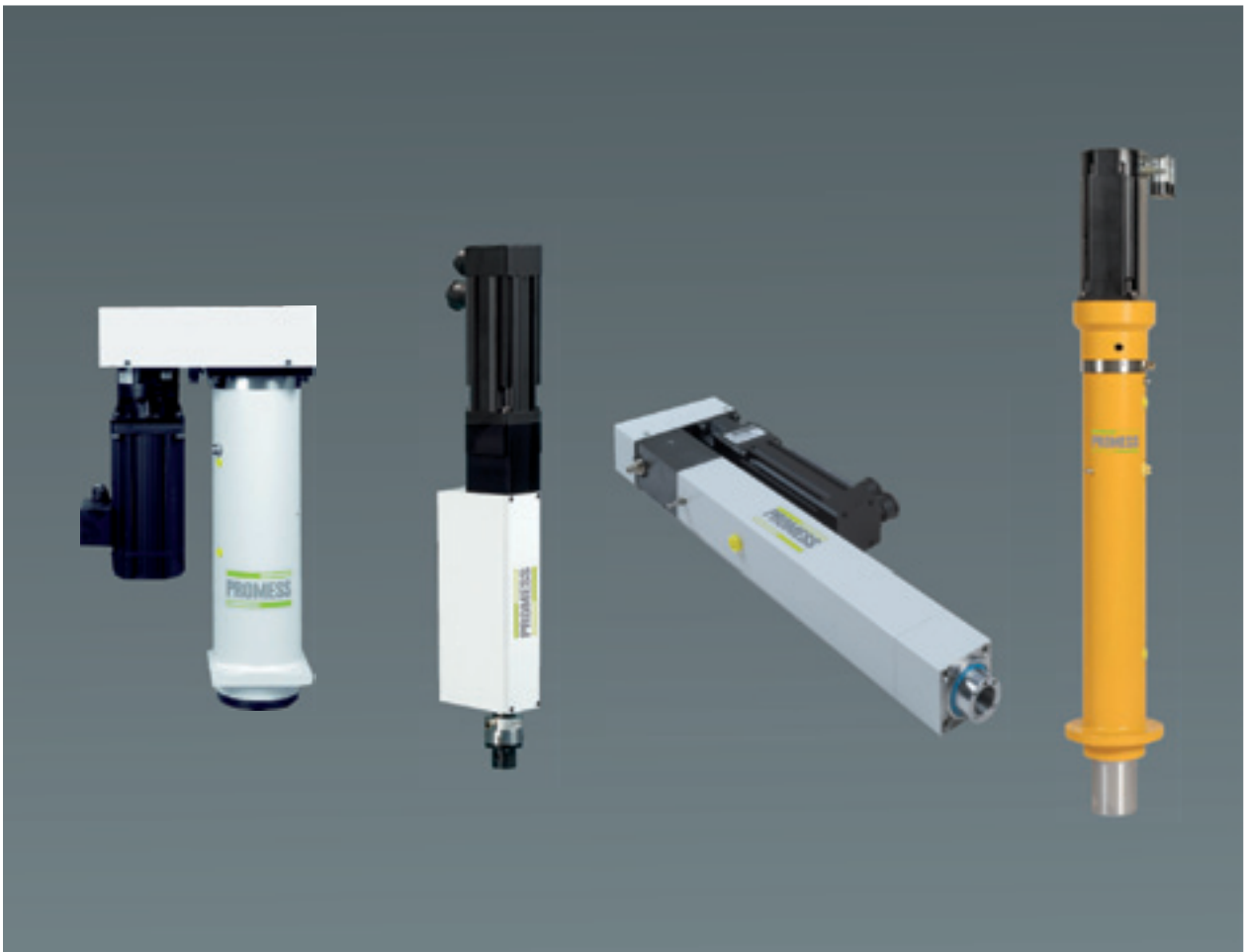


ELECTRO-MECHANICAL ASSEMBLY PRESSES

WIDE RANGE – UNLIMITED OPTIONS



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PROMESS

GESELLSCHAFT FÜR MONTAGE- UND PRÜFSYSTEME

PROMESS Gesellschaft für Montage- und Prüfsysteme mbH (PROMESS) was founded by engineering doctorate Dr. Gerhard Lechler in 1977, as an engineering firm in the field of technical measurement. Initially the company manufactured and distributed patented measuring bearings for tool condition monitoring. At the end of the 1980s, the company developed the electro-mechanical assembly press (UFM) and made assembly and automation systems its field of specialisation. Today PROMESS is one of the global leaders in the manufacturing of electro-mechanical assembly presses and offers the widest range of presses in this field.

The company's core competencies is the development of complete technological systems for solving individual and complex assembly and testing tasks and the manufacturing of high-quality standard components. Experienced, highly qualified employees develop and implement the appropriate assembly, joining and testing process in close cooperation with the customer. From process development to pilot testing and from initial start-up to production use at the customer: PROMESS offers one-stop product know-how and thus can provide sustainable, fast service and competent consultation. A worldwide service network with well-trained employees assures reliability of the production process at all locations.



PROMESS is certified to DIN EN ISO 9001:2000

PROMESS ELECTRO-MECHANICAL ASSEMBLY PRESSES

FOR A WIDE APPLICATION RANGE



Assembly line equipped with electro-mechanical assembly presses

Today, the PROMESS electro-mechanical assembly presses are an integral component of assembly and testing systems. They are used for assembly with force-distance monitoring, by means of methods such as pressing, forming, moulding, stamping or spring-testing with high speed and precision. They provide reliable service both in manual workstations and fully automated assembly lines. A typical area of application is automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

THE ADVANTAGES:

- Extremely robust design for long service lives
- Real-time force-distance analysis directly in the servo amplifier
- High velocity of up to 1,200 mm/s for fast cycles and short cycle times
- Strokes of up to 1 m
- Simple and intuitive creation of new programs
- No PLC knowledge required
- Envelope and window functions
- Robust, reliable servo drive technology
- Low noise levels and clean to use

All major automotive manufacturers appreciate the value of these decisive benefits and have been profiting from them in their series production for many years. Other industries also benefit from the quality and reliability of the PROMESS assembly presses. These include among others the electronics industry, medical technology, as well as the watch industry.

PRESSING



JOINING



RIVETING



MOULDING



STAMPING



SPRING TESTING



THROUGHPUT



BENDING



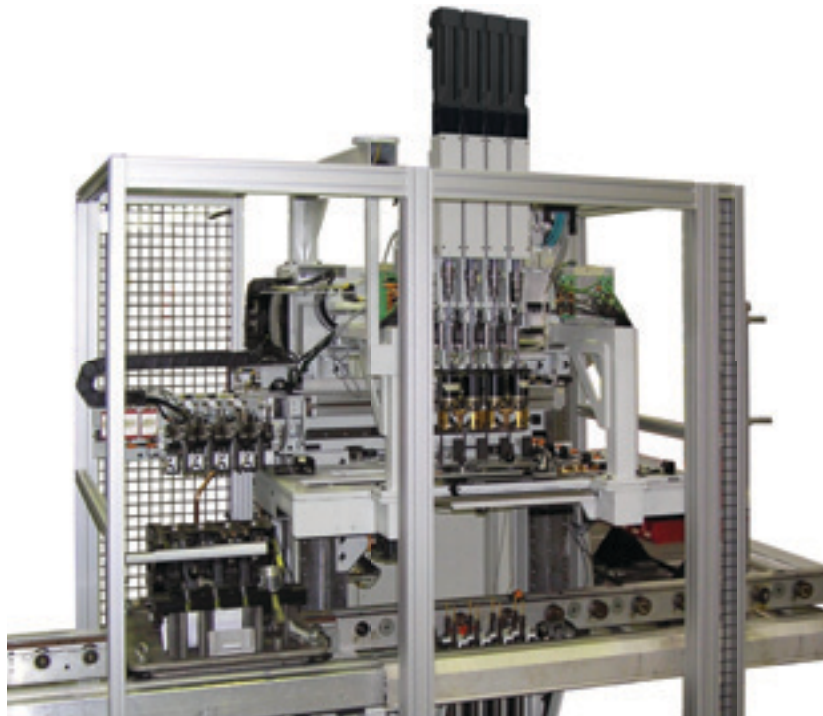
YOUR APPLICATION IS OUR PASSION

Thanks to many years of experience in the development and use of electro-mechanical assembly presses, countless applications in a wide range of industries have already been implemented all across the world. As innovative company, PROMESS has set itself the task of developing individual solutions in close cooperation with the customer, and of developing and optimising the functions and performance of its products. Regardless of whether the application requires extremely small dimensions, highest precision or unusual mounting positions, the solution is sure to be found in one of the four different press series offered by PROMESS.

SELECTION OF PREVIOUS APPLICATIONS:

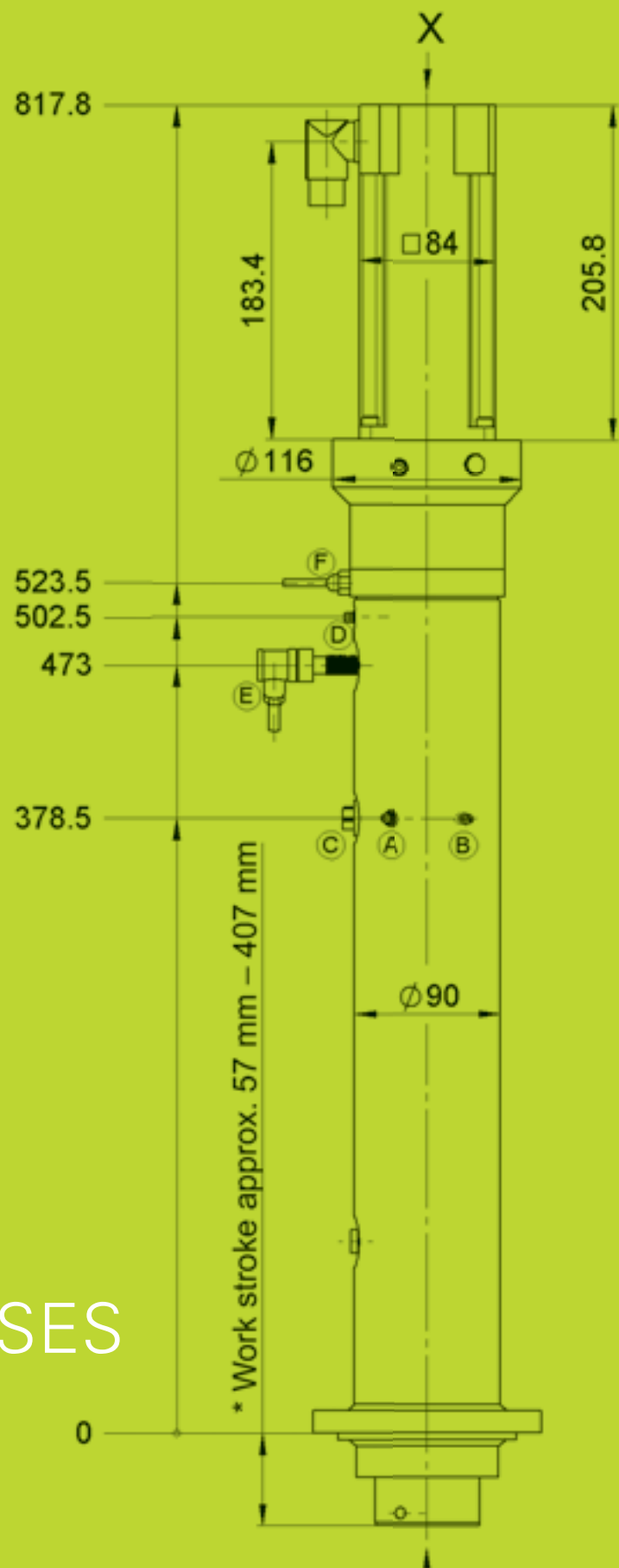
- Assembling valve seat guides and valve seats
- Joining outer bearing rings in bearing housings
- Joining gear wheels on shafts
- Joining dowel pins in housings at a relative position to the housing surface
- Friction value measurement at ball bearings subject to a defined bias
- Assembling of belt washers for servo motors
- Crimping electrodes at pacemakers
- Functional testing of syringes
- Pinning of clockwork mechanisms

For detailed application examples, refer to the [APPLICATIONS](#) chapter.



Assembly unit equipped with electro-mechanical assembly presses

ASSEMBLY PRESSES



PRESS RANGE

ECONOMIC MANUFACTURING – INTELLIGENT ASSEMBLY

With its NC-controlled assembly presses, PROMESS provides the tools required for implementing this strategy. Part tolerances and force differences are reduced and corrected. This significantly reduces the manufacturing costs of the individual parts.

PROMESS assembly presses are particularly suitable for demanding joining, forming or testing tasks with force-distance monitoring. Typical areas of application are automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

All PROMESS assembly presses can apply both pull and push forces. The internal and external expansion compensation neutralises bending up that occurs in the press system (frame, mechanical press parts and tools) and reduces the compression of the customer parts as these get shorter during the press process. Thus the positioning accuracy is maintained regardless of difference in the forces.

Closed-loop force control is a standard feature in all assembly presses; the applied force signal is permanently recorded during the movements. The electro mechanical assembly press can thus adjust and control the force so as to match the force setpoints, or initiate a quick stop in the event of collisions. This makes a virtually unlimited range of applications possible.

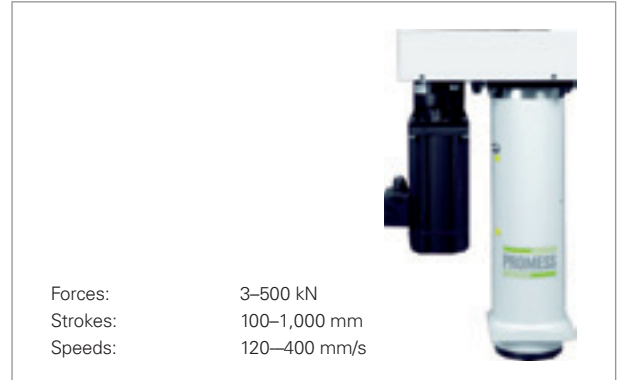
SPECIAL FEATURES:

- Integrated force, position and signal control
- Real-time force-distance analysis directly in the servo amplifier
- No external analysis system required
- Safety brake for category 4 optional
- Envelope and window functions
- Robust, tried-and-tested servo drive technology, no proprietary hollow shaft motor solution
- Absolute encoder eliminates the need for a reference run
- Positioning by means of external position transducers possible
- Only one measurement range required, due to high-precision force transducer
- Drift-free force measurement with high-precision strain gauge force transducer for pull and push forces
- All customary bus systems are supported
- Compensation against bending
- Service life of bearings and threaded drive > 12 million cycles
- Strokes of up to 1,000 mm
- Velocity of up to 1,200 mm/s

FOUR PRESS TYPES AND TWENTY FORCE RANGES FOR A MULTITUDE OF APPLICATION AREAS

CLASSIC SERIES

The PROMESS CLASSIC series offers the customer an optimal selection of standard units, thanks to the diverse configuration options. Depending on the application, the units are equipped with strain or piezo gauges for force measurement and have a flexible drive concept, i.e. the motor is either angled or mounted in line with the press mechanism.



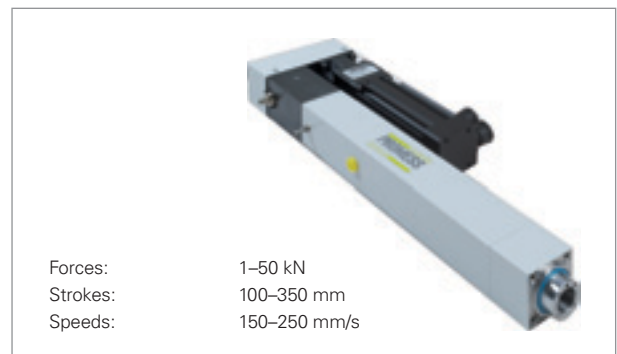
PRECISION SERIES

PROMESS has enhanced the CLASSIC unit and offers a PRECISION unit for applications in the micrometre range. It features a high-precision press ram guidance and exact force measurement, and is used in medical applications and the watch industry, among others. The unit offers high dynamics and speeds of up to 1,200 mm/s.



COMPACT SERIES

The COMPACT units have proven themselves in the market, thanks to their optimised design. With dimensions of 55–90 mm, they are frequently used in motor assembly. Thanks to their reduced weight, they can be connected to robots and used in flexible assembly concepts.



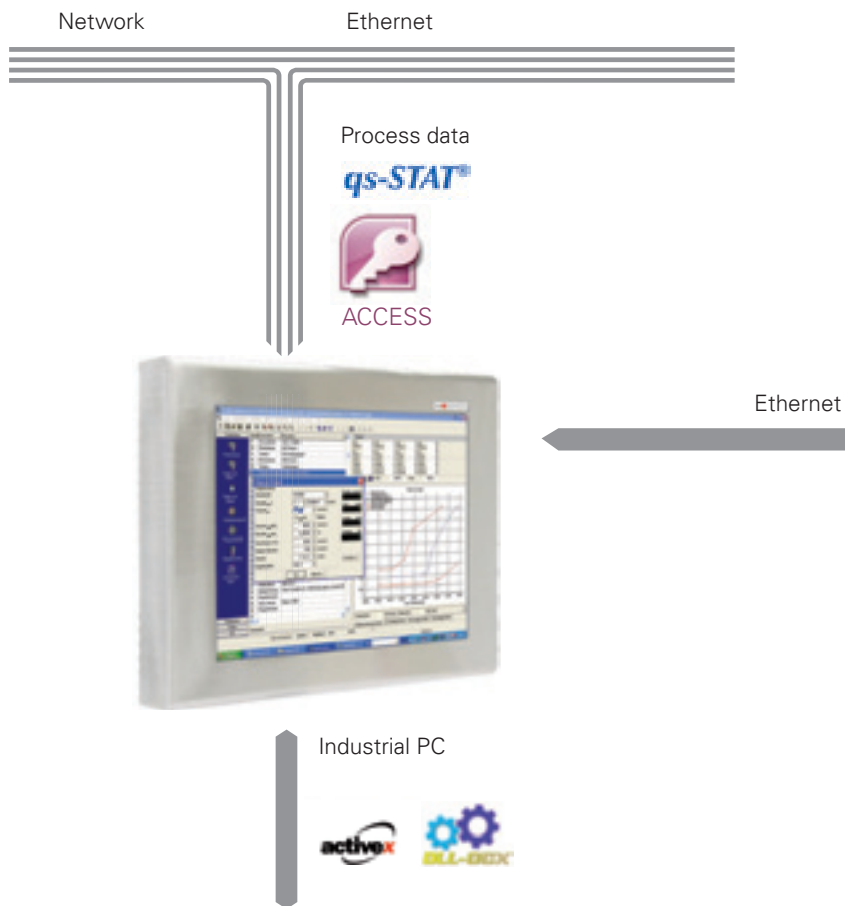
BASIC SERIES

The BASIC series was specially developed as cost-optimised starter version for simple forming and joining tasks. The BASIC unit has an innovative, easy control concept that makes use of icons on a touch panel. Preconfigured program steps reduce the set-up time for creating assembly programs. The units are available in three force ranges.

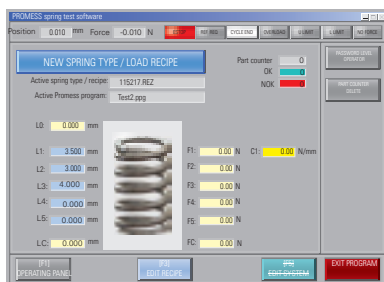


COMPACT CONTROL:

MODULAR AND NETWORKABLE



CUSTOMER-SPECIFIC SOFTWARE



SAFETY

Assembly presses require safety equipment of protection category 3 as defined by EN 954-1

Manual workstations require safety equipment of protection category 4 as defined by EN 954-1



Safety

PROMESS offers the most compact control. It is inserted into the servo amplifier as a plug-in component, and unites press movement control and force-distance monitoring. The process data is compared with the envelope, monitored and documented. The data is recorded in real-time. Thus the measurement and process results can be analysed immediately and transferred to the superordinate PLC. The data is visualised and stored by means of an industrial PC, laptop or a simple display. Quality assurance data can be accessed by means of the integrated database at any time. Ethernet is used as interface.

The system has a very flexible structure and can be integrated into various control concepts. Even in the basic version, which consists of an electro-mechanical assembly press, control and PC, it is possible to link 31 assembly presses. Here once again Ethernet is used as interface. If desired, the control (even the basic version) can be integrated into the system control functions. In this case, the PLC interface is set up as parallel IO interface, yet all other customary fieldbus systems are also compatible.



PLC systems



SIEMENS BECKHOFF



HARDWARE INTERFACE

- Standard
- 2 inputs
- 2 user inputs
- 4 outputs
- 2 user outputs
- 2 analog inputs
- 1 incremental input
- 24 V DC
- Can be supplemented with extension module (see ACCESSORIES chapter)



PROMESS UFM SOFTWARE

EASY AND SELF-EXPLANATORY OPERATION

The PROMESS UFM software is characterised by its wide range of functions and is therefore suitable for a multitude of demanding assembly and test applications. It is included in the scope of supply of each PROMESS electro-mechanical assembly press and is continuously developed further and optimised.

A transparent, user-friendly Windows interface ensures easy handling. The programs are easy to create and edit, by entering the process values in the respective function windows.

Knowledge about PLCs or drives is not required to configure the parameters for the unit movements. All entered program steps are displayed in the main window, and can be observed while the program is running. The signal curve is also displayed in the main window in real-time.

A customary PC or laptop can be used as programming unit for editing the program, visualising the signal curve, saving the programs and storing the database.

The screenshot displays the main software interface with a 'Functions' sidebar on the left containing icons for Position, Tare, Press to force, Delay time, Program end, and Press to signal. A central table lists program steps:

Step	Command	Parameter
1	Position	200.000 mm
2	Tare	Force input
3	Press to force	10.000 kN
4	Delay	250 ms
5	Position	50.000 mm
6	Program end	
7		
8		

Two detailed dialog boxes are shown:

- Press to force dialog:** Contains parameters for Force (10.000 [kN]), Pre-position (270.000 [mm]), Speed (400.000 [mm/s]), Acceleration (2000.000 [mm/s²]), Max. press-in pos. (310.000 [mm]), and Press-in feed (5.000 [mm/s]). It also includes checkboxes for 'Add force to force at prepos.', 'Record data', 'Monitor', 'Combine the curves at block position', 'Limit teach-in', and 'Cycle stop'.
- Position dialog:** Contains parameters for Position (97.000 [mm]), Speed (400.000 [mm/s]), Acceleration (6000.000 [mm/s²]), and Brake rate (6000.000 [mm/s²]). It includes an 'Overload' section with radio buttons for Force, Analog 1, and Analog 2, and an 'Overload limit' (200.000 [N]).

Labels 'Detailed input boxes for each step' point to these dialog boxes.

The list of steps to be performed is created by selecting the corresponding icons.

The software provides several process monitoring options. These include envelope and window functions, and it is also possible to monitor individual measuring values at specific points, or to monitor average, max. and min. values. The envelope method is very easy and user-friendly and can be configured in a few simple steps. The basic idea behind

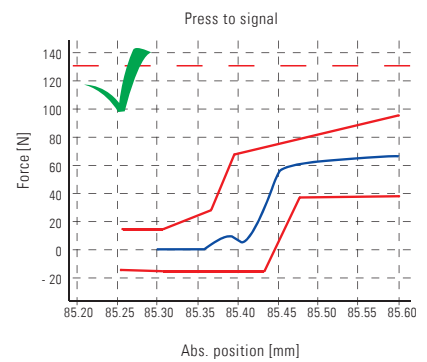
this method is to monitor a signal curve by means of freely definable limit curves. PROMESS developed this method at the end of the 1980s and has continuously optimised it since. This method is the prerequisite and basis for a technologically advanced data analysis using measuring curves and limit values.

QUALITY MONITORING

A force-distance analysis of the joining cycle makes 100 % real-time inspection of the manufactured parts possible.

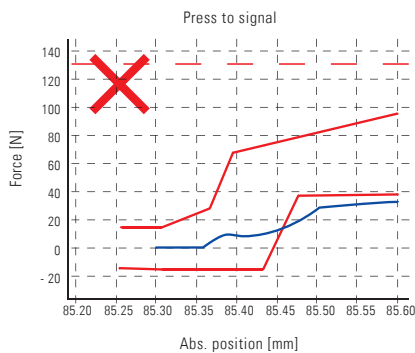


OK part



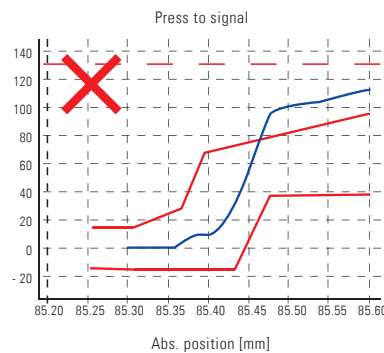
ALL QUALITY CRITERIA MET

NOK parts



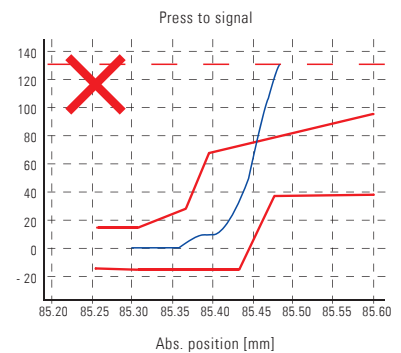
LOWER LIMIT EXCEEDED

- Possible causes:
- Material too soft
 - Part fit not tight enough
 - Part too short or missing
 - Tool defective



UPPER LIMIT EXCEEDED

- Possible causes:
- Material too hard
 - Part fit too tight
 - Part too long
 - Part not centred correctly



OVERLOAD

If an overload occurs, the pressing process is immediately stopped, to protect the tools and parts.

BASIC SERIES: SYSTEM OVERVIEW AND SOFTWARE

The PROMESS electro-mechanical assembly presses of the BASIC series have been developed especially for simple joining and forming tasks. PROMESS has standardised the units and offers three types with an attractive price-performance ratio. With their optimised range of features and innovative control and operation concept, the units are the ideal introduction to servo-electric joining technology. They allow even inexperienced users to perform simple joining and forming tasks with force-distance monitoring, such as bearing assembly.

Like all the other press types, the robust mechanism is controlled by a servo amplifier with integrated NC module on which the PROMESS BASIC software runs. Up to eight programs can be stored and selected by an operator panel or PLC interface. Various fieldbus systems can be connected.

DISPLAY



RS 485

Fieldbus systems



PLC systems



NC control in the servo amplifier

SAFETY

Assembly presses require safety equipment of protection category 3 as defined by EN 954-1

Manual workstations require safety equipment of protection category 4 as defined by EN 954-1



Safety



BASIC electro-mechanical assembly press

The PROMESS BASIC software is characterized by its intuitive user interface with touch panel. After the assembly unit has been switched on, the software starts, whereafter new programs can be created and existing programs can be edited or deleted. Up to eight programs can be stored.

The software contains preconfigured program steps that makes it much easier and faster to create a joining program. The user only has to enter the speeds, positions and forces, and define the limits for the monitoring.

Three different program types make a wide scope of applications possible:

- Press to position
- Press to force
- Press to relative position

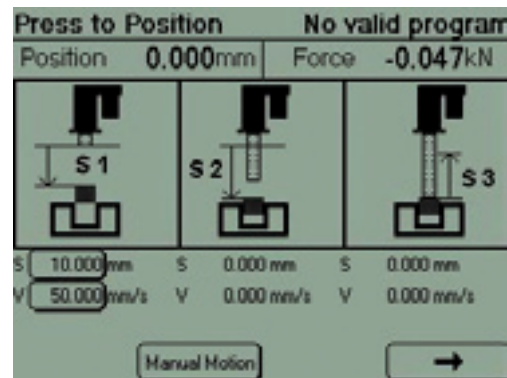
In all three program types, the pressing procedure can be monitored by means of the proven envelope method, or by recording up to three measuring values.

MEASURING VALUES FOR ANALYSIS

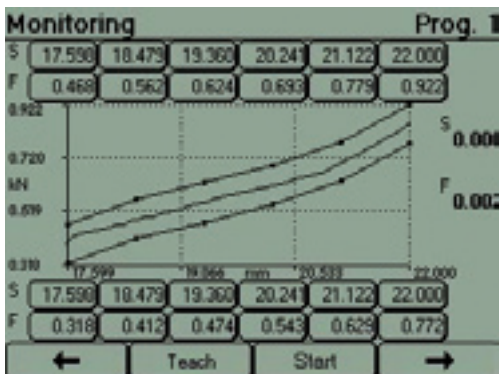
1. Recording a single force value at a fixed absolute position
2. Recording a max. force value for the monitored step
3. Recording the force value at a position relative to the end position of the monitored step



Start screen



Program type: Press to position

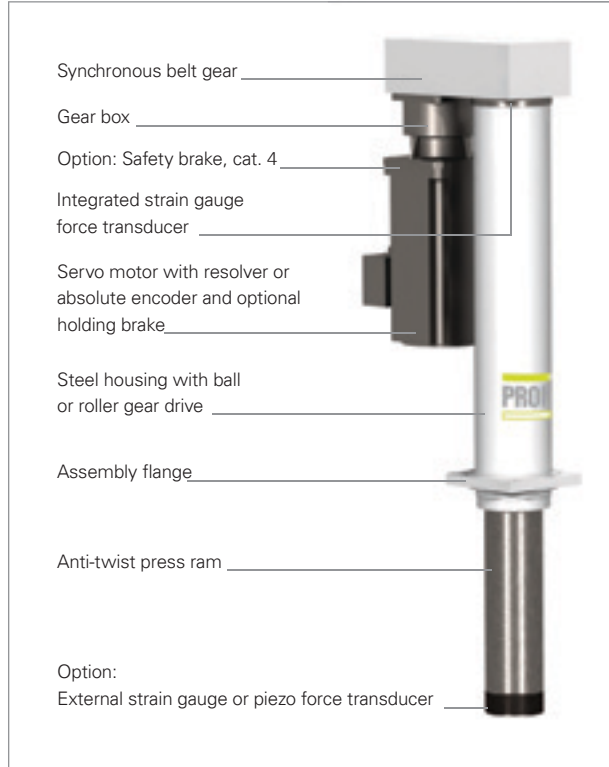


Monitoring by means of envelope curves

MECHANICAL DESIGN

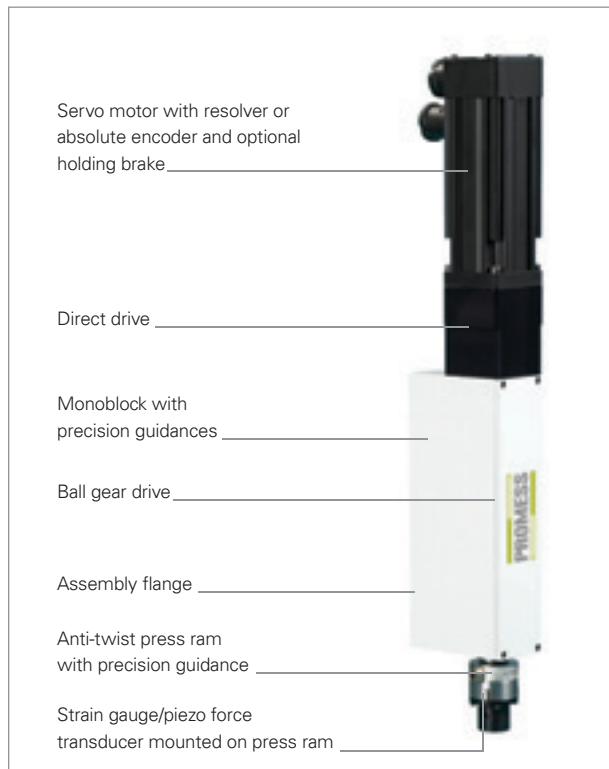
CLASSIC SERIES

The assembly presses of the CLASSIC series offer a large selection of load ranges and nominal strokes. The angled motor makes a compact design possible. It is connected to the ball/roller gear drive by means of a special synchronous belt gear. Appropriate, sufficiently large dimensioning of the drive ensures a high service life. The robust anti-twist press ram guidance enables positioning accuracy of < 0.01 mm.



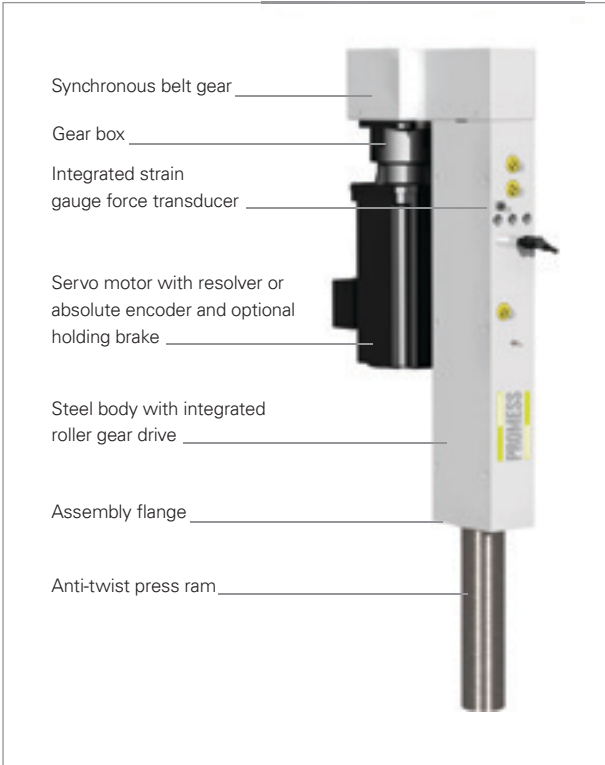
PRECISION SERIES

The electro-mechanical assembly presses of the PRECISION series have a linear design. The spindle is directly driven by the aligned servomotor and reaches high speeds. The precision mechanism, the high-resolution sensors and the intelligent control system enable results with micrometer precision. The systems of the PRECISION series are intended for high-precision applications, e.g. in the field of medical technology or the watch industry. The excellent measuring accuracy of the units particularly shows in tests in the single-digit Newton range.



COMPACT SERIES

These units are characterised by their slim and lightweight design. They are used in assembly tasks that require small dimensions. For example, eight valve seat guides and rings can be pressed into a motor block simultaneously. The servomotor is aligned parallel to the assembly unit, this results in a low installation height. The durable and compact roller gear drive is ideal for high forces at small dimensions. A synchronous belt connects the motor with the roller gear and provides a positioning accuracy of < 0.01 mm.



BASIC SERIES

The assembly presses of the BASIC series have been designed for a wide range of applications. A robust mechanism with integrated force-distance sensors, a compact control unit and operator panel make these units an ideal solution for simple assembly and forming tasks. The systems are available in the following sizes: 10 kN, 25 kN and 50 kN.



SAFETY EQUIPMENT FOR PROMESS ELECTRO- MECHANICAL ASSEMBLY PRESSES

PROMESS supplies the appropriate safety equipment for the purchased electro-mechanical assembly press, upon request. For integration into semi-automatic or automatic stations, the PROMESS assembly presses can be equipped with the following components, in accordance with the safety requirements of the machine manufacturer:

- Holding brake
- Safety brake (retrofitting possible)
- Single or dual pneumatic or hydraulic clamping brake
- Safe speed limit
- “Safe stop” function
- Function for enabling safe access to the work area even when the press ram is moving

For safe operation of the units, it is furthermore essential that all installed machine elements are safely dimensioned. Upon request, PROMESS supplies the appropriate safety factors for a specific assembly unit – e.g. for the belt drives, the bushings, couplings etc.

SAFETY IN PROMESS WORKSTATIONS

All PROMESS workstations are equipped with state-of-the-art safety equipment. Based on a detailed risk analysis, only components that conform to the required safety category are selected for use. In workstations with manual or pneumatic safety doors, appropriate interlock switches are used. Workstations with light curtain or two-hand device are usually equipped with the PROMESS safety brake. A Pilz PNOZmulti controller with the appropriate safety standard is used to electrically control the components.

The workstations are all supplied with declaration of conformity and CE mark.

Typical installation versions are shown below. Other versions are also possible.

MACHINES WITH FIXED SAFETY EQUIPMENT:

The units are installed in a protected work area with fixed safety equipment and monitored, locked doors (manually, pneumatically or electrically). Access to the danger area can only be obtained through the monitored and locked safety doors.

Here PROMESS uses mounting plates with integrated EMERGENCY STOP switch, combined with suitable locking elements for the doors. The EMERGENCY STOP triggers a controlled shutdown of the assembly press and subsequently interrupts the energy supply, in acc. with EN 418, cat. 1.

MACHINES WITH LIGHT CURTAIN:

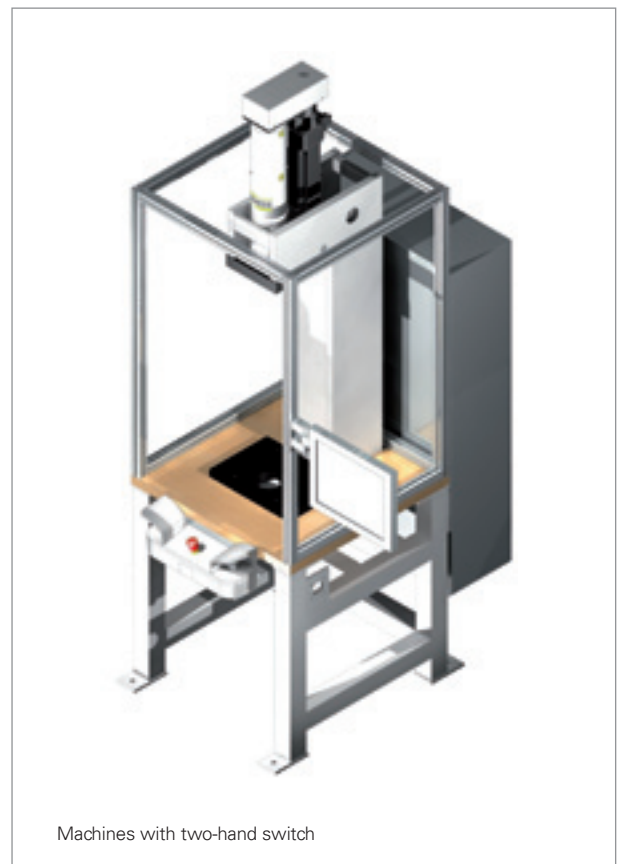
The danger area is protected by a light curtain. A PROMESS safety brake with integrated brake monitoring provides additional safety. The safety brake can also be retrofitted.

