



Push-to-Fit

Solutions for press and joining applications



ENGINEERING YOUR SUCCESS.



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Solutions for press and joining applications

Overview

Description

Joining, pressing, bending, clinching, forming, testing and inspection are key processes in modern automated manufacturing, typically in the force range of 50 N to 120 kN. The type of process determines component quality, innovation and process stability.

Because automation components are frequently used in the most critical and harsh industrial environments, product requirements for mechanical and electrical parts often include long service life, dynamism and precision.

Product and system flexibility can enable simple and speedy realization of a variety of processes and applications. Parker offers a complete electromechanical system for all common joining operations in assembly plants for transmissions, engines and cars providing energy-efficient, cost-effective solutions for high quality manufacturing and assembly processes.

Advantages

Globally available with global support



Short Lead Time

- Systems designed around standard, readily-available components
- Turnaround of 4-5 weeks for delivery of complete system
- All from a single source



Travel speed up to 4 times faster

- Thanks to the ballscrew design (compared to planetary roller transmission)



Compact Solution

- Unrivalled power density
- Up to - 25% less volume



Economic solution

- Save by choosing an optimised selection of components in a predefined package
- Modular structure allows customisation based on application requirements



Simple Installation

- Wide range of industrial Ethernet based fieldbus options as standard



Quiet, Clean

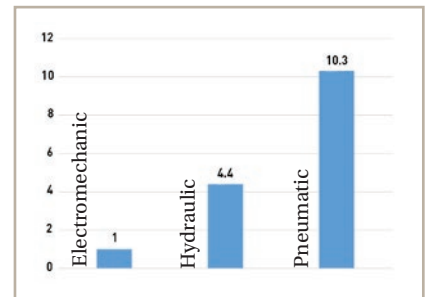
- Electromechanical actuator with ball screw technology
- Servo drive

Energy savings

- Electromechanical offers greater efficiency in comparison to other technologies such as hydraulics and pneumatics.
- -75% over hydraulic solutions
- Higher efficiency with high quality ball screw compared to planetary roller screw

High flexibility

- Force curves can be created and downloaded (excel file) by the user



Comparison of energy consumption

Push-To-Fit System

Parker HMI

- Simplify and reduce cost in visualisation applications.
- Designed to optimize performance, storage and connectivity.
- Compact, no fan – no maintenance
- Brilliant display and low power consumption
- High resolution capacitive touch screen with 7", 10" or 15"
- Sealed / protected against dust, dirt, and splash water (front side)
- System integration via Ethernet, RS232 and USB interfaces
- Integrated Web Browser



Parker HMI (option)

Other I



EtherCAT®

Compax3 Servo Controller

- Robust closed metal housing
- Direct mains operation / integrated line filter
- All connections at the front
- Max. Motor cable length 100m
- CE Conformity & UL / cUL Compliant
- Safety function Safe Torque Off "STO" according to EN ISO 13849-1 with Performance Level PLe
- Fast Force / Torque control
- Basis for operation without force sensor
- EtherCAT interface for realtime connection to the Force-Stroke-Unit

