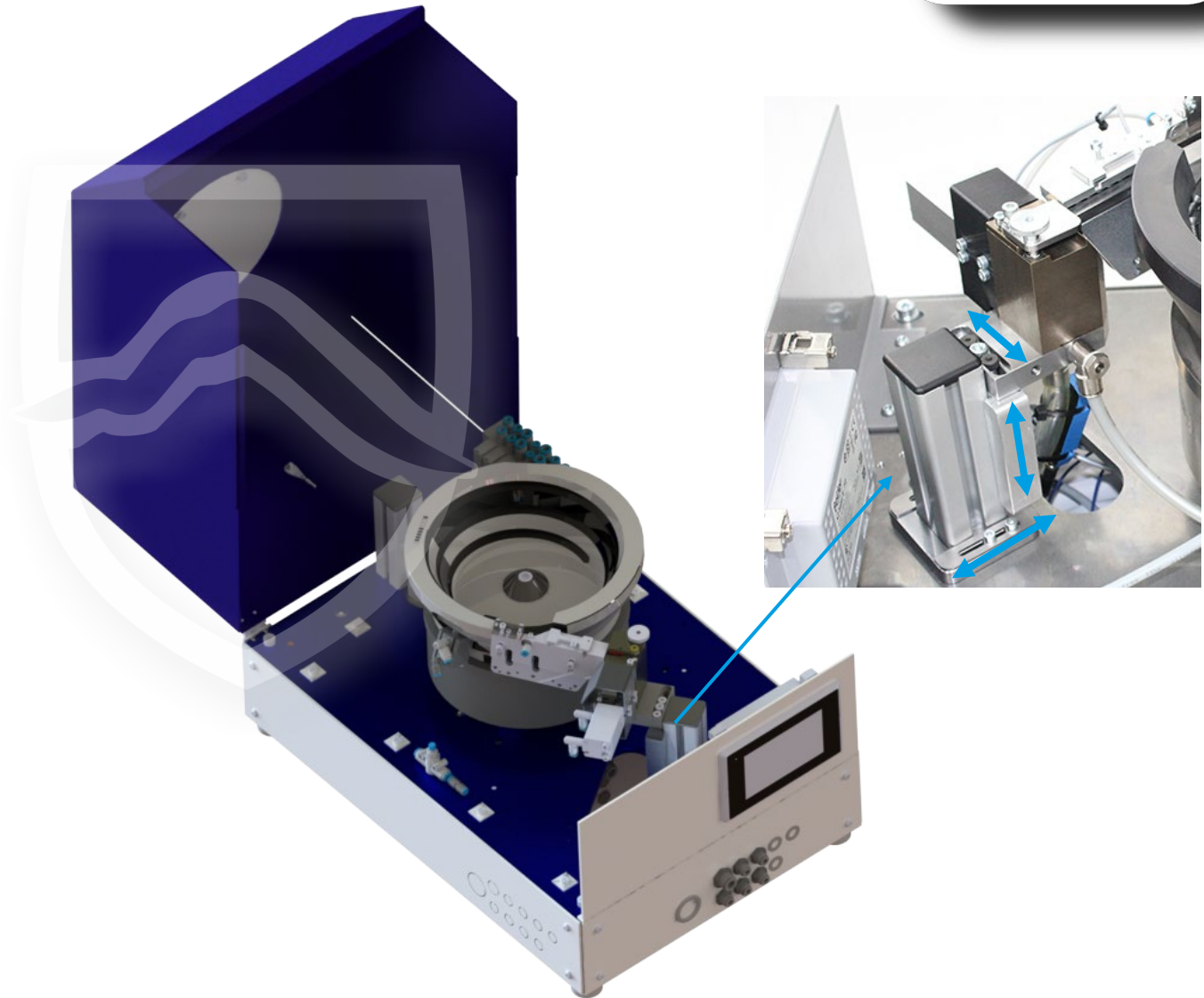


Series Components

TCE-EVO Line

- Easy accessibility for maintenance
- Stable construction
- Easily adjustable in all axes