MACHINES WITH TWO-HAND SWITCH:

The assembly press is started by means of a two-hand switch. A PROMESS safety brake (which can also be retrofitted) with integrated brake monitoring provides additional safety. An important decision-making criterion is whether frequent retooling is required at the system. If this is the case, it is necessary to bypass the two-hand switch for "Setup" operation. For this situation, PROMESS supplies safe speed monitoring units, because the travel speed during setup operation must not exceed 10 mm/s.



Machines with light curtain



Machines with two-hand switch

SIZES AND SPECIFICATIONS

UFM TYPE (Other sizes on request)	FORCE [kN]	STROKE [mm]	VMAX [mm/s]	ARTICLE NO.	RESOLUTION: POSITION TRANSDUCER [µm]	RESOLUTION: FORCE TRANS- DUCER [N]	OPTIONS*
--------------------------------------	---------------	----------------	----------------	-------------	--------------------------------------------	------------------------------------------	----------

PRECISION SERIES, RECTANGULAR, WITH PIEZO FORCE TRANSDUCER

UFM 0.2/60/250	0.05	60	250	365815	0.15	0.0125	
UFM 0.2/60/250	0.1	60	250	365803	0.15	0.025	
UFM 0.2/60/250	0.2	60	250	365802	0.15	0.05	
UFM 1/100/400	0.5	100	400	364827	0.25	0.14	1) 2)
UFM 1/100/400	1	100	400	364830	0.25	0.28	1) 2)
UFM 1/100/400	1.5	100	400	364839	0.25	0.42	1) 2)
UFM 3/200/250	3	200	250	366830	0.31	0.84	1) 2)

COMPACT SERIES, RECTANGULAR, WITH STRAIN GAUGE FORCE TRANSDUCER

UFM 1/100/400	1	100	400	364020	0.25	0.28	1) 2)
UFM 3/200/250	3	200	250	366030	0.31	0.84	1) 2)
UFM 25/350/250	25	350	250	378025	0.5	6.25	1) 2)
UFM 50/250/150	50	250	150	378050	0.05	13.75	1) 2)
UFM 50/250/240	50	250	240	378055	0.10	13.75	1) 2)

STANDARD SERIES, ROUND, WITH STRAIN GAUGE FORCE TRANSDUCER

UFM 3/100/120	3	100	120	374003	0.05		1) 2) 3)
UFM 5/200/240	5	200	240	374005	0.10	1.38	1) 2) 3) 4)
UFM 12/200/240	12	200	240	374012	0.10	3.32	1) 2) 3) 4)
UFM 15/200/240	15	200	240	374014	0.10	4.16	1) 2) 3) 4)
UFM 20/180/150	20	180	150	374125	0.30	5.50	1) 2) 3) 4)
UFM 20/350/230	20	350	230	374023	0.40	5.50	1) 2) 3) 4)
UFM 30/180/150	30	180	150	374131	0.30	8.25	1) 2) 3) 4)
UFM 30/350/230	30	350	230	374130	0.40	8.25	1) 2) 3) 4)
UFM 40/180/150	40	180	150	374040	0.40	11.00	1) 2) 3) 4)
UFM 40/330/240	40	330	240	374043	0.60	11.00	1) 2) 3) 4)
UFM 60/180/150	60	180	150	374060	0.40	16.50	1) 2) 3) 4)
UFM 60/330/240	60	330	240	374065	0.60	16.50	1) 2) 3) 4)
UFM 80/180/150	80	180	150	374181	0.40	22.00	1) 2) 3) 4)
UFM 80/330/200	80	330	200	374091	0.50	22.00	1) 2) 3) 4)
UFM 100/180/150	100	180	150	374111	0.60	28.00	1) 2) 3) 4)
UFM 100/330/200	100	330	200	374103	0.70	28.00	1) 2) 3) 4)
UFM 150/400/145	150	400	145	374151	0.50	42.00	1) 2) 3)
UFM 240/350/120	240	350	120	374243	0.40	66.00	1) 2) 3)
UFM 300/350/100	300	350	100	374291	0.40	82.80	1) 2) 3)
UFM 500/400/200	500	400	200	374293	0.20	137.50	1) 2) 3)

BASIC SERIES WITH STRAIN GAUGE FORCE TRANSDUCER

UFM Basic 10/350/150	10	350	150	375010	0.10	2.80	2)
UFM Basic 25/350/150	25	350	150	375025	0.10	6.88	2)
UFM Basic 50/350/150	50	330	150	375050	0.50	13.75	2)

* OPTIONS

- 1) Absolute encoder
- 2) Holding brake
- 3) Standard integrated strain gauge force transducer, optional external strain gauge or piezo force transducer at the end of the press ram
- 4) Safety brake, cat. 4 for use with light curtain or two-hand switch

Data sheets and drawings can be downloaded at www.promessmontage.de

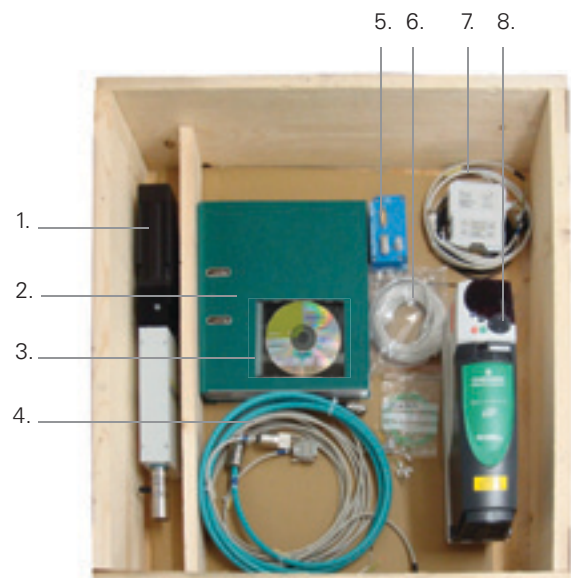
SCOPE OF SUPPLY & TRANSPORT

PROMESS electro-mechanical assembly presses are tested, calibrated and appropriately certified prior to leaving the factory, and are shipped in stable packaging. Comprehensive documentation is included and makes it possible to quickly start up the units. Depending on the system and accessories, the documentation includes manuals for the electro-mechanical assembly press, the Unidrive and the Profibus with its function modules, as well as wiring diagrams, test reports, calibration records, technical data of the accessories and documentation on the safety equipment. Renowned and reliable freight carriers take care that the devices are safely delivered to the customer.



SCOPE OF SUPPLY

1. Electro-mechanical assembly press
2. Documentation folder
3. Software package
 - UFM NC programming software
 - Process database (MS Access)
 - DB Viewer (database viewer)
4. Cable set (optional)
5. Pre-amplifier
6. PC connection cable
7. Ethernet module
8. NC control and servo amplifier



PRESS CONFIGURATOR

FOR YOUR PLANNING AND INQUIRY

Which max. forces are required? _____ kN

What stroke is required? _____ mm

Which max. speeds are required? _____ mm/s

Do certain forces need to be held or controlled for longer periods of time? _____
(Important if nominal forces need to be held for more than 4 seconds.)

How long is the expected interval time between two cycles? _____ sec.
(Important in the case of short cycle times below 3 seconds, for calculating the heating effect at the motor.)

Are pull forces also required? yes no

How much is the expected tool weight? _____ kg
(Beyond a certain weight, a holding brake is required to prevent the press ram from lowering when de-energized).

If a service life calculation or exact cycle time calculation is desired, a short description of the process has to be given.
The process has to be broken down into individual steps:

STEP	TYPE OF MOVEMENT	TRAVEL RANGE	AVERAGE SPEED	AVERAGE REQUIRED FORCE	OTHER
1					
2					
3					
...					

Example:

STEP	TYPE OF MOVEMENT	TRAVEL RANGE	AVERAGE SPEED	AVERAGE REQUIRED FORCE	OTHER
1	Positioning	150 mm	150 mm/s	0.5 kN	
2	Dwell time				1 sec.
3	Pressing	20 mm	10 mm/s	Linear force increase to 20 kN	
4	Press to force	1 mm	2 mm/s	25 kN	
5	Hold force			25 kN	1 sec.
6	Repositioning	170 mm	150 mm/s	0.5 kN	
7	Interval time				3 sec.

With which system is the assembly press to be used?

- Automatic assembly line
- Manually loaded station
- Single workstation

If no, how are program switches performed?

- Manually, by means of the keyboard
- By means of a program selection switch
- Others ()

Which safety system is required?

- Light curtain
- Two-hand switch
- Manually operated door
- Automatically closing and opening door
- Safety fence around the machine
- Other

Which accessories are required?

- Electric cabinet
- Mounting plate
- Frame
- Display
- Cable sets
- Sensors

How many different programs are used?

- 1
- 1–10
- More than 10

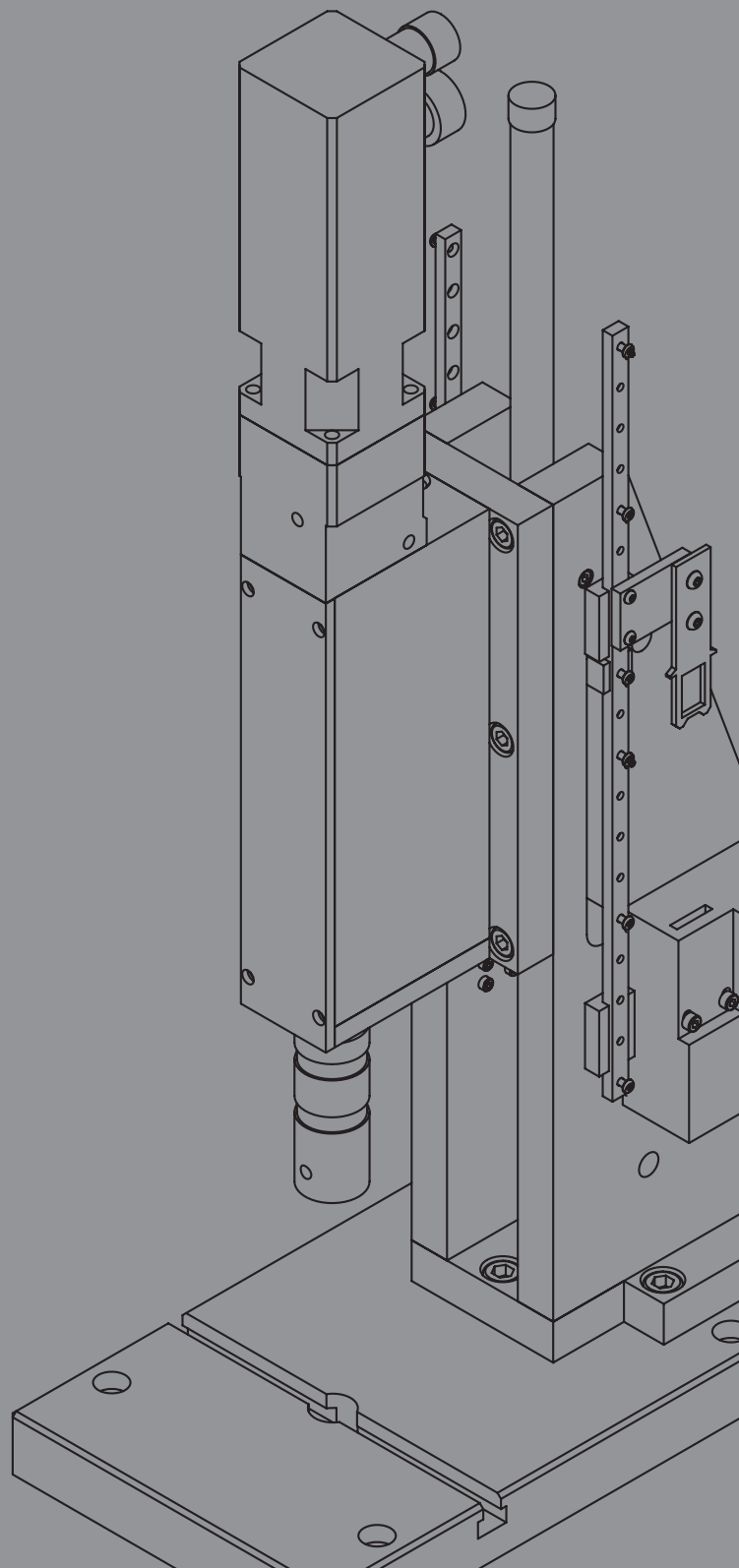
Does the machine have a PLC?

- Yes
- No

If yes, which interface does the PLC use for communication with the assembly press?

- PROFIBUS
- Digital interface
- INTERBUS-S
- CAN-BUS

WORKSTATIONS



SINGLE WORKSTATIONS

MODULAR CONFIGURATION, PRECISE MANUFACTURING

PROMESS supplies individual customised solutions for a multitude of applications in rough industrial conditions, from only the assembly presses themselves to complete universal single workstations. The single workstations are particularly suitable for small and medium-scale series production or prototype manufacturing, and offer extremely flexible application options, thanks to their modular design. All workstations are numerically controlled, autonomous stations of highest precision. They are equipped with integrated force-distance monitoring and thus ensure optimal quality assurance for each joined part. The measuring data is analysed in real-time and thus the results are immediately available for use during the running production.

PROMESS offers single workstations with many different force ranges. From precision workstations for 50 N to 3 kN applications in the field of microtechnology, to workstations with a joining force of up to 300 kN. The heart of each workstation is the electro-mechanical assembly press. Its dimensions and specifications are tailored to the requirements of the customer. Based on these dimensions, the other components, e.g. base frames, press frames, electric cabinets or safety equipment are configured. All workstations are equipped with state-of-the-art safety equipment and are supplied with declaration of conformity and CE mark.

SPECIAL FEATURES

- Integrated force-distance monitoring ensures optimal quality assurance for every assembled part
- Numerical control eliminates the need for mechanical stops and adjustments to control valves
- Fast type change within seconds
- Precision due to solid structural components
- Highest positioning accuracy and repeatability across the entire stroke of the press
- Modular system design enables individual customised workstations
- High level of operating comfort thanks to short distances for insertion operations
- Extensive range of accessories
- Supplied with CE declaration of conformity



PRECISION WORKSTATIONS 50–200 N

The smallest precision workstations are equipped with the 200 N precision unit. They are especially designed for applications in the micrometre range, e.g. in medical technology or in the watch industry. The guidance, drive and measuring systems are integrated into a monoblock. A C-frame made of solid steel ensures high rigidity.

FEATURES:

- C-frame, ST 52 steel
- Category 4 protective housing
- Automatic, pneumatically operated safety door with interlock switches, fully assembled and ready to use
- Cable feedthrough in the frame
- Surface treatment: bead-blasted and matt chrome-plated

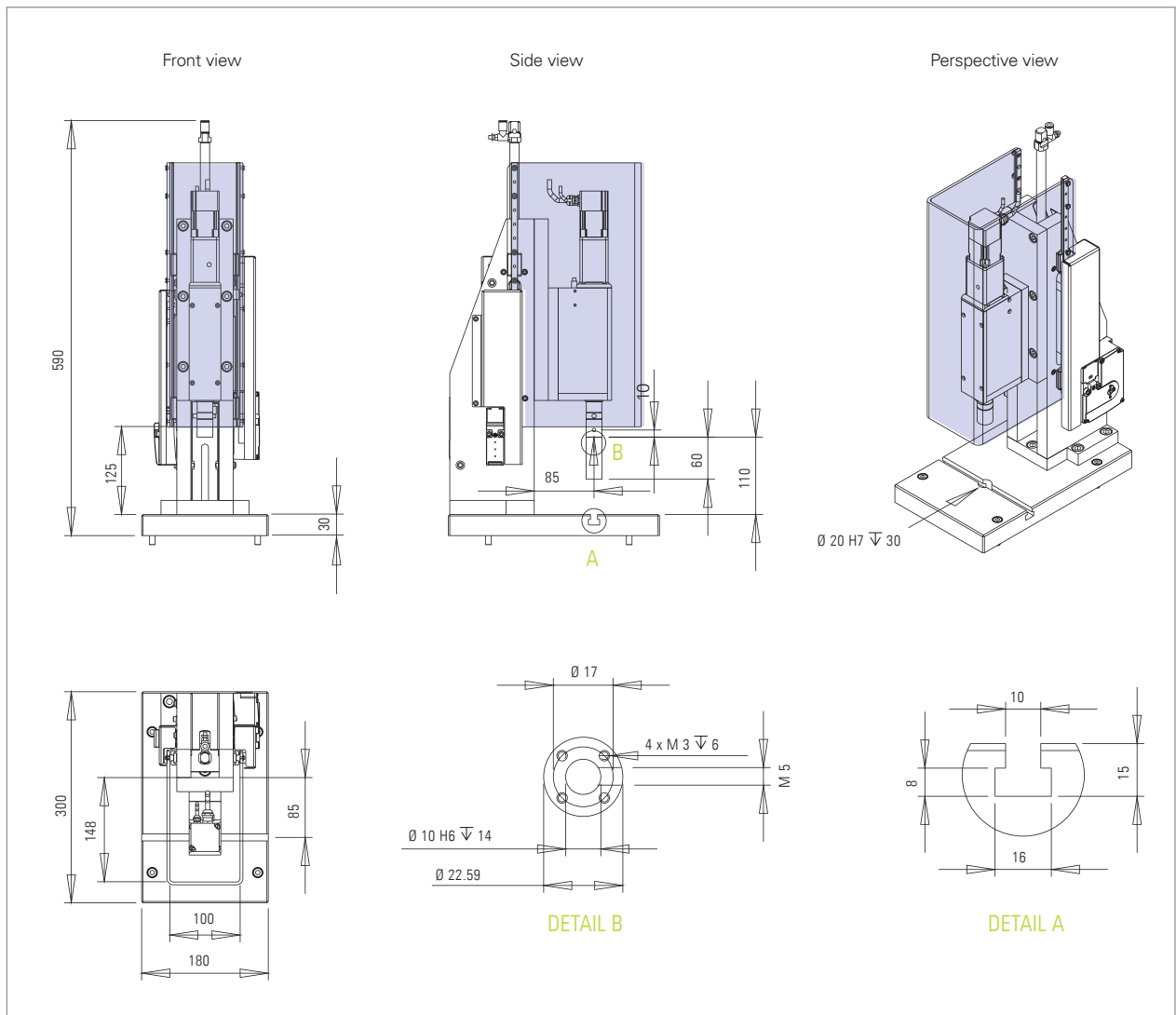
Article no.

50 N	160365815
100 N	160365803
200 N	160365802



TECHNICAL DATA – UFM 0.2/60/250

Mechanism	Direct drive
Force measurement	Ext. piezo force transducer
Nominal force	0 to 50 N, 0 to 100 N, 0 to 200 N, push and pull
Standard stroke	60 mm
Speed	0 to 250 mm/s
Force resolution	0.0125 N, 0.025 N, 0.050 N
Distance resolution	0.15 µm
Repeatability	0.001 mm
Guidance precision of press ram	±0.002 mm
Rotational play of press ram	Pre-tensioned without play
Overload protection: force transducer	20 kN
Voltage supply	3 x 400 V AC, 50 Hz, 6 A
Permissible temperature	+10 to +50 °C



The following accessories are available for this workstation.
For more information, refer to the Accessories chapter.



Electric cabinet

Base frame

Operator panel

PRECISION WORKSTATIONS: 500 TO 1500 N

The precision workstations for forces from 500 to 1500 N are equipped with a PROMESS precision unit and are valued especially for their precision and high speed. The system is supplied ready-for-use.

FEATURES:

- C-frame, ST 52 steel
- Category 4 protective housing
- Automatic, pneumatically operated safety door with interlock switches, fully assembled and ready to use
- Cable feedthrough in the frame possible
- Surface treatment: bead-blasted and matt chrome-plated

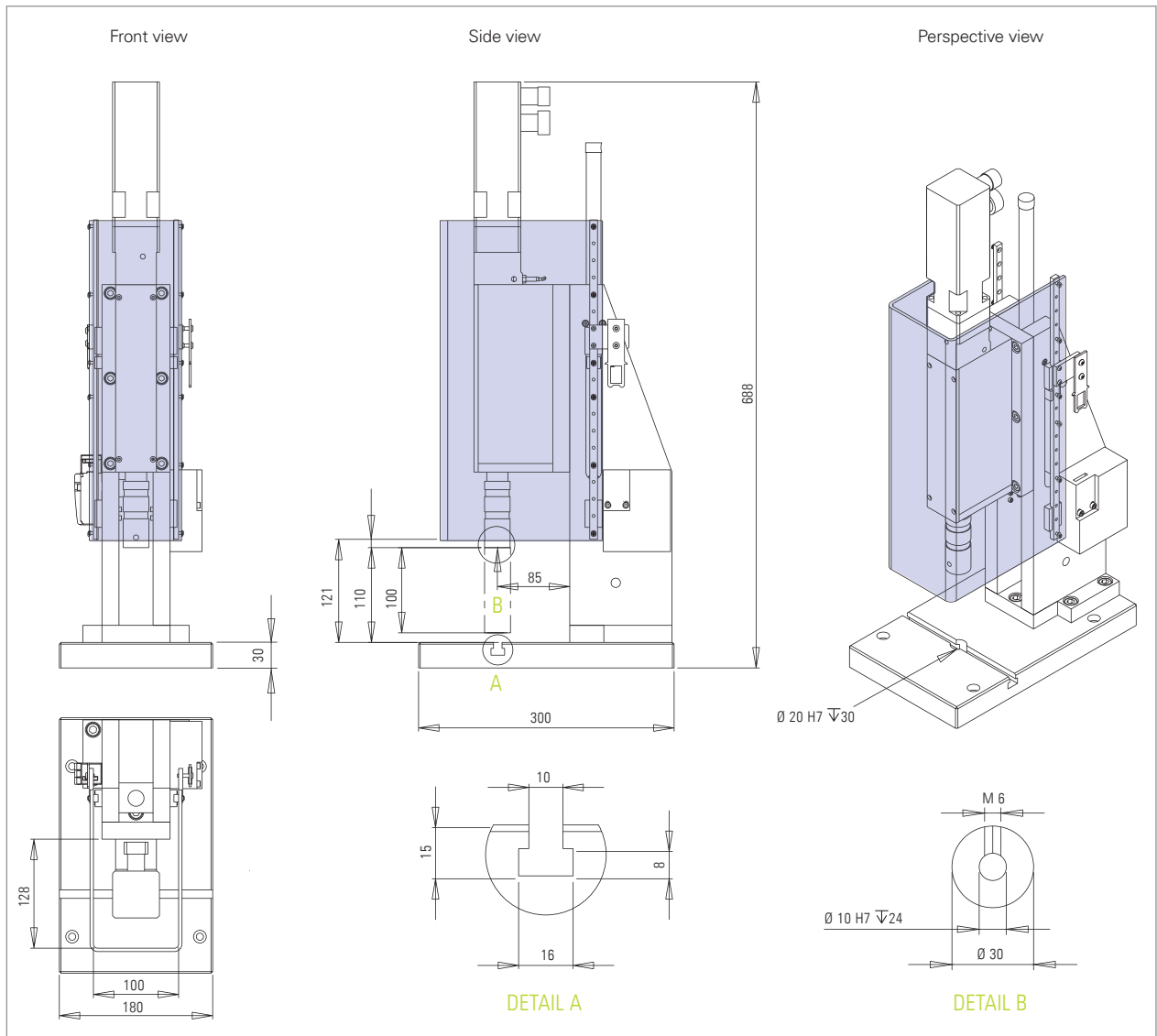
Article no.

500 N	2100364827
1,000 N	2100364830
1,500 N	2100364839



TECHNICAL DATA – UFM 01/100/400

Mechanism	Direct drive
Force measurement	Ext. force transducer
Nominal force	0 to 500 N, 0 to 1000 N, 0 to 1500 N, push and pull
Standard stroke	100 mm
Speed	0 to 400 mm/s
Force resolution	0.14 N, 0.28 N, 0.52 N
Distance resolution	0.25 µm
Repeatability	< 0.002 mm
Guidance precision of press ram	±0.002 mm
Rotational play of press ram	Pre-tensioned without play
Overload protection: force transducer	20 kN
Voltage supply	3 x 400 V AC, 50 Hz, 6 A
Permissible temperature	+10 to +50 °C



The following accessories are available for this workstation.
For more information, refer to the Accessories chapter.



PRECISION WORKSTATION 3 kN

This precision workstation is suitable for high-precision assembly procedures such as valve assembly or pressing watch glasses. It is equipped with a PROMESS precision unit which is capable of delivering push and pull forces of up to 3 kN.

FEATURES:

- C-frame, ST 52 steel
- Category 4 protective housing
- Automatic, pneumatically operated safety door with interlock switches, fully assembled and ready to use
- Cable feedthrough in the frame possible
- Surface treatment: bead-blasted and matt chrome-plated

Article no.

3 kN

3250366830



TECHNICAL DATA – UFM 03/200/250

Mechanism	Direct drive
Force measurement	Ext. force transducer
Nominal force	0 to 3 kN, for both push and pull
Standard stroke	200 mm
Speed	0 to 250 mm/s
Force resolution	0.84 N
Distance resolution	0.31 μ m
Repeatability	< 0.005 mm
Guidance precision of press ram	\pm 0.01 mm
Rotational play of press ram	Pre-tensioned without play
Voltage supply	3 x 400 V AC, 50 Hz, 6 A
Permissible temperature	+10 to +50 °C

MODULAR SINGLE WORKSTATIONS

For small to medium series production, PROMESS offers a unique, modular single workstation system with appropriate accessories. The user can choose from two sizes:

1. A workstation with a base frame sized 800 x 800 mm (width x depth) for the 3 to 20 kN force ranges, and
2. a system for the 20 to 300 kN force ranges. This second version has a base frame sized 1,000 x 1,000 mm.

The workstations are equipped with electro-mechanical assembly presses from the CLASSIC series. The workstations have a modular design and are therefore extremely flexible. Depending on the requirements of the customer, PROMESS can supply all components up to a ready-to-use workstation and will take care of the on-site start-up, upon request.

FEATURES

- Modular system design enables individual customised workstations
- Press frame, robust steel, RAL 7035 paint coating
- Category 4 protective housing
- Large selection of force, stroke and speed ranges
- Extremely robust design, suitable for long service lives
- Integrated force-distance monitoring ensures optimal quality assurance for each assembled part
- Assembly results displayed immediately
- Highest positioning accuracy and repeatability across the entire stroke of the press
- Numerical control eliminates the need for mechanical stops and adjustments to control valves
- T-slot and central bore hole for tool fixture equipped



WORKSTATION CONFIGURATOR

THE MODULAR SYSTEM: IT'S YOUR CHOICE!

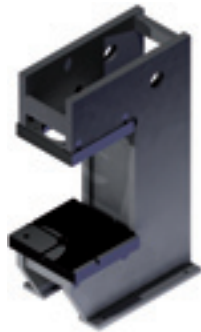
ASSEMBLY PRESS SELECTION:

- Force
- Stroke
- Speed

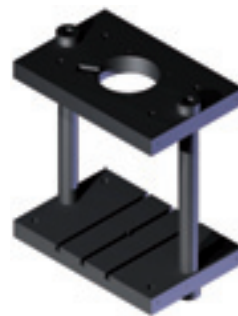


PRESS FRAME SELECTION:

- Clear height
- Projection
- Width



C-frame



Two-column frame



Four-column frame

BASE PLATE SELECTION

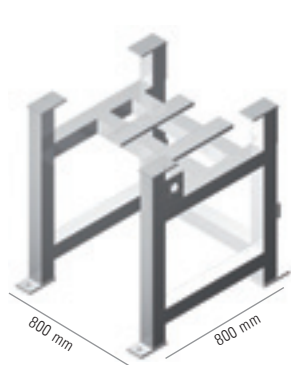


Wood

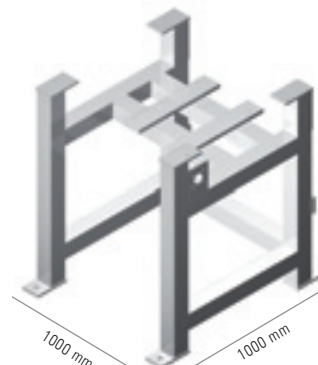


Aluminium

BASE FRAME SELECTION



Up to 20 kN



From 20 kN

FRAME FEET SELECTION



Levelling feet



Fastening lugs

SAFETY EQUIPMENT



Light curtain



Two-hand switch



Manual/pneumatic safety door

OPERATOR PANEL

- Emergency stop switch
- OK/NOK indicator
- Reference run indicator
- Start button
(if no two-hand switch is used)
- Key switch for setup operation
(optional)



ELECTRIC CABINET

The electric cabinet dimensions depend on the nominal force of the electro-mechanical assembly press.

The electric cabinet can be mounted at the right, left or rear of the workstation, as desired.



PC SELECTION



Flat panel PC on supporting arm



Industrial PC, installed in electric cabinet

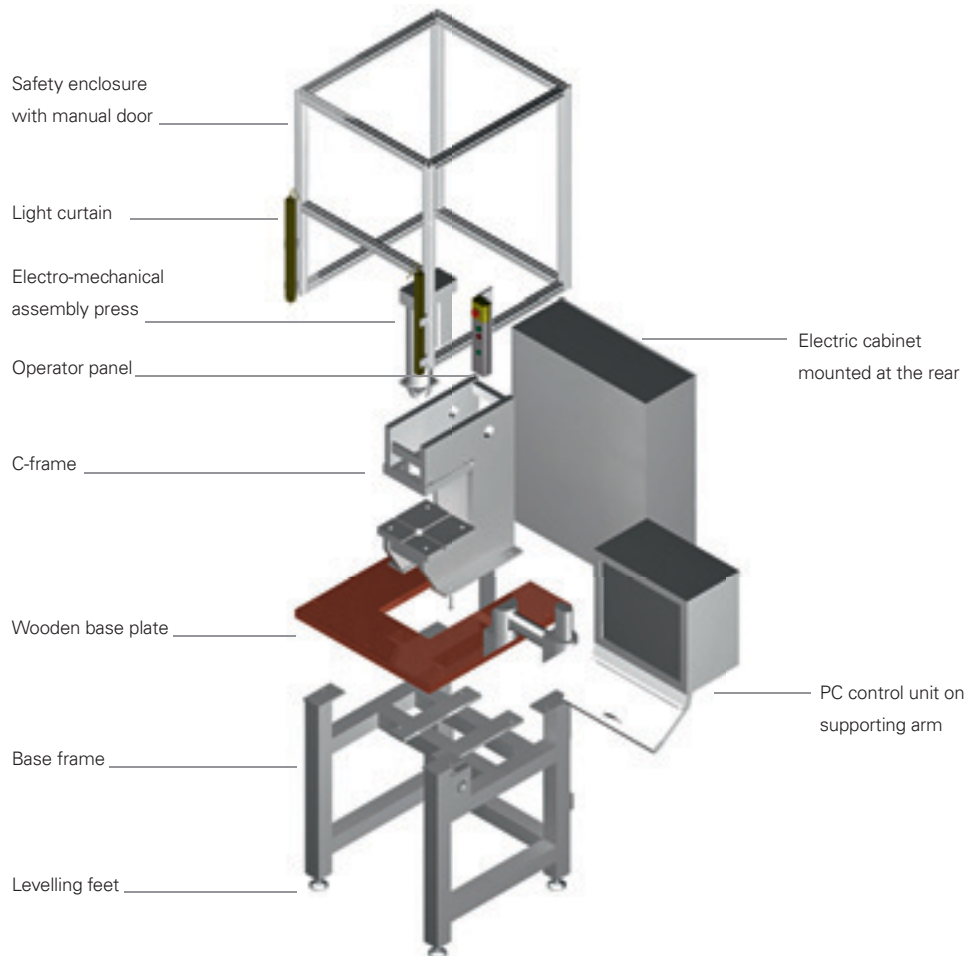


Laptop shelf pre-mounted at workstation (optional)

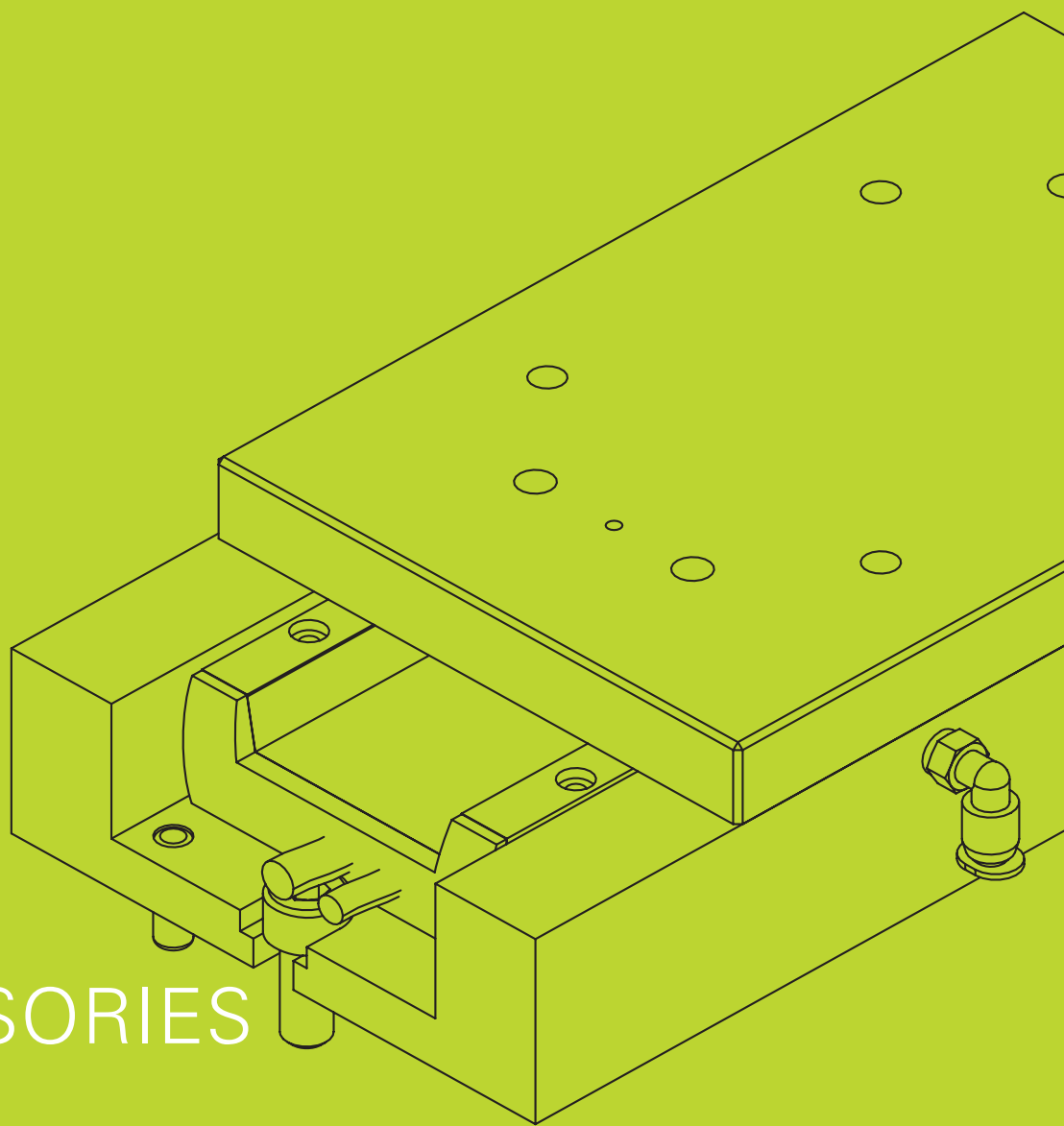
For more options, refer to the Accessories chapter.

The following illustration shows an example of a modular single workstation.

EXAMPLE:



ACCESSORIES



MOUNTING PLATES

The PROMESS mounting plates are manufactured in-house and are started up, calibrated and subjected to a performance test and long-term test together with the electro-mechanical assembly press. The mounting plates are shipped with CAD drawings and, upon request, with inspection records of the final acceptance inspection. They can be easily integrated into the electrical system of an assembly line. The plates have been designed for electrical cabinets from the AE 1350 or TS 8 series manufactured by Rittal.

All connections have been wired to terminals. All components, such as the AC servo amplifier, NC control module, EMC components, e.g. mains filter and ferrite cores, as well as an emergency stop switch that corresponds to the safety standard defined in the machine safety directive (EN 418, stop category 1), are included on the plates.

The scope of supply of the mounting plate includes a cable set with a length of 5 m.

CABLES INCLUDED IN THE CABLE SET:

- Motor power cable
- Resolver cable or encoder cable
- Proximity switch cable
- Connection cable for strain gauge or piezo amplifier

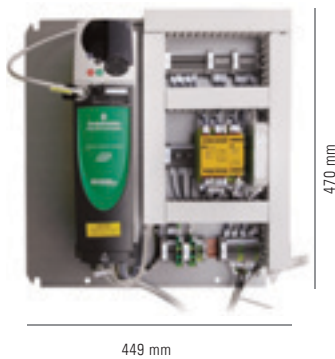
REQUIRED CONNECTIONS ON TERMINALS:

- Power connection 400 V AC
(fuse protection to be provided by the customer)
- Control voltage 24 V DC/3 A
(fuse protection to be provided by the customer)
- 2-channel emergency stop circuit, 24 V DC
- PLC interface as digital I/O, 24 V DC
- Fieldbus interface option (Profibus, CanOpen, etc.)

