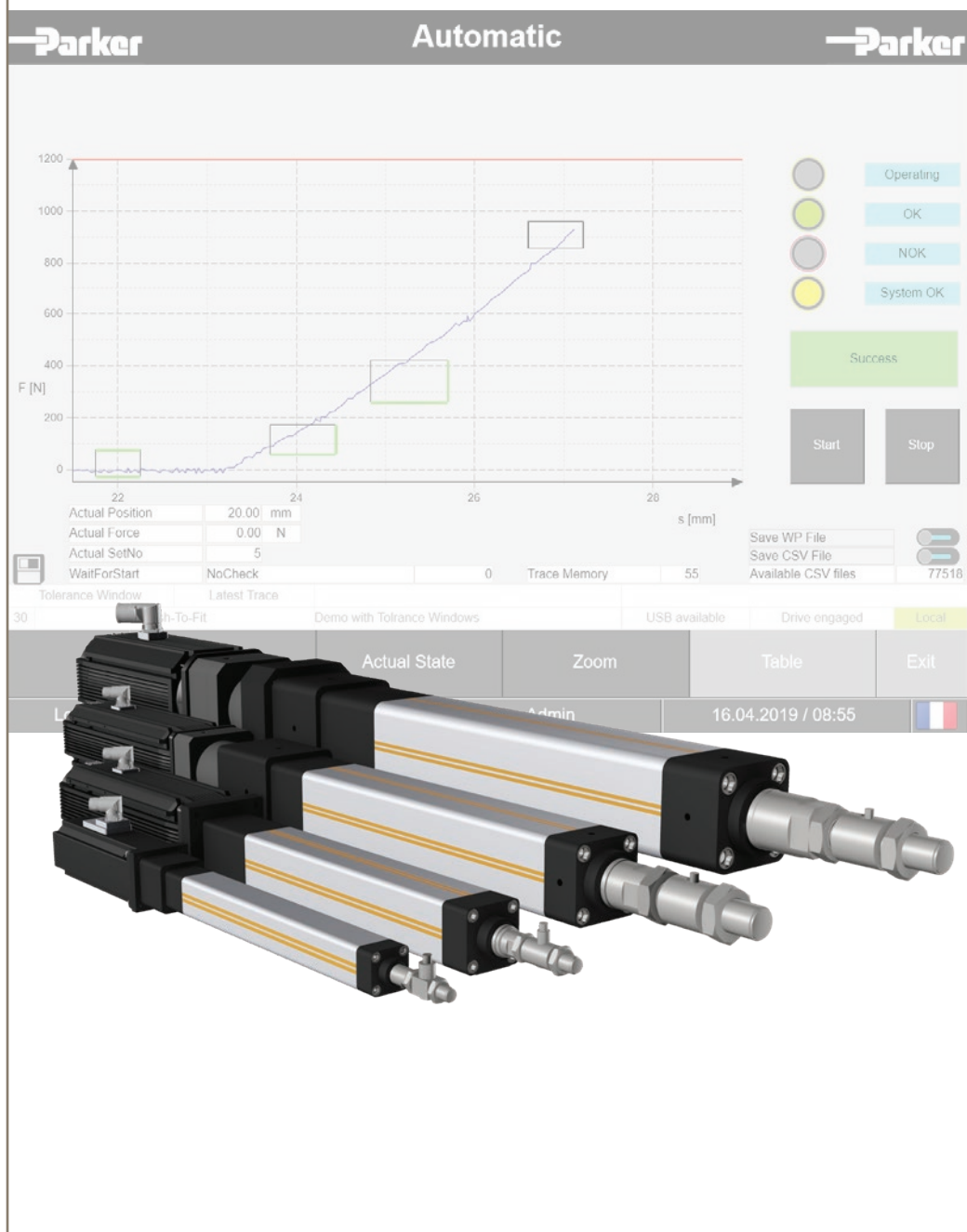
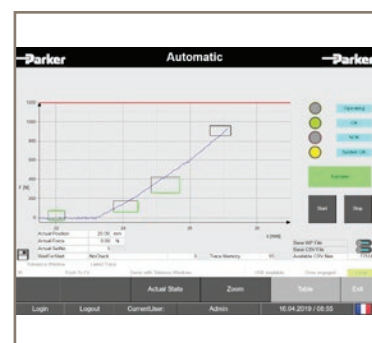




# Push-To-Fit

Solutions for press and joining applications



ENGINEERING YOUR SUCCESS.



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# Parker Hannifin

## The global leader in motion and control technologies

### A world class player on a local stage

#### Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

#### Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

#### Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

#### Electromechanical Worldwide Manufacturing Locations

##### Europe

Littlehampton, United Kingdom  
Dijon, France  
Offenburg, Germany  
Filderstadt, Germany  
Milan, Italy

##### Asia

Wuxi, China  
Jangan, Korea  
Chennai, India

##### North America

Rohnert Park, California  
Irwin, Pennsylvania  
Charlotte, North Carolina  
New Ulm, Minnesota



Offenburg, Germany

#### Local Manufacturing and Support in Europe

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Milan, Italy



Littlehampton, UK



Filderstadt, Germany



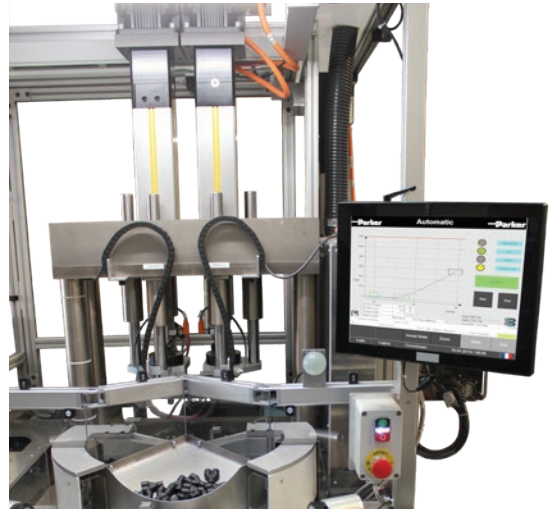
Dijon, France

# Push-To-Fit - PTF

## Overview

### Description

Push-To-Fit is an electromechanical solution for servo presses and joining applications, the key processes in modern automated manufacturing. Combining its established core products into a joining module, Parker offers a reliable, energy efficient and cost-effective solution to serve customers critical applications in harsh industrial environments. All single components of the PTF module are designed to fulfill highest expectations concerning force, dynamic, precision and service life.