MAFU
AUTOMATION

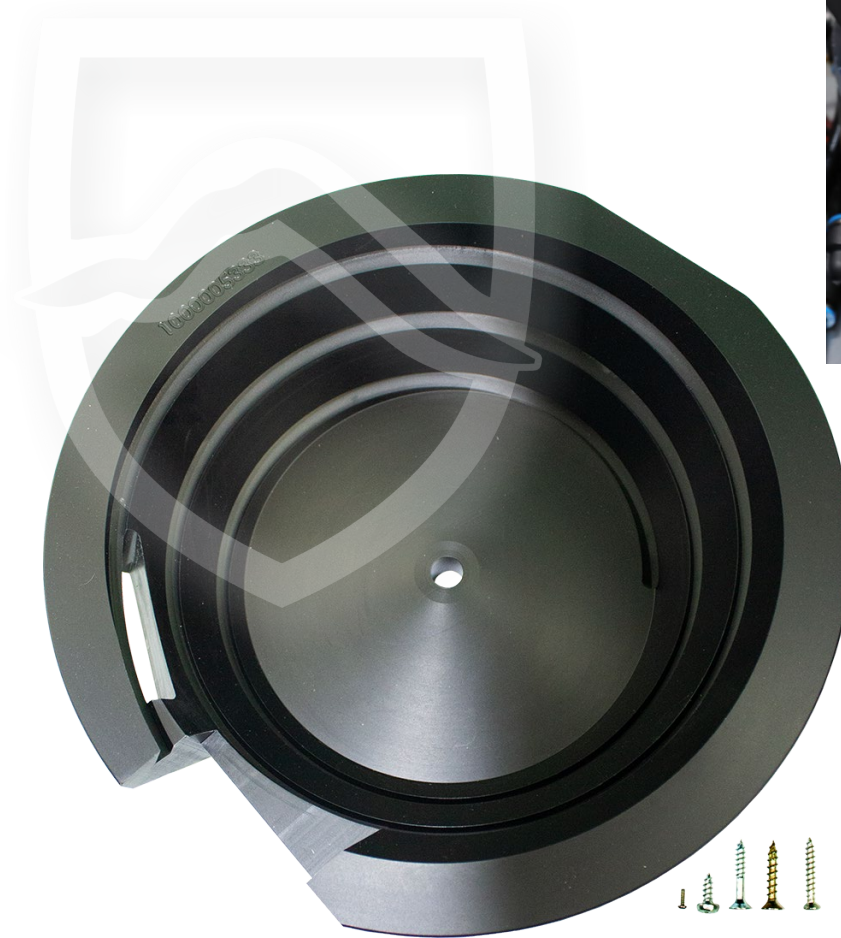


Series Components

TCE-EVO Line

- Frictionless plastic pot
- High-quality drive from MAFU HAVEMO

MAFU
AUTOMATION

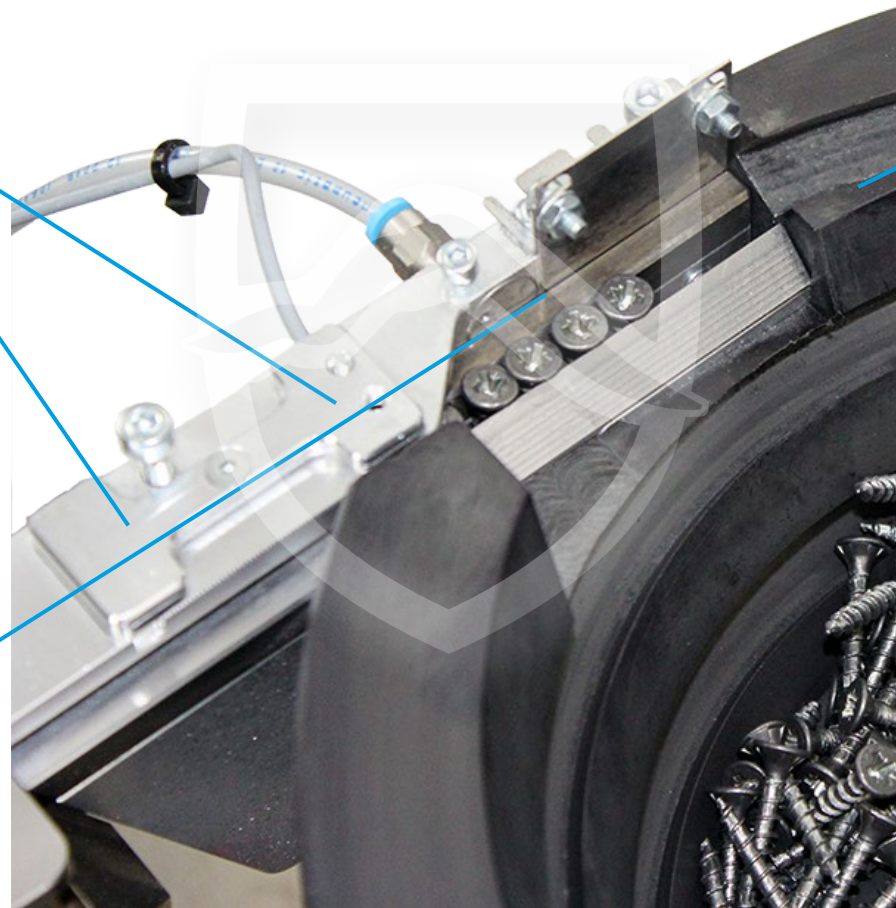


Series Components TCF-EVO Line

Adjustable sensor for SPIW –
To control the filling of the
buffer section

SPIW – Jam-free buffer
section through intelligent
spiral management

Adjustable blow air nozzle in
the singulation rail

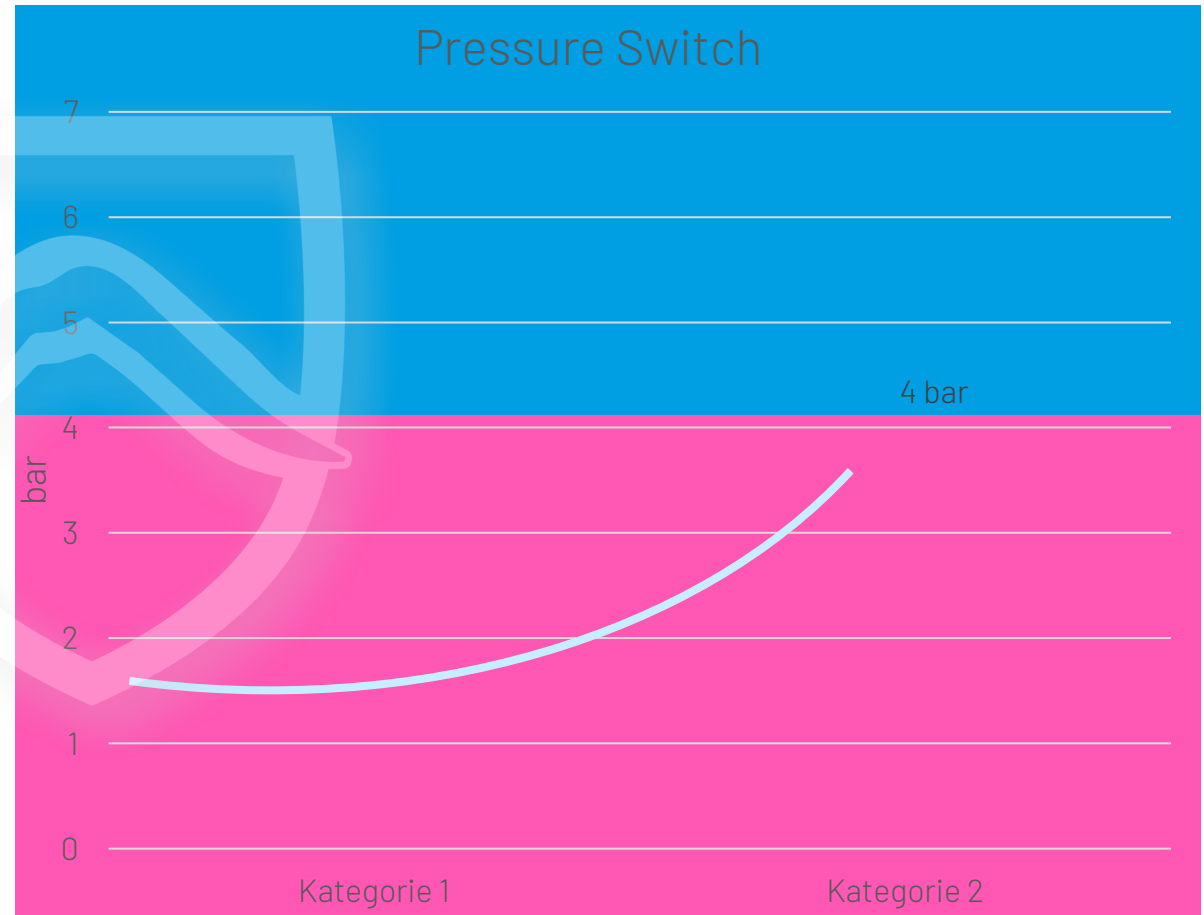


Series Components

TCE-EVO Line

The TCF EVO Line is shut down in the pink area (below 4 bar) during manual operation.