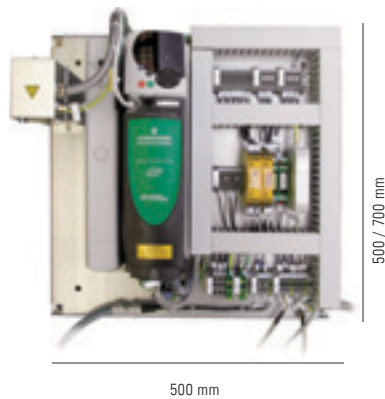
THE ADVANTAGES

- Short start-up times
- No wiring work
- Fully tested and inspected
- EMC tested

TYPE 1



TYPE 2/3



TYPE 4



UFM TYPE	ARTICLE NO.	OPTIONS				SUPPLY V AC / HZ	FUSES A	CABLE SET W/O MP ARTICLE NO.*
		ARTICLE NO.	DIMENSION	RITTAL NO.	MOUNTING PLATE, INCL. 5 M CABLE			
PRECISION SERIES, RECTANGULAR, WITH PIEZO FORCE TRANSDUCER								
UFM 0.2/60/250	365815	3653030	Type 1	Type AE	3 x 400 / 50	6	3391xx	
UFM 0.2/60/250	365803	3653030	Type 1	Type AE	3 x 400 / 50	6	3391xx	
UFM 0.2/60/250	365802	3653030	Type 1	Type AE	3 x 400 / 50	6	3391xx	
UFM 1/100/400	364825	3645300	Type 1	Type AE	3 x 400 / 50	6	3307xx	
UFM 1/100/400	364830	3645300	Type 1	Type AE	3 x 400 / 50	6	3307xx	
UFM 1/100/400	364839	3645300	Type 1	Type AE	3 x 400 / 50	6	3307xx	
UFM 3/200/250	366830	3678300	Type 1	Type AE	3 x 400 / 50	6	3355xx	
COMPACT SERIES, RECTANGULAR, WITH STRAIN GAUGE FORCE TRANSDUCER								
UFM 1/100/400	364020	3643200	Type 1	Type AE	3 x 400 / 50	6	3307xx	
UFM 3/200/250	366030	3663300	Type 1	Type AE	3 x 400 / 50	6	3344xx	
UFM 25/350/250	378025	on request	–	–	3 x 400 / 50	16	on request	
UFM 50/250/150	378050	on request	–	Type TS	3 x 400 / 50	20	on request	
UFM 50/250/240	378055	on request	–	Type TS	3 x 400 / 50	32	on request	
CLASSIC SERIES, ROUND, WITH STRAIN GAUGE FORCE TRANSDUCER								
UFM 3/100/120	374003	3743030	Type 1	Type AE	3 x 400 / 50	6	3312xx	
UFM 5/200/240	374005	3743050	Type 1	Type AE	3 x 400 / 50	6	3312xx	
UFM 12/200/240	374012	3743120	Type 1	Type AE	3 x 400 / 50	12	3312xx	
UFM 15/200/240	374014	3743140	Type 2	Type AE	3 x 400 / 50	12	3411xx	
UFM 20/180/150	374125	3743200	Type 1	Type AE	3 x 400 / 50	12	3312xx	
UFM 20/350/230	374023	3743230	Type 1	Type AE	3 x 400 / 50	12	3312xx	
UFM 30/180/150	374131	3743310	Type 1	Type AE	3 x 400 / 50	16	3311xx	
UFM 30/350/230	374130	3743300	Type 2	Type TS	3 x 400 / 50	16	3368xx	
UFM 40/180/150	374040	3743400	Type 2	Type TS	3 x 400 / 50	20	3313xx	
UFM 40/330/240	374043	3743430	Type 2	Type TS	3 x 400 / 50	20	3313xx	
UFM 60/180/150	374060	3743600	Type 2	Type TS	3 x 400 / 50	20	3313xx	
UFM 60/330/240	374065	3743650	Type 3	Type TS	3 x 400 / 50	32	3304xx	
UFM 80/180/150	374181	3743810	Type 2	Type TS	3 x 400 / 50	32	3367xx	
UFM 80/330/200	374091	3743800	Type 3	Type TS	3 x 400 / 50	32	3304xx	
UFM 100/180/150	374111	on request	Type 3	Type TS	3 x 400 / 50	40	on request	
UFM 100/330/200	374103	3743900	Type 4	Type TS	3 x 400 / 50	40	3314xx	
UFM 150/400/145	374151	3743920	Type 4	Type TS	3 x 400 / 50	40	3314xx	
UFM 240/350/120	374243	on request	–	Type TS	3 x 400 / 50	63	3319xx	
UFM 300/350/100	374291	on request	–	Type TS	3 x 400 / 50	90	3319xx	
UFM 500/400/200	374293	on request	–	Type TS	3 x 400 / 50	300	335405	

* 3391xx = cable length in metres

Example: Article 339105 = Article no. 3391 + 05 m cable

(possible lengths: 03, 05, 10, 15, 20 and 25 m – for cables of 10 m or longer, a mains filter is required)



ELECTRIC CABINETS



PROMESS offers customer-specific, modular electric cabinets with various options for the PROMESS electro-mechanical assembly presses.

OPTIONS

For one or several electro-mechanical assembly presses

With or without installed industrial PC

With or without main switch (primary or secondary)

With or without fuse protection

With or without ventilator or air conditioning

With lead outlets at the top, bottom or on the side

With or without cabinet lighting

All connections have been wired to terminals. All components are mounted in-house and are tested prior to leaving the factory.

The following connections have to be customer-supplied:

- Power connection, 400 V AC
- 2-channel emergency stop circuit, 24 V DC
- PLC interface as digital I/O, 24 V DC
- Fieldbus interface option (Profibus, CanOpen etc.)
- Reserve cable-feedthroughs for supplied cables

The cable sets consists of the following cables:

- Motor power cable
- Resolver cable or encoder cable
- Proximity switch cable
- Connection cable for strain gauge or piezo amplifier
- Ethernet cable to PC

The cable sets are available in the following lengths:
3, 5, 10, 15, 20 and 25 m.

For cables of 10 m or longer, a mains filter is required.

PRESS FRAMES

C-FRAME

PROMESS offers robust C-frames for integration into production lines or machines. They are especially valued for their excellent accessibility from the front and side, and are mainly used for assembly tasks in the force range up to 100 kN. They have been specially designed for the PROMESS electro-mechanical assembly presses and have a high rigidity.

All C-frames consist of a welded steel frame with a RAL 7035 paint coating, as well as burnished top and bottom plates. The top plates are ready for installation of the electro-mechanical assembly press. The bottom plate has a central bore with fitting and T-slots, for easily fastening the tools.

SPECIAL FEATURES

- Available for various press models
- Variable clear height and depth
- Solid steel construction, completely assembled and ready-to-use
- High rigidity
- Base plates finish-grinded

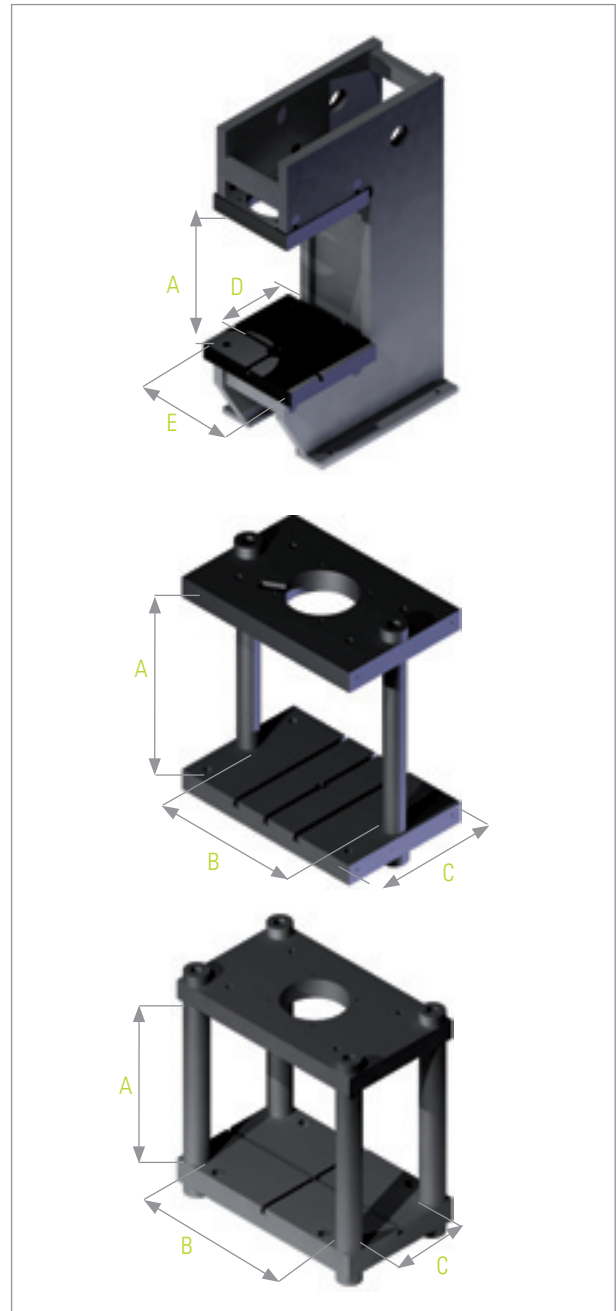
TWO- AND FOUR-COLUMN FRAMES

The two- and four-column frames offered by PROMESS are suitable for applications with central axial force transmission. The large advantage of the column frames is the low amount of bending, whereby parallelity is maintained. Column frames are largely used for stamping and forming, but are also suitable for other applications.

The top and bottom plates of the column frames consist of burnished steel and are equipped with two T-slots parallel to the lateral edges (T-slot width as per DIN 650-10). On all frames, the clear height and depth can be variably adjusted depending on the application.

SPECIAL FEATURES

- Available for various press models
- Variable clear height and depth
- Solid frame structure made of steel columns and plates, completely assembled and ready-to-use
- Base plates finish-grinded



FRAME CONFIGURATOR

PROMESS dimensions the frames based on the following specifications:

	Press type	Clear height (A)	Clear width (B)	Clear depth (C)	Projection (D)	Width of base plate (E)
C-frames			x	x		
2-column					x	x
4-column					x	x

DISPLAYS AND PCs

PROMESS offers various programming options for editing the NC programs and visualising the signal characteristics. You can choose between an industrial PC, various panel PCs or a display without computer.



INDUSTRIAL PC FOR INSTALLATION IN AN ELECTRIC CABINET

- Compact IPC for wall or table mounting
- Aluminium housing
- Without fan
- RAM 1024 MB DDR-2, SO_DIMM, 667 MHz, Kingston
- Hard disk 120 GB S-ATA/300, 2.5", 5400 rpm/ 8 MB
- Embedded board, AMD Sempron
- Equipped with HDD
- Interfaces: Dual Ethernet 10/100 Mbps, VGA, 1x RS-232, 4x USB 2.0, 1x LPT, 2x PS/2, audio
- Operating temperature: 0 to 35 °C
- Storage temperature: –20 to 60 °C
- Relative humidity: 5 to 90 %, non-condensing
- Voltage supply 24 V DC
- Weight 3 kg
- Operating system: Windows XP Prof.

ARTICLE NO.

Industrial PC for installation in an electric cabinet, German	2601001270
Industrial PC for installation in an electric cabinet, English	2601001275

OPTIONS

Keyboard with trackball	2601000916
Monitor 17" TFT	2601005400



PANEL PC with 12" TFT COLOUR DISPLAY

- Panel PC for minimal space requirements:
- Housing: Galvanised steel sheet housing, industrial, EMC-compliant housing design
- Front panel: Aluminium with replaceable film, Touch screen (analog resistive)
- Protection class: front IP65, rear IP20
- Display: 12.1" TFT (SVGA)
- Baseboard:
 - IPC479 all-in-one-board
 - Celeron M373 1.5 Ghz
 - Onboard graphics, 32/64 MB shared memory
- RAM: 1024 MB
- Drive: Hard disk 40 GB (24x7)
- Interfaces: 1x RS232, 2x PS/2, 1x VGA, 2x Ethernet, 6x USB (2x front port and 4x side port)
- Supply voltage: 14 V DC (18–36 V DC) max.115 W
- Temperature range: +5 °C to 45 °C
- Operating system: Windows XP Prof.

ARTICLE NO.

Panel PC with 12" TFT colour display	2601001225
--------------------------------------	------------

OPTIONS

Keyboard with trackball	2601000916
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PANEL PC WITH 15" TFT COLOUR DISPLAY

- Housing: Galvanised steel sheet housing, industrial, EMC-compliant housing design
- Front panel: Aluminium with replaceable film, touch screen (analog resistive)
- Protection class: front IP65, rear IP20
- Display: 15" TFT (XGA)
- Baseboard:
 - IPC479 all-in-one-board
 - ULV Celeron M373, 1.0 Ghz
 - Onboard graphics, 32/64 MB shared memory
- Slots: 1x PCI
- RAM: 1024 MB
- Drive: Hard disk 60 GB
- Interfaces: 1x RS232, 2x PS/2, 1x VGA, 2x Ethernet, 6x USB (2 front ports and 4 side ports)
- Supply voltage: 24 V DC (18–36 V DC) max. 115 W
- Temperature range: +5 °C to 45 °C
- Operating system: Windows XP Prof.

ARTICLE NO.

Panel PC with 15" TFT colour display	2601001138
--------------------------------------	------------

OPTIONS

Keyboard with trackball	2601000916
-------------------------	------------



PANEL PC WITH 15" TFT/TOUCH SCREEN IN HOUSING

- IPC board 479-T, CPU 1 GHz MHz, without fan,
- 512 MB RAM
- Hard disk 2.5", 40 GB for 24 h continuous use
- CD-RW drive

- Display: 15" TFT colour display, 1024 x 768 (XGA), incl. touch screen
- Interfaces: 2x RS232 COM1+2, 1x LPT1, 2x USB, as bootable ports located on rear panel, 2x Ethernet 10/100Base-T (RJ45)
- Other connections: VGA, mouse (PS2), keyboard (PS2),
- 1 vacant ISA/PCI combination slot,
- Supply: 24 V DC / max. 100 W
- Operating system: WINDOWS XP Prof. MUI e/u
- Documentation (CD-ROM), CE mark, UL certification
- Supply: 24 V DC / max. 100 W
- Operating system: WINDOWS XP Prof. MUI e/u
- Documentation (CD-ROM), CE mark, UL certification

ARTICLE NO.

Panel PC with 15" TFT/touch screen in housing	2601002205
-----------------------------------------------	------------



8.4" DISPLAY:

- Resistive touch screen
- Dimensions: 234 x 184 x 42 mm (W x H x D)
- AMD Geode LX 800 500 Mhz CPU
- 256 MB DDR RAM
- CompactFlash card, San Disk 512 MB
- Without fan
- Wall mounting with VESA Standard
- 0–50 °C
- Interfaces: 2x RS232, 2x RTL8100C for 10/100 Mbps, 2x USB 2.0
- Power switch
- Reset button
- CompactFlash socket
- Audio
- Windows XP operating system, installed in German or English
- External AC power adapter
- Input 90–260 V AC / 50–60 Hz / 45 W

ARTICLE NO.

8.4" TFT LCD panel, German	9951-1
8.4" TFT LCD panel, English	9996-1

OPTIONS

Keyboard with trackball	2601000916
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FIELDBUS INTERFACES

PROMESS offers various standard protocols and standard hardware elements for communication between a PLC or a PC and the NC control of the electro-mechanical assembly press. (PLC/PC = master, servo press = slave).



I/O level:

Digital start signals and other control signals are sent to the assembly press, which sends OK/NOK messages and other status signals.

ACTUAL VALUE LEVEL:

The assembly press continuously transmits the current actual value for force, position and analog values.

VARIABLE LEVEL:

Setpoints for the forces, positions etc. are transmitted to the assembly press. The assembly press responds with the calculated characteristic values of the press procedures.

MEASURING VALUE LEVEL:

The press sends measuring values that were determined during the pressing process.

ID LEVEL:

An ID number is assigned e.g. to a batch, and saved for later identification.

PROFIBUS DP

Article no.:
3101005150



SPECIFICATIONS

Adjustable data rate:
9.6 Kbit/s to 12 Mbit/s

PROGRAM MODULES

Incl. S7 function block

INTERBUS-S

Article no.:
3101005160



SPECIFICATIONS

Fixed data rate:
500 Kbit/s

CAN-OPEN

Article no.:
3101005180



SPECIFICATIONS

Adjustable data rate:
10 Kbit/s to 1 Mbit/s

DEVICE-NET

Article no.:
3101005170



SPECIFICATIONS

Adjustable data rate:
125 Kbit/s to 500 Kbit/s

EXTENSION MODULE

The extension module is equipped with 16 digital inputs and outputs respectively, and two analog inputs. It is used for small automation tasks peripheral to the press tool, e.g. for controlling a vacuum gripper, a cylinder or a sliding table.

The output can also be used to transmit detailed error messages. The module can be installed on a C-DIN rail in the electric cabinet.

16 DIGITAL OUTPUTS (DO)

(24 V DC, galvanically separated)

FUNCTION OUTPUTS:

9 user outputs*

Operate/reset

Program no.: Bit 0

Program no.: Bit 1

Program no.: Bit 2

Program no.: Bit 3

Program no.: Bit 4

Strobe

16 DIGITAL INPUTS (DI)

(24 V DC, galvanically separated)

FUNCTION INPUTS:

10 user inputs*

Program no.: Bit 0

Program no.: Bit 1

Program no.: Bit 2

Program no.: Bit 3

Program no.: Bit 4

Strobe

* The user inputs/outputs are used to control the sequence within joining programs and for controlling valves and other actuators.



ARTICLE NO.

Extension module: Outputs

2602002408

ARTICLE NO.

Inputs

2602001408

2 ANALOG INPUTS

Analog input signals: ± 10 V DC

The analog auxiliary signals are used to connect high-precision external sensors.

PRECISION INDEXING TABLE RE/96 ELECTRICAL

This precision indexing table with air bearing is used to double the capacity of the electro-mechanical assembly press: The operator can already insert the next part whilst the assembly press is still in operation.

APPLICATION EXAMPLE

This indexing table, which has a diameter of 96 mm, can also be equipped with more than two positions. When four positions are used, it is e.g. possible to insert a part at the first position, automatically insert another part at the second position, press the part at the third position and automatically unload the part at the fourth position. The parts are positioned with highest precision.

TECHNICAL DATA

Air-supported bearing during the movement
No play when in rest during standstill
Designed for max. 20 kN
Prepared for installation in press frame
Turntable diameter 96 mm
Two or more positions freely programmable
Positioning accuracy ± 0.002 mm
Axial runout ± 0.002 mm
Radial runout ± 0.002 mm
2 positions programmable with standard version, controlled by means of 2 digital inputs
Optional AXIS INTERFACE software package available for controlling 16 positions

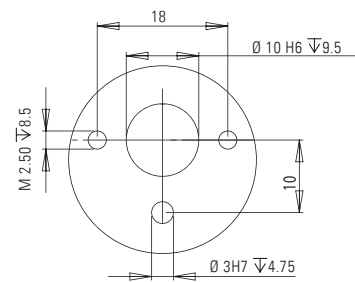
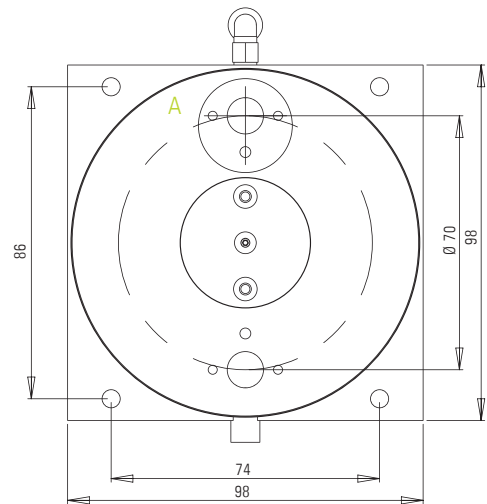
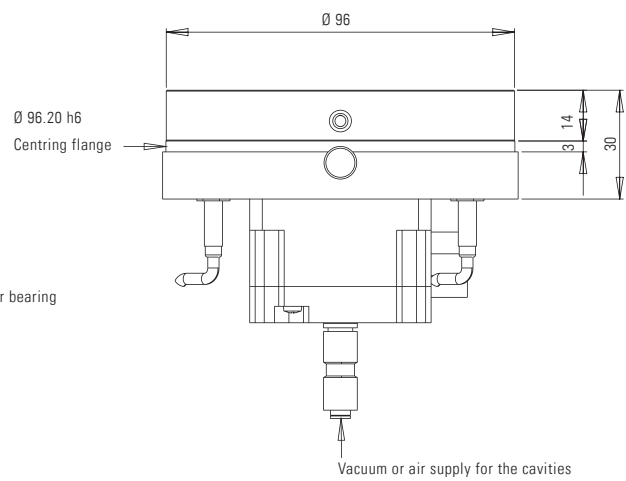
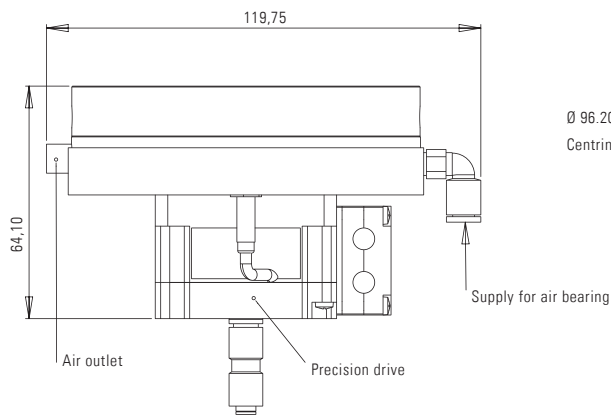
Driven by rotary module ROTAX Rx50R30, precision ± 0.002 angular degrees

- Incl. XENAX servo controller (12 inputs, 8 outputs)
- Incl. motor cable, length 1.5 m
- Incl. encoder cable, length 1.5 m
- Incl. PLC cable, shielded, 1.5 m

ARTICLE NO.

Precision indexing table RE/96, electrical | 630100596





DETAIL A



Application example

OPTIONS

More than two positions with appropriate fastening devices for holding several tools.

Vacuum suction in the fixture cavities, to stabilise the parts during movements.

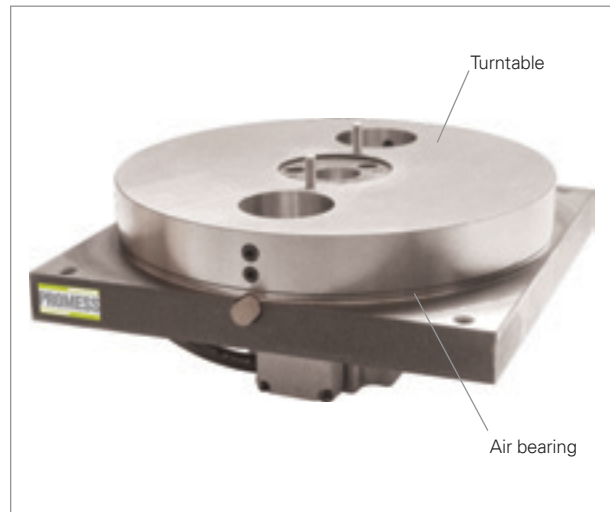
Matching AXIS INTERFACE software package for directly controlling 16 positions by means of the joining program (see Software chapter).

PRECISION INDEXING TABLE RE/165 ELECTRICAL

This precision indexing table with air bearing and electrical precision drive is used to double the capacity of the electro-mechanical assembly press: The operator can already insert the next part whilst the assembly press is still in operation.

APPLICATION EXAMPLES:

This indexing table, which has a diameter of 165 mm, can also be equipped with more than two positions. With four positions, it is e.g. possible to insert a part into the first position, automatically insert another part in the second position, press the part in the third position and automatically unload the part in the fourth position. The parts are positioned with highest precision.



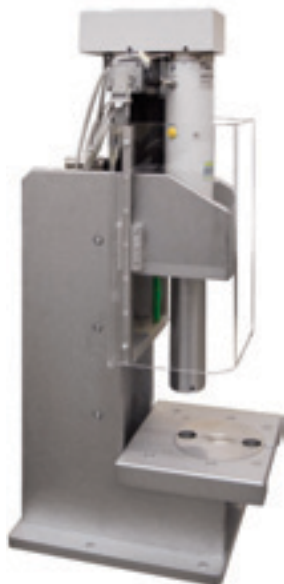
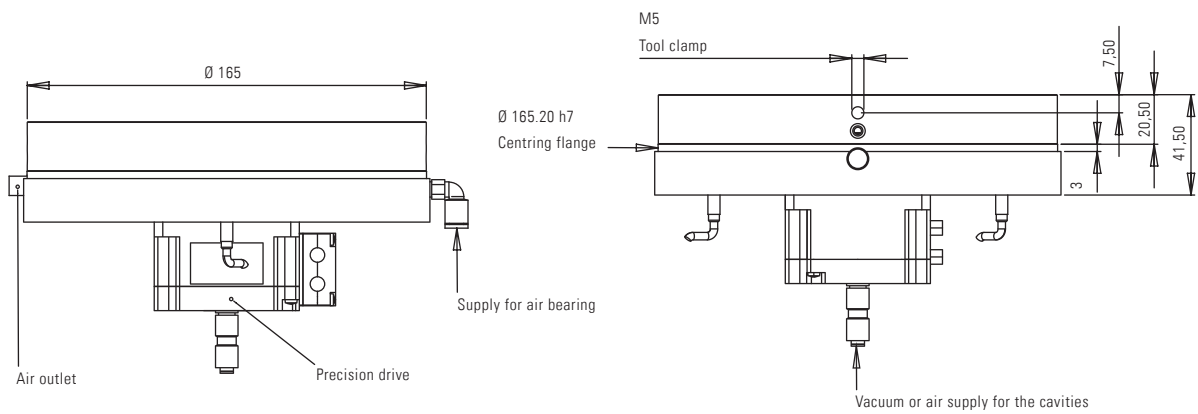
TECHNICAL DATA

Air-supported bearing during the movement
No play when in rest during standstill
Designed for max. 20 kN
Prepared for installation in press frame
Turntable diameter 165 mm
Two or more positions freely programmable
Positioning accuracy ± 0.003 mm
Axial runout ± 0.002 mm
Radial runout ± 0.002 mm
2 positions programmable with standard version, controlled by means of 2 digital inputs
Optional AXIS INTERFACE software package available for controlling 16 positions

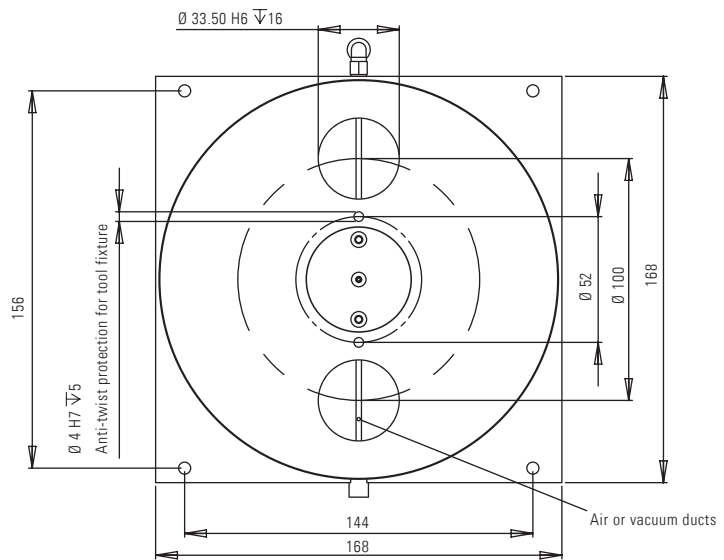
Driven by rotary module ROTAX Rx60R30, precision ± 0.002 angular degrees
– Incl. XENAX servo controller (12 inputs, 8 outputs)
– Incl. motor cable, length 1.5 m
– Incl. encoder cable, length 1.5 m
– Incl. PLC cable, shielded, 1.5 m

ARTICLE NO.

Precision indexing table RE/165, electrical	6301005165
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Application example



OPTIONS

More than two positions with appropriate fastening devices for holding several tools.

Vacuum suction in the fixture cavities, to stabilise the parts during movements.

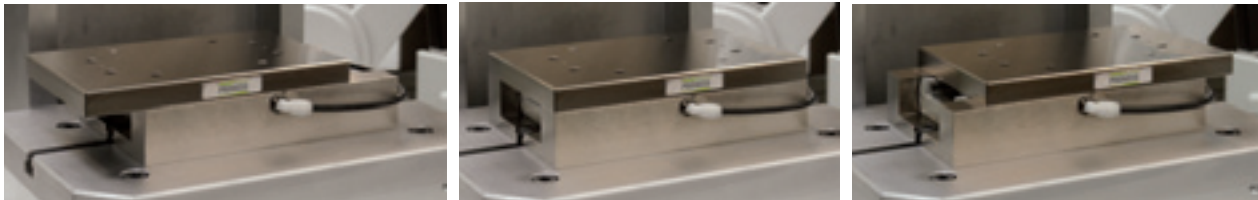
Matching AXIS INTERFACE software package for directly controlling 16 positions by means of the joining program (see Software chapter).

PRECISION LINEAR TABLE STE/85 ELECTRICAL

This precision linear table with air bearing is used for positioning parts underneath the assembly press. The positions can be freely programmed.

APPLICATION EXAMPLES:

- Serial pressing of diverse identical parts
- High-precision gripping of a part at position A and pressing it at position B.

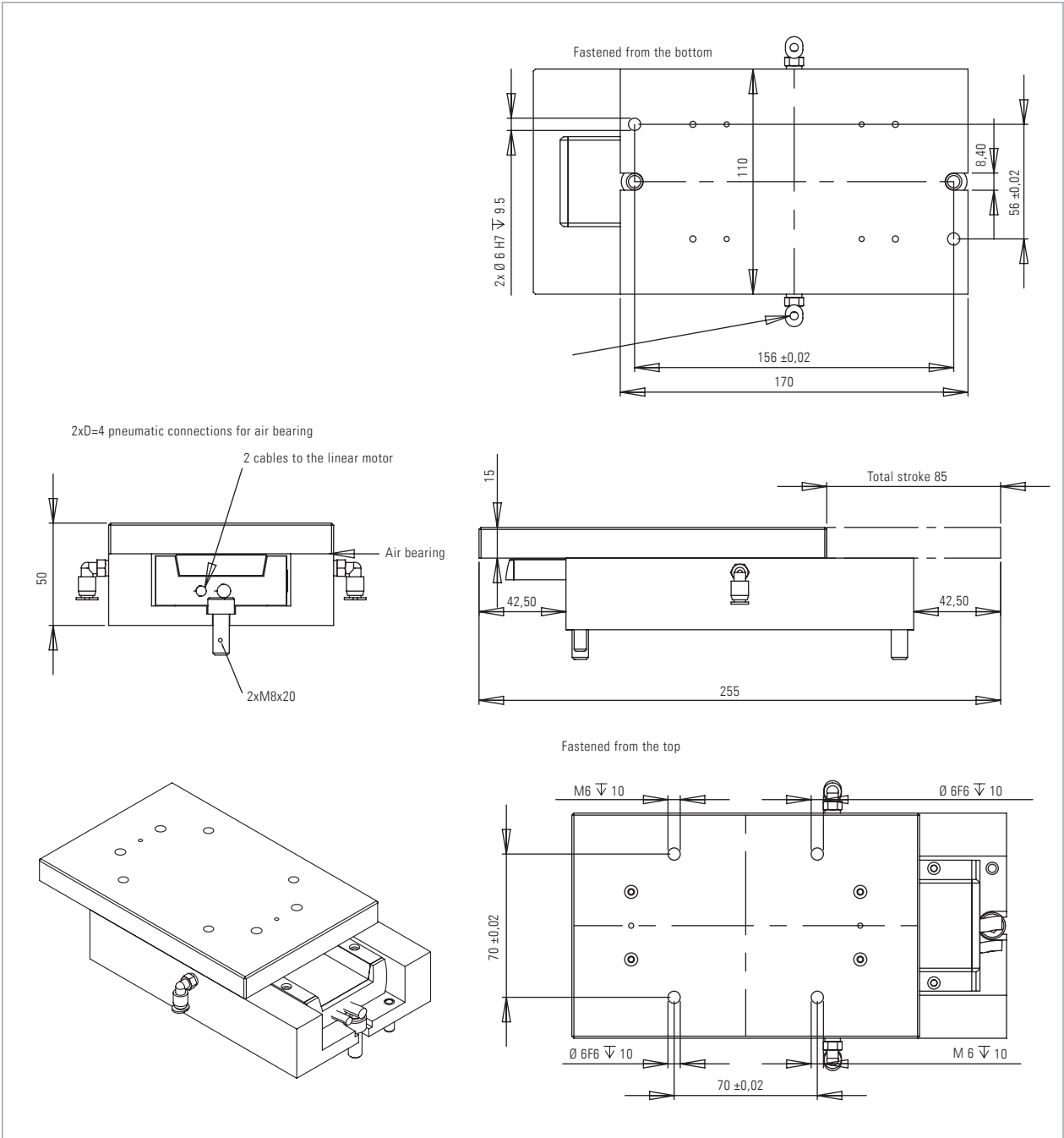


TECHNICAL DATA

Air-supported bearing during the movement
No play when in rest during standstill
Max. press force 20 kN
Max. dynamic load 40 N
Prepared for installation in press frame
Stroke 85 mm, freely programmable
Positioning accuracy ± 0.005 mm
Axial runout ± 0.004 mm
4 positions programmable with standard version, controlled by means of 2 digital inputs
Optional AXIS INTERFACE software package available for controlling 20 positions
Radial runout ± 0.002 mm
2 positions programmable with standard version, controlled by means of 2 digital inputs
Driven by a linear motor, precision ± 0.002 mm
- Incl. XENAX servo controller (12 inputs, 8 outputs)
- Incl. motor cable, length 1.5 m
- Incl. encoder cable, length 1.5 m
- Incl. PLC cable, shielded, 1.5 m

ARTICLE NO.

Precision linear table STE/85, electrical	6301006085
-------------------------------------------	------------



OTHER MODELS

Model:	STE 80
Stroke:	80 mm
Model:	STE 176
Stroke:	176 mm
Model:	STE 272
Stroke:	272 mm

OPTIONS

Matching AXIS INTERFACE software package for directly controlling 20 positions by means of the joining program (see Software chapter).

EXTERNAL SENSORS

The PROMESS NC control allows the user to connect diverse additional sensors for force, distance, temperature or similar physical values, and to analyse the data they provide. The system has two analog inputs and an encoder input. Max. two of these can be evaluated simultaneously.

APPLICATION EXAMPLE

A frequent application is the so-called "Press to a relative position" procedure. The part has to be pressed in until a certain position relative to the surface of the workpiece has been reached. The distance between the component and the surface is measured by a sensor.



ARTICLE NO.	SENSOR / ACCESSORIES	CABLE	STROKE	RESOLUTION
3647	Precision sensor: Heidenhain ST 1278	axial	12 mm, extended at rest	±0.001 m
3640	Precision sensor: Heidenhain ST 1278	radial	12 mm, extended at rest	±0.001 m
4103003080	Precision sensor: Heidenhain ST 1277	axial	12 mm, pneumatically retracted	±0.001 m
4103003078	Precision sensor: Heidenhain ST 3078	axial	30 mm, extended at rest	±0.001 m
4103001271	Precision sensor: Heidenhain MT 1271	radial	12 mm, extended at rest	±0.001 m
11541305	5 m connection cable for precision sensor ST 127x			

CALIBRATION ACCESSORIES AND CALIBRATION SERVICE

Regular calibration of the PROMESS units prevent incorrect process parameters and ensures constant production quality. To this end, PROMESS offers the necessary accessories and, if desired, a calibration service, which is performed by experienced and qualified service technicians and which includes the following:



CALIBRATION SERVICE:

- Calibration of the force measurement system
- Inspection of the position measurement system
- Alignment of the force measurement system
- Preparation of a calibration certificate
- Functional inspection for noise and wear
- Lubrication
- Inspection of machine capability (optional)

CALIBRATION SET

- Reference sensor
- Analysis unit for the reference sensor with display and RS 232 interface for connecting to a PC
- Interface cable
- Factory calibration report or DKD (Deutscher Kalibrierdienst) calibration certificate (extra charge)
- PROMESS Cal_Mc software (optional)
- Industrial suitcase

The calibration set is suitable for the following measurement ranges:

ARTICLE NO.	FORCE RANGES
5006	1 kN
5007	5 kN
5001	20 kN
5003	50 kN
5005	100 kN

CAL_MC CALIBRATION SOFTWARE

Automatic calibration of the force transducer is performed with the PROMESS CAL_MC calibration software, using a force transducer calibrated by the DKD as reference. Upon completion, a correction is recommended and a report, which can be exported to Microsoft Excel, is generated. The software functions exclusively with calibration devices from PROMESS.

ARTICLE NO.

CAL_MC software incl. interface cable for Unidrive Classic	5019
CAL_MC software incl. interface cable for Unidrive SP	5029



Example of how to connect the calibration device when using the CAL_MC.EXE software:



ADDITIONAL ACCESSORIES

HAND WHEEL & SETUP OPERATION

A hand wheel at the single workstation makes it possible to manually operate the PROMESS assembly press in setup mode. The click-stop positions of the wheel and the software-scalable resolution make the handling very comfortable. The hand wheel is portable and connected to the station by means of a cable. It can only be used in setup mode.

Setup mode for setting up the unit when the safety door is open: In this mode, the assembly press can be moved at low speed (<10 mm/s) while the safety door is open. The speed is automatically monitored. This is required by the machine safety directive. The setup mode is activated by means of a key switch.



TECHNICAL DATA

For high-precision setup tasks with the assembly press, using position or force

Installed in an aluminium housing with connection cable

Lead outlet with PG thread

Sub-D 15-pin connector at the end of the cable, for direct connection to the controller of the electro-mechanical assembly press

Wiring diagram

ARTICLE NO.

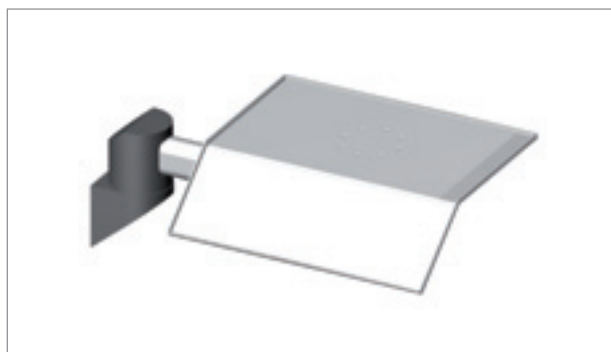
Hand wheel	5620
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LAPTOP SHELF

To enable comfortable use of a laptop at a manual working station, PROMESS offers a laptop shelf that can be attached to the side of the frame by means of a supporting arm.