### Advantages

#### Energy savings

- Electromechanical offers greater efficiency in comparison to other technologies such as hydraulics and pneumatics
- Quiet, clean and energy saving technology

#### Excellent throughput rates

- Thanks to high travel speed up to 450mm/s

#### Quick and easy integration

- A wide range of Ethernet based fieldbuses
- Ease of use
- Parker's established and reliable core products
- Short delivery time

#### Cost-effective and highly flexible solution

- Different thrust forces
- Multiple stroke length
- Functional safety
- You only buy what you need

#### Functional Safety

- Hardware STO as standard
- Safety PLC with STO over FSoE and functions like SS1, SLS, SBC and SBT
- External safety brake

### Markets

- General Industrial Assembly
- In-Plant Automotive (gearbox assembly, motor assembly, ...)

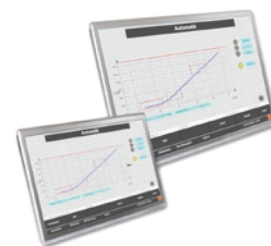
### Technical Characteristics - Overview

|                                             |                                                |
|---------------------------------------------|------------------------------------------------|
| <b>Modules</b>                              | PTF009 / PTF025 / PTF056 / PTF114              |
| <b>Max. dynamic traction/thrust force</b>   | up to 114 kN                                   |
| <b>Max. stroke</b>                          | up to 600 mm                                   |
| <b>Max. travel speed</b>                    | up to 450 mm/s                                 |
| <b>Max. acceleration</b>                    | up to 8.5 m/s <sup>2</sup>                     |
| <b>Repeatability</b>                        | +/- 0.03 mm                                    |
| <b>Motion profile</b>                       | up to 20 instructions                          |
| <b>Tolerance band</b>                       | 50 points per limit (upper / lower)            |
| <b>Tolerance window</b>                     | 5 windows per workpiece and 11 different types |
| <b>Program cycle time</b>                   | 1 ms                                           |
| <b>Measuring samples per motion profile</b> | up to 2000                                     |
| <b>Sampling time</b>                        | 1 ms to 30 ms                                  |
| <b>Number of different workpieces</b>       | 500                                            |
| <b>Internal curve storage per workpiece</b> | 500                                            |

## Description

### 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 touch screen with 10" or 15"
- Sealed / protected against dust, dirt, and splash water (front side)
- System integration via Ethernet
- Integrated Web Browser



Parker HMI

### Process Control Unit

- Integrated Web Visualisation
- Integrated Security for customized access
- Multiple languages supported
- Robust and industrialised rugged hardware without moving parts
- Insertable SD Memory Card and low voltage technology, fanless operation guarantees „no maintenance“
- Standardised and open Interfaces for simple system integration via Ethernet
- Dual LAN TCP/IP as standard
- USB flash drive for data storage and easy access e.g. via FTP.