MAFU
AUTOMATION



Basic Configuration – Hardware

Screw feeding



TCF EVO Line S/L

TCF EVO Line S:
05221500100

TCF EVO Line L:
05221500101

Handsystem



TC-HS 05221500104

Handsystem



TC-HF 05221500105

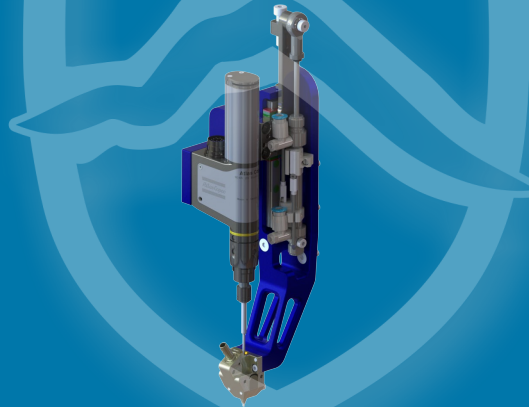
Basic Configuration – Hardware

Automated
systems



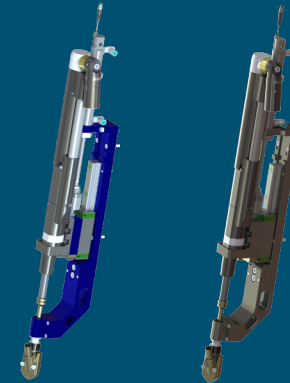
TC-HF 05221500105

Automated
systems



TC-AM 05221500110

Automated
systems

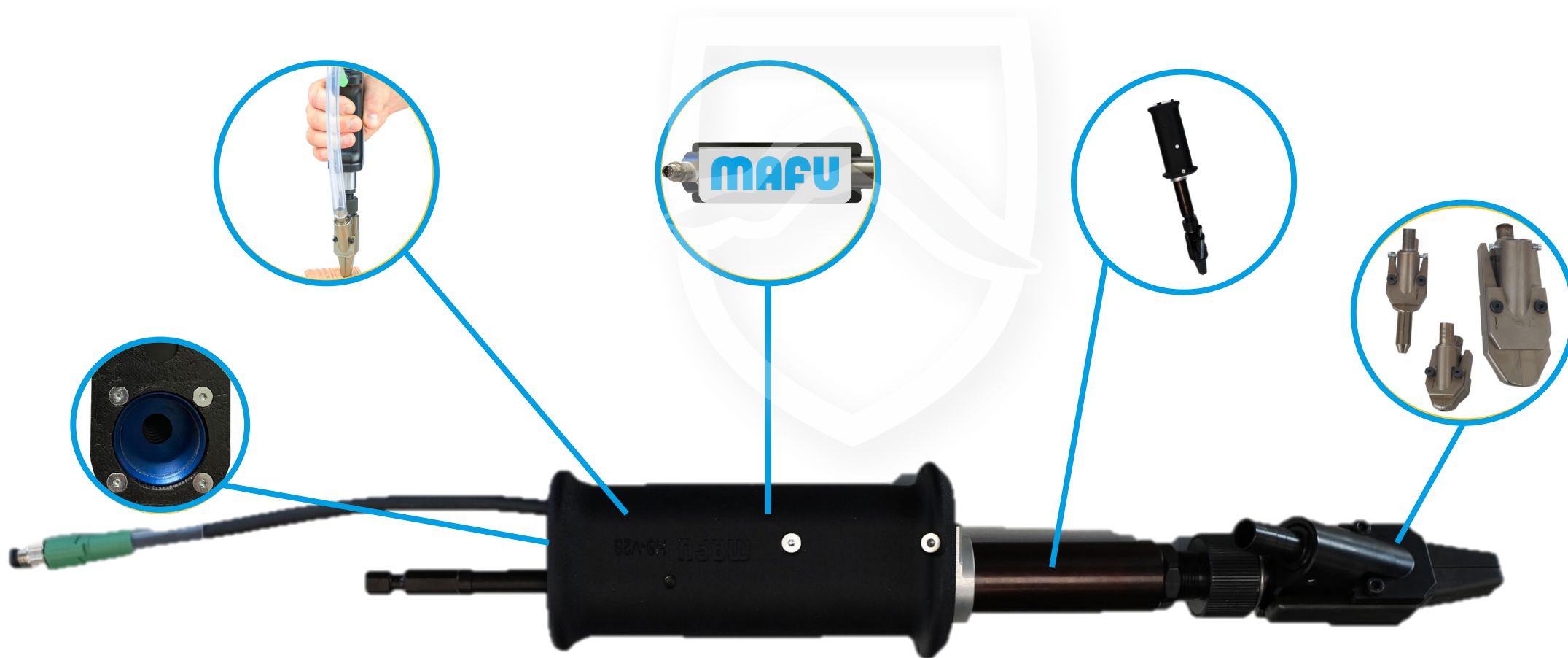


TC-AS 05221500111

TC-AH 05221500112

Series Components Handsystem

TC-HS



Series Components Handsystem

TC-HS

Open Interface



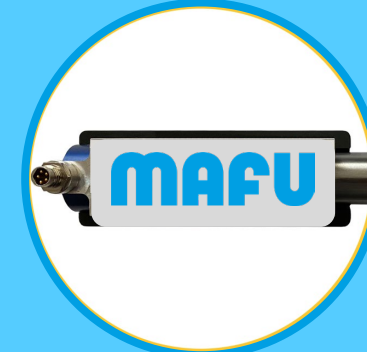
Through the open interface, all standard drives can be adapted.

Ergonomics



The TC-HS V2 features an ergonomic handle located directly behind the mouthpiece. This makes it easier to locate the screw point. The screwing process, including the screw stroke, is performed by the user pressing down on the handle.

Sensor Technology



The infinitely adjustable sensor technology monitors the entire stroke, preventing two screws from being present in the mouthpiece at the same time. The optional depth cut-off module is adjusted via the infinitely adjustable sensor technology.

Series Components Handsystem

TC-HS

Telescopic Screwdriver Unit

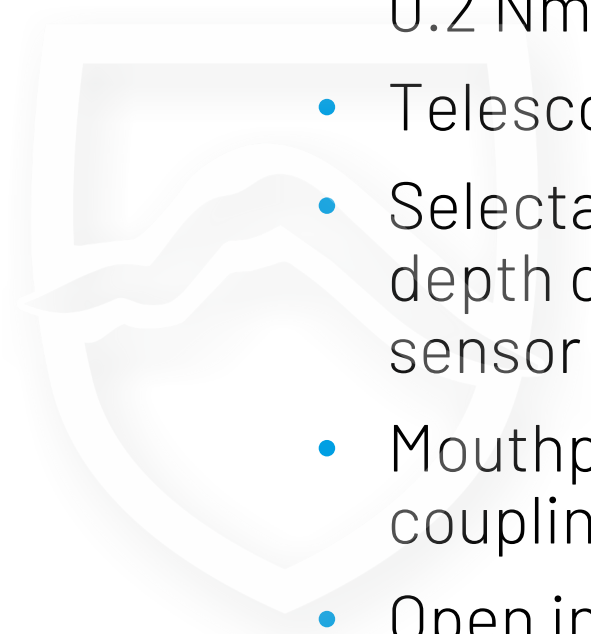


In the TC-HS V2 Telescopic Screwdriver Unit, the screw is guided through the mouthpiece during the entire screwing process. The screw stroke is actively performed by the user from the starting position to the completed fastening. The telescopic shaft is a specially hardened steel shaft with a ceramic guide, designed for the toughest stresses and a long service life.

Mouthpieces



The appropriate mouthpiece for your application is always included in the delivery scope. With our TC-HS V2, there are virtually no limits thanks to a wide variety of standard mouthpieces. If, however, a mouthpiece does not fit your application, we will gladly provide a custom mouthpiece.