ARTICLE NO.

Laptop shelf	5002005000
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FOOT REST

The foot rest, made of galvanised sheet steel, is attached to the base frame and available in widths of 500 mm and 700 mm. It is adjustable and ensures a comfortable sitting position.

ARTICLE NO.

Foot rest (500 mm)	6301001100
Foot rest (700 mm)	6301001200



LUBRICATION SET

For periodic lubrication of its electro-mechanical assembly presses, PROMESS offers various maintenance kits consisting of a grease gun and high-quality lubricating grease. To ensure a long service life, all electro-mechanical assembly presses have to be lubricated as specified in the manual. The PROMESS product range include different grease guns to match the different electro-mechanical assembly presses and customer requirements.



UNIVERSAL ROTATION UNITS

The universal rotation units are used to supplement the assembly presses and allow rotation movements to be performed in addition to the joining process. This rotation can be performed prior to or during the movements of the joining process.



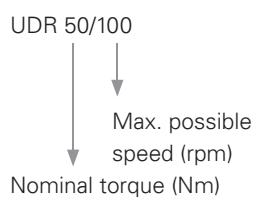
Application examples:

- Aligning or orienting parts prior to the joining process
- Applying torque to parts after they have been pressed in, in order to measure the torsional stiffness
- Rotating parts during the pressing procedure, if required by the joining method

The universal rotation units are auxiliary components and can be mounted on all assembly presses – depending on the required torque. The fastening plate for mounting the assembly press and frame is individually manufactured in accordance with the customer requirements.

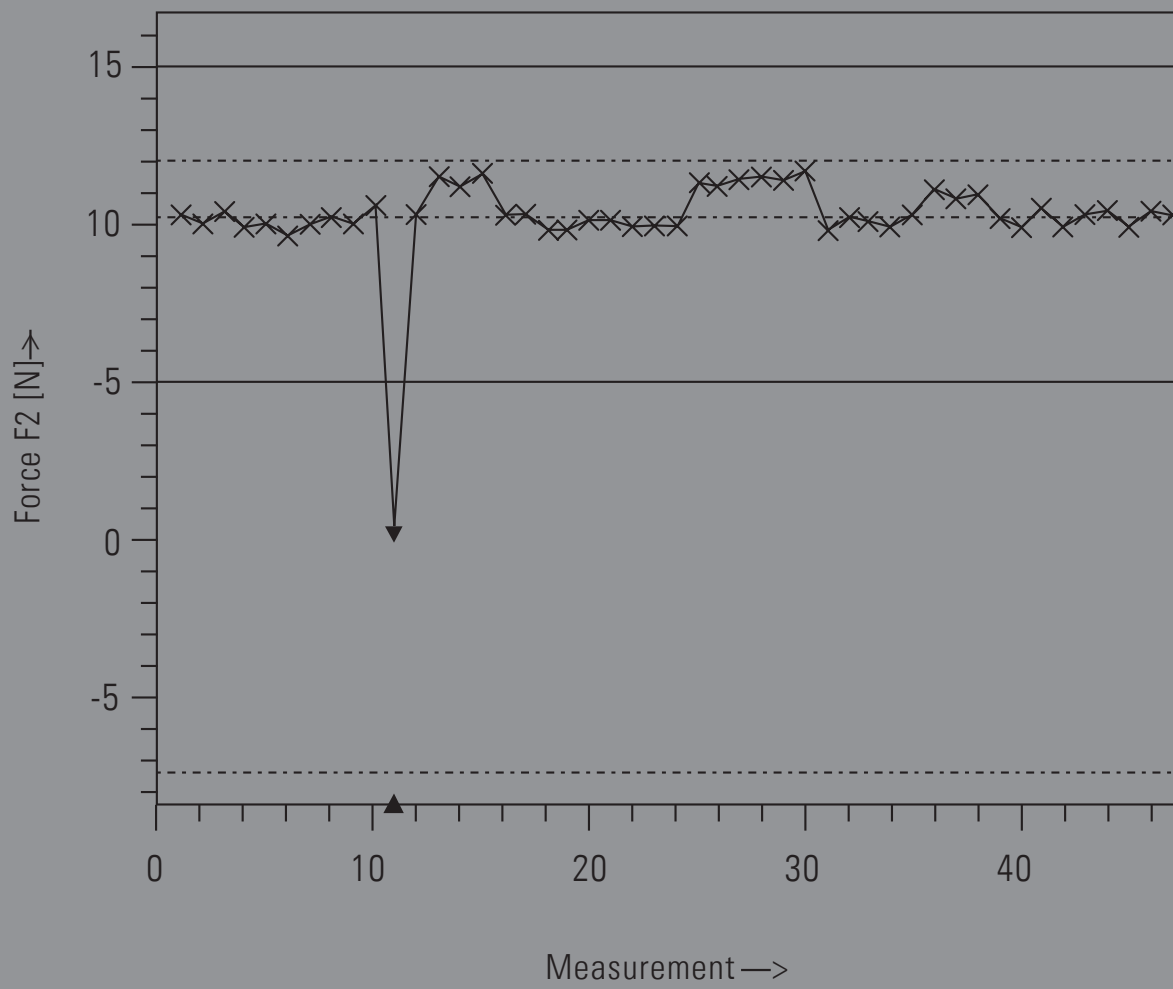
PERFORMANCE DATA

Designation:



DESIGNATION	TORQUE NM	SPEED RPM	PERM. AXIAL FORCE KN
UDR 5/1000	5	1000	12
UDR 10/500	10	500	12
UDR 20/200	20	200	20
UDR 50/100	50	100	20/40/60
UDR 100/50	100	50	20/40/60

Other specifications on request.



SOFTWARE

PROMESS UFM SOFTWARE

The powerful PROMESS UFM software is characterised by its wide range of functions which can be expanded by using the OCX software interface. The UFM software is first and foremost intended for creating programs and for recording, displaying and saving the process values. All data are recorded and stored in an ACCESS database by default. This provides 100 % production traceability.

A transparent, user-friendly interface that runs on Windows (2000/XP/Vista) ensures easy handling. The programs are easy to create and edit, by entering parameters in the respective function windows. All entered program steps are displayed in a transparent step list in the main window, and can be observed while the program is running. The signal curve is also displayed in the main window after the program step has been completed. Knowledge about PLCs or drives is not required to configure the parameters for the unit movements.

PROMESS offers diverse interfaces for communicating with a multitude of peripheral devices. This includes OCX, qs-STAT and the following field busses: Profibus, DeviceNet, CANopen, Interbus, Ethernet.

SPECIAL FEATURES

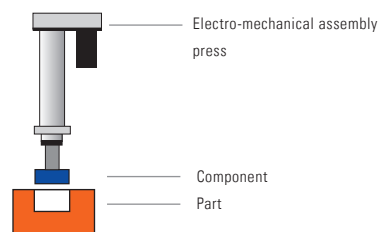
- Parameterisation instead of programming
- Real-time force-distance monitoring
- Output and valve control (e.g. of sliding or indexing tables)
- Data stored in MS ACCESS
- 100 % process traceability
- Additional measuring signals can be read
- Compensation of component tolerances
- Highest positioning accuracy
- Fast type change

EXAMPLE OF CREATING A PROGRAM: PRESS TO FORCE

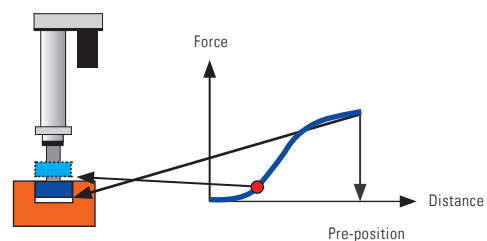
With the PROMESS UFM software, creating a program is very simple. All functions are easily accessed and are shown in the step list on the program interface. The following example illustrates the creation of a "Press to force" program:

The "Press to force" program is used to press a component against a stop, for example a ball bearing against a housing shoulder or a gear onto a shaft. The end of the joining process is indicated by the force increase, which is usually very rapid. The electro-mechanical assembly press stops as soon as the specified force has been reached.

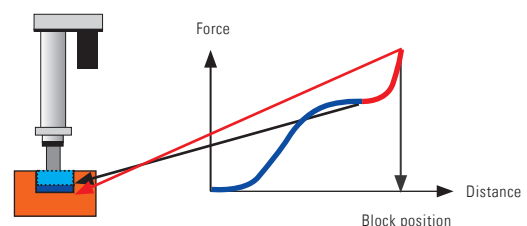
In the "Press to force" process, the component is first moved to the part.



The actual pressing process starts thereafter. The component is initially joined at the pre-position – usually at high speed – up to a point close to the contact surface. The joining process has now almost been completed.



Thereafter, the part is pressed against the contact surface with the programmed force and the block position is reached.



The program list for the “Press to force” process could look as follows:

STEP	COMMAND	PARAMETER	ACQ.	COMMENTS
1	Tare	Force input		
2	Positioning	56.00 mm		to drive up
3	Gauging	GVal. 1 = (Force) Maximum value (Start) Position: 57.00 mm > End Position: = 59.00 mm	M	
4	Press to force	300.00 kN	A	
5	Delay	1000 ms		release tension
6	Positioning	0.00 mm		homing
7	Program end			

STEP 1: TARE

First it is possible to set the force input or one of the connected sensors to zero. This function is e.g. used to:

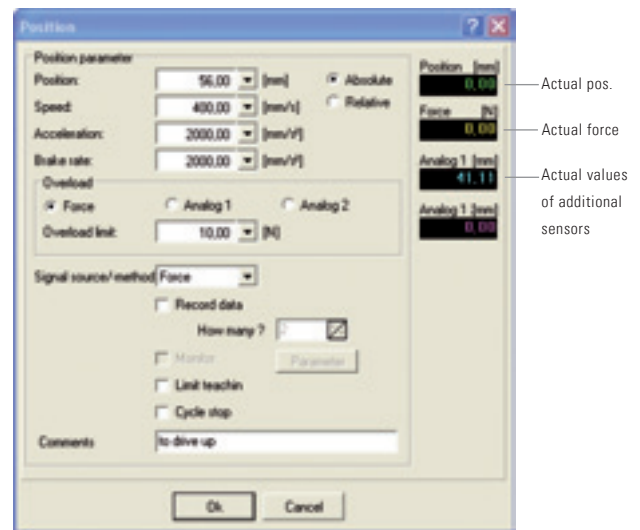
- Eliminate preloads – e.g. tool weights – from the force signal.
- Set positions of external measuring systems to zero, e.g. to measure differential movements.

STEP 2: POSITION

This function block is used for movement to any defined position, both absolute and relative. In the “Press to force” process, the part is moved to the workpiece in the first step. The “Position” function is added to the step list for this purpose.

The following parameters required for the application has to be entered into the function window:

- Target position
- Speed
- Acceleration
- Brake rate
- Overload limit

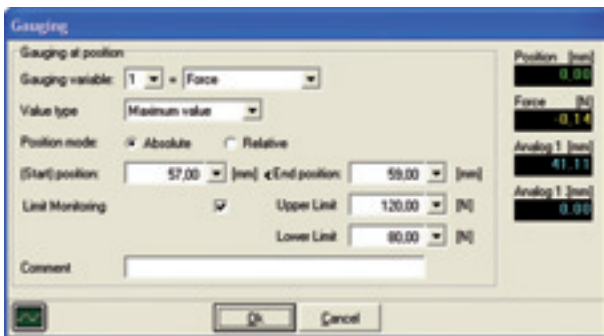
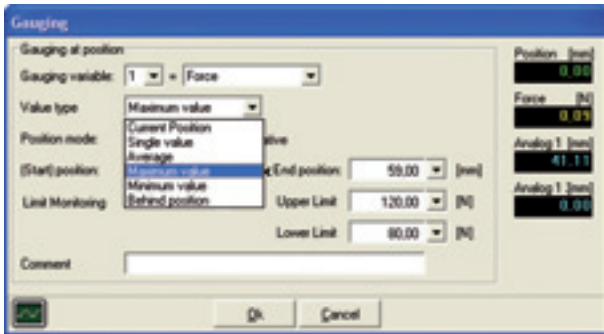


Example:

In the example, the assembly press moves to position 56 mm at a speed of 400 mm/s, with an acceleration and brake rate of 2,000 mm/s.

STEP 3: GAUGING

With the "Gauging" function, the force measurement values or external signals can be recorded and monitored at any position. Monitoring behind block position is also no problem. Furthermore the max. value, min. value or average value between certain positions can be determined. If desired, the measuring values are saved in the database as gauging variables.



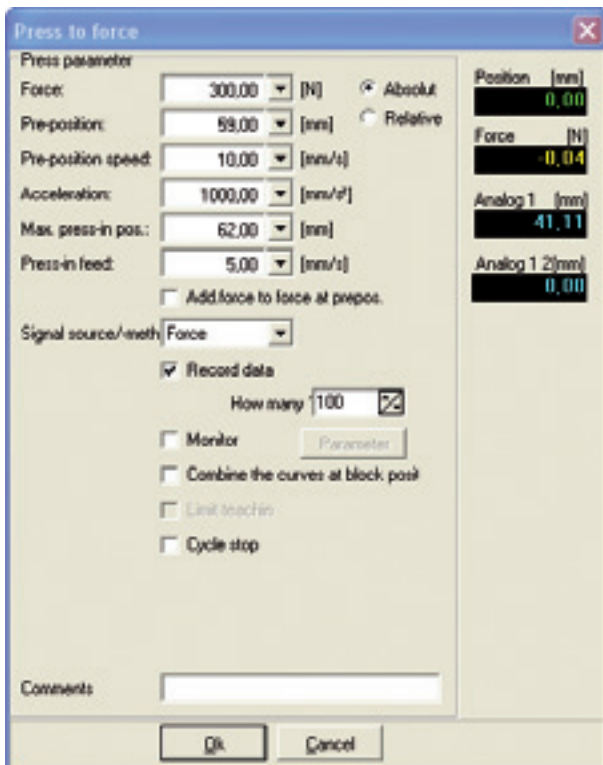
Example:

In the illustrated example, the max. value has to be determined just before the block force is reached, at a distance of between 57 and 59 mm. The measured value is furthermore monitored using an upper limit of 120 N and lower limit of 80 N.

STEP 4: PRESS TO FORCE

This function block is used to press to a given force. The distance may be expressed as absolute or relative values. The following parameters required for the application has to be entered into the function window:

- Force:
The desired switch-off force can be entered directly or by using variables from the PLC.
- Pre-position:
The movement is performed at the entered speed until this position has been reached.
- Speed:
This is the speed used for movements up to the pre-position.
- Acceleration:
Here the acceleration for the positioning movements is entered.
- Max. press-in position:
This is the max. position up to which the assembly unit moves if the target force is not achieved.
- Press-in speed: Speed at the pre-position
- Record data:
If this function is selected, the force-distance curve for the movement is recorded. The number of reading points also has to be specified (max. 200).
- Monitoring:
If this function is active, the force-distance curve is monitored using envelopes. At "Parameter", the number of desired control points (max. 19) has to be entered.
- Combine the curves at block position:
The curves are displayed relative to the taught block position. The block position is displayed as zero point and the curves are scaled in the negative direction. This causes the curves to shift towards the plus or minus side, i.e. the scaling is – from an "absolute" point of view – not correct any more.
- Limit teach-in:
If this function is activated, an envelope is taught with the next cycle.



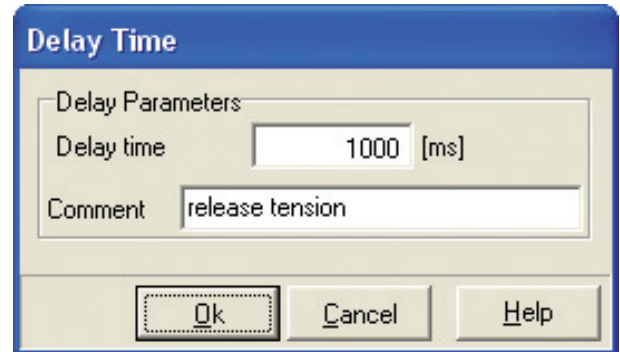
Example:

In the example, the unit first moves to the pre-position (59 mm) at a speed of 10 mm/s and an acceleration of 1.000 mm/s².

After the pre-position has been reached, the unit automatically reduces the speed to the press-in speed (5 mm/s), without coming to a standstill. From the pre-position, the unit gradually approaches the programmed block force of 300 N. It automatically reduces the speed the closer it gets to the block force. This ensures that the block force is precisely met, overshooting is prevented. If no component is available and the block force has not been achieved before the max. press-in position (62 mm) has been reached, the step is stopped and a NOK error message is issued. During the process, the force-distance data is recorded and displayed as a curve based on 100 reading points. It is monitored by using the programmed envelope.

STEP 5: DELAY

The delay time is used to halt the program sequence between two program steps. After the delay time, the next program step is executed.

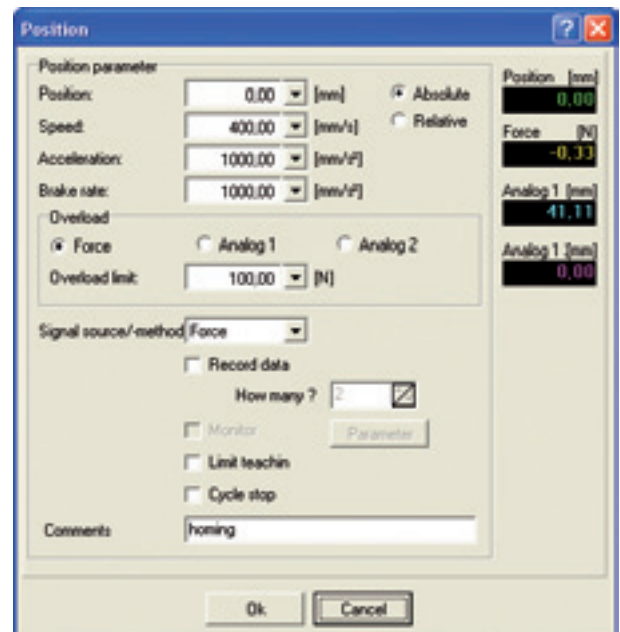


Example:

In this example, the delay time is used as settling time for the bolt to be joined.

STEP 6: POSITION

As explained in Step 2, this function block is used for movement to a specified position.



Example:

After the component has been joined to the workpiece, the unit moves back to the zero position at a speed of 400 mm/s. The acceleration and brake rate amount to 1.000 mm/s².

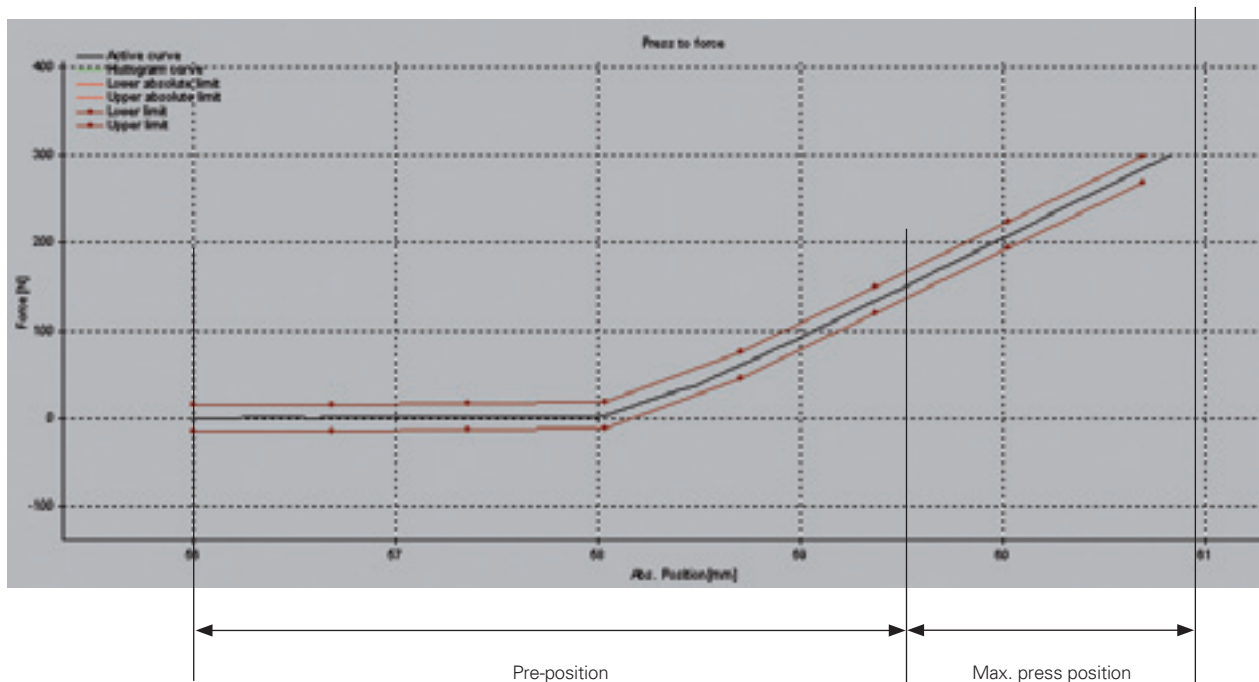
PROCESS MONITORING

The software provides several process monitoring options:

- Envelope functions
- Window functions
- Monitoring of individual measuring values at specific positions
- Monitoring of average, min. and max. values
- Monitoring of force values behind block position

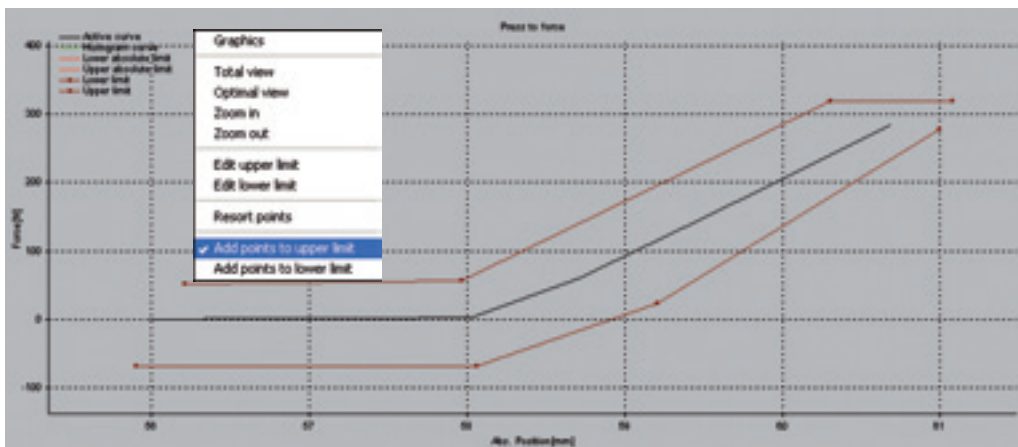
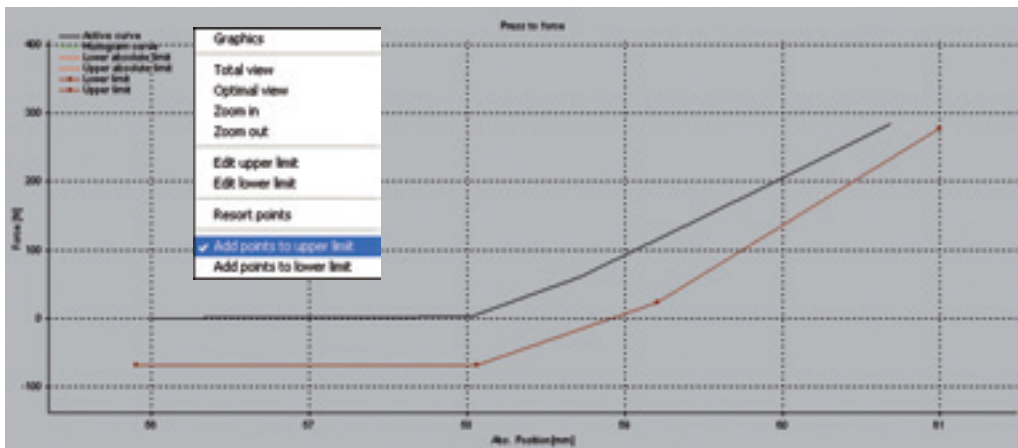
measuring values and envelopes. When envelopes are used for monitoring, the force-distance curve is limited by an upper and lower envelope. If these limits are violated, a NOK message is issued and appears in the error status bar. In the function window of the respective movement, the envelope-based monitoring can be selected and the number of support points can be defined. After the cycle has been completed, the results are immediately displayed in a graph on the screen.

The envelope function is very simple and can be configured quickly and easily. It enables advanced data analysis using



EDITING ENVELOPE CURVES

If the monitoring function has not been selected in the function window, the envelopes can also be manually generated by using the Graphics menu. To this end, the user simply has to select “Add points to upper limit” or “Add points to lower limit” function and manually set the support points. It is also possible to edit the envelopes at a later stage by using the Graphics menu.

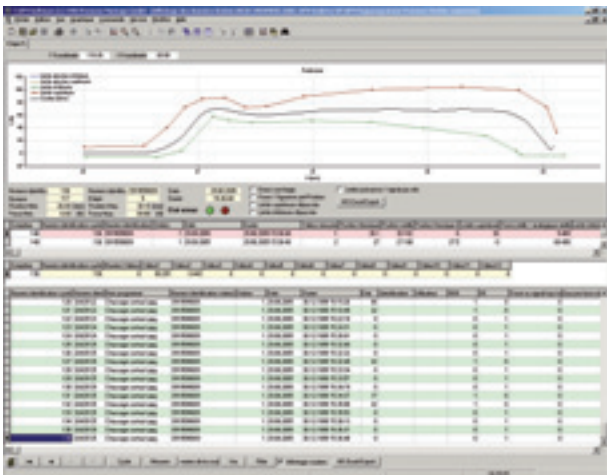


For further application examples, refer to the [APPLICATIONS](#) chapter.

PROCESS DATA STORAGE AND ANALYSIS

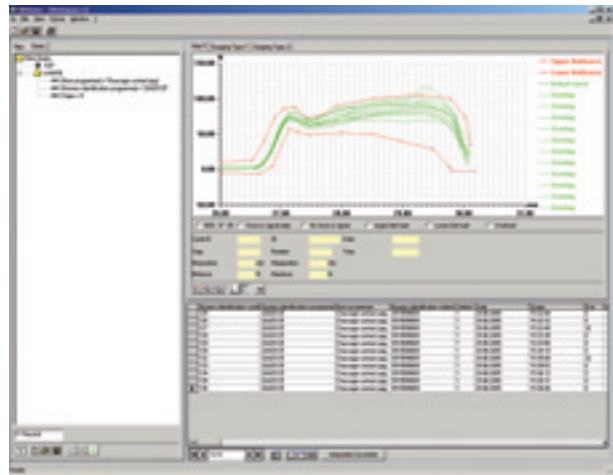


Incl. in scope
of supply



MS-ACCESS DATABASE*

The database in the PROMESS UFM software saves all process data in an MS-ACCESS database file. For each joining cycle, all results, e.g. measuring values, cycle information, variables, ID numbers or curve data are saved. Furthermore changes to an existing program are saved. All data can be edited and analysed in ACCESS at any time. This ensures 100 % traceability for the entire production process.



DB-VIEWER*

The DB-Viewer software package is used to export, graphically display and filter data that has been recorded with the electro-mechanical assembly press and saved in the MS-ACCESS database file. Data from several databases can be united in one workspace, where it can be filtered and analysed based on criteria saved in the database. User-friendly data filters can be used to superimpose curves and obtain quality-relevant information.

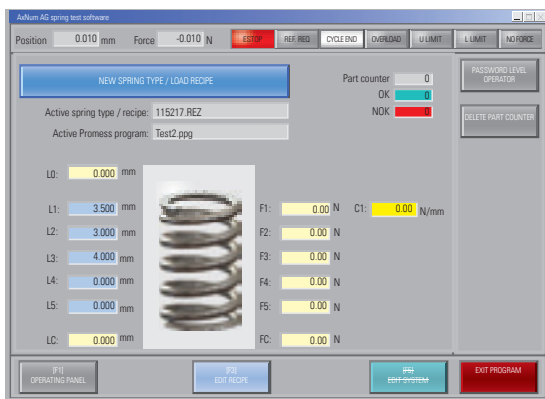
* These software packages are included in the standard scope of supply.

OCX INTERFACE

Optional software

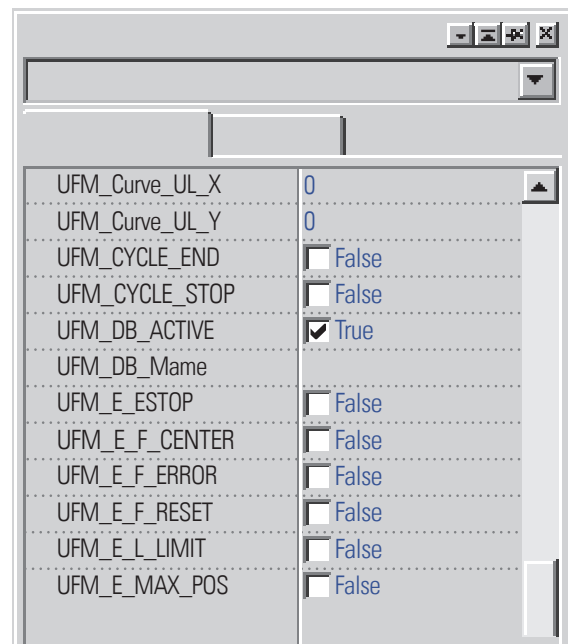
EXAMPLE

Customised software from the spring industry.



The UFM OCX Control is an ActiveX component and is used as “remote control” for the UFM software. The control can be integrated in any Windows-compatible programming language that is supported by ActiveX/Com components. This includes e.g. Visual Basic, Visual C++, LabVIEW and Delphi. The UFM OCX Control offers a variety of properties and events with which the user can access the basic functions of the assembly units. These include starting the programs, exporting measuring values and curve data or setting and reading variables. While the UFM software runs in the background, the OCX application connects to it and makes access to all connected presses possible. The colour of the control changes from red to green to indicate that a connection with the UFM software has been established.

Delphi Object Inspector with several examples of the properties that can be read and can, depending on the case, also be written



ADVANTAGES

- High speed thanks to parallel data processing
- Communication for up to 255 stations simultaneously
- External control unnecessary
- Customised user interfaces
- Language independent

OCX APPLICATIONS

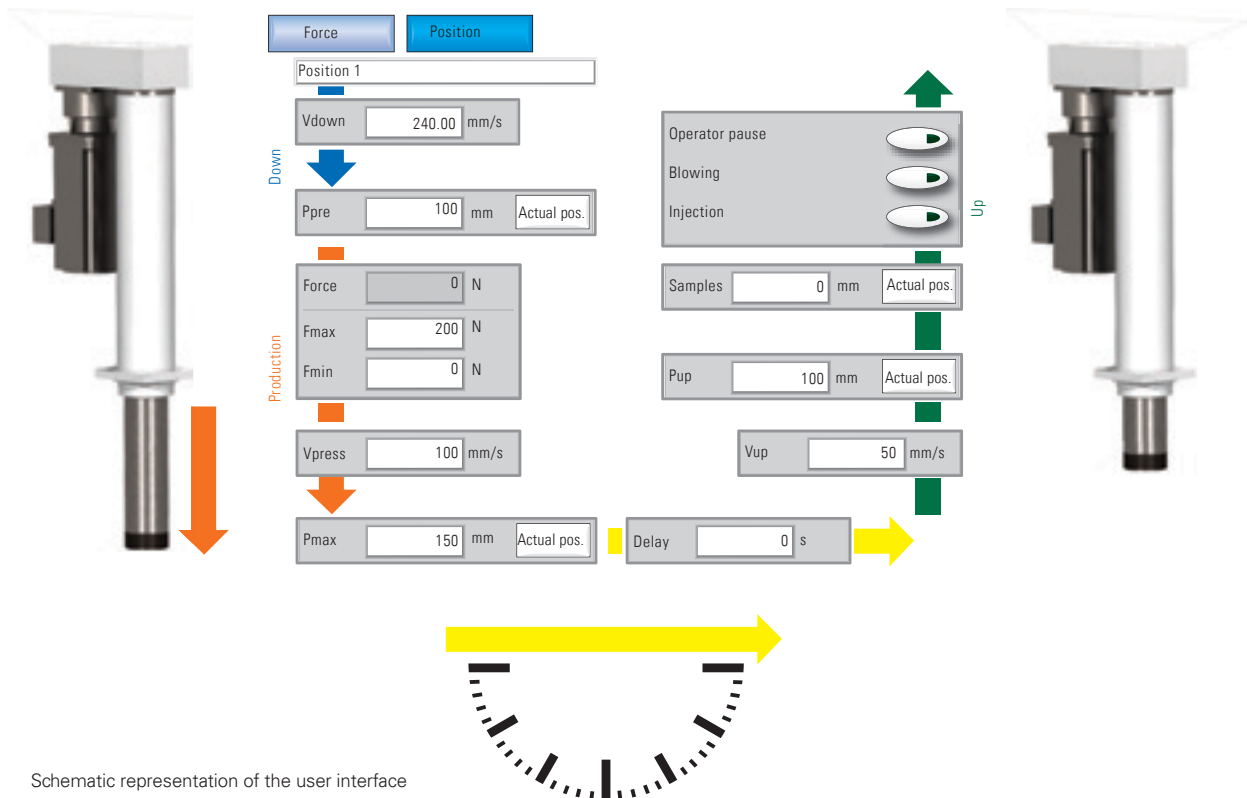
REALISED OCX APPLICATIONS

- Program generation using graphic interface
- OCX with barcode scanner
- Spring testing over OCX
- Automatic pressure and analysis of the force-distance curve if NOK
- Display of four individual curves on one screen
- Calculation of a force plateau
- User interface for touch screen with five essential status information points

PROGRAM GENERATION USING GRAPHIC INTERFACE

The software interface offers an alternative to program generation using the step list of the PROMESS UFM software. It was developed for customers who prefer to operate their electro-mechanical assembly press without the program interface of the UFM software. The programs "Positioning" and "Press to force" are predefined and are displayed graphically over an OCX.

After selecting the program, positions, forces, speeds, BDC time and return stroke speed are entered in the graphic window. Direct teaching using the UP and DOWN buttons is possible and a new part can be produced within minutes. This software is particularly attractive in combination with a touch screen.



Schematic representation of the user interface

GRAPHIC INTERFACE MAIN MENU

In the main menu of the graphic interface the two predefined programs "Positioning" and "Press with force" are displayed. Entering the necessary parameters is performed quickly and easily using the graphical interface.



Main menu of the graphic interface

OCX FOR BARCODE SCANNER

This software interface prompts the operator to scan the product ID number. If desired, the barcode can also be directly imported into the PROMESS UFM software. With the ID number, the customer can find all relevant information of the product, such as quality attributes from production or test statistics that can be accessed when necessary and that document the development process of the products.



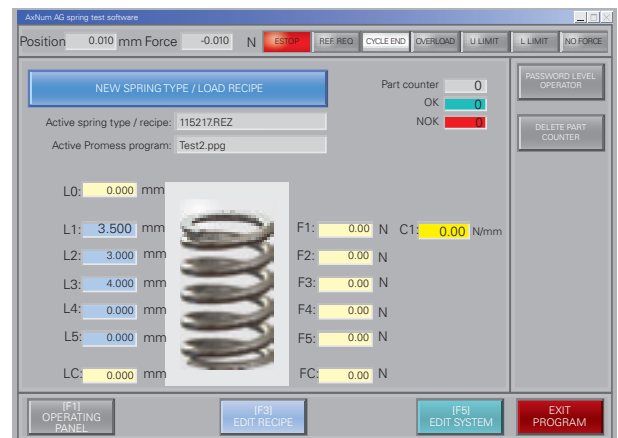
Barcode scanner



SPRING TESTING OVER OCX

This OCX was developed for customers from the field of spring production. PROMESS electro-mechanical assembly presses are perfect for this kind of testing. The software provides the testing data in a format that can be immediately utilised by the spring manufacturer.

The main menu always displays the current values of the tested springs and the current status of the good/bad parts.



Spring testing

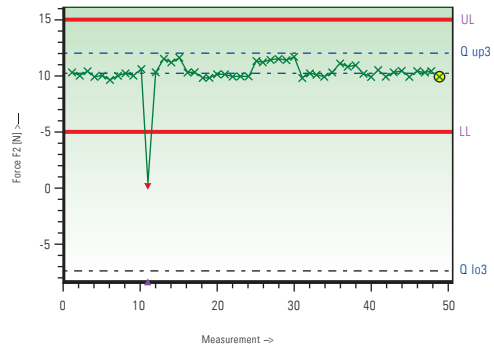
QS-STAT STATISTICAL SOFTWARE

PROMESS electro-mechanical assembly presses are equipped with an interface for qs-STAT and MONITORING from Q-DAS as standard. These software packages make fast statistical data analysis possible and help to set tolerances and reveal trends. The interface is based on the Q-DAS ASCII transfer format.

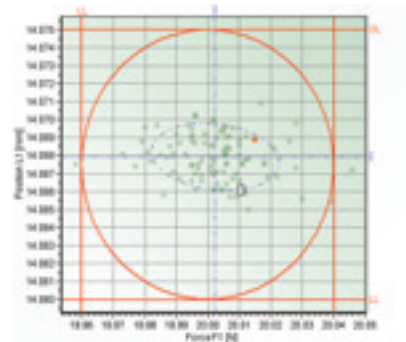
MONITORING SOFTWARE PACKAGE

The MONITORING statistical software displays the current production data live:

- Run chart
- Histograms
- Cp & Cpk values



XY PLOT



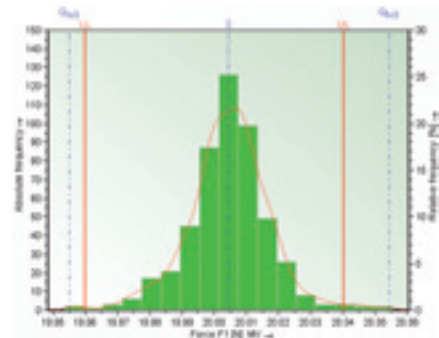
SOFTWARE PACKAGE qs-STAT

At the end of a production run, the qs-STAT statistical software provides calculated and statistical indices in easily understandable and meaningful figures. The visualisation makes it possible to quickly identify critical processes. Emphasis is put on a clear overview so that problem areas and deviations can be recognised immediately. Process optimisation measures can be precisely formulated using this information.