Process Control Unit

EtherCAT®

Safety over  
EtherCAT®

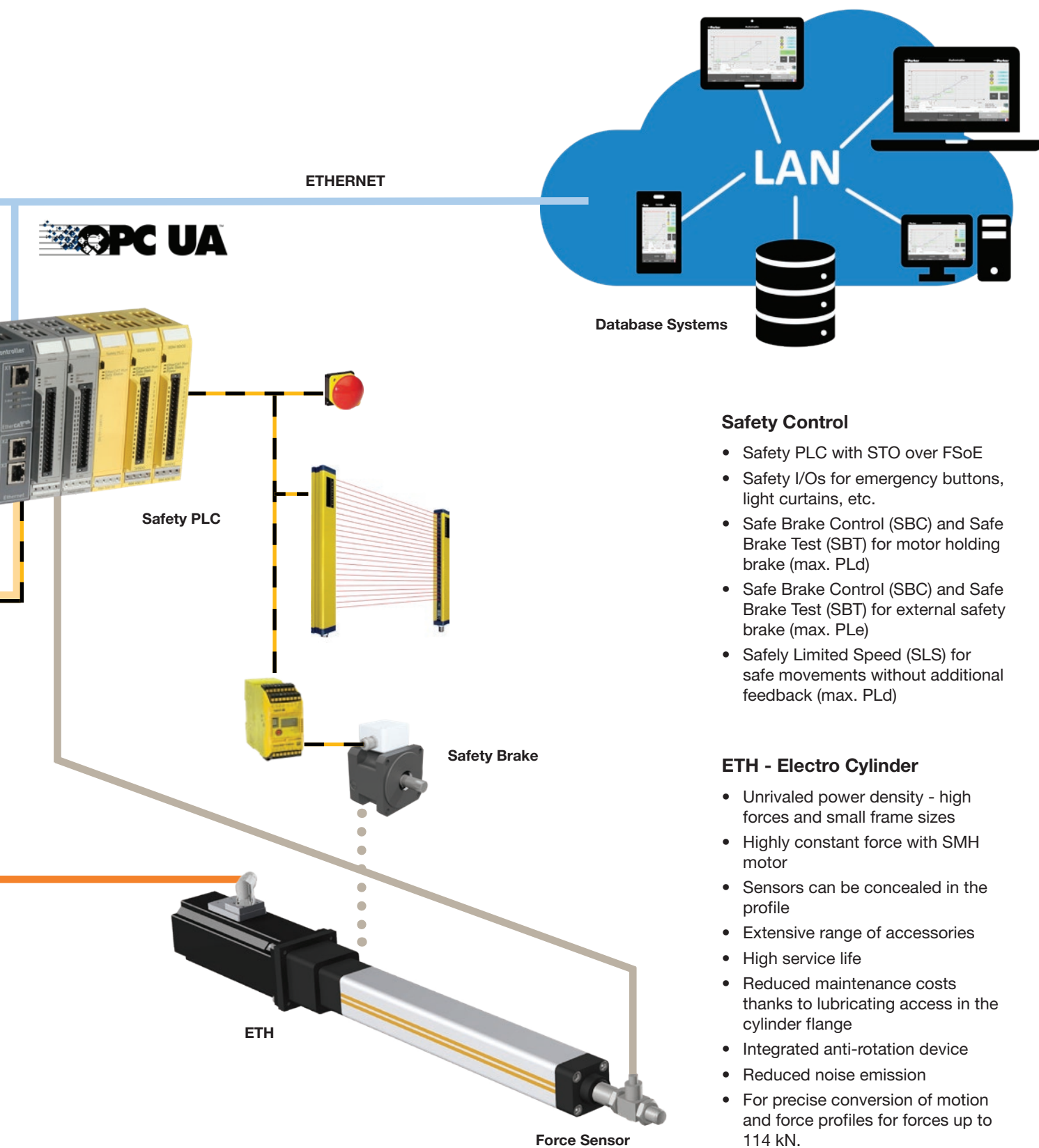


PSD1S

HiPERFACE®  
DSL

### Parker Servo Drive PSD1S/M

- Hiperface DSL feedback®
- Reduced cabling; only one cable connection between drive & motor
- EtherCAT communication
- Quick and easy wiring
- Removable SD card
- CE Conformity & UL / cUL Compliant
- Hardware STO (max PLe according EN ISO13849)
- Safety Option Board



### Safety Control

- Safety PLC with STO over FSoE
- Safety I/Os for emergency buttons, light curtains, etc.
- Safe Brake Control (SBC) and Safe Brake Test (SBT) for motor holding brake (max. PLd)
- Safe Brake Control (SBC) and Safe Brake Test (SBT) for external safety brake (max. PLe)
- Safely Limited Speed (SLS) for safe movements without additional feedback (max. PLd)

### ETH - Electro Cylinder

- Unrivalled 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 profiles for forces up to 114 kN.

### Force Sensor

- Measuring range:  $\pm 9.3$  up to  $\pm 114$  kN
- Corrosion resistant stainless steel version
- Integrated amplifier
- High shock and vibration resistance
- Long term stability
- Simple mounting

## Technical Characteristics

| Push-To-Fit                                           | Unit  | PTF009                                                                      | PTF025             | PTF056             | PTF114 |
|-------------------------------------------------------|-------|-----------------------------------------------------------------------------|--------------------|--------------------|--------|
| Force, stroke, payload, speed, acceleration           |       |                                                                             |                    |                    |        |
| Max. axial traction / thrust force (≤ 2s)             | kN    | 9.3                                                                         | 25.1               | 56                 | 114    |
| Max. continuous axial force (traction / thrust force) | kN    | 4.9                                                                         | 12.8               | 32.1               | 84.1   |
| Max. stroke <sup>2)</sup>                             | mm    | 300                                                                         | 600                | 600                | 600    |
| Max. payload                                          | kg    | 100                                                                         | 200                | 400                | 1000   |
| Max. travel speed                                     | mm/s  | 250                                                                         | 450                | 200                | 133    |
| Max. acceleration                                     | mm/s2 | 4000                                                                        | 8000               | 8500               | 6000   |
| Accuracy                                              |       |                                                                             |                    |                    |        |
| Repeatability (according ISO230-2)                    | mm    | ±0.03                                                                       |                    |                    |        |
| Linearity Deviation                                   | kN    | ±0.04                                                                       | ±0.1               | ±0.2               | ±0.4   |
| Weight                                                |       |                                                                             |                    |                    |        |
| Drive train                                           | kg    | 7.9                                                                         | 38.7               | 70.6               | 166.5  |
| Drive train with safety brake                         | kg    | 13                                                                          | 51.2               | 83.1               | 190.1  |
| Mass of additional stroke                             | kg/m  | 8.2                                                                         | 18.2               | 38                 | 62     |
| Electrical Data                                       |       |                                                                             |                    |                    |        |
| Input Voltage (AC)                                    | V     | 230V                                                                        | 3*400V             |                    |        |
| Input Current (RMS)                                   | A     | 11                                                                          | 22                 |                    |        |
| Lubrication Intervals <sup>3)</sup>                   |       |                                                                             |                    |                    |        |
| Normal operating conditions <sup>1)</sup>             | km    | 240                                                                         | 480                | 570                | 570    |
| Short-Stroke conditions                               | mm    | ≤ 12.5 <sup>2)</sup>                                                        | ≤ 25 <sup>2)</sup> | ≤ 50 <sup>2)</sup> |        |
|                                                       |       | every 10 000 movement cycles                                                |                    |                    |        |
| Ambient Conditions                                    |       |                                                                             |                    |                    |        |
| Ambient temperature                                   | °C    | 0..40                                                                       |                    |                    |        |
| Max. operating humidity (non-condensing)              | %     | 80                                                                          |                    |                    |        |
| Altitude                                              |       | 1000 m ASL. Derate force by 1.0 % per 100 m up to a max. altitude of 2000 m |                    |                    |        |
| Software                                              |       |                                                                             |                    |                    |        |
| Motion profile instructions                           |       | 20                                                                          |                    |                    |        |
| Tolerance band points per limit (upper / lower)       |       | 50                                                                          |                    |                    |        |
| Numer of tolerance windows per workpiece              |       | 5                                                                           |                    |                    |        |
| Number of different tolerance window types            |       | 11                                                                          |                    |                    |        |
| Programm cycle time                                   | ms    | 1                                                                           |                    |                    |        |
| Sampling time                                         | ms    | 1-30                                                                        |                    |                    |        |
| Measuring samples per motion profile                  |       | 2000                                                                        |                    |                    |        |
| Number of different workpieces                        |       | 500                                                                         |                    |                    |        |
| Number of internal curve storage per workpiece        |       | 500                                                                         |                    |                    |        |

<sup>1)</sup> See ETH user manual [www.parker.com/eme/eth](http://www.parker.com/eme/eth)