- Low Height and Weight Torque: 0.2 Nm - 10 Nm
- Telescopic Screwdriver Unit
- Selectable torque, angle, or depth cut-off Infinitely adjustable sensor technology
- Mouthpiece with quick-release coupling
- Open interface

Facts

Series Components Handsystem

TC-HS



Series Components Handsystem

TC-HS

Mouthpieces



The appropriate mouthpiece for your application is always included in the delivery scope. With our TC-HS V2, there are virtually no limits thanks to a wide variety of standard mouthpieces. If, however, a mouthpiece does not fit your application, we will gladly provide a custom mouthpiece.

Ergonomics



The TC-HF V2 features an ergonomic handle located directly behind the mouthpiece. This makes it easier to locate the screw point. The screwing process is initiated via the handle by slightly moving it in the screw direction. The mid-position stroke prevents the screw from sliding back into the mouthpiece. An optional lever start is also available.

Strength Combined with Feed



Our powerful pneumatic feed achieves a standard screw depth of up to 30 mm. Deeper screw points can be realized with the optional depth package. Additionally, the optional vacuum module is available. This can also be retrofitted at the factory for systems that have already been delivered.

Series Components Handsystem

TC-HS

Inline / Open Interface



All connections are mounted on the back of the TC-HF V2, ensuring that the operator has no interfering cables in the work area. Through the open interface, all standard screwdrivers can be adapted.

Protected Adjustable Sensor Technology

The infinitely adjustable sensor technology monitors the entire stroke, thereby preventing two screws from being present in the mouthpiece at the same time. The optional depth cut-off module is adjusted via the infinitely adjustable sensor technology.