RUN CHART



HISTOGRAMS



SOFTWARE PACKAGE AXIS INTERFACE

AXIS INTERFACE SOFTWARE

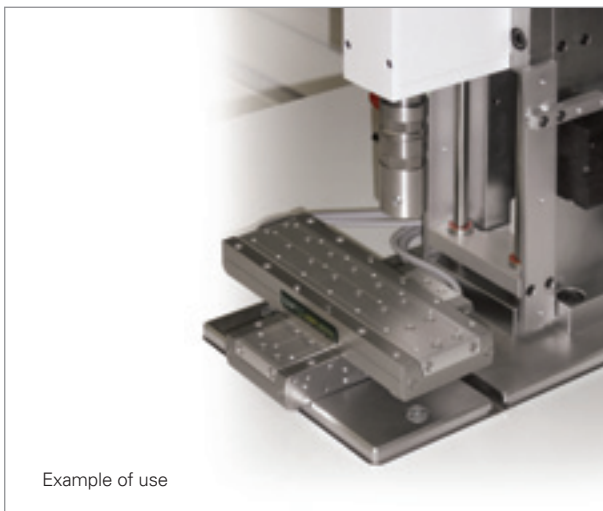
The AXIS INTERFACE software makes it possible to control additional axes directly from the press program. This can be, for instance, a sliding table or indexing table (see chapter Accessories). The software is suitable for one to three axes and can be easily installed on a PC that is permanently assigned to the electro-mechanical assembly press. It provides the user with simple programming capabilities for the highest level of precision.

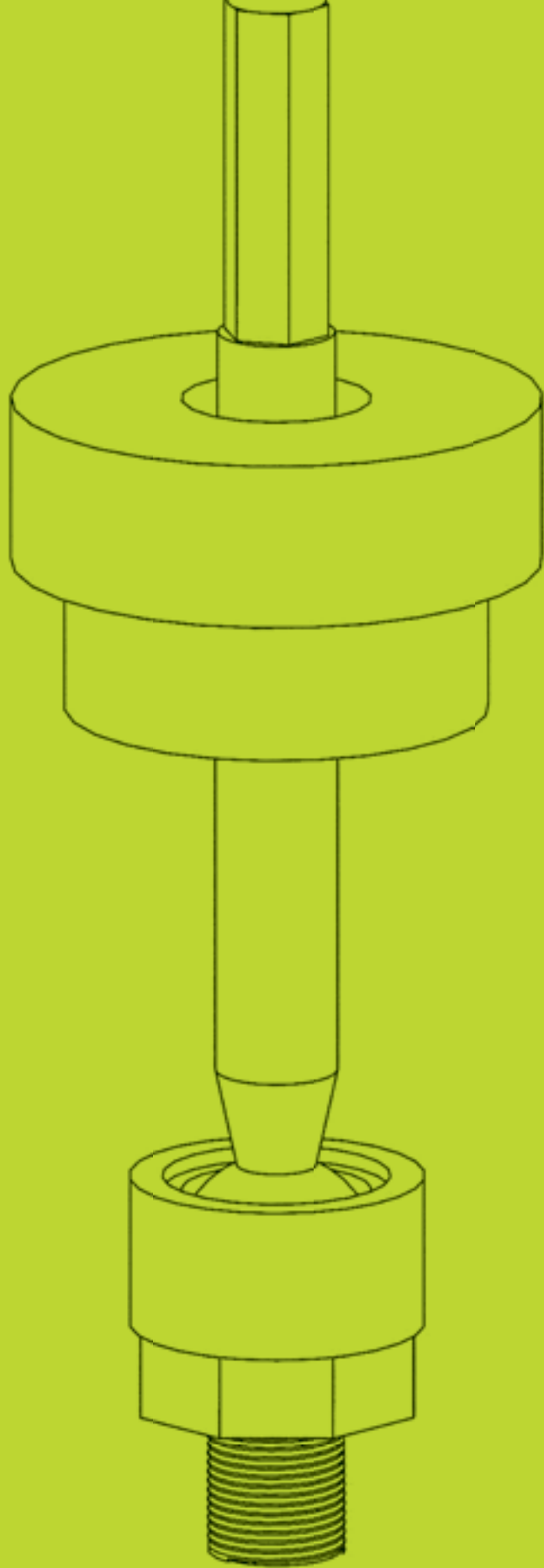
STEP LIST

The AXIS INTERFACE software component detects when the operator selects a new position for the axis in the PROMESS program. The new coordinate is immediately passed on to the axis controller. Once the desired position has been reached, confirmation is sent and the press sequence can continue.

STEP	COMMAND	PARAMETER	COMMENTS
1	Assign var.	Var 12 = 40,000	Sliding table setpoint
2	Cond. jump	If Var 12 = 999	Wait for confirmation
3	Positioning	83.750 mm	Press
4	Positioning	0,000 mm	Return stroke
5	Assign variable	Var 12 = 60,000	Sliding table setpoint
6	Cond. jump	If Var 12 = 999	Wait for confirmation
7	Positioning	97,000 mm	Press
8	Positioning	0,000 mm	Return stroke
9	Assign variable	Var 12 = 80,000	Sliding table setpoint
10	Cond. jump	If Var 12 = 999	Wait for confirmation
11	Positioning	65,000 mm	Press
12	Positioning	0,000 mm	Return stroke

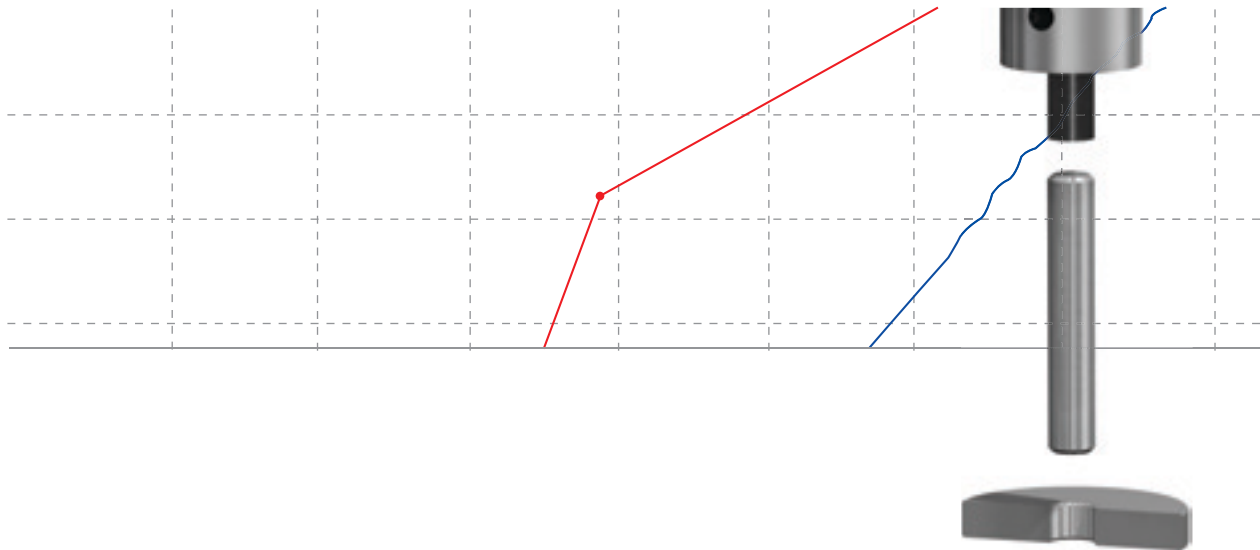
Example step list





APPLICATIONS

PRESS TO POSITION



TASK

A thin shaft is to be pressed into a rotor. The target dimension is a specified distance from the end of the shaft to the front surface of the rotor, with very narrow tolerances. The joining forces fluctuate from 3 to 10 kN due to the fit tolerance; this means that the thin shaft is elastically deformed to varying degrees during the joining procedure. The result is that the target dimension is incorrect.

SOLUTION

Using expansion compensation, the elastic deformation of the shaft during joining is compensated: For higher forces, the unit moves somewhat "further" than for smaller forces; when the load on the shaft is relaxed, it springs back to the correct position.

STEP 2

Tare



STEP 3

Pressing
100 mm + expansion



STEP 5

Return stroke

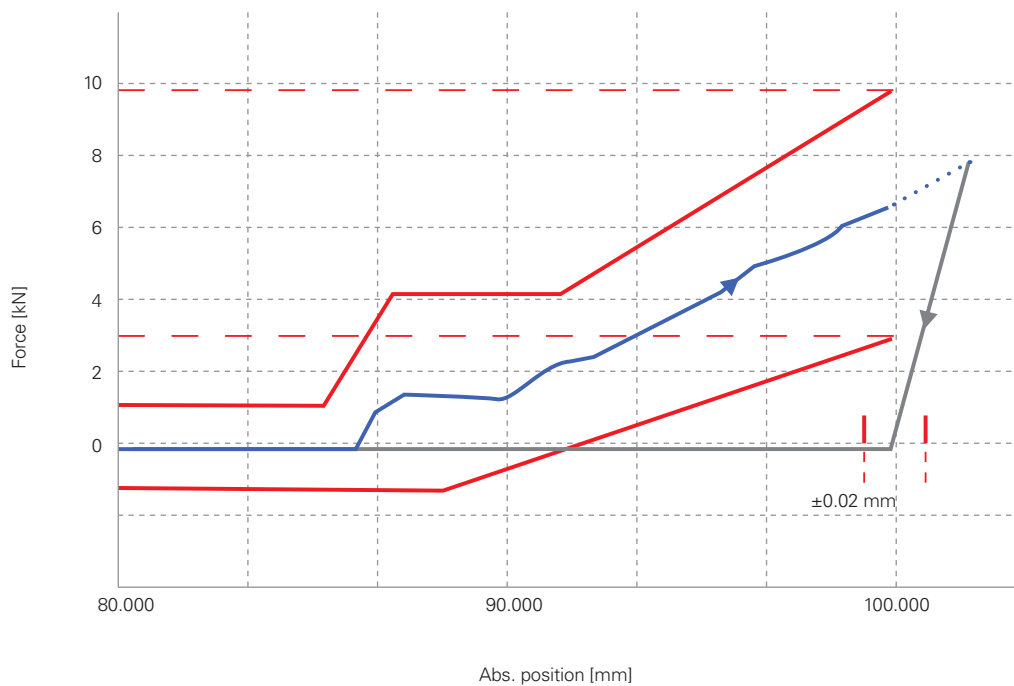


REALISATION IN THE PROMESS NC-PROGRAM

Expansion compensation turned on

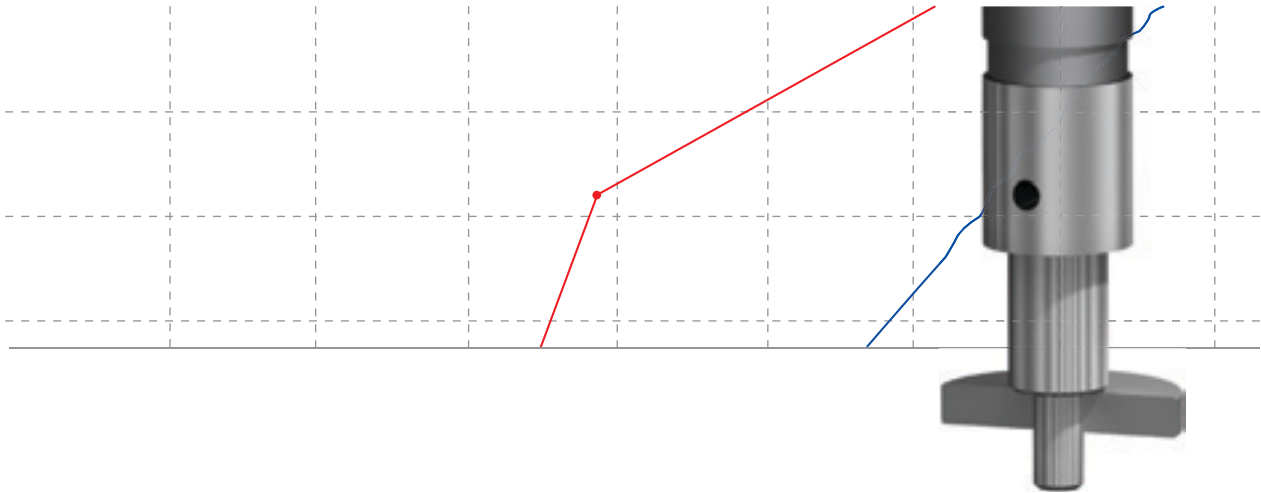
STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80.00 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Positioning	100 mm	AM	Pressing with expansion comp.
4	Delay time	200 ms		Stabilisation in the BDC point
5	Positioning	0 mm	AM	Return stroke
6	Program end			

GRAPHS AND QUALITY ASSURANCE



- Legend
- Upper and lower limits
 - ⋯ Expansion compensation
 - Step 3: Pressing
 - Step 5: Return stroke

PRESS TO FORCE



TASK

A shouldered shaft is to be pressed into a part; it is important that the shaft shoulder has a flush fit. The parts to be joined have significant tolerances; the joining forces fluctuate greatly.

SOLUTION

A program is created that uses the function "Press to force". This function ends the joining procedure once a programmed force limit has been reached. Using a force control loop, the target force is reached with high accuracy, and thus damage due to excessive loads is prevented.

STEP 2

Taring



STEP 3

Press to force



STEP 5

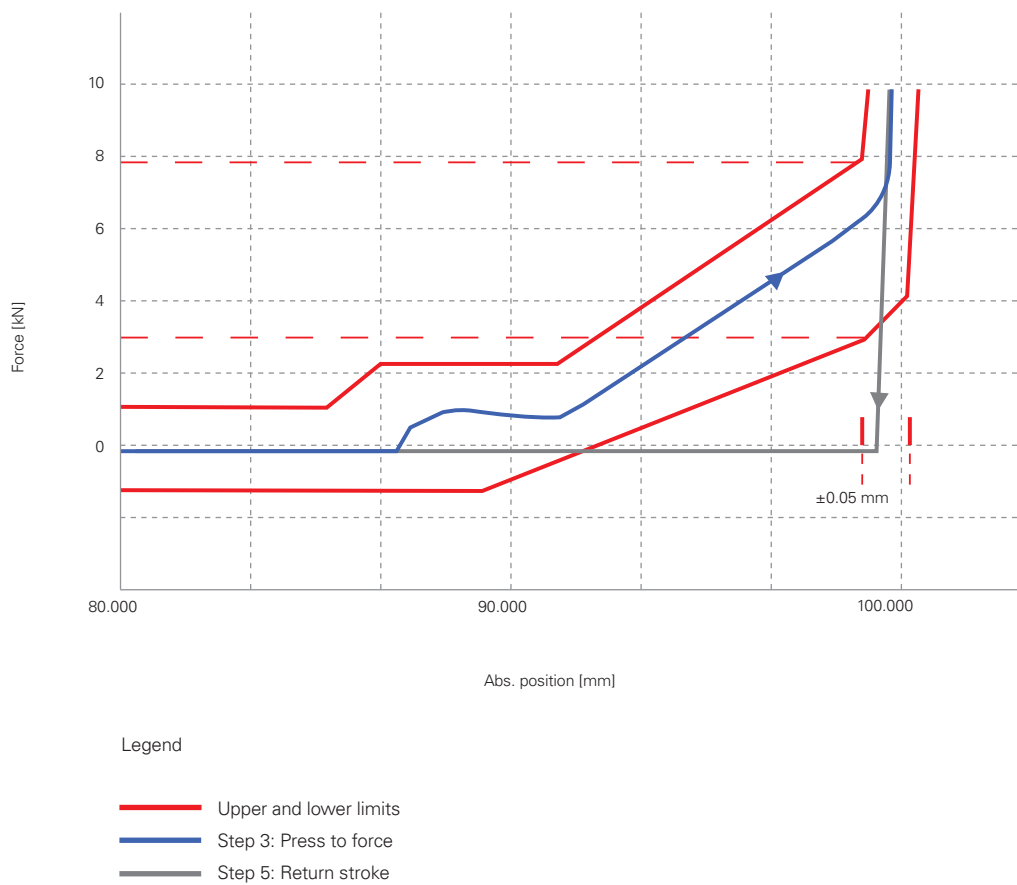
Return stroke



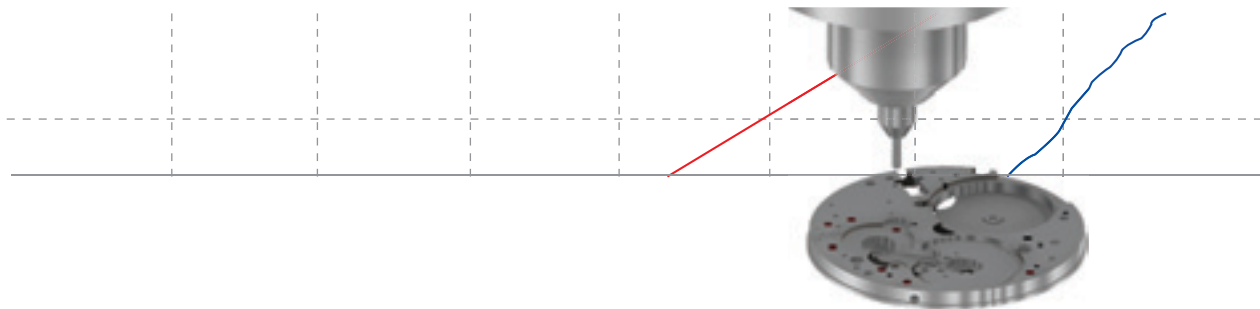
REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80.00 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Press to force	10 kN	AM	Press to force
4	Delay time	200 ms		Stabilisation in the BDC point
5	Positioning	0 mm	AM	Return stroke
6	Program end			

GRAPHS AND QUALITY ASSURANCE



TOUCH REFERENCE POSITION AND PRESS



TASK

A watch component is to be picked up by the assembly unit and pressed into a mounting board so that it is located 800 µm lower than the board surface.

The task thus consists of three functions:

- Measuring the board height
- Picking up the component
- Pressing

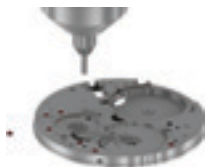
SOLUTION

The program is composed of three parts:

- Part 1: The board height is touched using a minimal force of 1 N.
- Part 2: A sliding table positions the part under the assembly press. The part is picked up by the assembly press and held with a vacuum.
- Part 3: The sliding table positions the board under the assembly press and the target dimension is calculated using the touch measurement.

STEP 1

Sliding table in measuring position



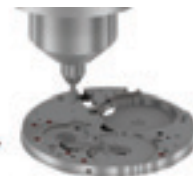
STEP 3

Measure height with 2 N



STEP 5

Return stroke



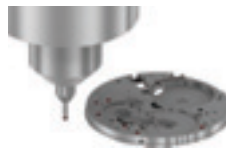
STEP 6

Sliding table in suction position



STEP 8

Switch on vacuum



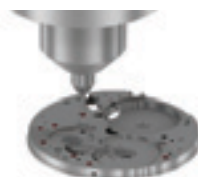
STEP 9

Return stroke



STEP 10

Sliding table in press position



STEP 12

Press to calculated position



STEP 15

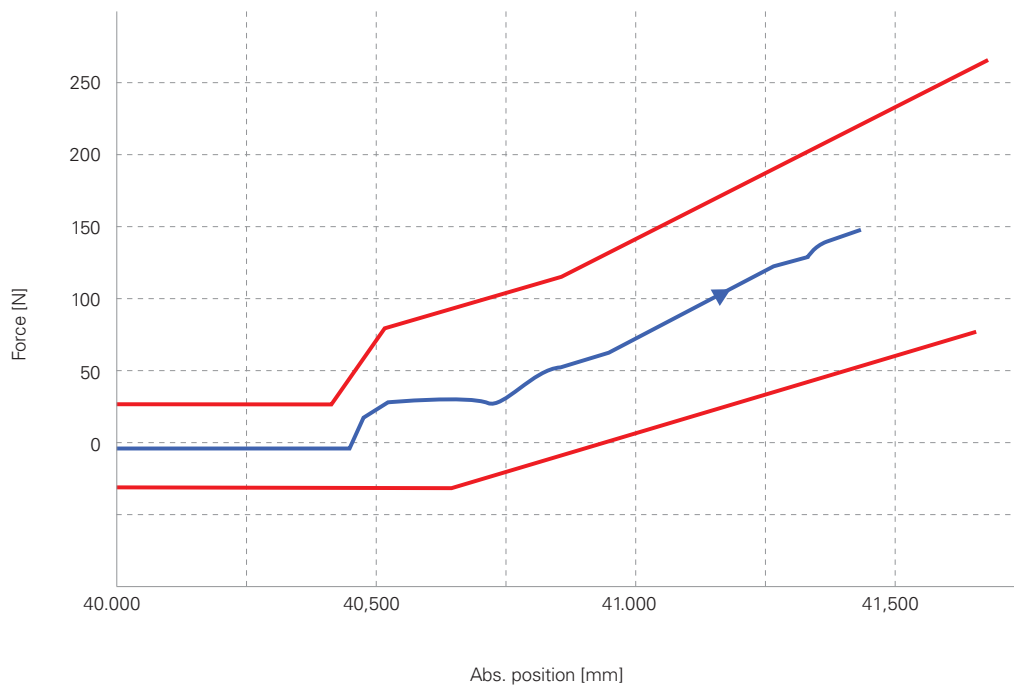
Return stroke



REALISATION IN THE PROMESS NC-PROGRAM

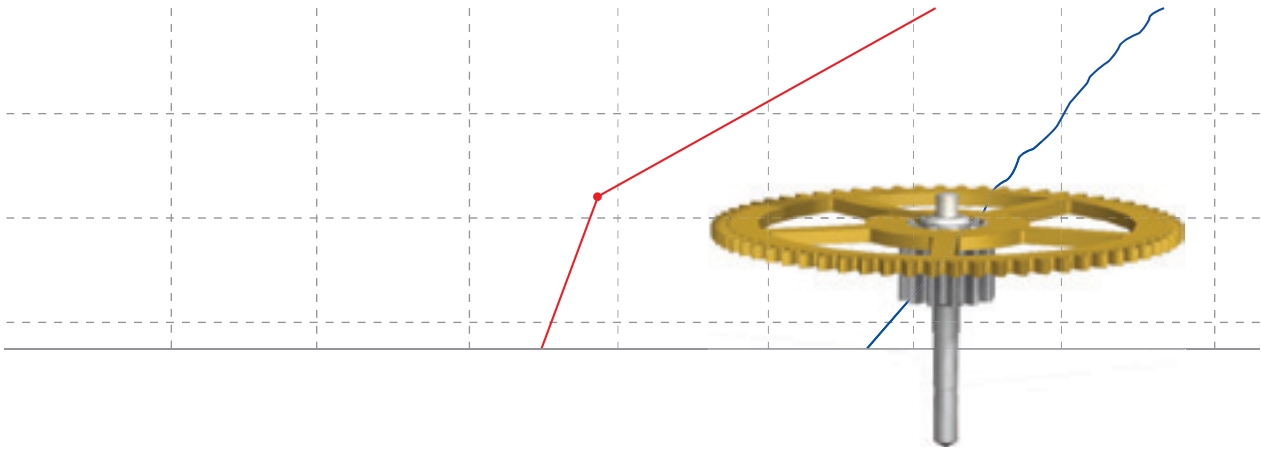
STEP	COMMAND	PARAMETER	COMMENTS
1	Set output	Output1 = ON	Sliding table in measuring position
2	Positioning	40,000 mm	Fast feed stroke
3	Press to force	2 N	Measure height with 2 N
4	Assign variable	VAR1 = Position	Save reference height in VAR1
5	Positioning	35,000 mm	Return stroke
6	Set output	Output2 = ON	Sliding table in suction position
7	Positioning	41,400 mm	Fast feed stroke
8	Set output	Output8 = ON	Switch on vacuum
9	Positioning	35,000 mm	Return stroke
10	Set output	Output3 = ON	Sliding table in press position
11	Assign variable	VAR2 = VAR1	Transfer reference height to VAR2
12	Assign variable	VAR2 + 0.800	800 µm deeper than reference height
13	Positioning	VAR2	Pressing
14	Delay time	200 ms	Stabilisation in the BDC point
15	Positioning	30,000 mm	Return stroke
16	Program end		

GRAPHS AND QUALITY ASSURANCE



Legend
— Upper and lower limits
— Step 13: Pressing

CAULKING / RIVETING



TASK

A gear is to be pressed onto a shaft with pinion and then caulked. The caulking procedure must ensure that the gear can transfer a defined torque onto the shaft, but it must also ensure that the forces are not so high as to deform, bend or buckle the shaft. The mounted part has a very tight tolerance.

SOLUTION

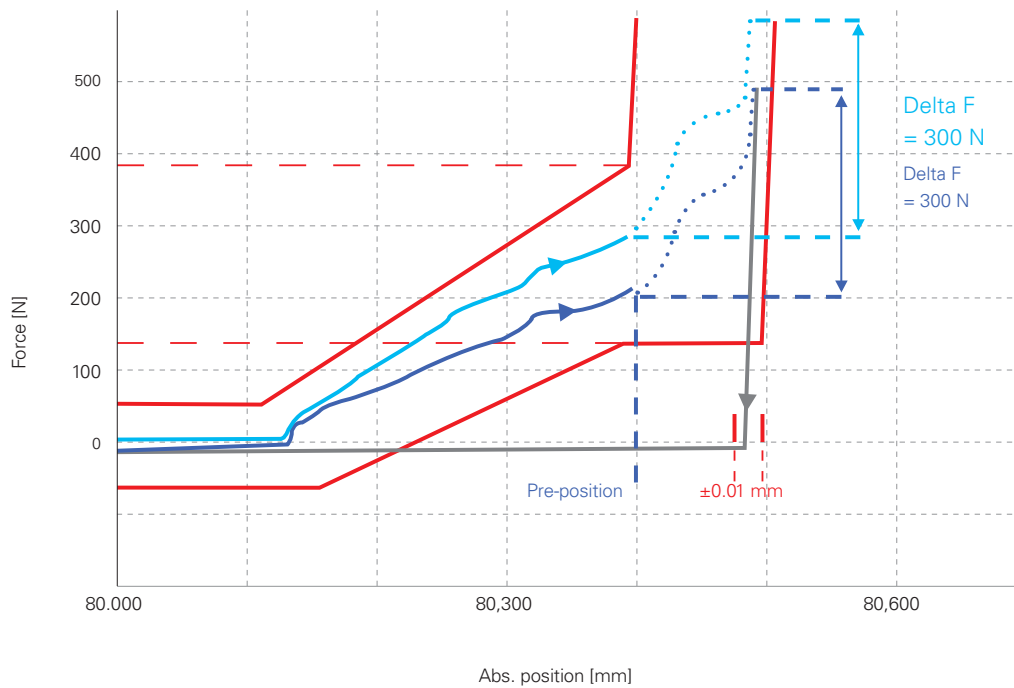
The joining forces result from the fit tolerances and can fluctuate greatly. The caulking forces are independent thereof and are very constant. The function "Press to force" is used for the process. The actual joining procedure is complete once the pre-position for caulking has been reached. The stop value for caulking is then calculated by adding the force at the end of the joining procedure to the force necessary for the caulking procedure. A "relative" force limit is set for caulking: relative to the end force of the joining procedure. The length of the mounted part is determined from the position of the assembly press after the load is removed.



REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Press to force	300 N	AM	Joining & forming with Delta F
4	Delay time	200 ms		Stabilisation in the BDC point
5	Positioning	70 mm	AM	Return stroke
6	Program end			

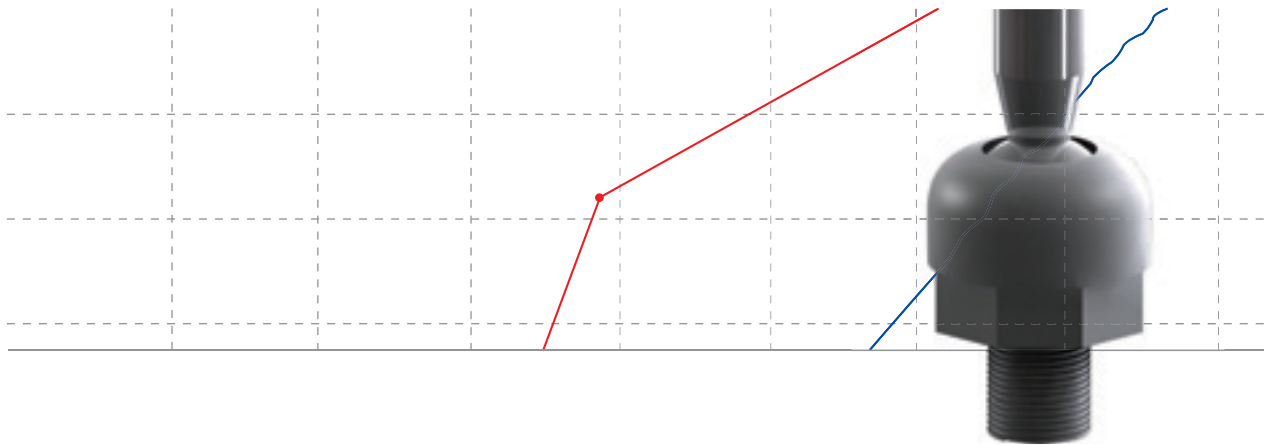
GRAPHS AND QUALITY ASSURANCE



Legend

- Upper and lower limits
- Step 3a: Joining part 1
- ⋯ Step 3b: Forming part 1
- Step 3a: Joining part 2
- ⋯ Step 3b: Forming part 2
- Step 5: Return stroke

BALL FORMING – BENDING



TASK

A ball is set into a ball socket and fixed in its position by bending the joint. After bending, the ball must move easily; the part height has a tolerance of ± 0.1 mm.

SOLUTION

The program uses the function "Determine pressure point". This function evaluates two slopes to stop the process at the correct point. The force increase at the beginning – the first slope – starts the function. The process is stopped when the flow process has begun and the force drops again: the second slope stops the assembly unit.

INSERT PART



STEP 2

Tare



STEP 4

Bending up to slope



STEP 6

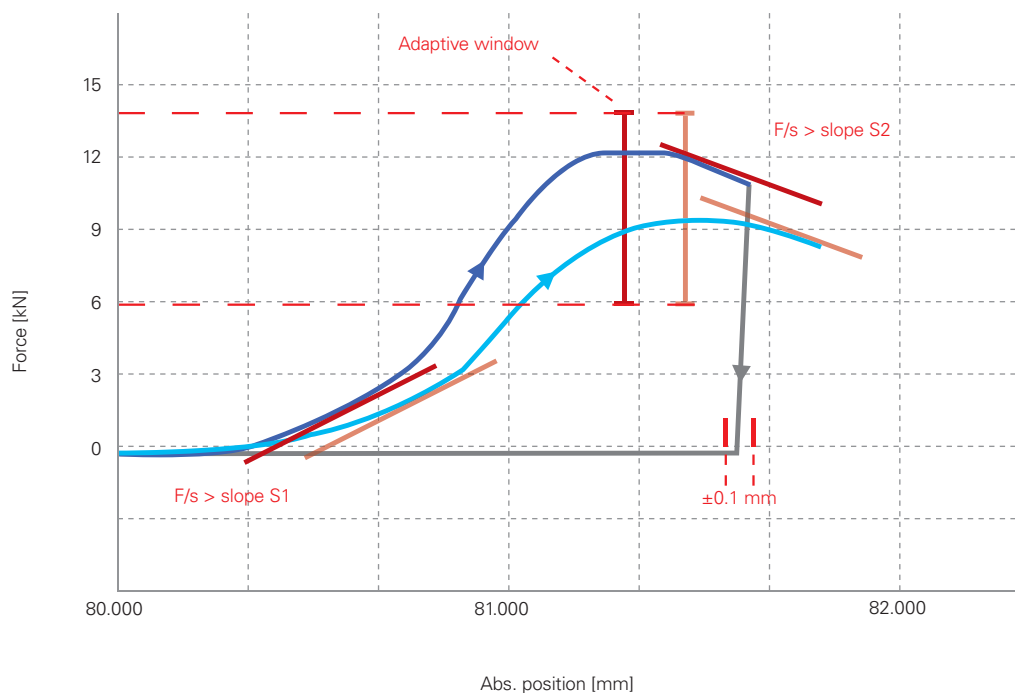
Return stroke



REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Measur. variable	M Var1 = max. force		Set adaptive window (min. 6 kN, max. 14 kN)
4	Determine pressure point	S1 / S2	AM	Bending up to slope 2 = 0
5	Delay time	200 ms		Stabilisation in the BDC point
6	Positioning	70 mm	AM	Return stroke
7	Program end			

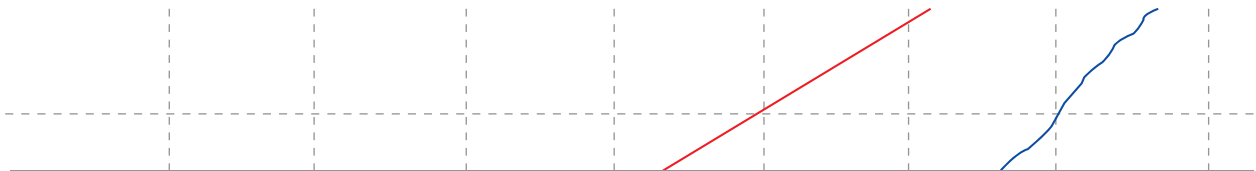
GRAPHS AND QUALITY ASSURANCE



Legend

- Step 4: Determine pressure point part 1
- Step 4: Determine pressure point part 2
- Step 6: Return stroke

PRESS TO SIGNAL DIFFERENTIAL PRESSING



TASK

A pinion is to be pressed onto a motor shaft; the functional dimension is the distance of 11.800 mm \pm 0.005 mm between pinion upper edge and mounting flange of the motor. The length of the motor has a very rough tolerance of \pm 0.1 mm. When the joining forces are above 3 kN, the holding force at the pinion will be correct; above 10 kN damage to the parts is to be expected.

SOLUTION

The program uses the function "Press to signal". The signalling device is a precision sensor that is integrated in the joining tool. The tool is first positioned on a master part and the probe is set to "0". During joining of production parts, the assembly process ends when the probe reaches "0" again. From an NC-perspective, the probe delivers the feedback signal for positioning the assembly press: the accuracy of the probe thus determines the accuracy of the target position.

INSERT PART

(Vacuum head)



STEP 2

Tare



STEP 3

Prepositioning



STEP 3

Press to signal



STEP 5

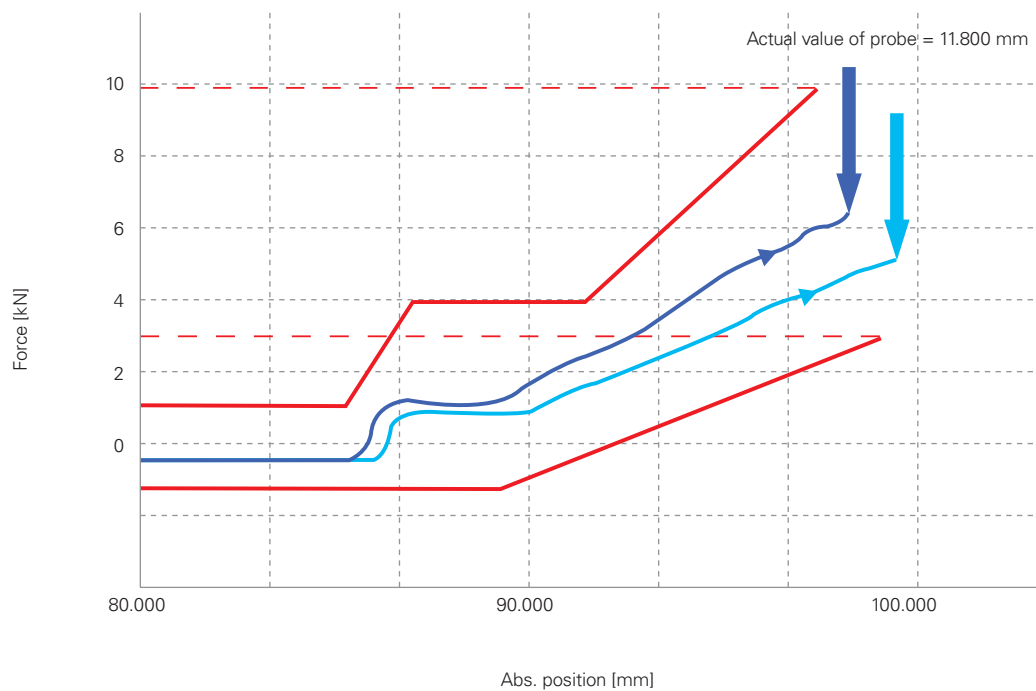
Return stroke



REALISATION IN THE PROMESS NC-PROGRAM

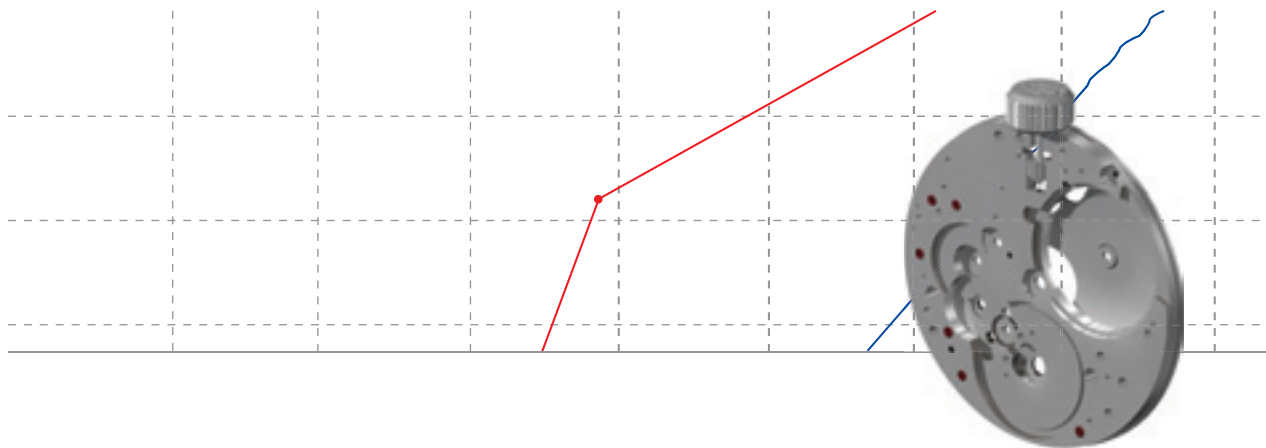
STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80.00 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Press to signal	11.8 mm	AM	Pressing until probe = 11.8 mm
4	Delay time	200 ms		Stabilisation in the BDC point
5	Positioning	0 mm	AM	Return stroke
6	Program end			

GRAPHS AND QUALITY ASSURANCE



- Legend
- Upper and lower limits
 - Step 3: Pressing part 1
 - Step 3: Pressing part 2

FUNCTIONAL TESTING WATCH CROWN



TASK

A watch crown has three positions:

Level 0: Setting the time

Level 1: Setting the date

Level 2: Normal position without set function

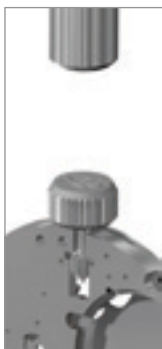
In all three positions it is to be tested whether the crown snaps into place properly and whether a minimum force of 1.5 N (maximum force 5 N) is required to move to the next position.