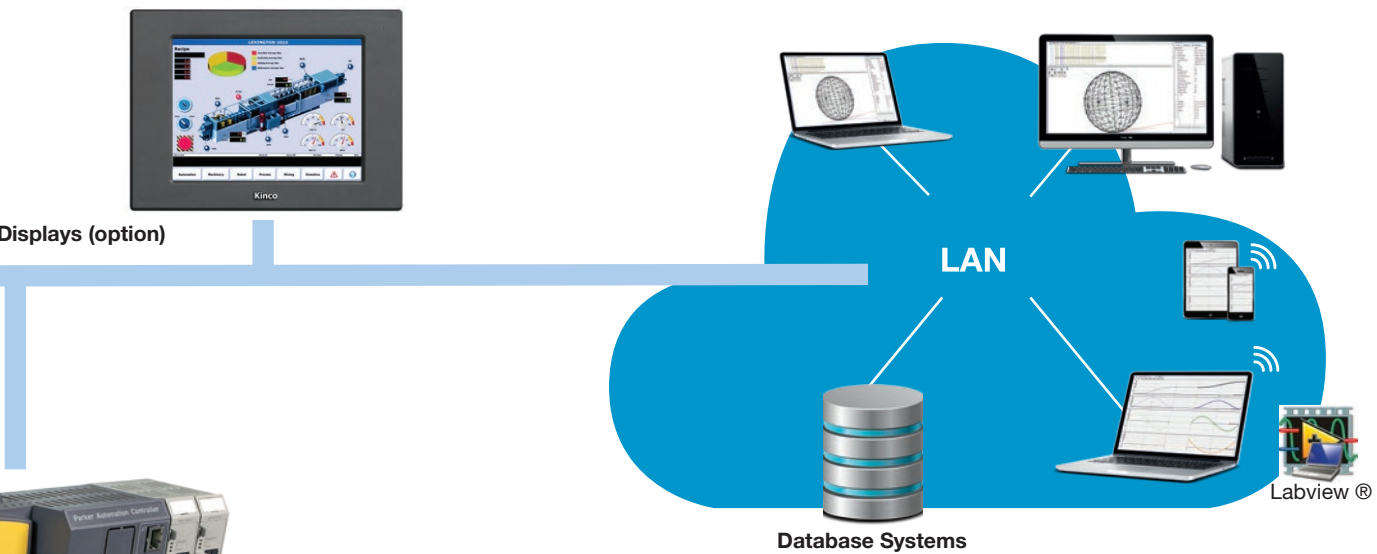


Multi Channel Design

Compax3

Force Sens

- Measuring
- Accuracy:
- Corrosion
- Integrated

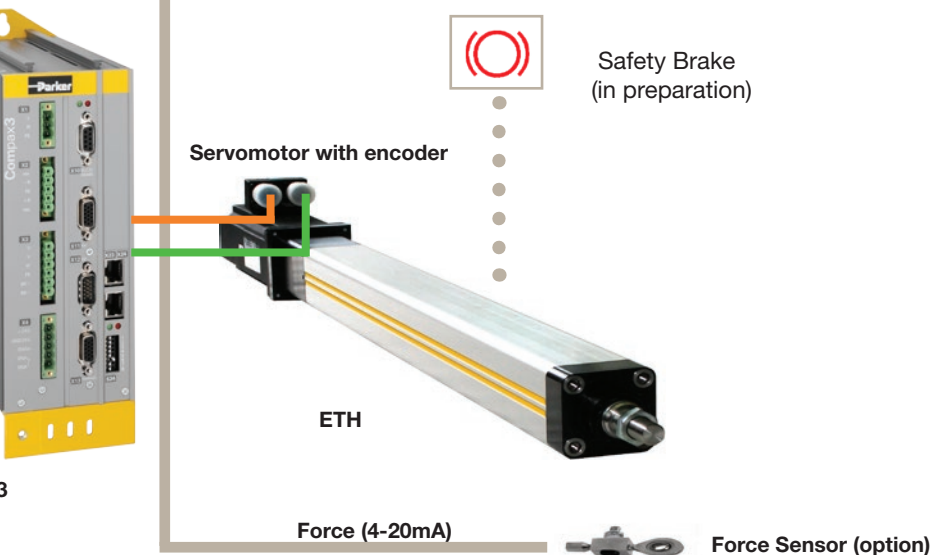


Force Stroke Unit

Force Stroke Unit

- Integrated Web Visualisation
- Integrated Security for customized access
- Multiple languages supported
- Robust and industrialised rugged hardware with „no moving parts“ technology

- Insertable SD Memory Card and low voltage technology, fanless operation guarantees „no maintenance“
- Standardised and open Interfaces for simple system integration via Ethernet, RS232 and USB interfaces
- Dual LAN TCP/IP as standard