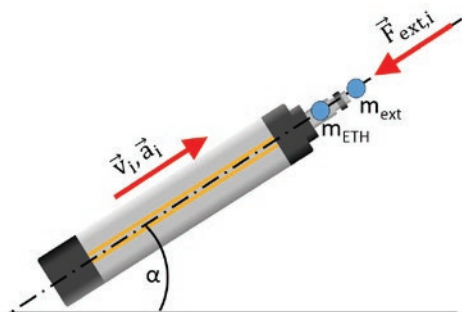
<sup>2)</sup> Total travel of the cylinder in one direction within one cycle

<sup>3)</sup> The cylinder must be relubricated at least once per year

# Service Life

## Nominal service life<sup>1)</sup>

To determine the service life first the force for each individual segment of the application cycle needs to be calculated according equation 1).



| Push-To-Fit | m <sub>ETH</sub> | ρ <sub>l</sub> |
|-------------|------------------|----------------|
| PTF009      | 2.34kg           | 8.2kg/m        |
| PTF025      | 7.92kg           | 18.2kg/m       |
| PTF056      | 26.2kg           | 38kg/m         |
| PTF114      | 68.3kg           | 62kg/m         |

$$F_{x,i} = F_{ext,i} + (m_{ETH} + \rho_l \cdot l_{stroke} + m_{ext}) \cdot (a_n + \sin(\alpha) \cdot g) \quad \text{Formula 1}^{2)}$$

|                     |                                  |                  |                                                      |
|---------------------|----------------------------------|------------------|------------------------------------------------------|
| F <sub>x,i</sub>    | Axial force in N                 | m <sub>ext</sub> | External mass in kg                                  |
| F <sub>ext,i</sub>  | External axial force in N        | a <sub>n</sub>   | Acceleration at the cylinder rod in m/s <sup>2</sup> |
| m <sub>ETH</sub>    | Mass of the cylinder in kg       | α                | Alignment angle in °                                 |
| l <sub>stroke</sub> | Stroke in m                      | g                | Gravitational acceleration 9.81 m/s <sup>2</sup>     |
| ρ <sub>l</sub>      | Mass per length (stroke) in kg/m |                  |                                                      |

The equivalent forces F<sub>m1</sub> and F<sub>m2</sub> to determine the nominal service life result from the sum of the positive and negative forces respectively weighted with the travel distance, according to equations (2) and (3).

$$F_{m1} = \sqrt[3]{\frac{1}{S_{total}} \cdot \sum_{i=1}^n F_{x,i}^3 \cdot s_i} = \sqrt[3]{\frac{1}{S_{total}} \cdot (F_{x,1}^3 \cdot s_1 + F_{x,2}^3 \cdot s_2 + \dots + F_{x,n}^3 \cdot s_n)} \quad F_{x,i} = \begin{cases} F_{x,i}, & F_{x,i} \geq 0 \\ 0, & F_{x,i} < 0 \end{cases}$$

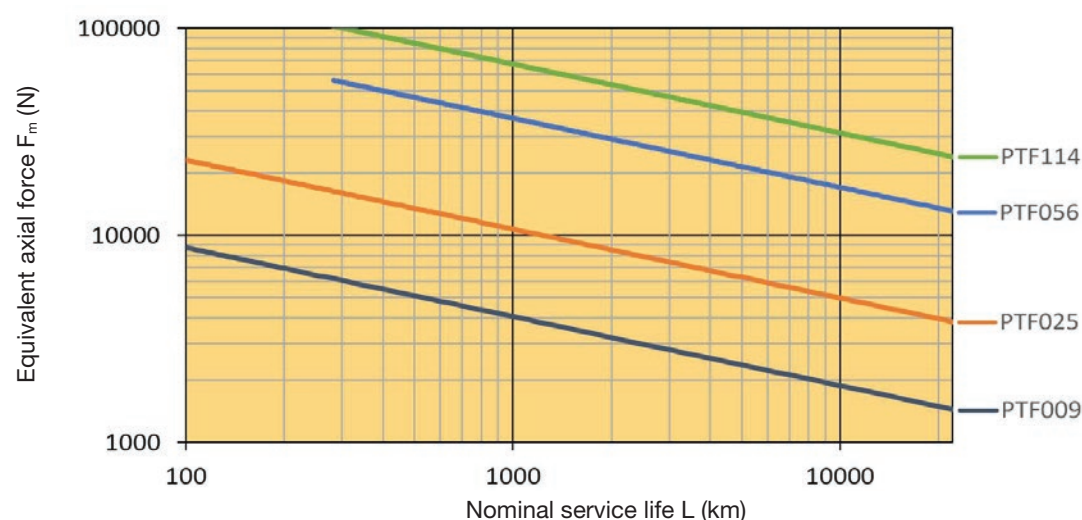
Formula 2

$$F_{m2} = \sqrt[3]{\frac{1}{S_{total}} \cdot \sum_{i=1}^n |F_{x,i}|^3 \cdot s_i} = \sqrt[3]{\frac{1}{S_{total}} \cdot (|F_{x,1}|^3 \cdot s_1 + |F_{x,2}|^3 \cdot s_2 + \dots + |F_{x,n}|^3 \cdot s_n)} \quad F_{x,i} = \begin{cases} F_{x,i}, & F_{x,i} < 0 \\ 0, & F_{x,i} \geq 0 \end{cases}$$

Formula 3

|                    |                                      |
|--------------------|--------------------------------------|
| F <sub>m1/2</sub>  | Equivalent force in N                |
| S <sub>total</sub> | Total travel in m                    |
| F <sub>x,i</sub>   | Axial force in N                     |
| s <sub>i</sub>     | Travel t force F <sub>x,i</sub> in m |

With the aid of the diagram and the equivalent forces F<sub>m1</sub>, F<sub>m2</sub> the nominal service life L1 and L2 can be determined. The total nominal life L results from the these two figures and equation (4).



$$L = (L_1^{-1.11} + L_2^{-1.11})^{-0.9} \quad \text{Formula 4}$$

L Nominal service life in km

<sup>1)</sup> The nominal service life is the service life reached by 90 % of a sufficient number of similar electro cylinders until the first signs of material fatigue occur.

<sup>2)</sup> Simplified calculation without the consideration of external friction.