Facts

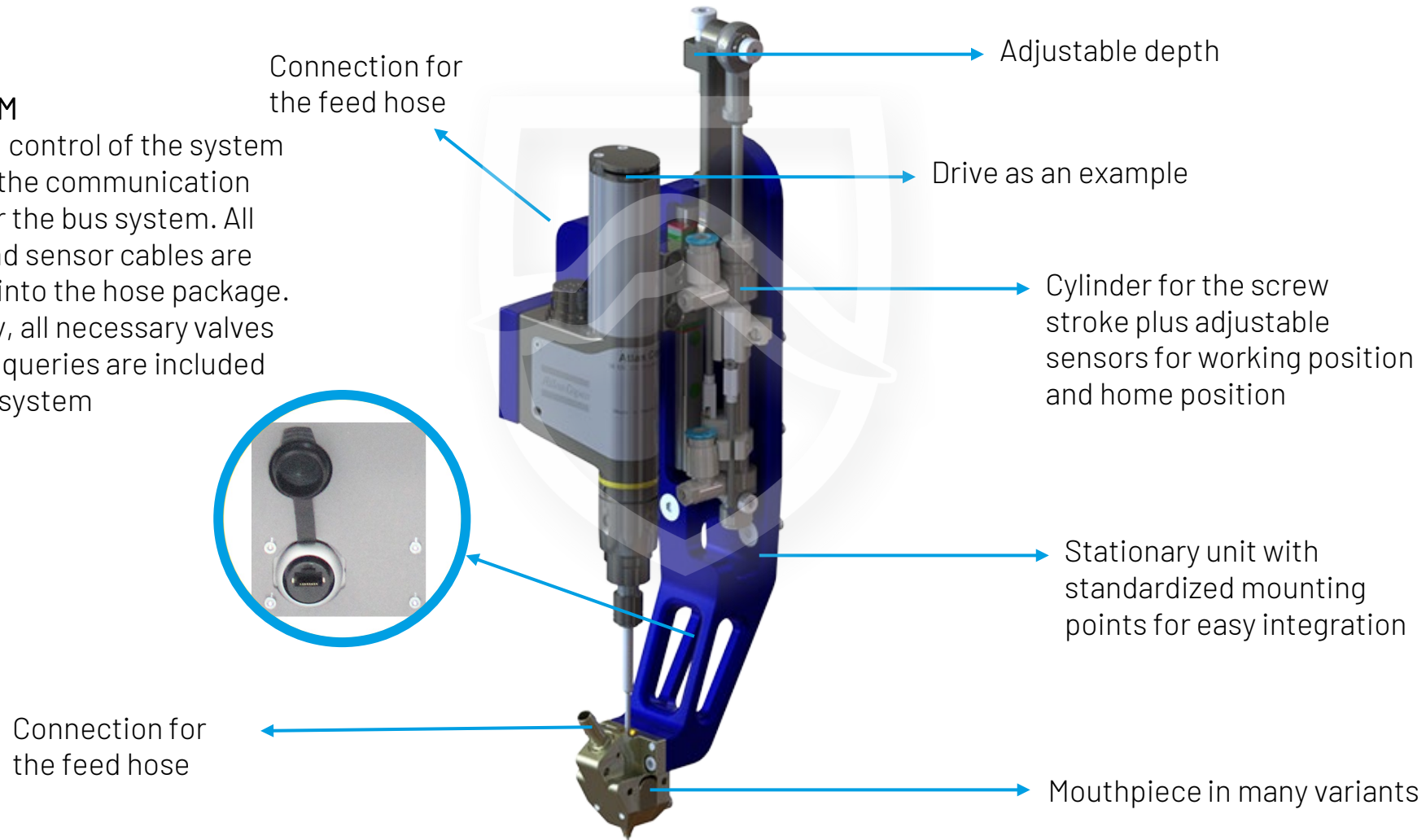
- Software-supported screw system
- Torque 0.3 Nm - 35 NmAdjustable two-stage stroke
- Control-monitored screw process
- Mouthpiece with quick release
- Sensors installed in a protected manner
- Various working positions

Series Components Handsystem

TC-AM

BUSSYSTEM

"The overall control of the system is done via the communication interface or the bus system. All actuator and sensor cables are integrated into the hose package. Additionally, all necessary valves and sensor queries are included in the feed system



- Overall length 265 mm (without drive)
- Weight 0.7 kg (without drive)
- Torque 0.01 Nm - 4 Nm Head diameter up to 6 mm
- High screw positioning accuracy
- Optional approach stroke
- Open interface

Facts

Series Components Handsystem

TC-AS

Cylinder for the screw stroke including adjustable depth plus adjustable sensors for working position and home position