ETH - Electro Cylinder

- Unrivaled power density - high forces and small frame sizes
- Highly constant force with SMH motor
- Sensors can be concealed in the profile
- Extensive range of accessories
- High service life
- Reduced maintenance costs thanks to lubricating access in the cylinder flange
- Integrated anti-rotation device
- Reduced noise emission
- For precise conversion of motion and force profile for powers up to 114 kN.

range: ± 2.4 up to ± 114 kN
 from 0.2 to 1 %
 resistant stainless steel version
 amplifier

- High shock and vibration resistance
- Long term stability
- Simple mounting

Application Tool Functionality

The software interface links the electrical and mechanical components to the system and controls the complete process as well as providing easy, convenient programming, visualization and operation.

Features

- Real Time Curves
- Array of Curves/Historical Data (up to 100 max.)
- Cycle Times
- Configuration of Sensors
- Part Number Integration
- Data Base / Interfacing
- Multiple Languages (German, English, others to come)
- Operator and Service Levels (Adjustable user level by password)
- Definition of motion profiles / press fit position – relative and absolute moves
- Sequence program and step enabling condition
- Monitoring via
- Hose strap / tolerance band / envelope
- Monitoring window / envelope window
- Error handling and configurable response
- Status display (Display window of device failures in plain text)
- Calibration
- Teaching/idle cycle w/o load

Push To Fit Packages :

Package 1

- ETH050 & SMH100
- Max Force = 9300 N
- Max Velocity = 250 mm/s

Package 2

- ETH080 & MH145
- Max Force = 25100 N
- Max Velocity = 500 mm/s

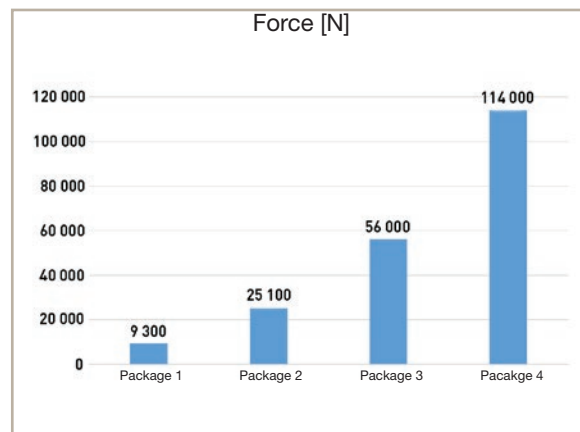
Package 3

- ETH100 & MH145
- Max Force = 56000 N
- Max Velocity = 200 mm/s

Package 4

- ETH125 & MH205
- Max Force = 114000 N
- Max Velocity = 133 mm/s

Note: Maximum force and maximum velocity must not occur simultaneously
Higher forces on request



Primary Functionality

Profiles

Input mask process profile

Profile											
Line	Order	Position [mm]	Speed [mm/s]	Acceleration [mm/s²]	Deceleration [mm/s²]	Hold [mm/s]	Time	T-Force	Inch	Outch	WZref
1	1	28.0	200.0	2000.0	2000.0	10000.0	0.0	0.0	0	1	0.0
2	1	37.75	4.0	500.0	200.0	10000.0	0.0	0.0	0	0	0.0
3	1	0.0	300.0	2000.0	2000.0	10000.0	0.0	0.0	0	0	0.0
4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
6	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
7	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
8	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
9	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
10	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
11	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
12	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
13	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
14	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
15	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
16	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
17	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
18	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
19	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0
20	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0

Position Trace Start: 28.50 Position Trace Stop: 38.00

Hilfskurve und Toleranzfenster TEST0002 USB available Drive engaged

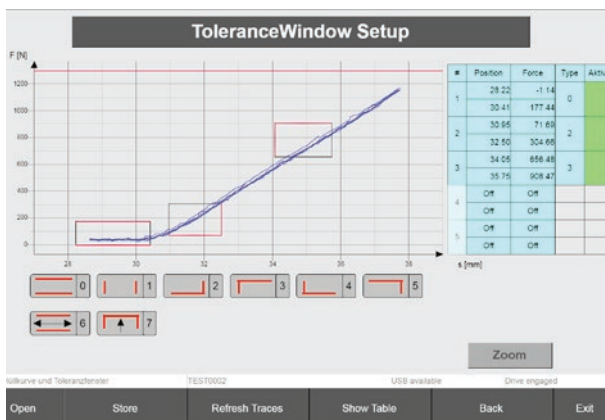
Accept Cancel Insert Row Delets Row Help Exit