## Actual service life

With the application factors  $f_{w1}$ ,  $f_{w2}$  and equation (5), the service life  $L_{fw}$  is obtained.

### Application factor $f_{w1}$

| Push-To-Fit   | Travel <sup>1)</sup> | Shocks/vibration |       |        |       |
|---------------|----------------------|------------------|-------|--------|-------|
|               |                      | none             | light | medium | heavy |
| PTF009        | > 12.5 mm            | 1                | 1.2   | 1.4    | 1.7   |
| PTF025        | > 25 mm              |                  |       |        |       |
| PTF056/PTF114 | > 50 mm              |                  |       |        |       |
| PTF009        | < 12.5 mm            | 1.8              | 2.1   | 2.5    | 3.0   |
| PTF025        | < 25 mm              |                  |       |        |       |
| PTF056/PTF114 | < 50 mm              |                  |       |        |       |

### Application factor $f_{w2}$

| Push-To-Fit | Max. Force      | $f_{w2}$ |
|-------------|-----------------|----------|
| PTF009      | < 7kN           | 1.1      |
|             | 7kN...9.3kN     | 1.2      |
| PTF025      | < 15.1kN        | 1.1      |
|             | 15.1kN...25.1kN | 1.2      |
| PTF056      | < 46kN          | 1.1      |
|             | 46kN...56kN     | 1.2      |
| PTF114      | < 96kN          | 1.1      |
|             | 96kN...114kN    | 1.2      |

$$L_{fw} = \frac{L}{(f_{w1} \cdot f_{w2})^3}$$

Formula 5

L Nominal service life in km  
 $L_{fw}$  Service life considering the application factors in km  
 $f_{w1}, f_{w2}$  Application factors

<sup>1)</sup> Total travel of the cylinder in one direction within a cycle

## Application Tool Functionalities

The hub of the solution is the process control unit that supports easy integration into existing plant networks and provides simple, convenient parametrization, visualization and operation.

### Features

- Real-time control information
- Historical / trend data for easy set-up (up to 500 per workpiece)
- Data can be saved as CSV file
- Adjustable sampling time
- Autocalibration
- Sensor configuration
- Database / Interfacing
- Multiple languages (German, English, French, others on request)
- Operator and service levels (adjustable user level by password)
- Different motion profile instructions
- Sequence program and step enabling condition
- Monitoring via tolerance band or tolerance windows
- Error handling and configurable response
- Status display (information in plain text)
- Status page of fieldbus interface

### Functional Safety

Push-To-Fit is supplied with Safe Torque Off (STO) as standard to set the drive safely to a non-torque state. In addition, advanced functional safety is available with a safety PLC. Acting as a Fail Safe over EtherCAT (FSOE) master the safety PLC uses the EtherCAT fieldbus to establish safe communication to the safety I/O modules and the drive. Separate wiring is not necessary. The first expansion stage includes Safely Limited Speed (SLS) and Safe Brake Control / Safe Brake Test (SBC/SBT) for the internal motor holding brake. The second comprises an additional external safety brake with SBC/SBT up to PLE.

## Primary Functionalities

### Sensor Calibration

Adjustment of the force sensor with the aid of a second measuring system. The value of the reference force of the second measuring system is entered in the input field for the reference force.

The system calculates the correction factor and stores it. Alternatively, the correction factor can be entered directly.

In addition to this basic setting, automatic offset correction in automatic mode can be activated.

### Definition of the Motion Profile

- Sequential program with step enabling conditions
- Entry mask for motion profile instructions (up to 20)
- Absolute or relative positioning
- Velocity
- Acceleration/Deceleration
- Jerk
- Step enabling conditions via input, delay time, force trigger or position trigger

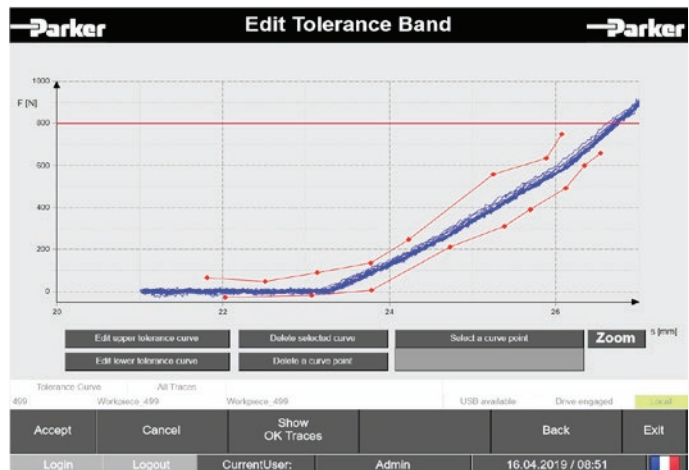
## Tolerance Band

User defined tolerance band with up to 50 points per limit (each for the upper and lower one)

- Add or change point with mouse or by value
- Remove point or the whole curve

As long as the force is within the band, the process is in a good condition.

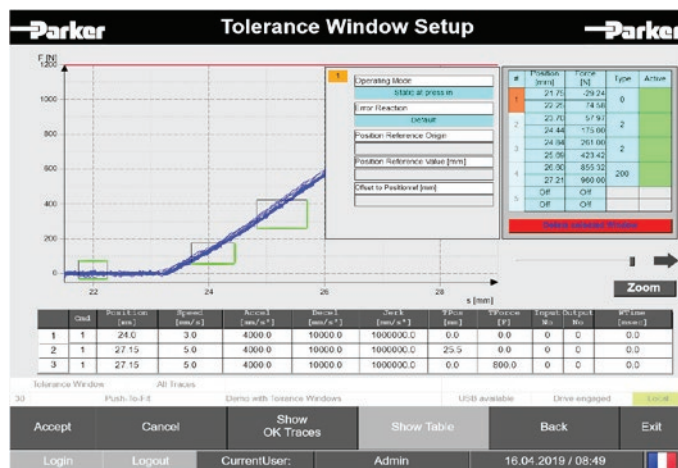
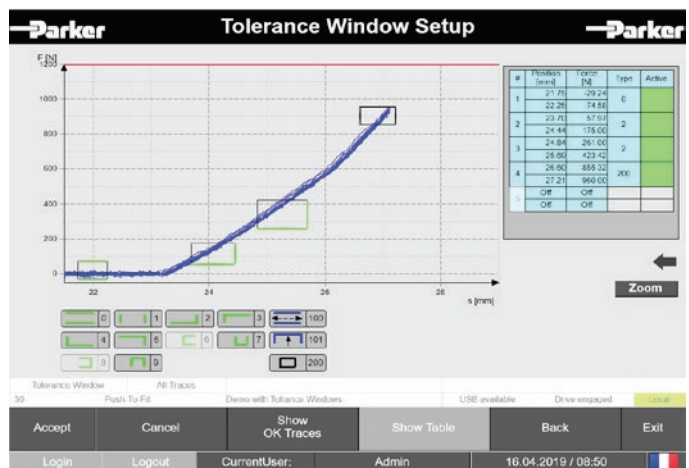
The feature to filter the 100 most recent curves (good / bad / all) and display all together helps to easy set-up the monitoring method.