SOLUTION

The watch crown is placed into the fixture in position 0 – crown pulled out. The watch crown is first contacted using the function “Press to force”. The assembly press is then moved to position 1 and 2 with a relative movement; the measured forces are stored and the OK/NOK decision is made using an envelope curve.

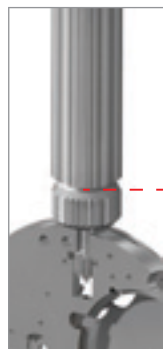
STEP 2

Taring



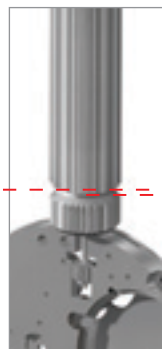
STEP 3

Measure height
Level 0



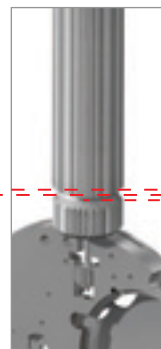
STEP 4

Approach
Level 1



STEP 5

Approach
Level 2



STEP 6

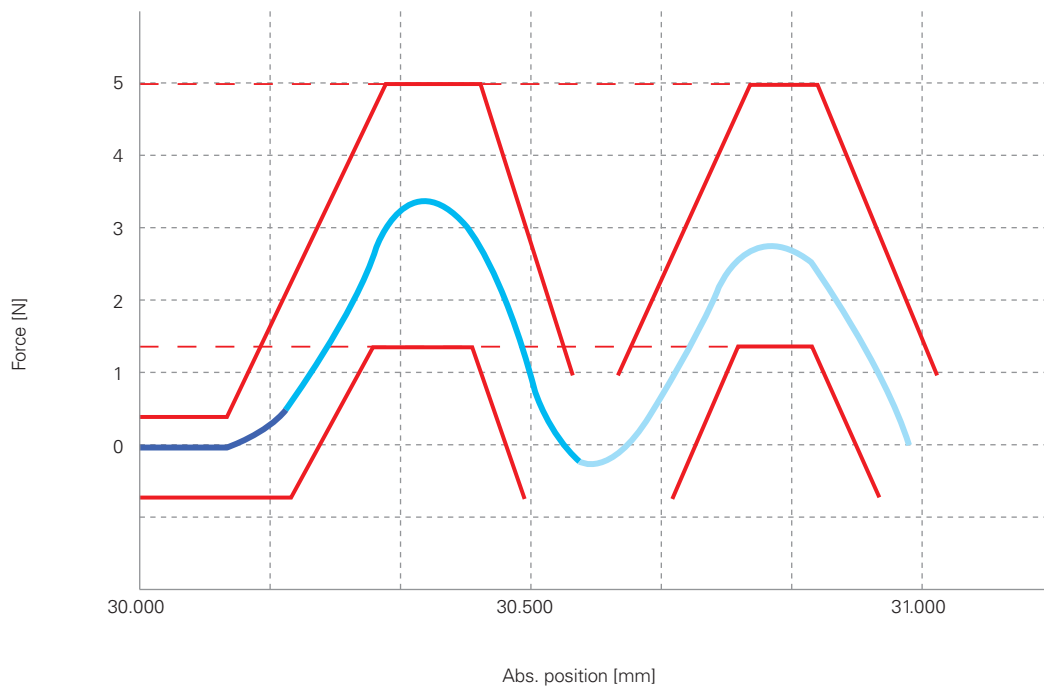
Return stroke



REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	30 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Press to force	0.5 N	AM	Measure height level 0
4	Positioning relative	0.4 mm	AM	Approach level 1
5	Positioning relative	0.4 mm	AM	Approach level 2
6	Positioning	0 mm		Return stroke
7	Program end			

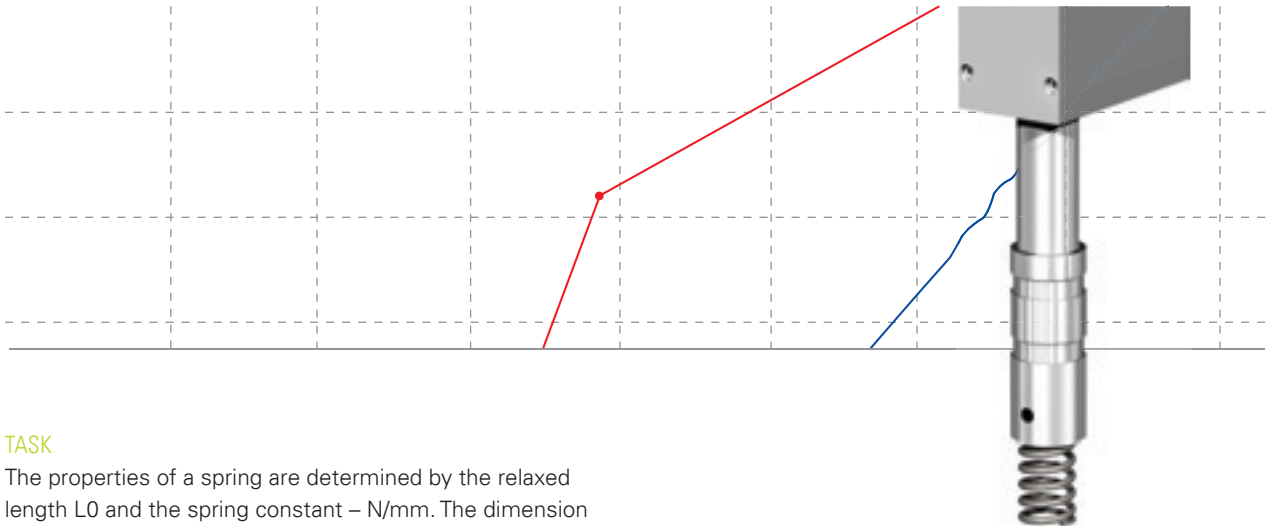
GRAPHS AND QUALITY ASSURANCE



Legend

- Upper and lower limits
- Step 3: Measure height
- Step 4: Relative positioning 0.4 mm
- Step 5: Relative positioning 0.4 mm

SPRING TESTING



TASK

The properties of a spring are determined by the relaxed length L_0 and the spring constant – N/mm. The dimension L_0 and the spring constant must be tested. The spring constant is calculated by measuring the forces at two positions. The spring constant is calculated by using $C = (F_2 - F_1) / (L_2 - L_1)$.

Spring data:

$L_0 = 50 \text{ mm} \pm 0.1 \text{ mm}$

$L_1 = 35 \text{ mm}$

$L_2 = 20 \text{ mm}$

The forces at L_1 and L_2 must have the following values:

$F_1 = 105 \text{ N} \pm 5 \text{ N}$

$F_2 = 210 \text{ N} \pm 10 \text{ N}$

$C = 7 \text{ N/mm} \pm 1 \text{ N/mm}$.

SOLUTION

Using the function "Press to force," the height L_0 is measured first. Then the spring is moved to position L_1 and L_2 and the forces at these positions are measured. The spring stiffness is calculated using the calculation functions for variables.

STEP 1

Measure height

Save L_0



STEP 2

Move to L_1

Save F_1



STEP 4

Move to L_2

Save F_2



STEP 6

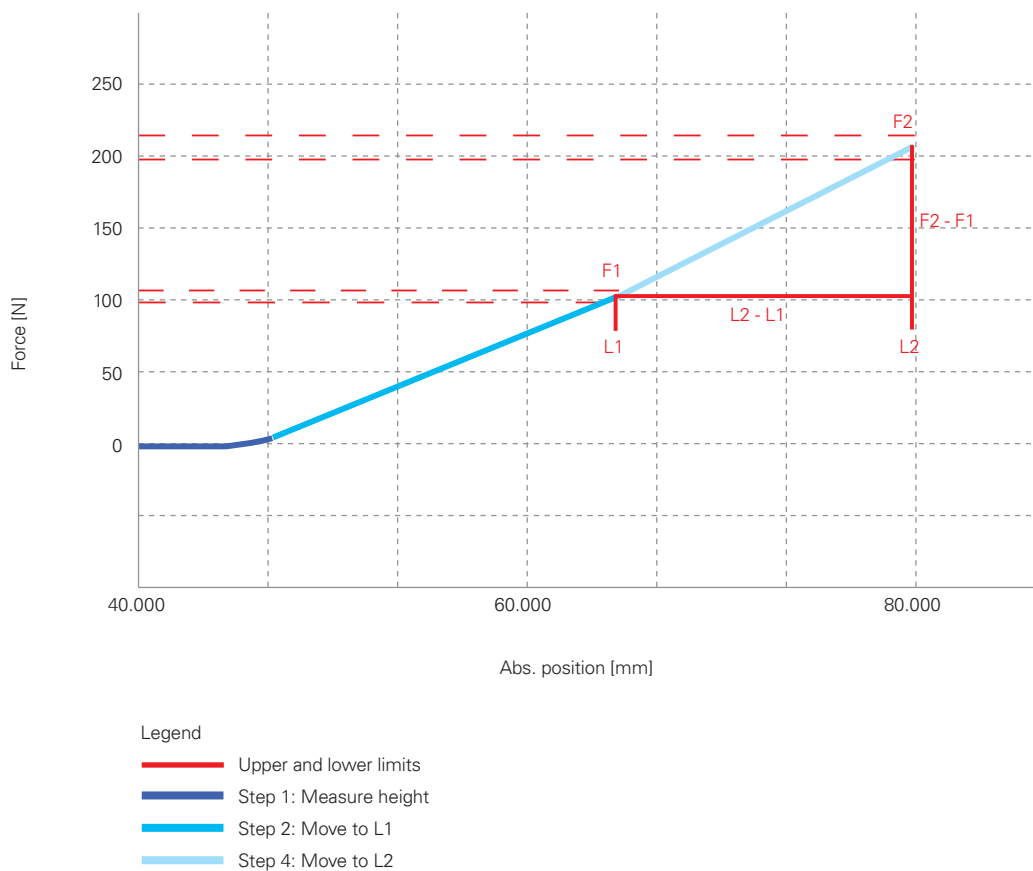
Return stroke



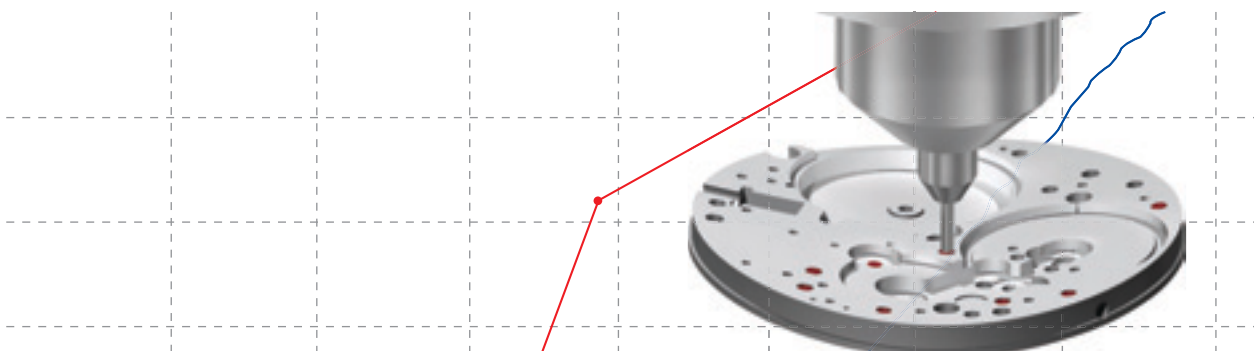
REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Press to force	1 N	AM	Measure height and check
2	Positioning	65 mm		L1= 100mm (press) 35mm
3	Record measurement	MVAR1= force		Save F1 and check ± 5 N
4	Positioning	80 mm		L2= 100mm (press) 20mm
5	Record measurement	MVAR2= force		Save F2 and check ± 10 N
6	Positioning	0 mm		Return stroke
7	Assign variable	VAR1=MVAR1		VAR1 = F1
8	Assign variable	VAR2=MVAR2		VAR2 = F2
9	Assign variable	VAR2-VAR1		Calculate Delta F (VAR2-VAR1)
10	Assign variable	VAR2/15		Calculate spring constant: $C = (F2-F1) / (L1-L2)$
11	Conditional jump	If VAR2<6 =>NOK		Compare spring constant with min. value
12	Conditional jump	If VAR2>8 =>NOK		Compare spring constant with max. value
13	Program end			

GRAPHS AND QUALITY ASSURANCE



PRESSING IN MICROMETRE RANGE



TASK

The main problem when performing pressing tasks in the micrometre range is the bending of the parts under the press. This bending is typically much larger than the desired tolerance: The pressing height has to be 81.000 mm. A tolerance of ± 0.002 mm is permitted for the height of the pressed-in component. The joining force has to be monitored using a window: minimum 40 N, maximum 100 N.

SOLUTION

A program is generated that iteratively joins and then measures the part height and adds a correction value if necessary. To ensure a secure fit of the component in the part, a window is defined in which the maximum force is evaluated and monitored.



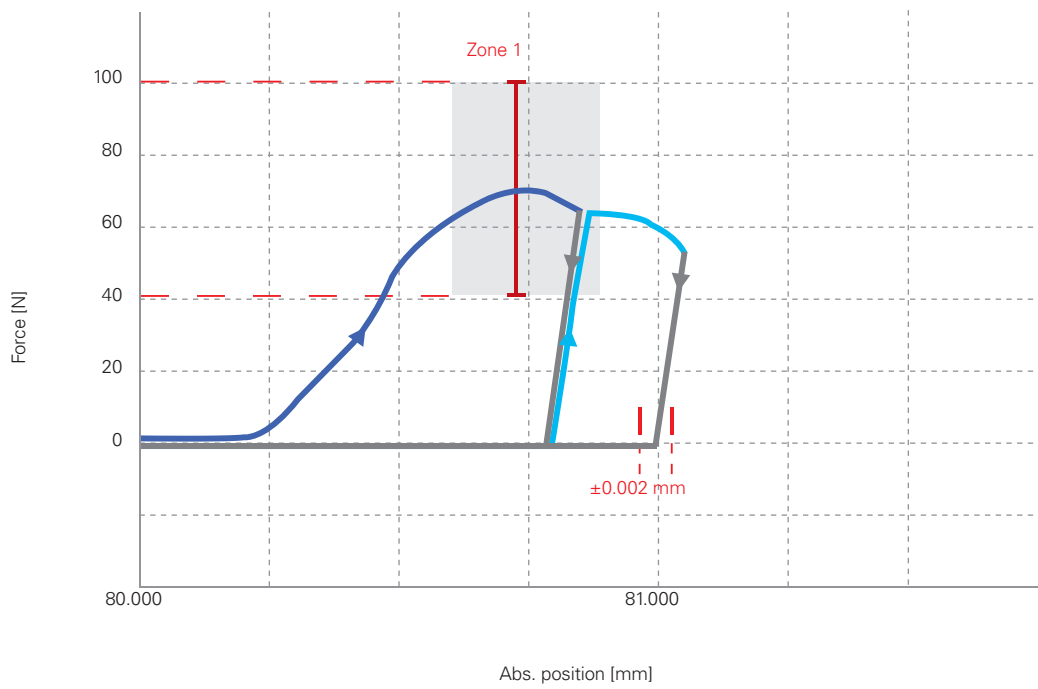
FEED STROKE & TARING



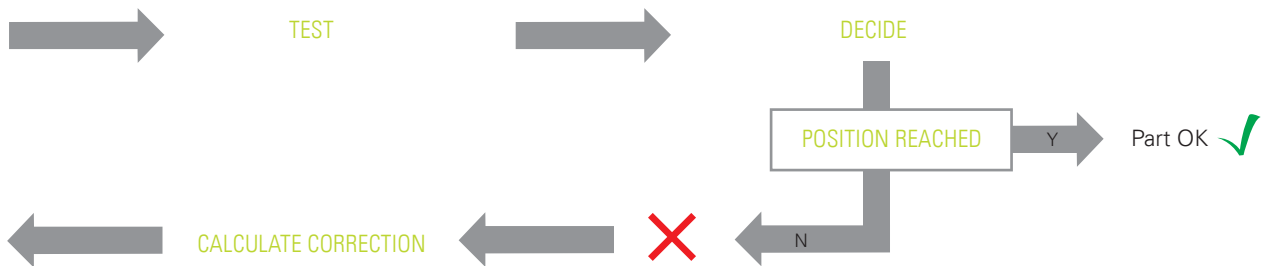
PRESS



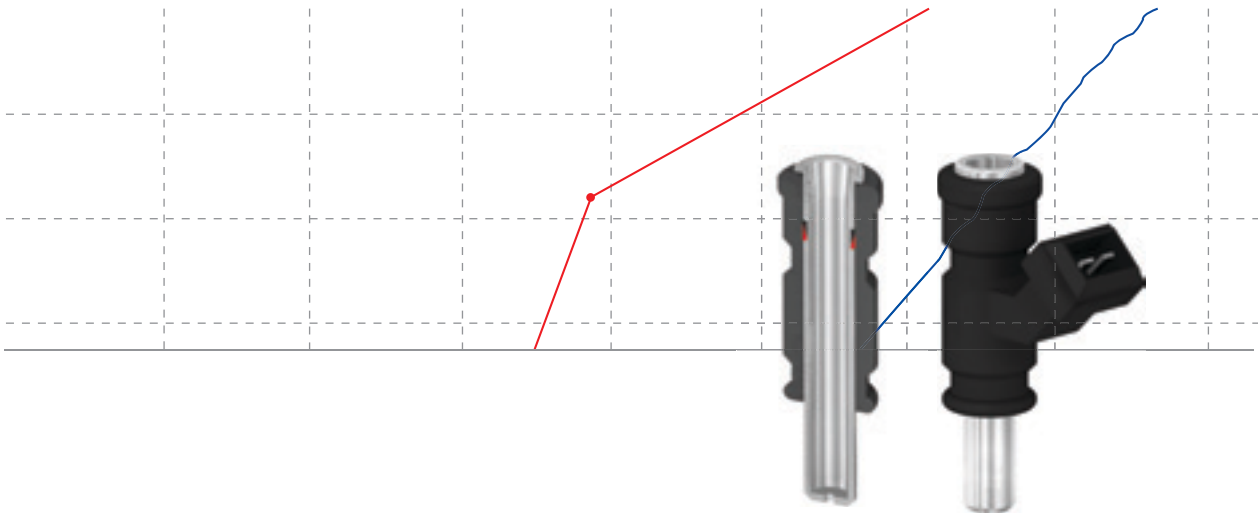
GRAPHS AND QUALITY ASSURANCE



- Legend
- Force monitor window
 - First joining procedure
 - Correction
 - Return strokes



CLIPPING VALVES



TASK

In this joining process connective elements clip into place in the designated grooves. The plastic-coated reel of the valve is mounted onto the valve shaft and the parts are "clipped" together. The length of the mounted valve should have a tolerance of ± 0.7 mm; the clipping force must be at least 1.5 kN and may not exceed 4 kN.

SOLUTION

The program uses the function "Press to force." Due to the important force fluctuations, the process cannot be monitored with envelope curves. Instead the difference between the maximum forces and minimum forces is evaluated.

STEP 1

Feed stroke



STEP 2

Tare



STEP 5

Clipping



STEP 5

Press to force



STEP 6

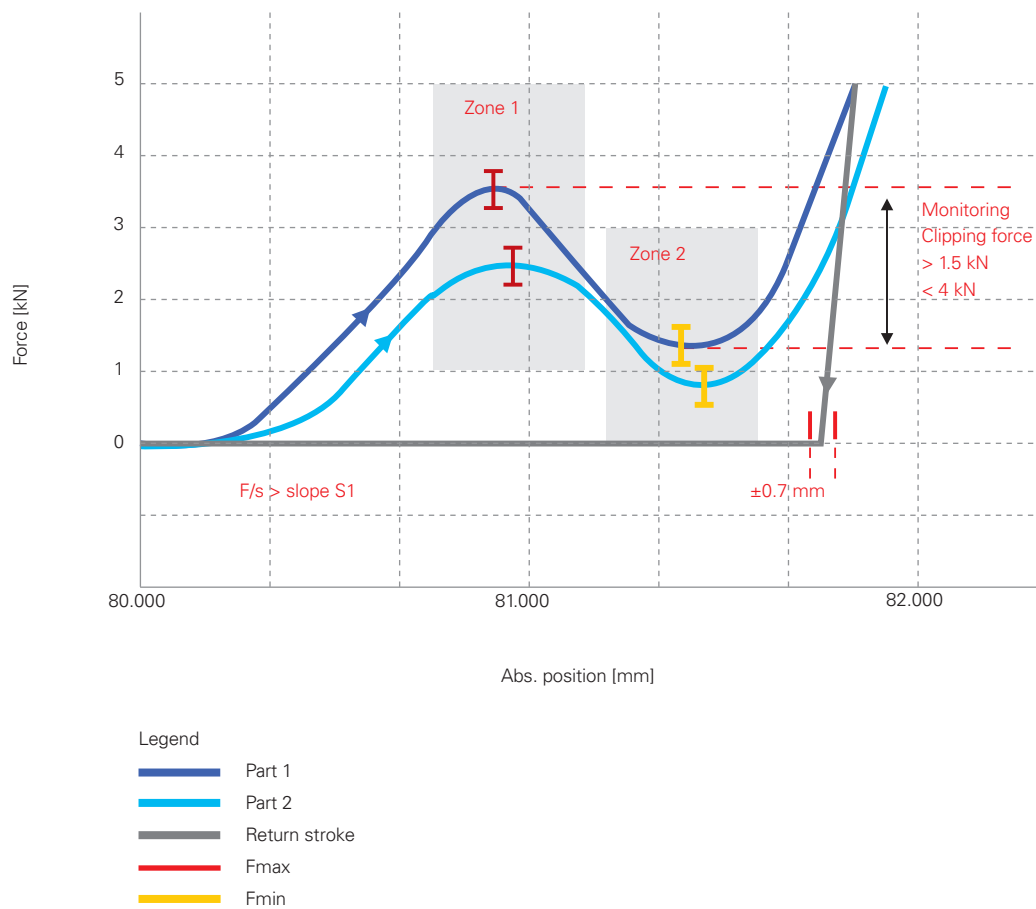
Return stroke



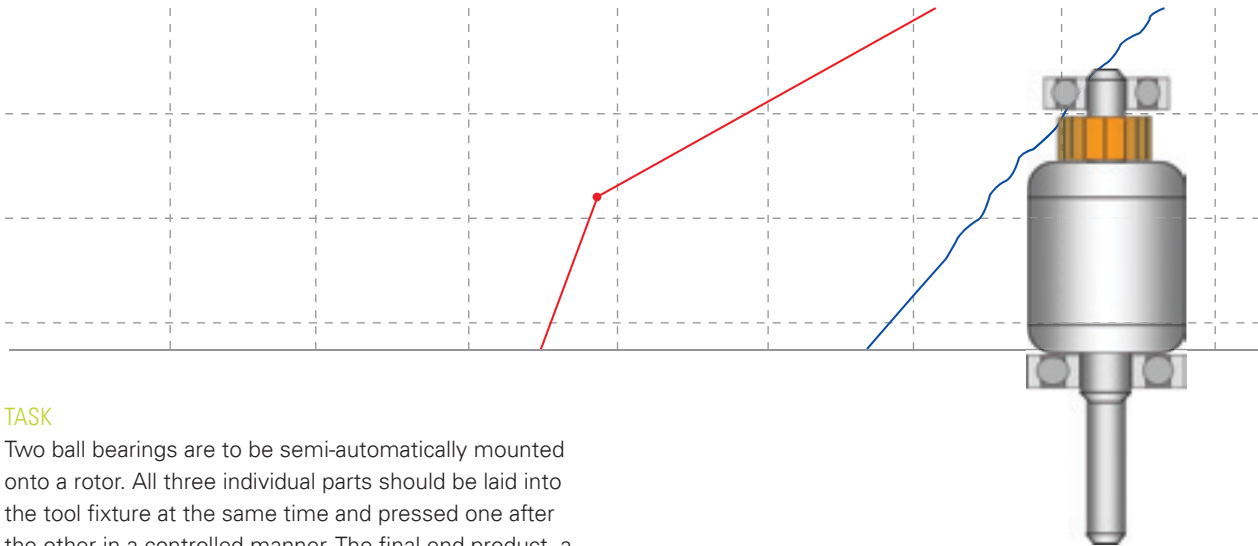
REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Positioning	80 mm		Fast feed stroke
2	Tare	Force input		Set tool weight 0
3	Measur. variable	MVar1 = Fmax		Window 1 detects Fmax in Zone 1
4	Measur. variable	MVar2 = Fmin	A	Window 2 detects Fmin in Zone 2
5	Press to force	5 kN	AM	Clipping + pressing to force
6	Positioning	0 mm		Return stroke
7	Assign variable	VAR1 = MVAR1		VAR1 = Fmax
8	Assign variable	VAR2 = MVAR2		VAR2 = Fmin
9	Assign variable	VAR2 - VAR1		Calculate drop in force (VAR2 - VAR1)
10	Conditional jump	If VAR2 < 1.5 => NOK		Compare clipping force with min. value
11	Conditional jump	If VAR2 > 4 => NOK		Compare clipping force with max. value
12	Program end			

GRAPHS AND QUALITY ASSURANCE



ROTOR ASSEMBLY



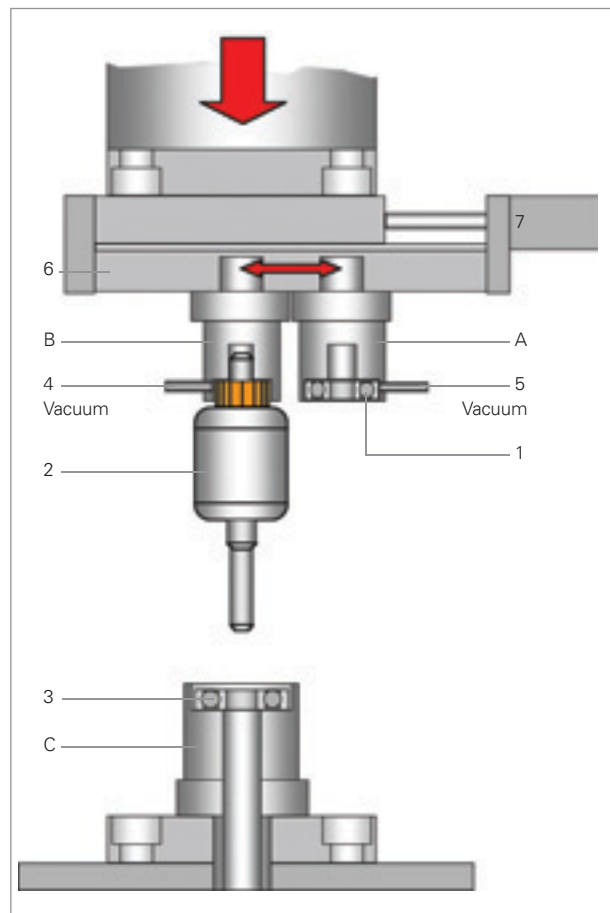
TASK

Two ball bearings are to be semi-automatically mounted onto a rotor. All three individual parts should be laid into the tool fixture at the same time and pressed one after the other in a controlled manner. The final end product, a complete rotor, is to be classified as either good or bad part. If the first pressing is NOK, the rest of the sequence should be aborted to avoid unnecessary waste of parts. The holding forces of both bearings are to be ensured by envelope curves: minimum 500 N, maximum 1200 N.

SOLUTION

A program is generated that controls a compound tool using digital inputs and outputs and performs the following functions sequentially:

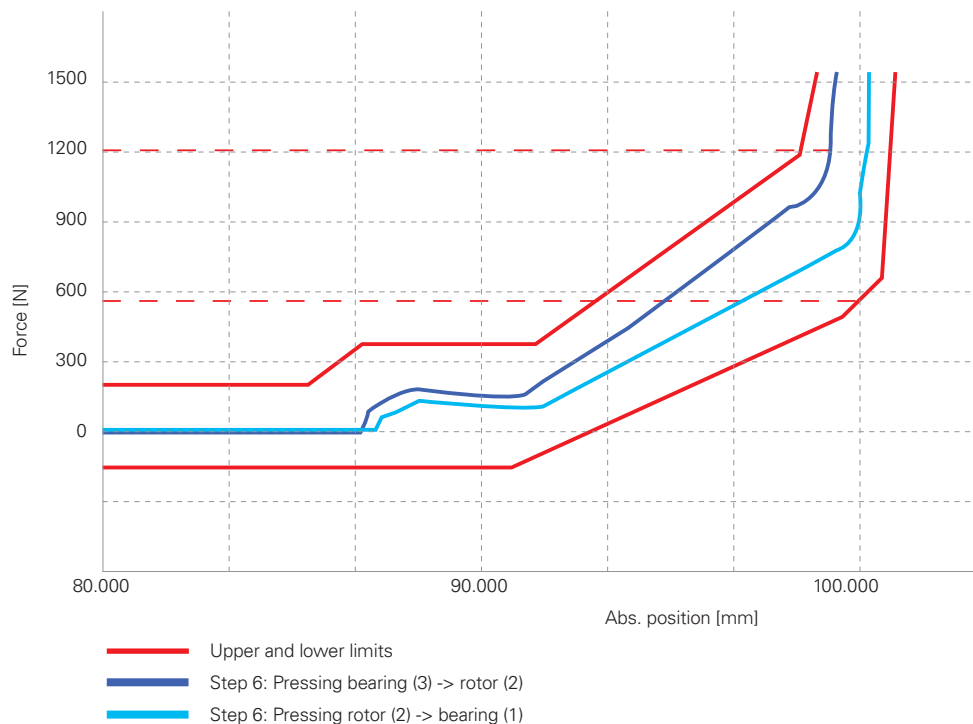
- The vacuum (4, 5) is enabled.
- The ball bearing (1) is fed into tool (A), the rotor (2) into tool (B) and the ball bearing (3) into tool (C).
- The program starts and the safety door closes.
- The assembly press lowers and presses the rotor (2) into the ball bearing (3).
- The vacuum (4) is switched off and the assembly press moves back.
- The compound tool (6) is moved by its pneumatic cylinder (7). The end positions are queried by limit switches and checked with digital inputs.
- The assembly press joins the ball bearing (1) onto the rotor (3).
- The vacuum (5) is switched off and the assembly press moves back.
- The compound tool (6) moves back to its initial position and the safety door opens. The finished part can be removed.



REALISATION IN THE PROMESS NC-PROGRAM

STEP	COMMAND	PARAMETER	ACQUISITION	COMMENTS
1	Set output	Output 4 = ON		Vacuum 4 on
2	Set output	Output 5 = ON		Vacuum 5 on
3	Set output	Output 1 = ON		Compound tool in "Rotor" position
4	Conditional jump	If E0 = 1		Check position, compound tool
5	Positioning	80.000 mm		Fast feed stroke
6	Press to force	1500 N	AM	Press to shoulder
7	Set output	Output 4 = OFF		Vacuum 4 off, rotor remains at bottom
8	Positioning	10.000 mm		Return stroke
9	Conditional jump	If status = NOK, then go to program end		Abort if bearings are incorrectly pressed
10	Set output	Output 1 = OFF		Is sliding table in "bearings" position
11	Conditional jump	If E1 = 1		Check position, compound tool
12	Positioning	80.000 mm		Fast feed stroke
13	Press to force	1500 N	AM	Press to shoulder
14	Set output	Output 5 = OFF		Vacuum 5 off, bearing remain at bottom
15	Positioning	10.000 mm		Return stroke
16	Set output	Output 4 = ON		Vacuum 4 on
17	Set output	Output 5 = ON		Vacuum 5 on
18	Set output	Output 1 = ON		Compound tool in "Rotor" position
19	Conditional jump	If E0 = 1		Check position, compound tool
20	Program end			

GRAPHS AND QUALITY ASSURANCE





SALES & SERVICE

MAINTENANCE, SERVICE AND SALES

PROMESS electro-mechanical assembly presses are in heavy industrial use all over the world. Reliable product quality combined with effective, comprehensive service makes this possible. From process development to pilot testing and from initial start-up to production use at the customer: PROMESS offers one-stop product know-how and thus can provide sustainable, fast service and competent consultation. Our services include:



- PROCESS DEVELOPMENT
- PILOT TESTING
- LOAN UNITS
- START-UP
- DOCUMENTATION
- TRAINING
- MAINTENANCE
- CALIBRATION SERVICE
- SPARE PART SUPPLY / CONSIGNMENT STOCK
- WORLDWIDE SALES AND SERVICE NETWORK

PROCESS DEVELOPMENT

Based on the customer's needs, PROMESS develops appropriate assembly, testing and joining processes and provides assistance regarding efficient use of PROMESS products in the respective production processes and systems.

PILOT TESTING AND START-UP

PROMESS operates in a solution-oriented manner, offering pilot testing to determine pressing forces, cycle times, joining and process parameters to find the perfect solution for the customer. Once the right solution has been found, PROMESS supports the customer during the start-up of the assembly unit, if requested. PROMESS also offers service life calculations. The service life of electro-mechanical assembly presses is greatly influenced by proper dimensioning.

LOAN UNITS

In addition to pilot tests at our location in Berlin, PROMESS can also provide loan units. This makes it possible for the customer to test the electro-mechanical assembly presses on-site.

DOCUMENTATION

PROMESS electro-mechanical assembly presses are shipped with comprehensive documentation. Depending on the system and accessories, the documentation includes manuals for the electro-mechanical assembly presses, the servo amplifier and the Profibus with its function modules, as well as wiring diagrams, test reports, calibration records, technical data of the accessories and documents for the safety equipment. PROMESS also provides project documents such as manuals, data sheets and drawings, free of charge, in the download area at www.promessmontage.de.

TRAINING

PROMESS offers consultation and support to its customers on all joining and assembly topics and in particular regarding the start-up, operation and maintenance of its products. For this purpose, special training modules have been developed that cover all relevant subjects and are tailored to the respective target group. The modules are based on fundamental concepts that can be changed or adapted individually upon request. To ensure optimal training results, no more than 5–6 participants should attend at a time. Depending on the customer's needs, the training can be conducted at the customer's location or at PROMESS in Berlin. The training is led by experienced, qualified training personnel.

MODULE 1:

TRAINING FOR MACHINE OPERATORS:

- Introduction to the product
- Operating the system
- Interpreting the parameters/messages
- Modifying parameters

Requirements: none

Duration: 1 day

MODULE 2:

TRAINING FOR SETTERS/PROGRAMMERS

– Contents of module 1

– Range of features of the assembly units, illustrated using application examples

– Generating and testing own programs

– Performance of functional tests

Requirements: none

Duration: 2 days

MODULE 3:

TRAINING FOR SERVICE PERSONNEL

– Contents of module 1

– Generating and testing own programs

– Interpreting error messages

– Interface functions

– Replacing components

– Recalibrating a force transducer

Requirements: Targeted at service/maint. personnel; proficiency w/ electr. equipment and NC axes required

Duration: 2 days

MODULE 4:

TRAINING FOR PLC PROGRAMMERS

– Abridged contents of module 1

– Interface description, Profibus and others

Requirements: PLC programmer

Duration: 2 days

MODULE 5:

TRAINING FOR START-UP PERSONNEL

Individual composition of the separate training components

Requirements: Individual

Duration: tbd

ARTICLE NO.

Module 1 – Training for machine operators	4863
Module 2 – Training for setters/programmers	4864
Module 3 – Training for service personnel	4865
Module 4 – Training for PLC programmers	4866
Module 5 – Training for start-up personnel	4867

MAINTENANCE

PROMESS products have been developed for tough, industrial use and have a service life of many years. To ensure optimal performance and long service life, PROMESS recommends regular, preventative maintenance, cleaning and inspection of the units. A maintenance package offers security and quality and makes the maintenance costs transparent. PROMESS offers two maintenance packages, ECO & COMFORT, which have been perfectly tailored to the needs of the customers.

OUR MAINTENANCE PACKAGES, ECO & COMFORT

		AT PURCHASE	ECO	COMFORT
Guarantee	1 year	+	+	+
	Extension (1 year)	-	+	+
Preventative maintenance *	Lubrication of unit	*	+	+
	Replacement of gear oil if necessary	*	+	+
	Inspection of mechanical and safety-relevant components	*	+	+
	Replacement of wear parts	*	+	+
	Adjustment/set-up work if necessary	*	+	+
	Generating a machine status report	*	+	+
Software updates	Software Service Release (upon request)	*	+	+
Software upgrades	New software functions release	*	+	+
Remote maintenance	Remote maintenance module for maintenance from Berlin	*	*	+
Calibration	Calibration of force transducer	*	+	+
	Issuance of calibration certificate	*	+	+
Spare parts	Spare parts list	+	+	+
	Generating a machine status report	*	+	+
Replacement unit	24 h – from factory **	*	*	+

Note

* Optional depending on costs

** Plus shipping costs; the replacement unit is provided free of charge for the duration of the repairs.

ARTICLE NO.