Drive as an example

Open interface is factory-adjusted for your drive

Mouthpiece available in many variants

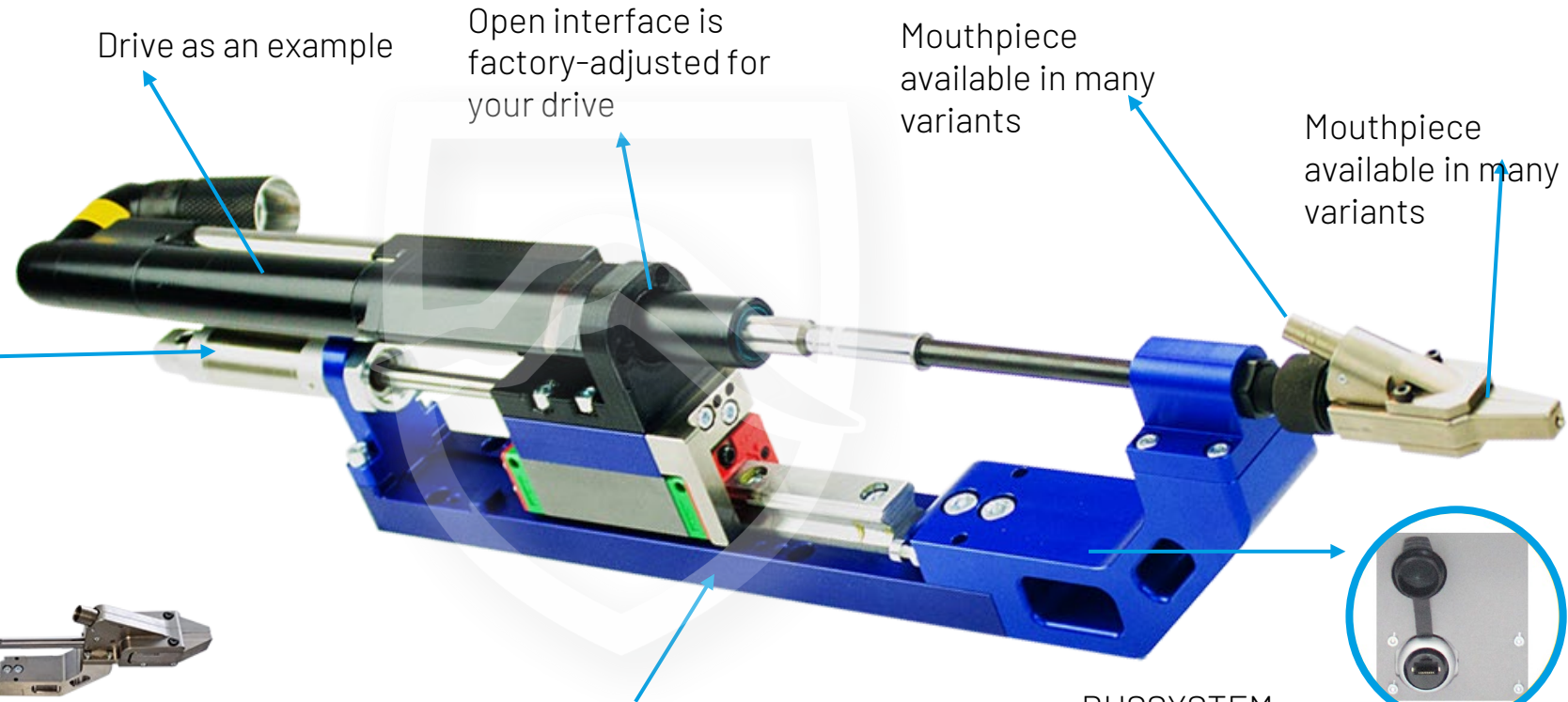
Mouthpiece available in many variants

TC-AH For high torques



Deviating facts

- Overall length 450 mm (without drive)
- Weight 8 kg (without drive)
- Torque 10 Nm - 50 Nm Head diameter up to 18 mm



Stationary unit with standardized mounting points for easy integration

BUSSYSTEM

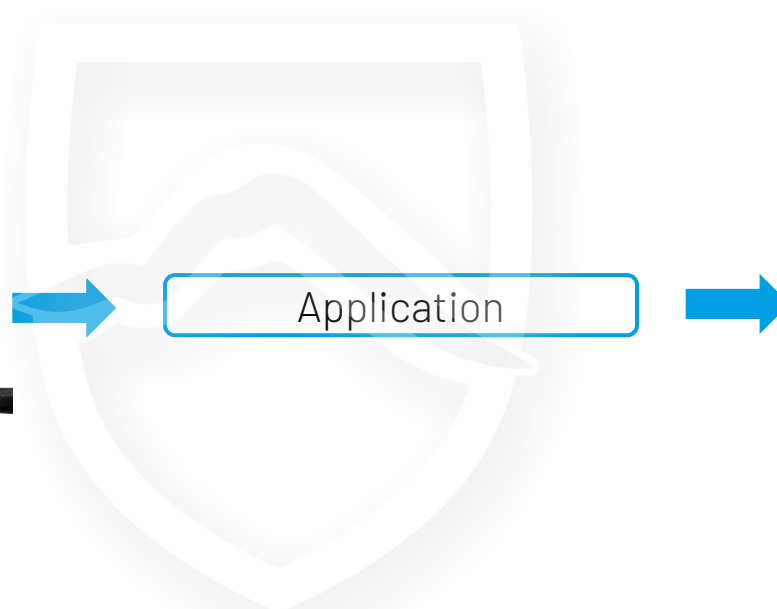
The overall control of the system is carried out via the communication interface or the bus system. All actuator and sensor cables are integrated into the hose package. Additionally, all necessary valves and sensor queries are included in the feed system.

Basic Functions

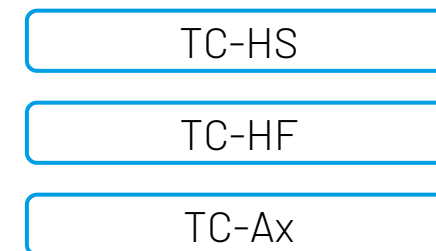
TCF EVO Line



TCF EVO Line S/L



BASIC
FUNCTIONS



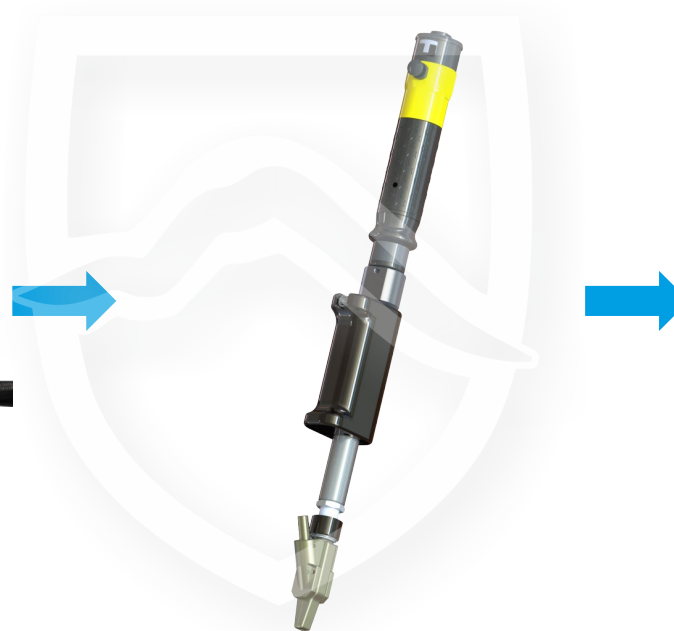
BASIC FUNCTIONS
-MODULE

Basic Functions

TCF EVO Line TC-HS



SCREW FEEDING



Basic FunctionsI TC-HS

05221500150 Modul TC-HS V2

Control Module TC-HS V2 für TCF-EVO

Software module for the functional integration of the standard handheld screwdriver.

Includes sensor query for free mouthpiece during automated reloading.