## Tolerance Window

Monitoring of the force using predefined tolerance windows (up to 5). There is a choice of 11 predefined window types. Windows can be defined with drag and drop or by values.

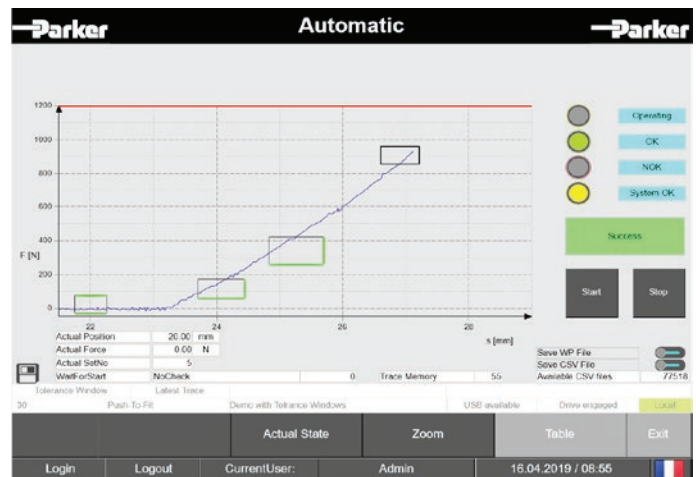
The feature to filter the 100 most recent curves (good / bad / all) and display all together helps to easy set-up the monitoring method.



In addition it is possible to use dynamic tolerance windows. According to a position instruction and a related trigger the window is shifted about a defined value.

## Automatic Mode

During each joining procedure real-time data as force-position curve is displayed. All tolerance windows and the tolerance band are shown as well. Additional information are available below and next to the graph. The tolerance window boundaries and the status field indicate a good or bad part with a red and green color, respectively.



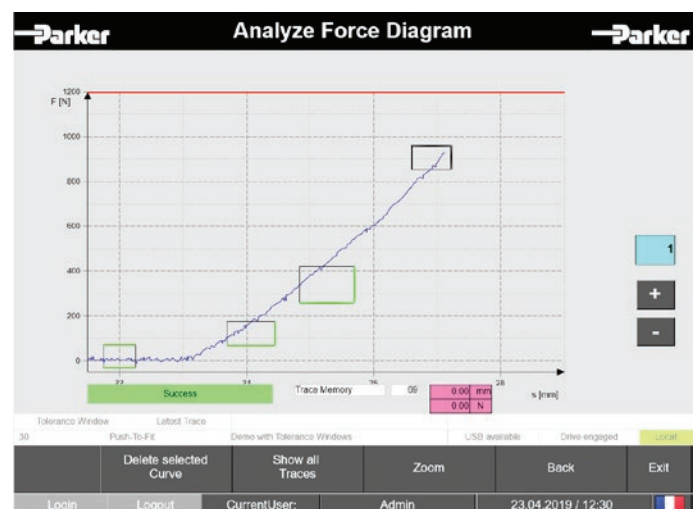
## Analyze Raw Data

The last 500 curves are available by curve number and part number. The result as well as each measuring sample (position, force and time stamp) can be viewed.

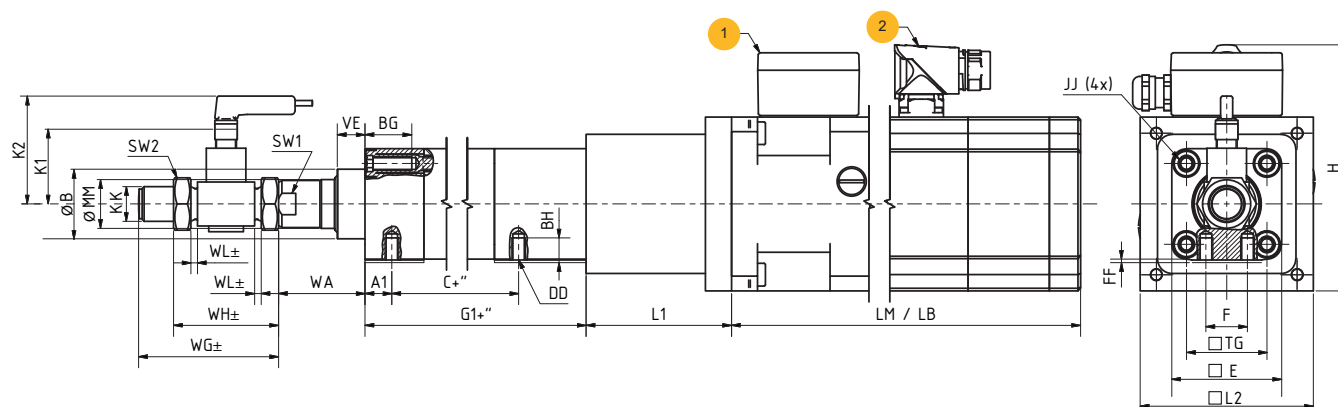
|    | Position [mm] | Force [N] | Time Stamp [ms] |
|----|---------------|-----------|-----------------|
| 0  | 21 0080       | 4.83      | 1               |
| 1  | 21 0110       | 2.41      | 2               |
| 2  | 21 0142       | 0.00      | 3               |
| 3  | 21 0172       | 0.00      | 4               |
| 4  | 21 0203       | 2.41      | 5               |
| 5  | 21 0235       | 2.41      | 6               |
| 6  | 21 0268       | 2.41      | 7               |
| 7  | 21 0300       | 4.83      | 8               |
| 8  | 21 0332       | 2.41      | 9               |
| 9  | 21 0364       | 7.24      | 10              |
| 10 | 21 0396       | 9.65      | 11              |
| 11 | 21 0429       | 4.83      | 12              |
| 12 | 21 0461       | 4.83      | 13              |
| 13 | 21 0493       | 0.00      | 14              |
| 14 | 21 0523       | 2.41      | 15              |
| 15 | 21 0555       | 0.00      | 16              |
| 16 | 21 0585       | 2.41      | 17              |
| 17 | 21 0615       | 2.41      | 18              |
| 18 | 21 0646       | 7.24      | 19              |