Tolerance Curve - Band / Envelope

User defined tolerance entries apply to the following parameters:

- position [mm]
- minimum allowable force [N]
- maximum permitted force [N]

As long as the power is within the tolerance the process is correct.



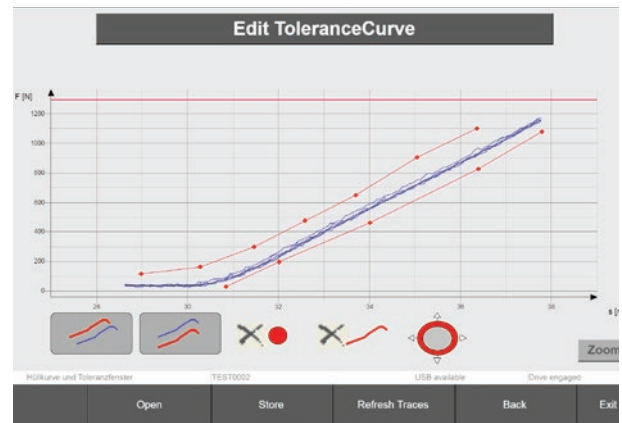
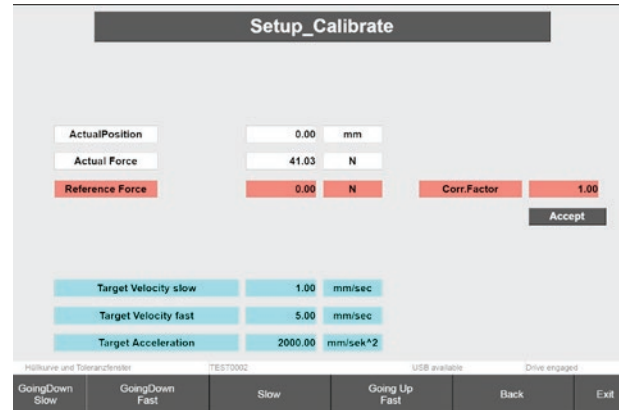
Automatic - Operating Window

After each process completion (<1s) a quick representation of the process will appear as a force-stroke diagram F (x). All windows and envelopes are displayed. Automatic generation of xy scaling / optimal force-stroke graphs.

Array of Curves/Historical Data

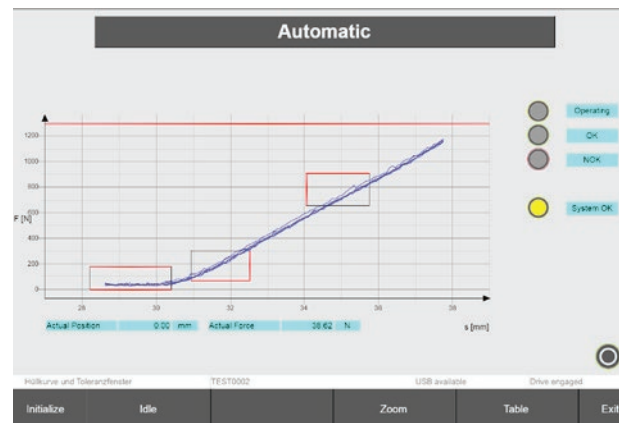
The last 100 force-measurement curves can be stored. The saved curves graphs are also available individually by curve number / part number.

Calibration



Tolerance Window

Monitoring of the force is possible using predefined positioning windows. The windows are based on the measured value input of the minimum and maximum values for the X and Y axes. The tolerance window entrance and exit points can also be monitored.



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