Maintenance package ECO	926
Maintenance package COMFORT	925

CALIBRATION SERVICE

Regular calibration of PROMESS units prevents incorrect process parameters and ensures constant manufacturing quality. To this end, PROMESS offers the necessary accessories and, if desired, a calibration service, which is performed by experienced and qualified service technicians and which includes the following:

CALIBRATION SERVICES:

- Inspection calibration of the force measurement system
- Inspection of the position measurement system
- Adjustment of the force transducer
- Issuing a calibration certificate
- Functional inspection for noise and wear
- Lubrication
- Inspection of machine capability (optional)

THE PROMESS CALIBRATION SET INCLUDES:

- Reference sensor
- Analysis unit for the reference sensor with display and RS 232 interface for connecting to a PC
- Interface cable
- Factory calibration report or DKD (Deutscher Kalibrierdienst) calibration certificate (extra charge)
- PROMESS Cal_Mc software (optional)
- Industrial suitcase

PROMESS CAL_MC CALIBRATION SOFTWARE

Automatic calibration of the force transducer is performed with the PROMESS CAL_MC calibration software, using a force transducer calibrated by the DKD as reference. Upon completion, a correction is recommended and a report, which can be exported to Microsoft Excel, is generated. The software functions exclusively with calibration devices from PROMESS.

ARTICLE NO.

Calibration service at PROMESS	5032
Calibration service	4512
Calibration set	
1 kN	5006
5 kN	5007
20 kN	5001
50 kN	5003
100 kN	5005
Software CAL_MC incl. interface cable for Unidrive Classic	5019
Software CAL_MC incl. interface cable for Unidrive SP	5029



SPARE PART SUPPLY / CONSIGNMENT STOCK

A spare part package for an electro-mechanical assembly press typically consists of mechanics with a pre-amplifier and the components for the control and servo amplifier. Upon request, the customer can set up a consignment stock with the components of a spare part package at PROMESS or on-site. The fees are graduated according to the duration of the consignment storage. At the end of the consignment period, the units become the property of the customer. Optionally, the components can also be taken back by PROMESS.

For electro-mechanical assembly presses of the CLASSIC, COMPACT, PRECISION and BASIC series, the standard components such as gear drive, motor, gears, servo amplifier, etc. are kept in stock in Berlin and the USA. This ensures rapid in-house repair at PROMESS.

WORLDWIDE SALES AND SERVICE NETWORK

Over the course of time, PROMESS has developed from an engineering firm to an internationally represented company. PROMESS electro-mechanical assembly presses are in heavy industrial use all over the world and are valued for their quality and reliability. A comprehensive network of over twenty sales and service partners worldwide safeguards the operation of PROMESS units and thus the quality of manufacturing.

PROMESS SALES AND SERVICE PARTNERS

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info@industriellesmesstechnik.de
www.industriellesmesstechnik.de

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INDIA

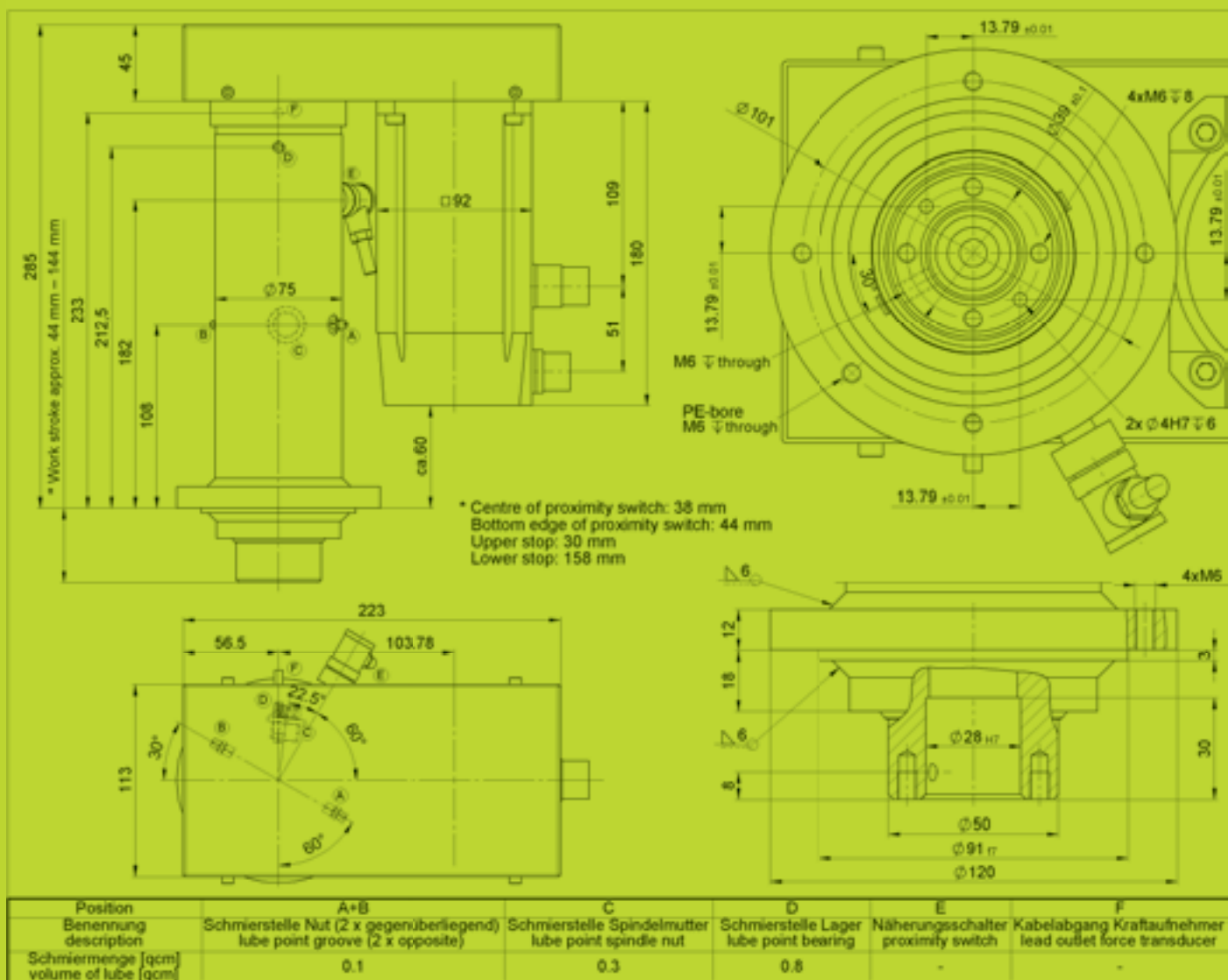
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DATA SHEETS

CLASSIC SERIES

PROMESS electro-mechanical assembly presses are particularly suitable for demanding joining, forming or testing tasks with integrated force-distance monitoring. A typical area of application is automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

DESIGN

The assembly press is based on a spindle with guidance, which is installed in a solid steel housing. The systems consist of robust mechanical components with AC servo motor, ball or roller gear drive spindle for converting rotational movement into linear movement, integrated force transducer for direct measurement of the joining forces, as well as the control.

KEY FEATURES

- Integrated force, position and signal control
- Real-time force-distance analysis directly in the servo amplifier
- No external analysis system required
- Safety brake for category 4 optional
- Envelope and window functions
- Robust, tried-and-tested servo drive technology, no special hollow shaft motor solution

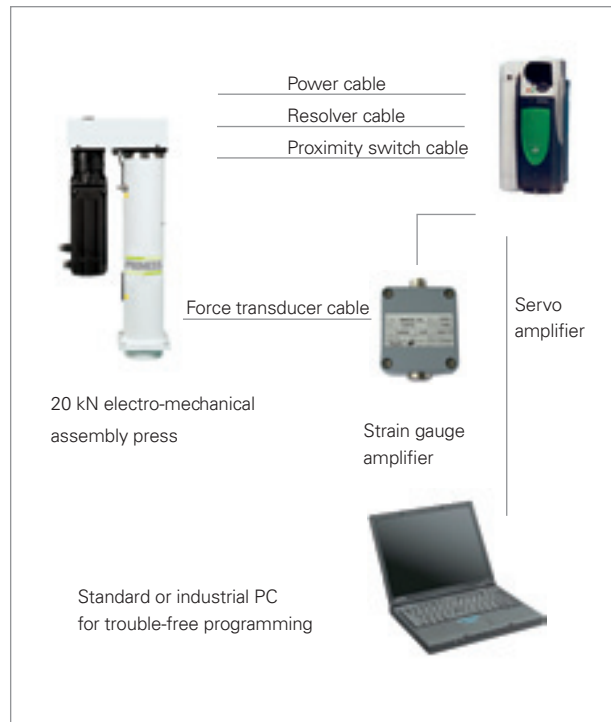
ADDITIONAL FEATURES

- Absolute encoder eliminates the need for a reference run
- Positioning by means of external position transducers possible
- Only one measurement range required, thanks to high-precision force transducer
- Drift-free force measurement with high-precision strain gauge force transducer for push and pull forces
- All customary bus systems are supported
- Compensation against bending
- Service life of bearings and threaded drive >12 million cycles
- In-house production
- Most comprehensive range of assembly presses
- Modular design allows versatile equipment configurations



FUNCTIONAL PRINCIPLE:

Actuation is performed by an AC servo motor. The rotational movement of the servo motor is transferred to the ball or roller gear drive and the press ram, where it is converted to linear movement. With the spindle drive, the assembly press is able to apply the full force both in push and pull directions. The sequence of movements can be easily specified using the included control and monitoring software. The envelope and window functions make full monitoring and documentation of the assembly process possible.



ELECTRO-MECHANICAL ASSEMBLY PRESS 05/200/240 ART. NO.: 374005

MAIN FUNCTIONS	
Nominal load	±5 kN
Stroke	200 mm
Nominal speed	240 mm/s
Acceleration	2000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	28.8 kg
Max tool weight	5 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	1.34 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.1 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1402 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC gG / 6 A
Temperature range	-10 to +50 °C
Power loss	57 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	Ethernet / RS 485
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	Profibus, CANOpen, Interbus, DeviceNet

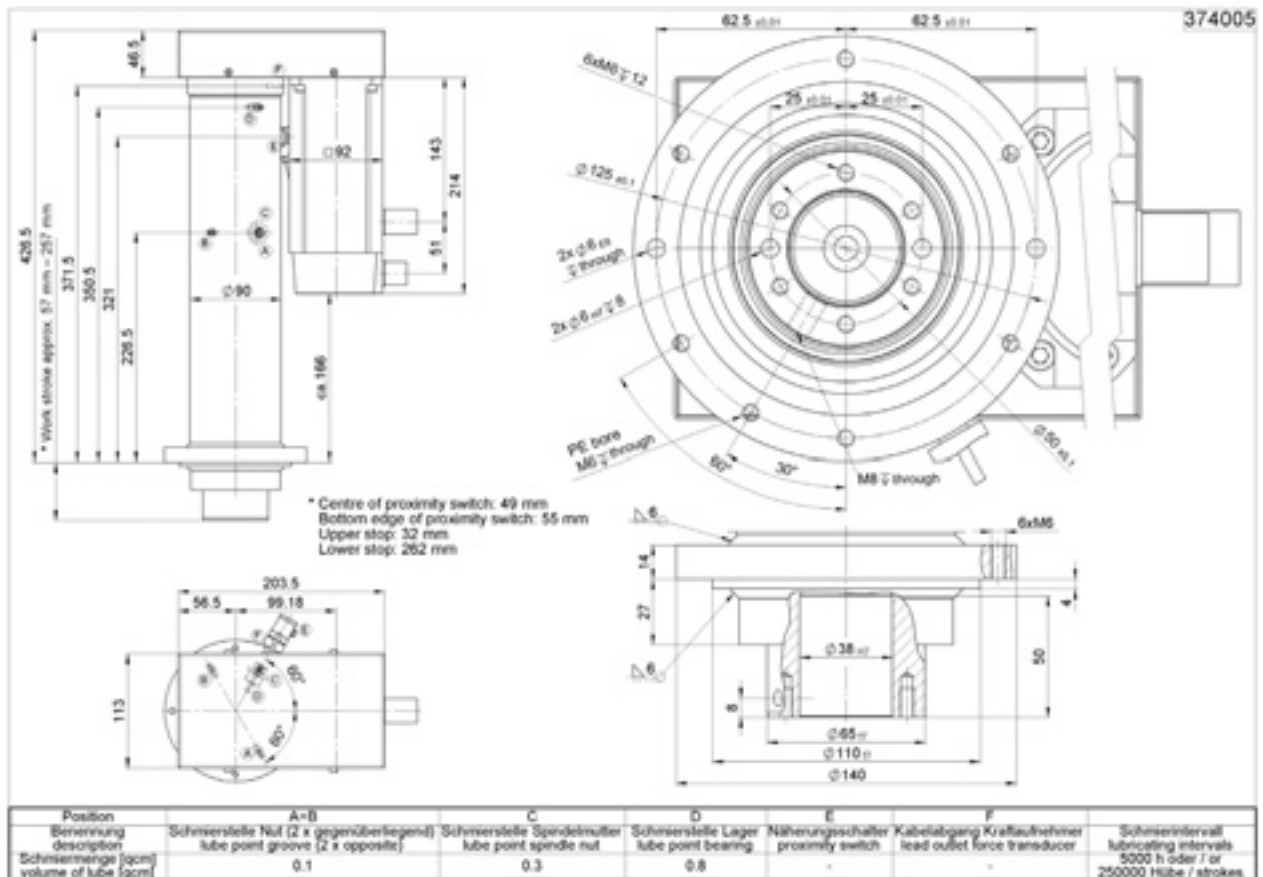
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 12/200/240 ART. NO.: 374012

MAIN FUNCTIONS	
Nominal load	±12 kN
Stroke	200 mm
Nominal speed	240 mm/s
Acceleration	2000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	40 kg
Max tool weight	8 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	3.22 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.1 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1404 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1.5 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC gG / 12 A
Temperature range	-10 to +50 °C
Power loss	97 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

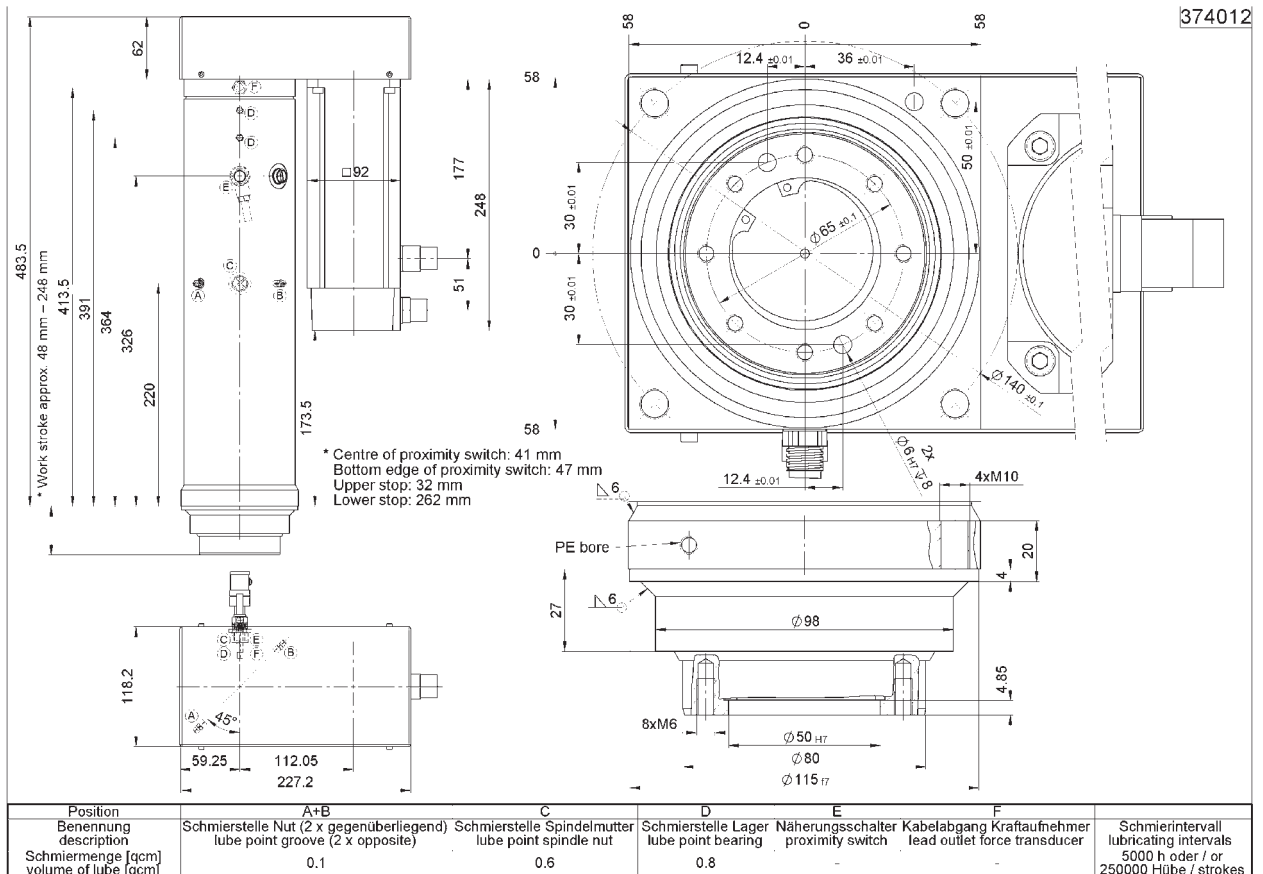
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 20/180/150 ART. NO.: 374125

MAIN FUNCTIONS	
Nominal load	±20 kN
Stroke	180 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	72.4 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	5.37 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.3 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1405 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %, ,
Cable cross-section; input/output	1.5 / 1 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC gG / 12 A
Temperature range	-10 to +50 °C
Power loss	139 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

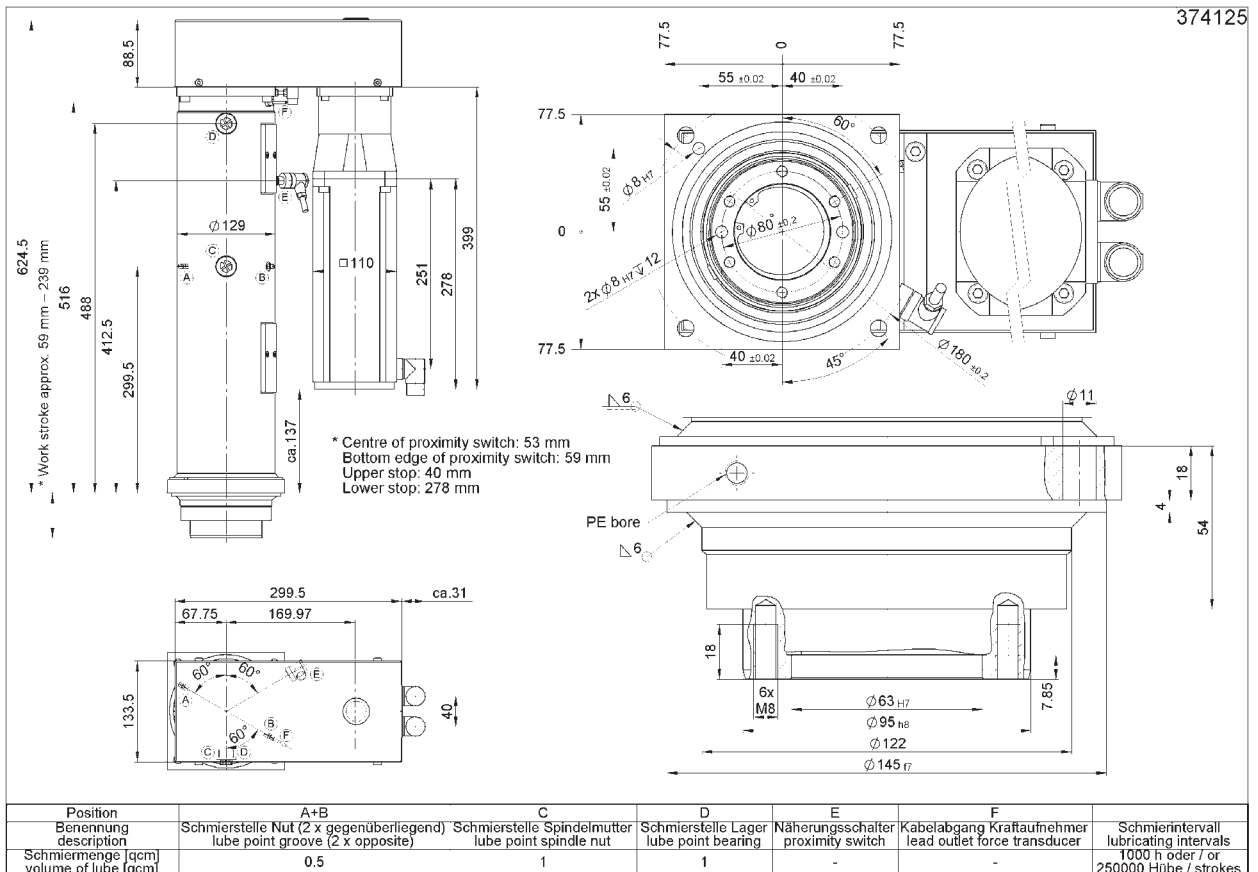
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 20/350/230 ART. NO.: 374023

MAIN FUNCTIONS	
Nominal load	±20 kN
Stroke	350 mm
Nominal speed	230 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	82.6 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	5.37 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1405 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %,
Cable cross-section; input/output	1.5 / 1 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC gG / 12 A
Temperature range	-10 to +50 °C
Power loss	139 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	Ethernet / RS 485
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	Profibus, CANOpen, Interbus, DeviceNet

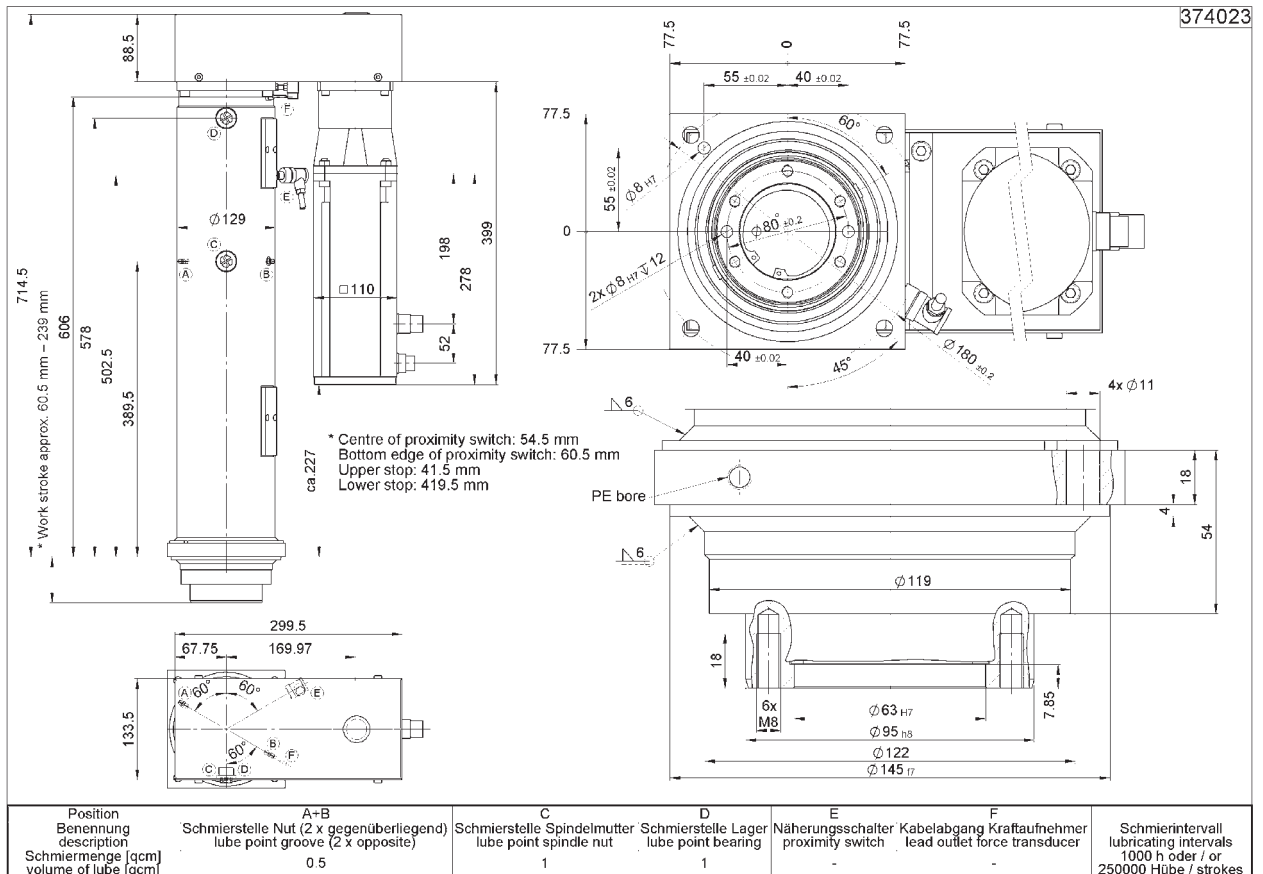
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 30/180/150 ART. NO.: 374131

MAIN FUNCTIONS	
Nominal load	±30 kN
Stroke	180 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	72.6 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	8.05 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.3 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1406 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %,
Cable cross-section; input/output	2.5 / 1.5 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC gG / 16 A
Temperature range	-10 to +50 °C
Power loss	158 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

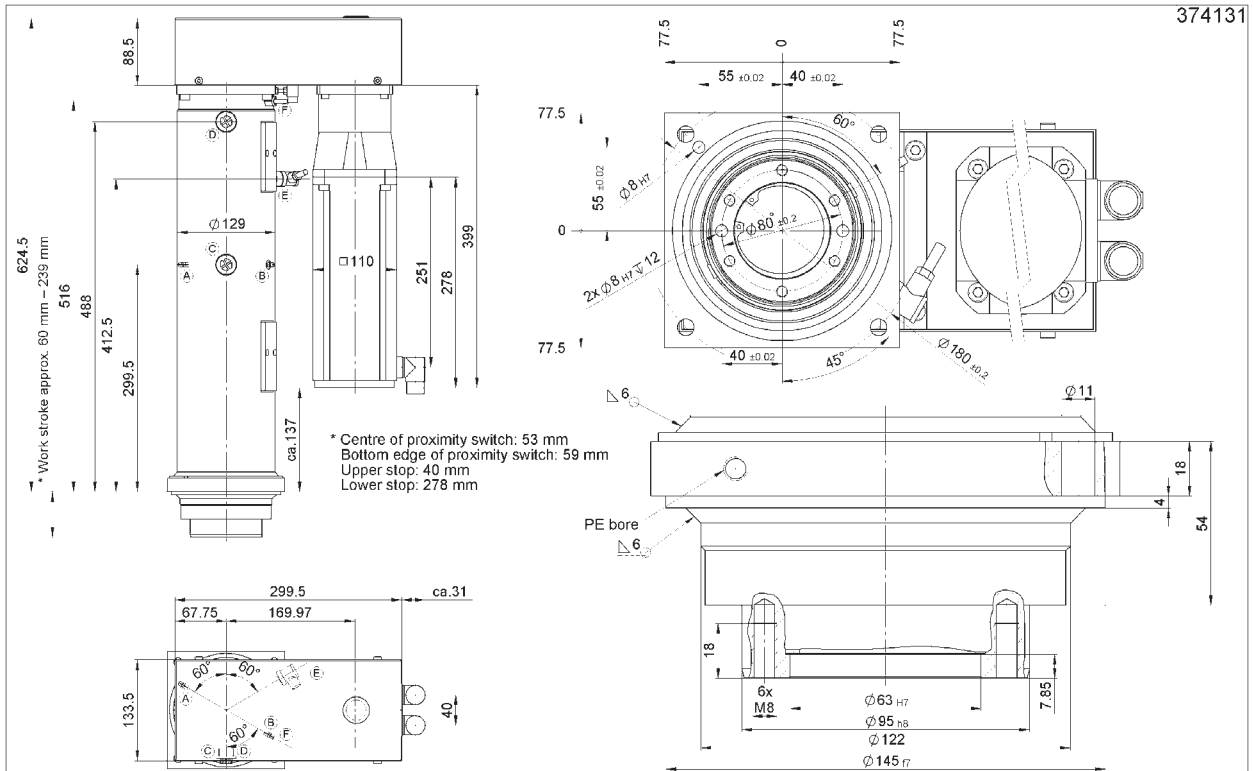
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



374131

Position	A+B	C	D	E	F	
Benennung description	Schmierstelle Nut (2 x gegenüberliegend) lube point groove (2 x opposite)	Schmierstelle Spindelmutter lube point spindle nut	Schmierstelle Lager lube point bearing	Näherungsschalter proximity switch	Kabelabgang Kraftaufnehmer lead outlet force transducer	Schmierintervall lubricating intervals
Schmiermenge [qcm] volume of lube [qcm]	0.5	1	1	-	-	1000 h oder 7 250000 Hube / strokes

ELECTRO-MECHANICAL ASSEMBLY PRESS 40/180/150 ART. NO.: 374040

MAIN FUNCTIONS	
Nominal load	±40 kN
Stroke	180 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	142.5 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	10.74 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP2401 / (155*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	4 / 2.5 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 20 A
Temperature range	-10 to +50 °C
Power loss	266 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

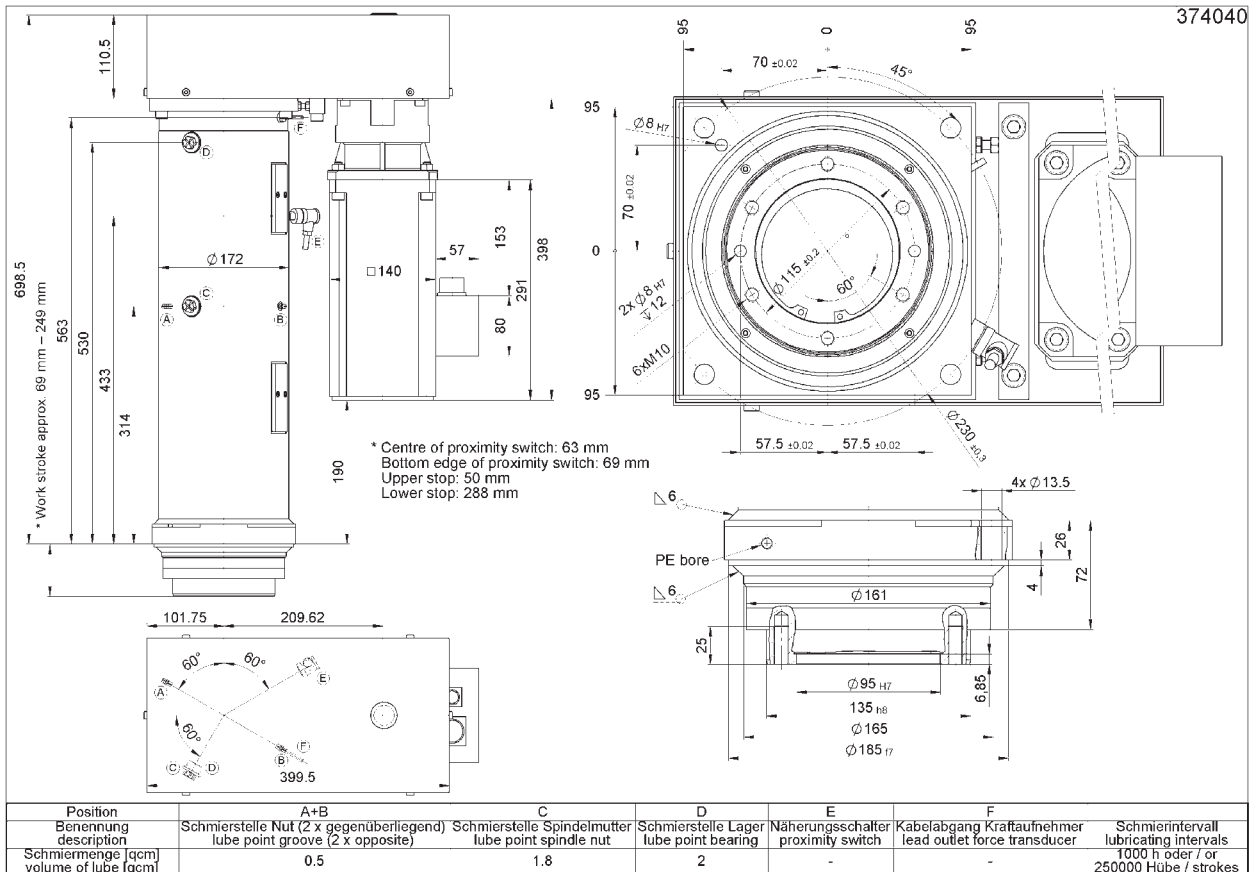
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 40/330/240 ART. NO.: 374043

MAIN FUNCTIONS	
Nominal load	±40 kN
Stroke	330 mm
Nominal speed	240 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	161.6 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	10.74 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.06 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP2401 / (155*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %, ,
Cable cross-section; input/output	4 / 2.5 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 20 A
Temperature range	-10 to +50 °C
Power loss	266 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

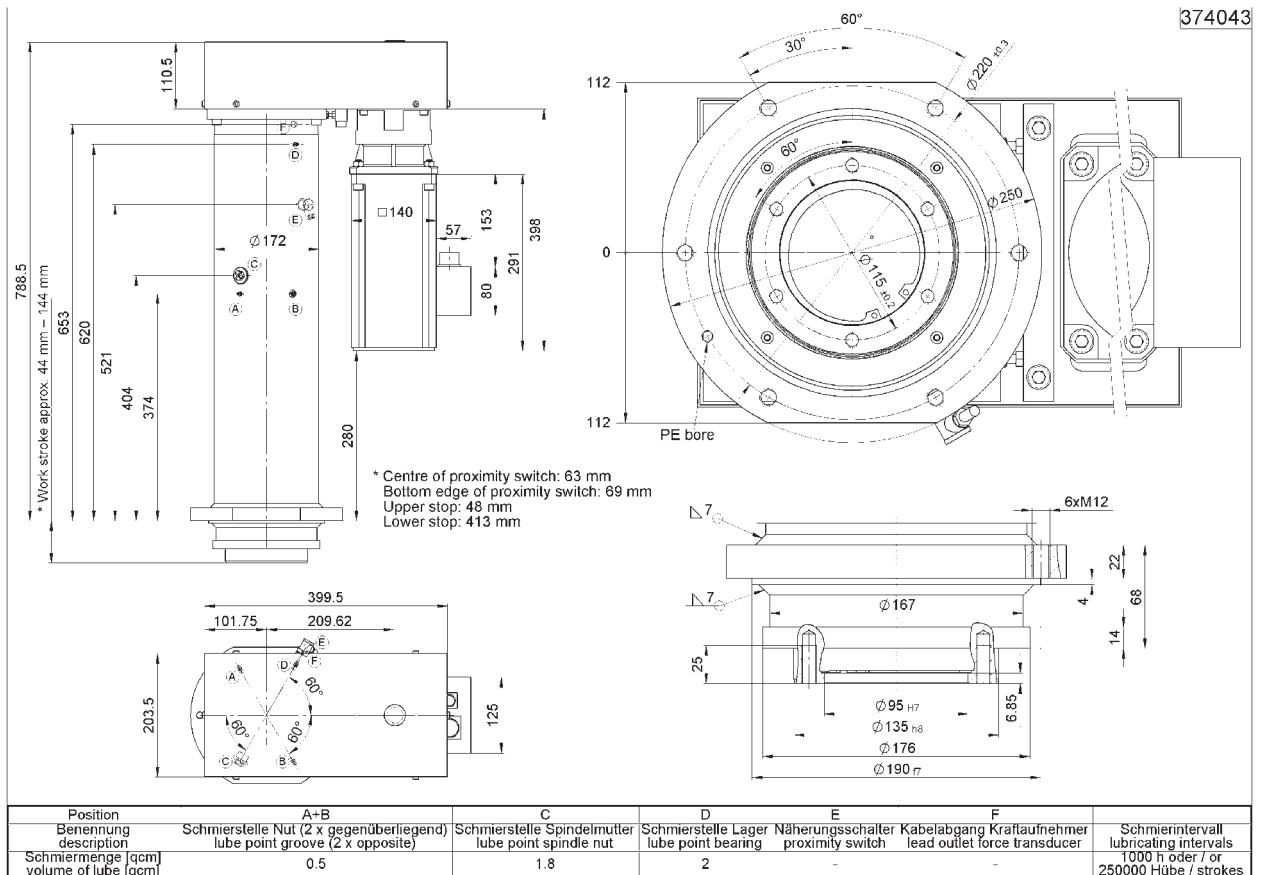
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 60/180/150 ART. NO.: 374060

MAIN FUNCTIONS	
Nominal load	±60 kN
Stroke	180 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	145.5 kg
Max tool weight	50 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	16.11 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP2401 / (155*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %, ,
Cable cross-section; input/output	4 / 2.5 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 20 A
Temperature range	-10 to +50 °C
Power loss	266 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