## Analyze Diagram

The last 500 curves can be displayed. The 100 most recent curves can be filtered (good / bad / all) and viewed together. The result as well as the tolerance windows or the tolerance band is displayed according to each measurement.



## Dimensions



1 Terminal box optional safety brake

2 Motor connector

+ ° = Dimension + length of desired stroke

Position and orientation Sensor and motor connectors may differ from the illustration

|                                  | Unit | PTF009        | PTF025    | PTF056          | PTF114          |
|----------------------------------|------|---------------|-----------|-----------------|-----------------|
| C+°                              | [mm] | 99.5          | 159.5     | - <sup>1)</sup> | - <sup>1)</sup> |
| G1+°                             | [mm] | 154           | 215       | 361             | 549             |
| A1                               | [mm] | 15.5          | 21        | -               | -               |
| BG (=BN+BS)                      | [mm] | 25            | 26        | 32              | 44              |
| BN Usable thread length          | [mm] | 20            | 20        | 22              | 33              |
| BS Depth of key (without thread) | [mm] | 5             | 6         | 10              | 11              |
| BH                               | [mm] | 12.7          | 18.5      | - <sup>1)</sup> | - <sup>1)</sup> |
| DD                               | [mm] | M8x1.25       | M12x1.75  | - <sup>1)</sup> | - <sup>1)</sup> |
| E                                | [mm] | 63,5          | 95        | 120             | 150             |
| F                                | [mm] | 24            | 30        | - <sup>1)</sup> | - <sup>1)</sup> |
| FF                               | [mm] | 0.5           | 1         | - <sup>1)</sup> | - <sup>1)</sup> |
| H                                | [mm] | 141.6         | 191.6     | 196.5           | 281.6           |
| JJ                               | [mm] | M8x1.25       | M10x1.5   | M16x2           | M20x2.5         |
| K1                               | [mm] | 73            | 73        | 85              | 85              |
| K2                               | [mm] | 91.5          | 91.5      | 101             | 101             |
| KK                               | [mm] | M20x1.5       | M24x2     | M45x3           | M45x3           |
| L1                               | [mm] | 84            | 116.5     | 160             | 226.5           |
| L2                               | [mm] | 100           | 155       | 155             | 205             |
| LM / LB <sup>2)</sup>            | [mm] | 238.5 / 318.5 | 510 / 629 | 666.5 / 785.5   | 742.5 / 881     |
| SW1                              | [mm] | 24            | 30        | 60              | 70              |
| SW2                              | [mm] | 30            | 36        | 70              | 70              |
| TG                               | [mm] | 46,5          | 72        | 89              | 105             |
| VE                               | [mm] | 16            | 20        | 20              | 20              |
| WA                               | [mm] | 60            | 59        | 92              | 123             |
| WG <sup>3)</sup>                 | [mm] | 80.8 ± 1,5    | 107 ± 2   | 184.4 ± 3       | 184.4 ± 3       |
| WH <sup>3)</sup>                 | [mm] | 60.6 ± 1,5    | 84 ± 2    | 136 ± 3         | 136 ± 3         |
| ØB                               | [mm] | 40 d11        | 60 d11    | 90 d8           | 110 d8          |
| ØMM h9                           | [mm] | 28            | 45        | 70              | 85              |

<sup>1)</sup> PTF056 and PTF114 does not have a mounting thread on the underside.

<sup>2)</sup> LM without optional safety brake / LB with optional safety brake

<sup>3)</sup> Screw-in depth of the force sensor can vary by the thread pitch.

## Accessories

### Motor cable

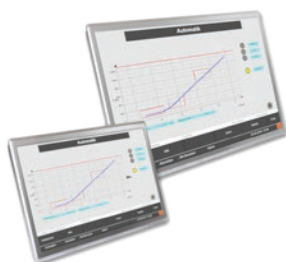
| Description | PTF009                   | PTF025 / PTF056          | PTF114                   |
|-------------|--------------------------|--------------------------|--------------------------|
| 3 m         | CBM015HD-M23-PSX-0030-00 | CBM025HD-M23-PMX-0030-00 | CBM040HD-M23-PMX-0030-00 |
| 5 m         | CBM015HD-M23-PSX-0050-00 | CBM025HD-M23-PMX-0050-00 | CBM040HD-M23-PMX-0050-00 |
| 10 m        | CBM015HD-M23-PSX-0100-00 | CBM025HD-M23-PMX-0100-00 | CBM040HD-M23-PMX-0100-00 |

### Sensor cable

| Description | PTF009 / 025 / 056 / 114 |
|-------------|--------------------------|
| 5 m         | 080-900467               |
| 10 m        | 080-900468               |

### Human Machine Interface HMI

| Description | PTF009 / 025 / 056 / 114 |
|-------------|--------------------------|
| 10.1"       | PTA-010-1R1-13           |
| 15.5"       | PTA-015-1R1-13           |