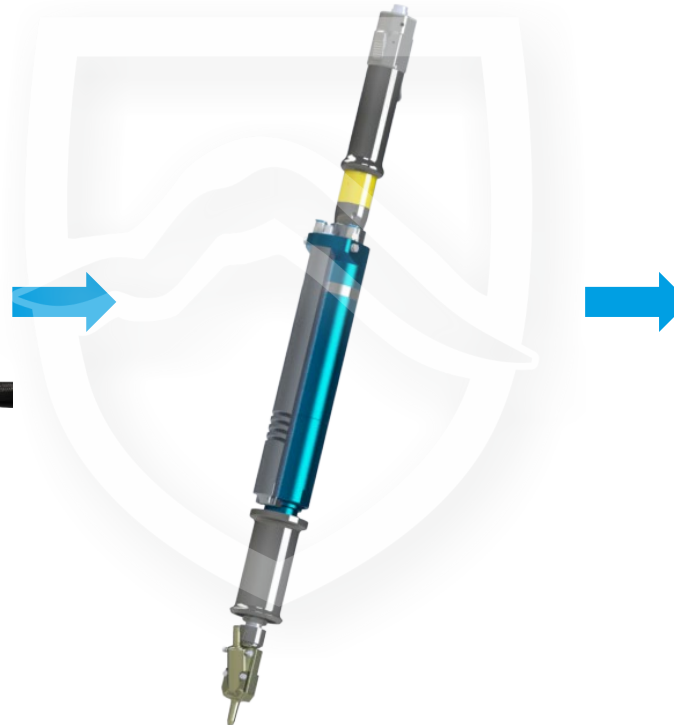
Without this module, a TC-HS screwdriver is not functional.

Basic Functions

TCF EVO Line TC-HF



SCREW FEEDING



Basic Functions TC-HF

05221500151 Modul TC-HF V2

Control Modul TC-HF V2 für TCF-EVO

Software module for TC-HF V2
screwdriver function: fixed blade or fully
extended blade after the reloading
process (accessories: magnet bit,
vacuum). When the extended blade
option is selected, the drive is briefly
activated during extension to ensure the
blade securely finds the engagement
feature of the screw.

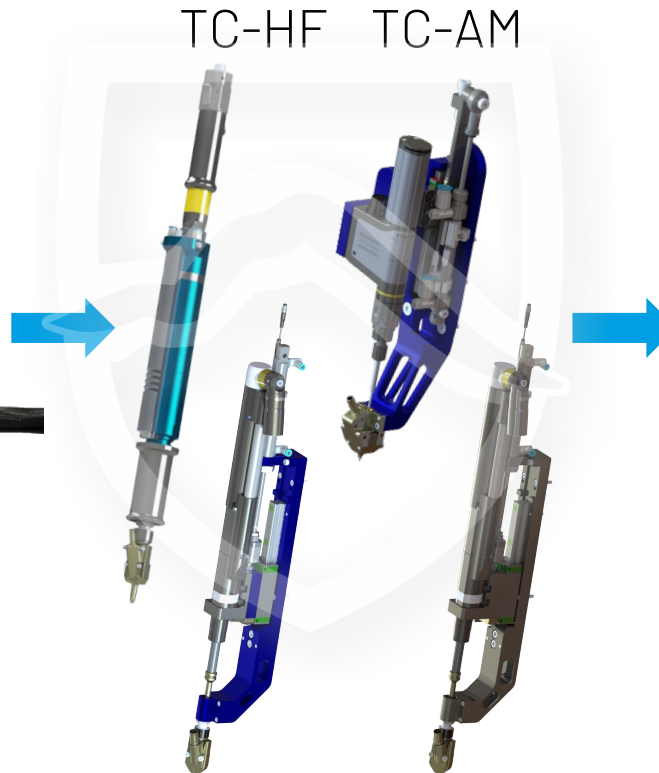
Without this module, a TC-HF
screwdriver is not functional in manual
operation.

Basic Functions

TCF EVO Line TC-HF



SCREW FEEDING



Basic Functions

05221500156 Modul TC-Ax

Control Modul

TC-HF/TC-AM/AS/AH für TCF-EVO

Software module for controlling the TC automatic units. Comprehensive control of the feed system including feedback via sensors and valves in the TCF EVO LINE, pre-assembled.

For example:

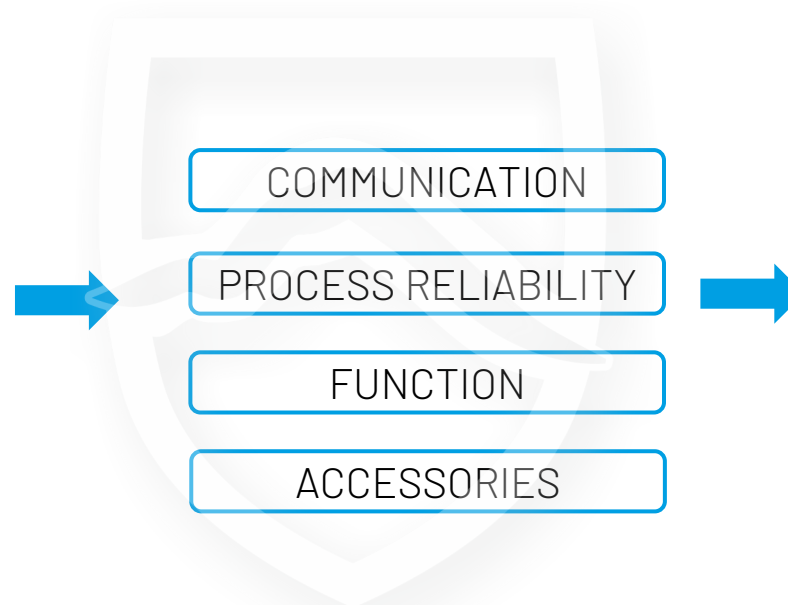
- Connection element in the hose ready; feedback is in the hose
- Push (activate air blast); feedback was pushed
- Blade stroke (blade forward and backward); feedback indicates position reached
- Optional approach carriage (forward and backward); feedback indicates position reached
- Error bitPower supply for I/O module
- Without this module, a TCF-EVO Line system cannot function automatically