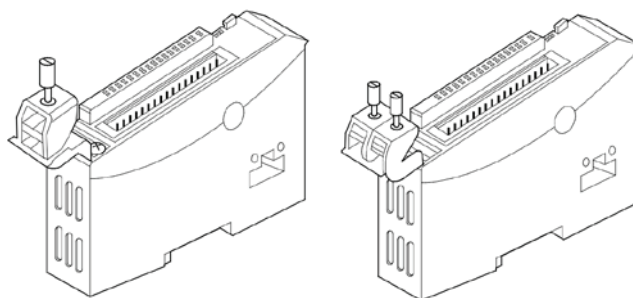


### External braking resistor

| Description | PTF009   | PTF025                   | PTF056 | PTF114 |
|-------------|----------|--------------------------|--------|--------|
| Resistor    | internal | ACB-0001-01 (300Ω, 400W) |        |        |

### Shield connection terminal block for I/O modules (PACIO-412-01 included as standard)

| Description | PTF009 / 025 / 056 / 114 |
|-------------|--------------------------|
| 2 x 8 mm    | PACIO-412-01             |
| 1 x 14 mm   | PACIO-412-02             |



## Order Code

|               | 1   | 2   | 3 | 4 | 5 | 6   | 7 | 8 | 9 | 10 | 11    | 12  |
|---------------|-----|-----|---|---|---|-----|---|---|---|----|-------|-----|
| Order example | PTF | 025 | A | 1 | F | 300 | A | 1 | N | A  | NNNNN | 000 |

|           |                                                                                         |                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>1</b>  | <b>System name</b>                                                                      |                                                                                                           |
|           | PTF                                                                                     | Push-To-Fit                                                                                               |
| <b>2</b>  | <b>Maximal Thrust Force</b>                                                             |                                                                                                           |
|           | 009                                                                                     | 9.3 kN                                                                                                    |
|           | 025                                                                                     | 25.1 kN                                                                                                   |
|           | 056                                                                                     | 56 kN                                                                                                     |
|           | 114                                                                                     | 114 kN                                                                                                    |
| <b>3</b>  | <b>Motor mounting position, housing orientation and groove orientation</b>              |                                                                                                           |
|           | PTF025/056/114 features 2 grooves each on all 4 sides (e.g. Code B=A)                   |                                                                                                           |
|           | A                                                                                       | Inline + groove for initiator 3 & 9 o'clock (standard)                                                    |
|           | B                                                                                       | Inline + groove for initiator 6 & 12 o'clock                                                              |
| <b>4</b>  | <b>Relubrication option <sup>1)</sup></b>                                               |                                                                                                           |
|           | In combination with motor mounting position, housing orientation and groove orientation |                                                                                                           |
|           |                                                                                         | PTF009                                                                                                    |
|           |                                                                                         | A    B    all others                                                                                      |
| 1         | No additional lubrication hole (standard)                                               | •                                                                                                         |
| 2         | Relubricating hole in the profile 12 o'clock                                            | •                                                                                                         |
| 3         | Relubricating hole in the profile 3 o'clock                                             | •                                                                                                         |
| 4         | Relubricating hole in the profile 6 o'clock                                             | •                                                                                                         |
| 5         | Relubricating hole in the profile 9 o'clock                                             | •                                                                                                         |
| 6         | Preparation to connect to customer central lubrication                                  | •                                                                                                         |
| <b>5</b>  | <b>Mounting type</b>                                                                    |                                                                                                           |
|           | F                                                                                       | Thread on the cylinder body (PTF056, ETH114 does not have an additional mounting thread on the underside) |
| <b>6</b>  | <b>Stroke in mm</b>                                                                     |                                                                                                           |
|           | 100                                                                                     | PTF009                                                                                                    |
|           | 200, 300                                                                                | PTF009 / 025 / 056 / 114                                                                                  |
|           | 400, 600                                                                                | PTF025 / 056 / 114                                                                                        |
| <b>7</b>  | <b>Holding brake</b>                                                                    |                                                                                                           |
|           | A                                                                                       | Motor with holding brake                                                                                  |
| <b>8</b>  | <b>Force Sensor</b>                                                                     |                                                                                                           |
|           | 1                                                                                       | Force sensor                                                                                              |
|           | 2                                                                                       | Force sensor with calibration sheet according to DIN EN 10204                                             |
| <b>9</b>  | <b>Interface</b>                                                                        |                                                                                                           |
|           | N                                                                                       | Integrated web visualization and digital I/Os (standard)                                                  |
|           | P                                                                                       | N + PROFINET                                                                                              |
| <b>10</b> | <b>Functional Safety</b>                                                                |                                                                                                           |
|           | A                                                                                       | Hardware STO (max. PLe, standard)                                                                         |
|           | B                                                                                       | Safety PLC (STO over FSoE, max. PLe), SLS (max. PLd), SBC/SBT (motor holding brake max. PLd)              |
|           | C                                                                                       | B + SBC/SBT with external safety brake (max. PLe)                                                         |
| <b>11</b> | <b>Option</b>                                                                           |                                                                                                           |
|           | NNNNN                                                                                   | Standard                                                                                                  |
| <b>12</b> | <b>Customization</b>                                                                    |                                                                                                           |
|           | 000                                                                                     | Non customized                                                                                            |

<sup>1)</sup> Relubrication options 2-5: The standard lubrication port is without function. In case of actuators with very short strokes, the position of the lubrication port in the center of the profile may not be possible. For more information see mounting instructions.







# Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



## **Aerospace**

### **Key Markets**

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

### **Key Products**

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



## **Climate Control**

### **Key Markets**

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

### **Key Products**

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



## **Electromechanical**

### **Key Markets**

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

### **Key Products**

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



## **Filtration**

### **Key Markets**

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

### **Key Products**

Analytical gas generators  
Compressed air filters & dryers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



## **Fluid & Gas Handling**

### **Key Markets**

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

### **Key Products**

Check valves  
Connectors for low pressure fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



## **Hydraulics**

### **Key Markets**

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

### **Key Products**

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



## **Pneumatics**

### **Key Markets**

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

### **Key Products**

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



## **Process Control**

### **Key Markets**

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

### **Key Products**

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



## **Sealing & Shielding**

### **Key Markets**

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General Industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

### **Key Products**

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

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