Function Extensions

TCF EVO Line



TCF EVO Line S/L



FUNCTION
EXTENTION



EXTENSION
MODEL

TCF EVO Line – Extension modules based on the basic function module

TC-HS



COMMUNICATION

Modul Communication

PROCESS SECURITY

Modul Hose sensor technology

Modul Singulation sensor technology

Modul Pressure switch

FUNCTION

Modul Depth stop (DLS/ES)

Modul Level Monitoring

ACCESSORIES

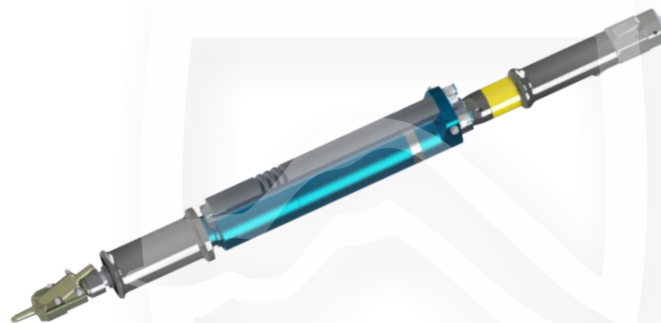
Modul Hopper

Modul EC-COM

Modul Maintenance Unit

TCF EVO Line – Extension modules based on the basic function module

TC-HF



COMMUNICATION

Modul Communication

Modul Ext. Start

PROCESS SECURITY

Modul Hose sensor technology

Modul Singulation sensor technology

Modul Pressure switch

FUNCTION

Modul Depth stop (DLS/ES)

Modul Level Monitoring

Modul Vacuum

ACCESSORIES

Modul Hopper

Modul EC-COM

Modul Maintenance Unit

TCF EVO Line – Extension modules based on the basic function module

TC-Ax



COMMUNICATION

Modul Modbus

PROCESS SECURITY

Modul Hose sensor technology

Modul Singulation sensor technology

Modul Pressure switch

FUNCTION

Modul Vacuum

Modul Level Monitoring

Modul delivery stroke

ACCESSORIES

Modul Hopper

Modul Mount TC-HF

TCF EVO Line – Communication Function Extensions

Modul Communication 05221500157

Electric Screwdriver
Communication
(I.O./N.I.O.) and
Screwdriver Start for
Stand-Alone Systems.

Screwdriver Start via
Digital Output.

COMMUNICATION

Modul Modbus 05221500155

Control of the entire TCF
EVO Line, as well as
enhanced
operabilityMaximum
convenience during
integrationTransmission
of error messages as
error codesIndustry 4.0
connectivity of the TCF
EVO LineMaximum
interlinking
capabilityInformation
such as cycle time,
additional time, etc.

Modul Ext. Start 05221500168

External Start for TC-
HF V2Enables
remote start of the
TC-HF V2e.g., for use
with an external start
handle

TCF EVO Line - Process Safety Function Extensions

PROCESS SECURITY

Modul Hose Sensor Technology 05221500153

Part Feed Control and Provisioning
ControlMonitoring via sensorsDisplay of feed time with monitoring via the display(error messages shown in plain text)and, in systems with a bus module, additionally via the interface.

Modul Part Separation Sensor Technology 05221500154

ensor-Based Part SingulationWith automatic fault clearance as well as warning and error message generation.Designed to improve process capability when handling contaminated or mixed feed material.

Modul Pressure Switch 05221500165

Optional Pressure SensorThe standard pressure switch is replaced by a pressure sensor.The current pressure is displayed on the screen.Additionally, pressure limits can be defined.

TCF EVO Line – Process Safety Function Extensions

Modul Vacuum 05221500159

Vacuum Fitting for
Complex and Deep Screw
Locations High-end
vacuum generators and
sensors integrated into
the TCF EVO Line.

FUNCTION

Modul Depth Cut-Off (DLS/ES) 05221500160 / 05221500161

Depth Cut-Off for
Pneumatic and Electric
Screwdrivers Screw depth
infinitely adjustable via
sensors.

Modul Feed Stroke 05221500162

Feed Unit for TC-Ax Units
Provides the option to
execute an additional
stroke alongside the blade
stroke.
When an axis system is
used, the TC-Ax feed unit
is a cost-effective
alternative for the Z-
stroke of the axis system.

TCF EVO Line - Process Safety Function Extensions



FUNKTIONALITÄT

Modul Screw Counting 05221500164

Counting Function for Screws at End of Hose This module turns the TCF EVO Line into a screw dispenser. Screws are dispensed with precise piece-count accuracy. Dispensing speed of up to 0.5 seconds per screw is possible. The desired number of screws is entered via the HMI.

Modul Level Monitoring 05221500167

Level Monitoring for TCF EVO Line For monitoring the fill level in the conveyor bowl. Automated notification for refilling.

TCF EVO Line

- Accessory Function Extensions

ACCESSORIES

Modul Hopper 05221503012

30-Liter Bunker for Additional Storage of Feed Parts (Screws, etc.) Requires Module 05221500167 for Level Monitoring.

Modul Holder TC-HF 05221500163

With the holder for the TC-HF, we provide the option to attach the TC-HF to the TC-Ax feed unit. The TC-HF V2 with the TC-Ax feed unit is the optimal screw fastening solution for vertical screw applications from below.

Modul EC-COM 05221503011 / 05221500170

Module 05221503011 is mandatory when the Depth Cut-Off ES module (05221500161) is sold with an EBL screwdriver. Conversion of EBL drive to active shutdown via TCF EVO Line. Module 05221500170 must be used for screwdrivers integrated into the feeder, e.g., N- Generic screw system.

Modul Maintenance Unit 05221500102

Maintenance Unit
Filter Regulator with
Manometer and Oiler



MAFU Automation GmbH
Standort Rosenfeld
MAFU Automation GmbH
Daimlerstraße 7
72348 Rosenfeld

+49 / 7428 / 931-0
info@mafu.de