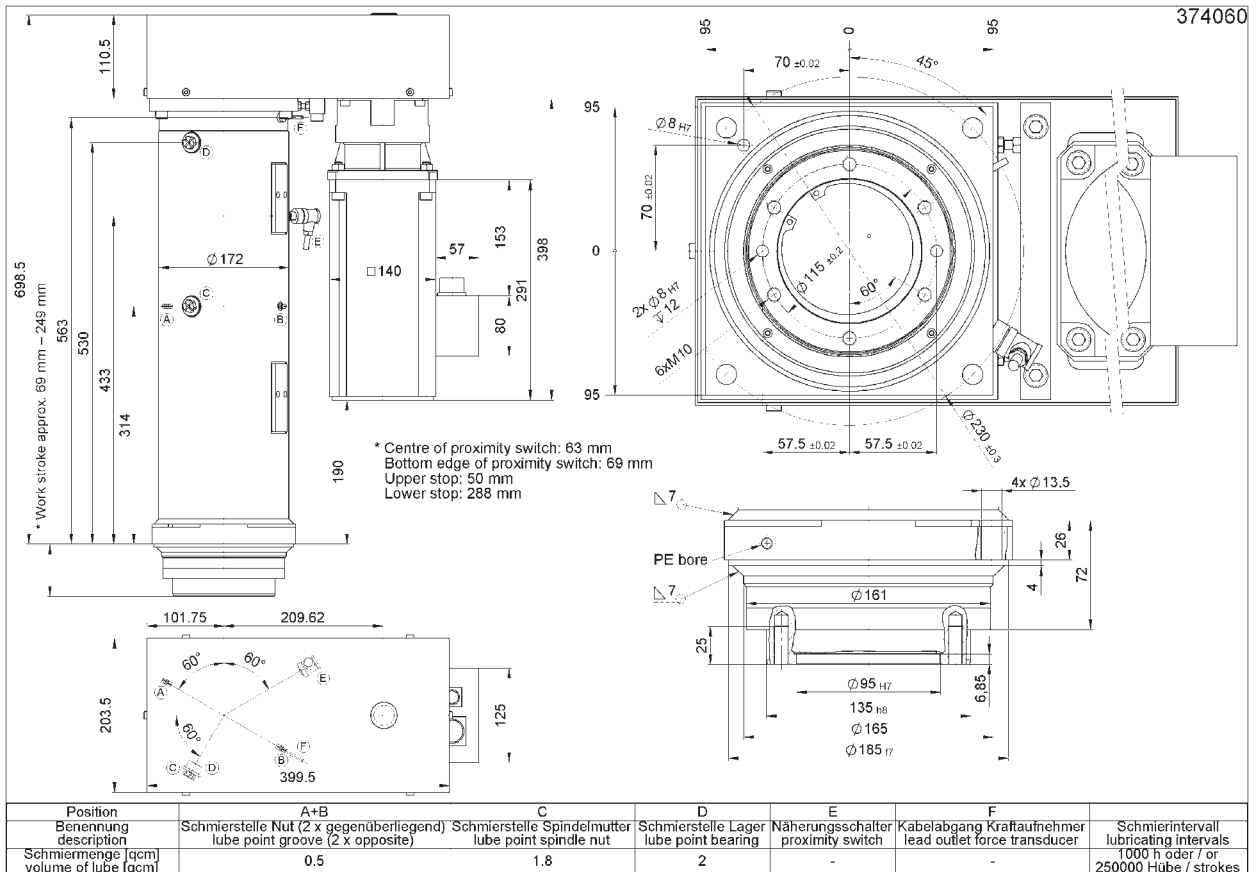
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 60/330/240 ART. NO.: 374065

MAIN FUNCTIONS	
Nominal load	±60 kN
Stroke	330 mm
Nominal speed	240 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 10 s
Weight	182 kg
Max tool weight	50 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	16.11 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.06 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	
SP2403 / (155*389*260 mm)	
Mains voltage	3 AC 380 V – 480 V, ±10 %,
Cable cross-section; input/output	6 / 6 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 32 A
Temperature range	-10 to +50 °C
Power loss	320 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

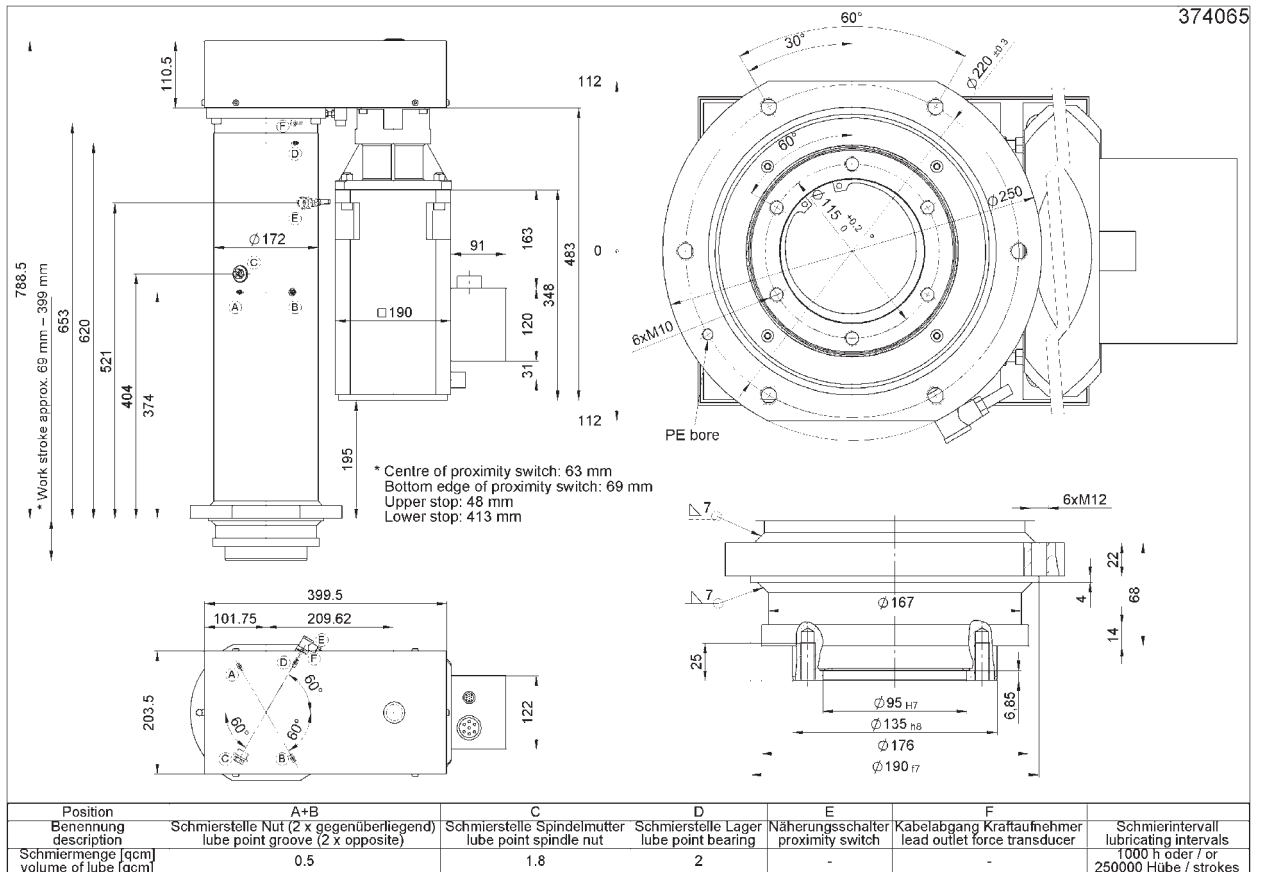
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 80/180/150 ART. NO.: 374081

MAIN FUNCTIONS	
Nominal load	±80 kN
Stroke	180 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	145.7 kg
Max tool weight	80 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	21.48 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP2402 / (155*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %, ,
Cable cross-section; input/output	4 / 4 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 25 A
Temperature range	-10 to +50 °C
Power loss	286 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

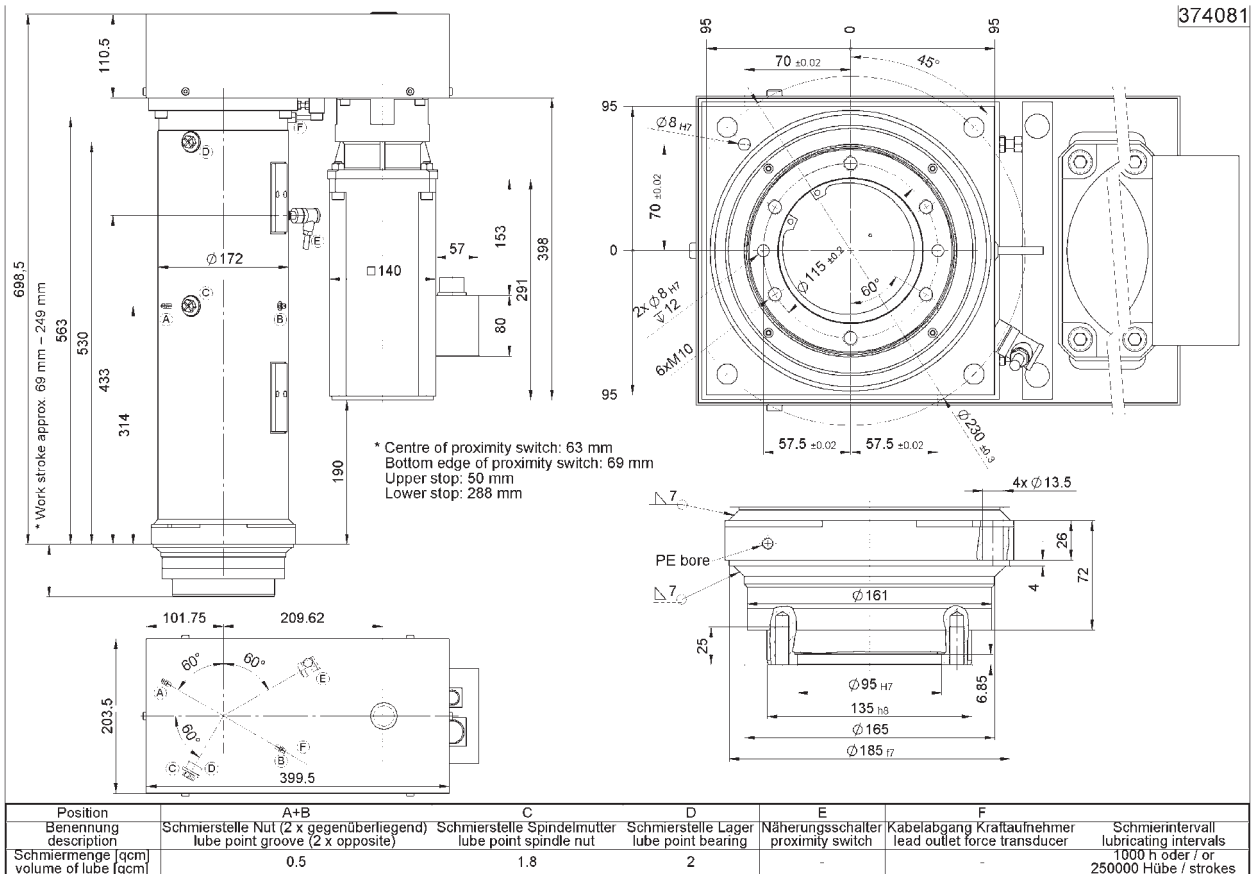
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 100/330/200 ART. NO.: 374103

MAIN FUNCTIONS	
Nominal load	±100 kN
Stroke	330 mm
Nominal speed	200 mm/s
Acceleration	2000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	210 kg
Max tool weight	85 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	26.85 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.07 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP3401 / (250*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	10 / 10 mm ²
Protection class	IP 20
Weight	15 kg
Recommended protection	IEC gG / 40 A
Temperature range	-10 to +50 °C
Power loss	499 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	Ethernet / RS 485
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	Profibus, CANOpen, Interbus, DeviceNet

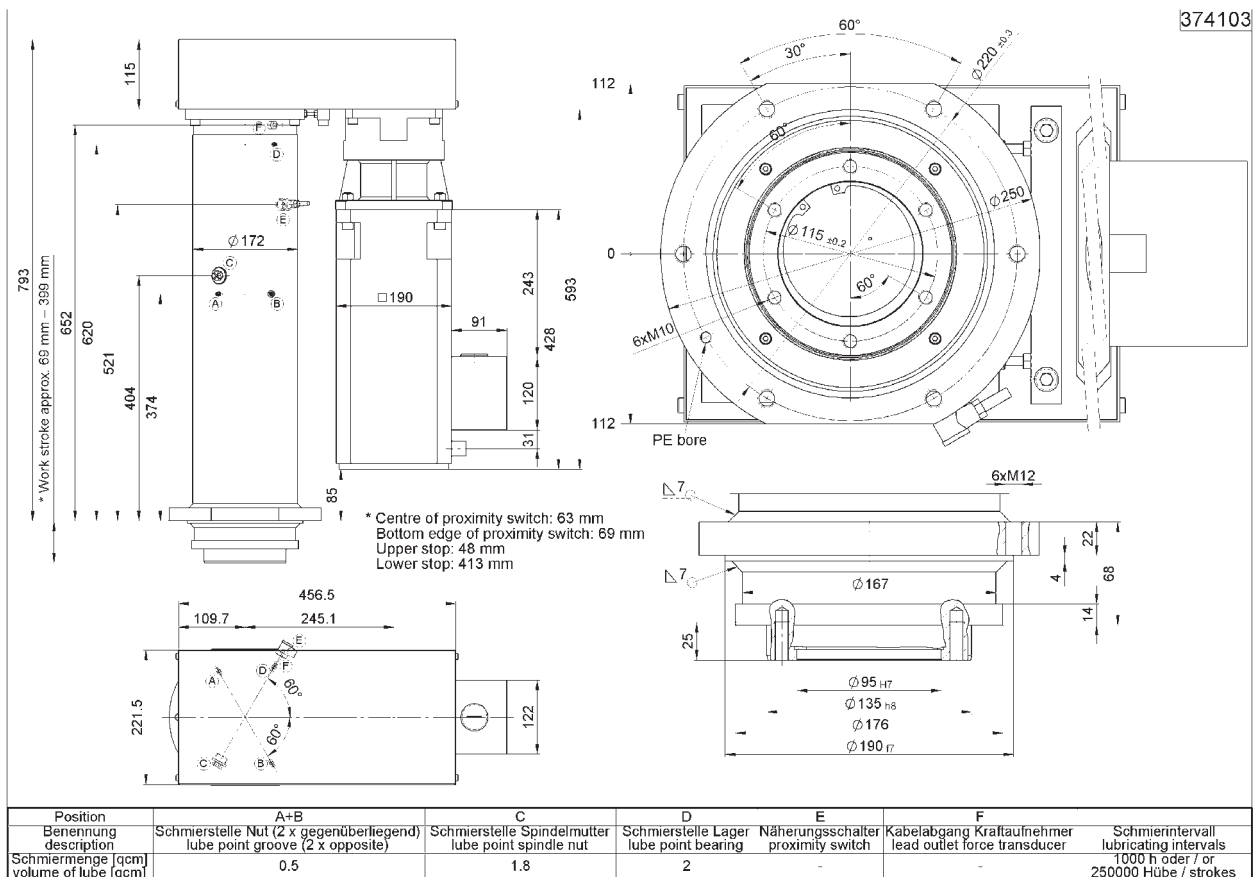
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 150/400/145 ART. NO.: 374151

MAIN FUNCTIONS	
Nominal load	±150 kN
Stroke	400 mm
Nominal speed	145 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	330 kg
Max tool weight	85 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	40.28 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.05 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP3401 / (250*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10 %
Cable cross-section; input/output	10 / 10 mm ²
Protection class	IP 20
Weight	15 kg
Recommended protection	IEC gG / 40 A
Temperature range	-10 to +50 °C
Power loss	499 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

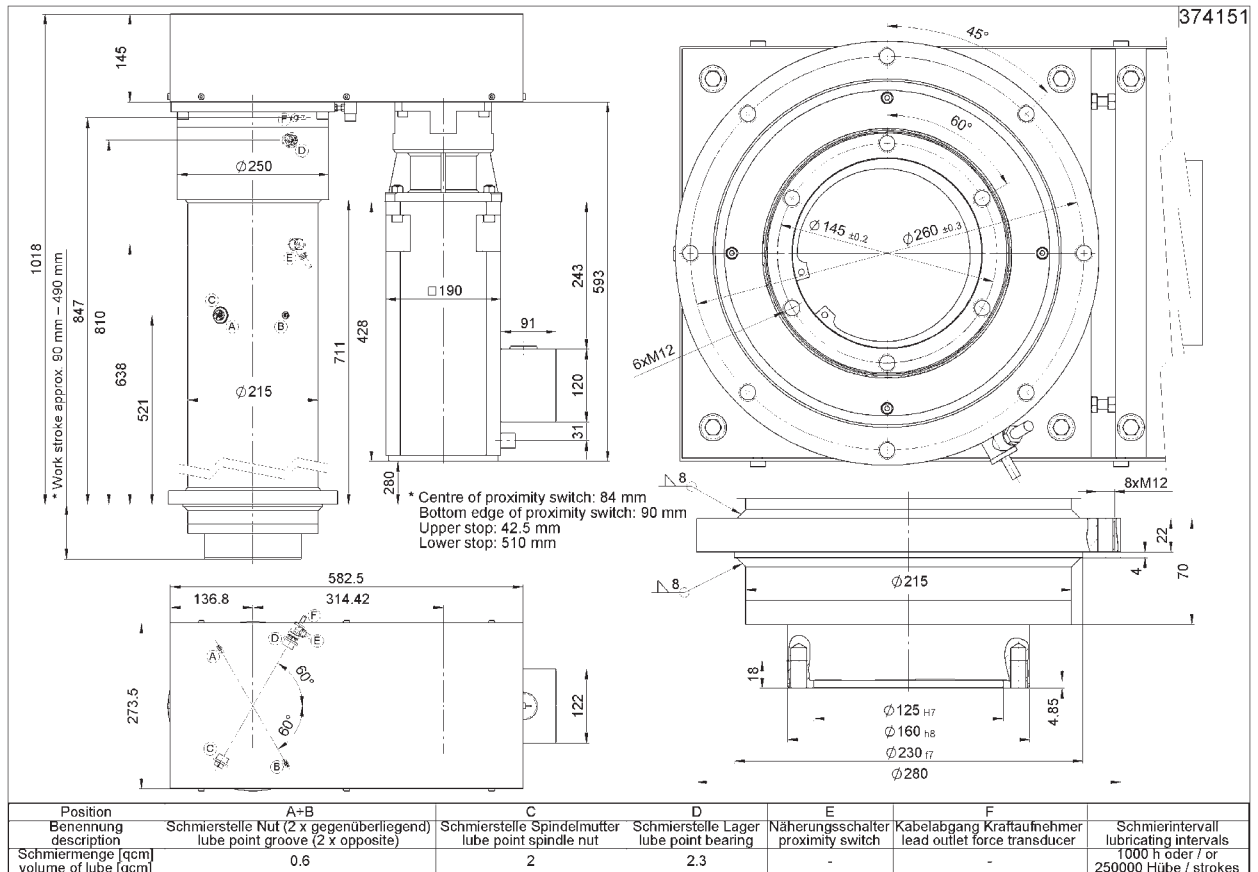
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 240/350/120 ART. NO.: 374243

MAIN FUNCTIONS	
Nominal load	±240 kN
Stroke	350 mm
Nominal speed	120 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	436 kg
Max tool weight	85 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	64.45 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP3403 / (250*389*260 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	25 / 25 mm ²
Protection class	IP 20
Weight	15 kg
Recommended protection	IEC gG / 63 A
Temperature range	-10 to +50 °C
Power loss	533 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	Ethernet / RS 485
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	Profibus, CANOpen, Interbus, DeviceNet

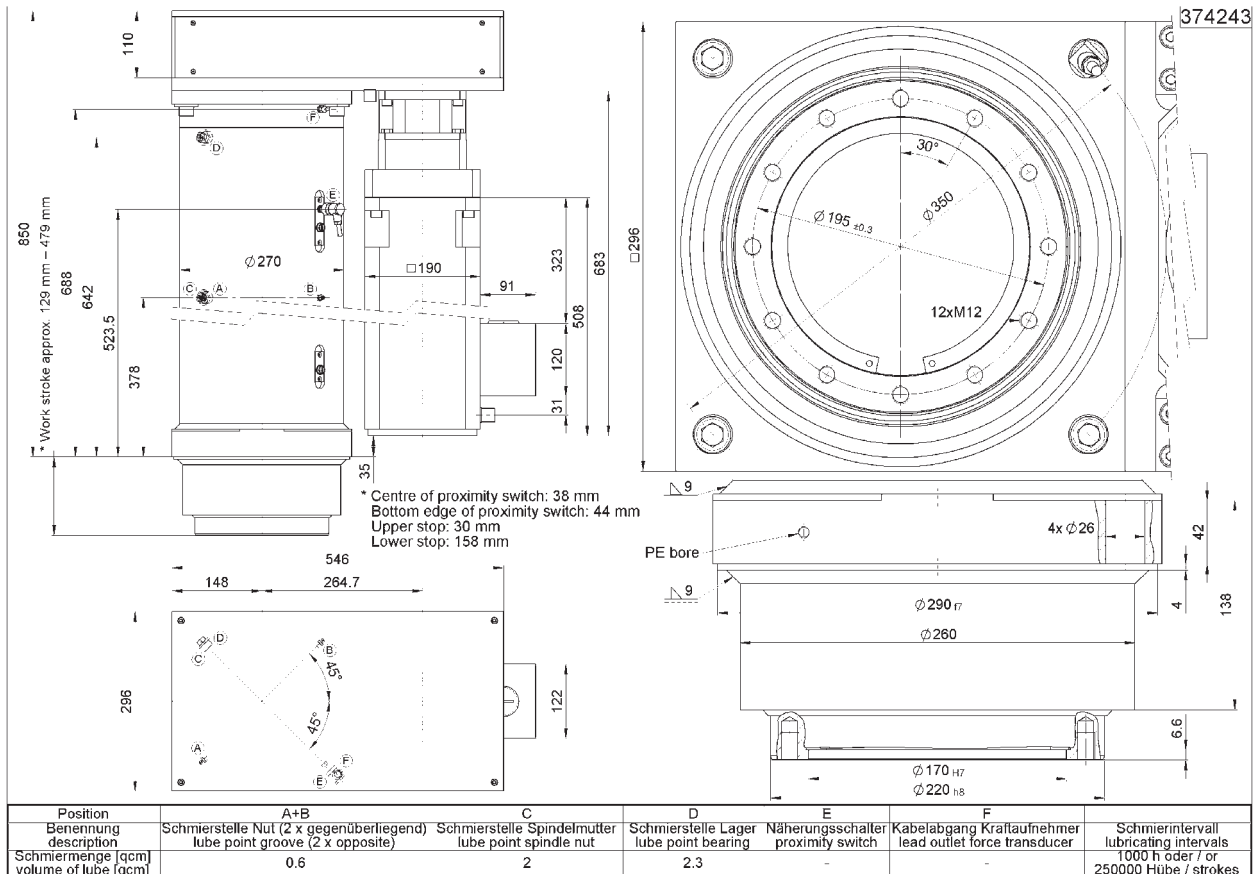
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 500/400/200 ART. NO.: 374293

MAIN FUNCTIONS	
Nominal load	±500 kN
Stroke	400 mm
Nominal speed	200 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 3 s
Weight	1284 kg
Max tool weight	50 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	134.28 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.05 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	6402 / (310*1169*298 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	50 / 50 mm ²
Protection class	IP 20
Weight	75 kg
Recommended protection	IEC / 300 A
Temperature range	-10 to +50 °C
Power loss	1880 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

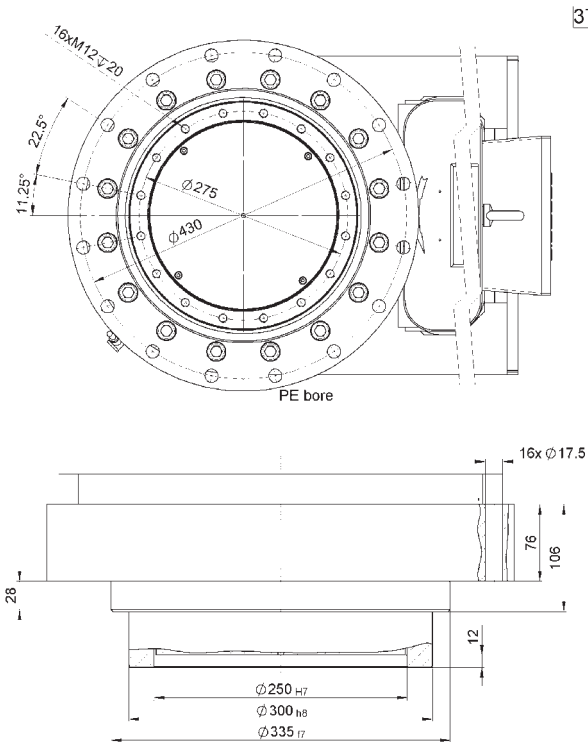
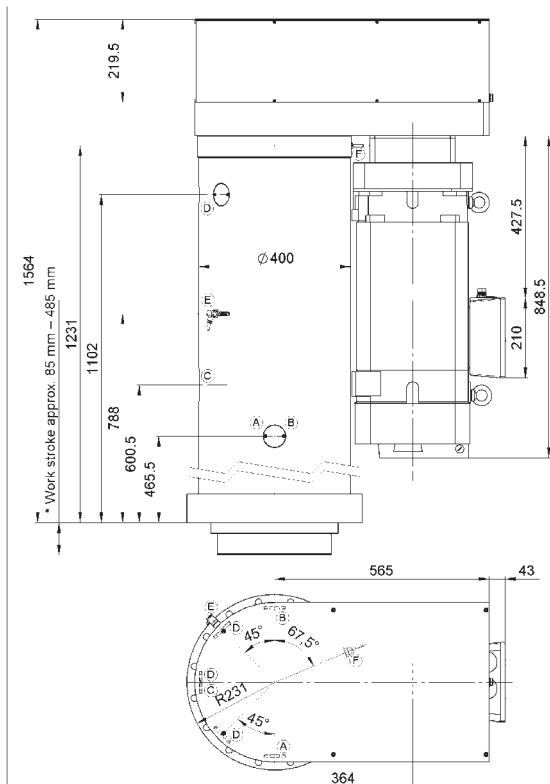
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



374293

Position	A+B	C	3xD	E	F	
Benennung description	Schmierstelle Nut (2 x gegenüberliegend) lube point groove (2 x opposite)	Schmierstelle Spindelmutter lube point spindle nut	Schmierstelle Lager lube point bearing	Näherungsschalter proximity switch	Kabelabgang Kraftaufnehmer lead outlet force transducer	Schmierintervall lubricating intervals
Schmiermenge [gcm] volume of lube [gcm]	0.8	2.5	3	-	-	1000 h oder / or 250000 Hübe / strokes

PRECISION SERIES

PROMESS electro-mechanical assembly presses are particularly suitable for demanding joining, forming or testing tasks with integrated force-distance monitoring. A typical area of application is automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

DESIGN

The assembly press is based on a spindle – installed in a solid steel housing – with a high-precision press ram guidance. The systems consist of robust mechanical components with AC servo motor, ball gear drive for converting rotational movement into linear movement, integrated force transducer for direct measurement of the joining forces, as well as the control.

KEY FEATURES

- Integrated force, position and signal control
- Real-time force-distance analysis directly in the servo amplifier
- No external analysis system required
- Safety brake for category 4 optional
- Envelope and window functions
- Robust, tried-and-tested servo drive technology, no special hollow shaft motor solution

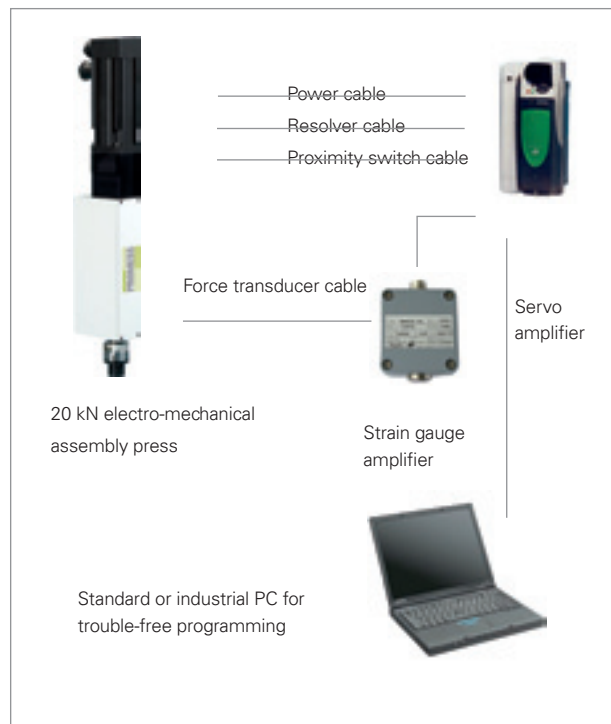
ADDITIONAL FEATURES

- Absolute encoder eliminates the need for a reference run
- Positioning by means of external position transducers possible
- Only one measurement range required, thanks to high-precision force transducer
- All customary bus systems are supported
- Drift-free force measurement with high-precision force transducer
- Compensation against bending
- Service life of bearings and threaded drive >12 million cycles
- In-house production
- Modular design allows versatile equipment configurations



FUNCTIONAL PRINCIPLE:

Actuation is performed by an AC servo motor. The rotational movement of the servo motor is transferred to the ball gear drive and the press ram, where it is converted to linear movement. With the spindle drive, the assembly press is able to apply the full force both in push and pull directions. The sequence of movements can be easily specified using the included control and monitoring software. The envelope and window functions make full monitoring and documentation of the assembly process possible.



ELECTRO-MECHANICAL ASSEMBLY PRESS 0.2/60/250 ART. NO.: 365802

MAIN FUNCTIONS	
Nominal load	0.2 kN
Stroke	60 mm
Nominal speed	250 mm/s
Acceleration	6000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	4.75 kg
Max tool weight	2 kg
INTEGR. PIEZO ELECTR. FORCE TRANSDUCER	
System accuracy	< 1 %
Transducer accuracy	< 0.5 %
Smallest measuring step	0.054 N
Amplifier / (W*H*D)	Aluminium die-cast housing / 115*64*34.5 mm
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.04 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	
Mains voltage	3 AC 380 V – 480 V, ±10 %
Cable cross-section; input/output	1 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC gG / 6 A
Temperature range	-10 to +50 °C
Power loss	45 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (12I / 12 O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

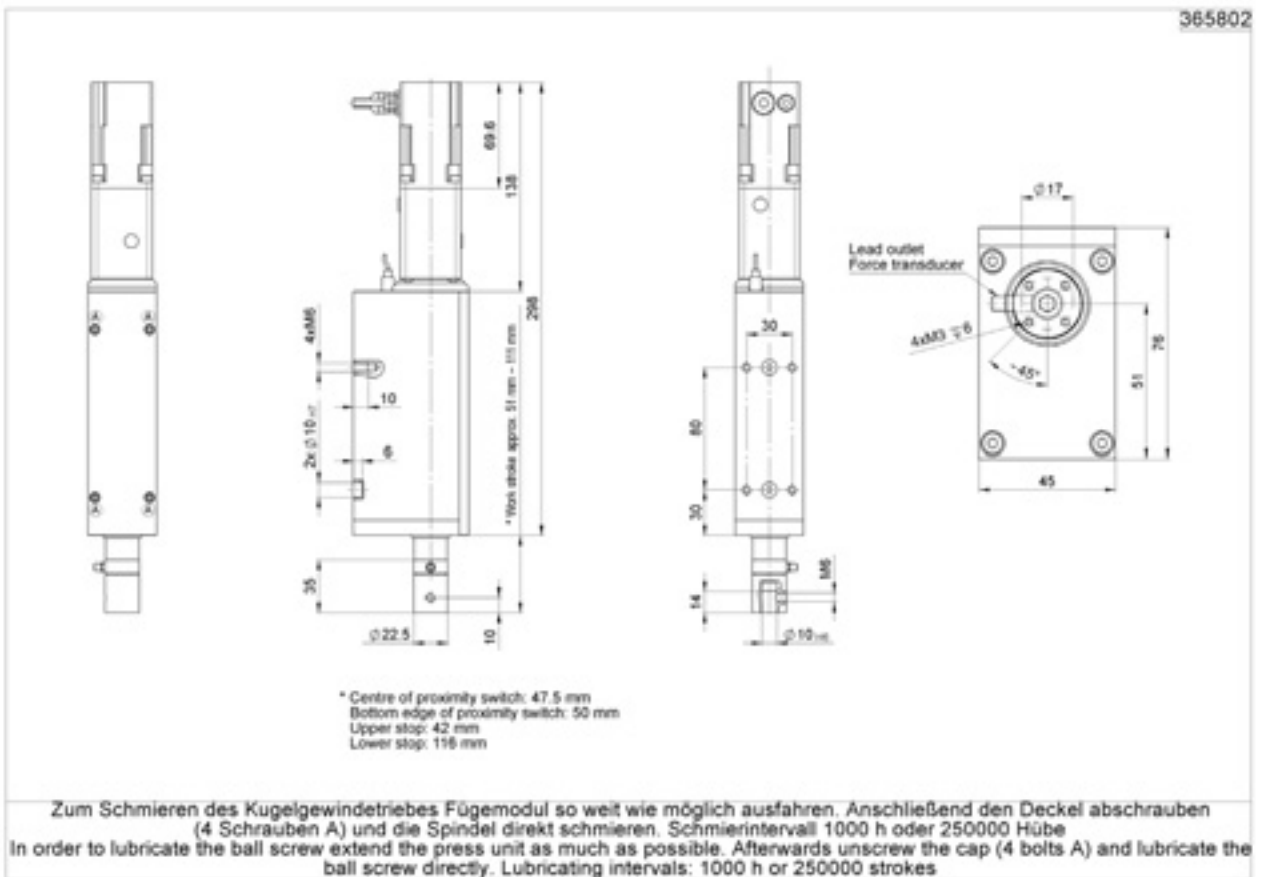
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 01/110/400 ART. NO.: 364830

MAIN FUNCTIONS	
Nominal load	1 kN
Stroke	110 mm
Nominal speed	400 mm/s
Acceleration	5000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	9.46 kg
Max tool weight	0.5 kg
INTEGR. PIEZO ELECTR. FORCE TRANSDUCER	
System accuracy	< 1 %
Transducer accuracy	< 0.5 %
Smallest measuring step	0.244 N
Amplifier / (W*H*D)	Aluminium die-cast housing / 115*64*34.5 mm
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.08 µm
Repeatability	<0.002 mm*
SERVO AMPLIFIER / (W*H*D)	SP1401 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC gG / 6 A
Temperature range	-10 to +50 °C
Power loss	45 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (12I / 12 O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

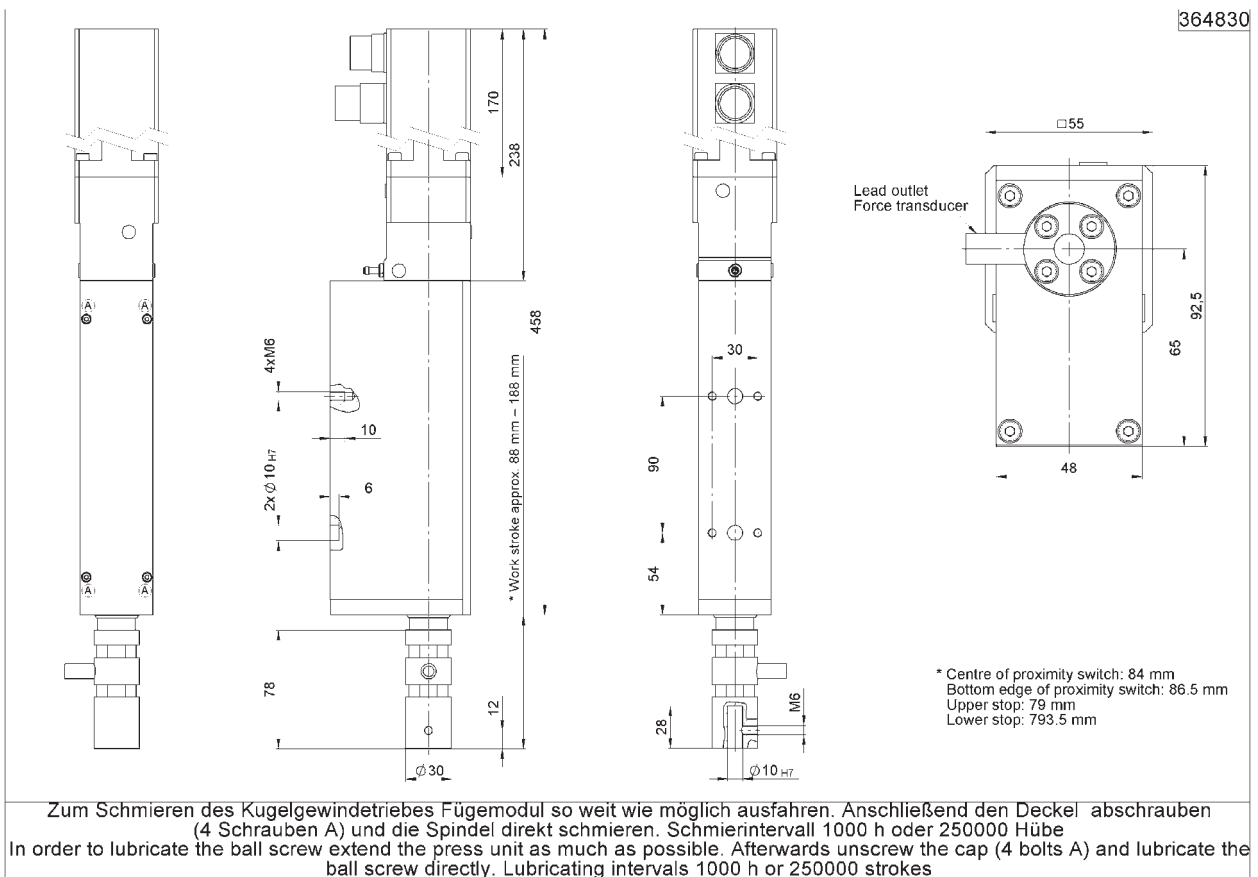
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 03/200/250 ART. NO.: 366830

MAIN FUNCTIONS	
Nominal load	3 kN
Stroke	200 mm
Nominal speed	250 mm/s
Acceleration	5000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	22.22 kg
Max tool weight	0.5 kg
INTEGR. PIEZO ELECTR. FORCE TRANSDUCER	
System accuracy	< 1 %
Transducer accuracy	< 0.5 %
Smallest measuring step	0.732 N
Amplifier / (W*H*D)	Aluminium die-cast housing / 115*64*34.5 mm
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0,07
Repeatability	< 0.002 mm*
SERVO AMPLIFIER / (W*H*D)	
Model	SP1401 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC gG / 6 A
Temperature range	-10 to +50 °C
Power loss	45 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (12I / 12 O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

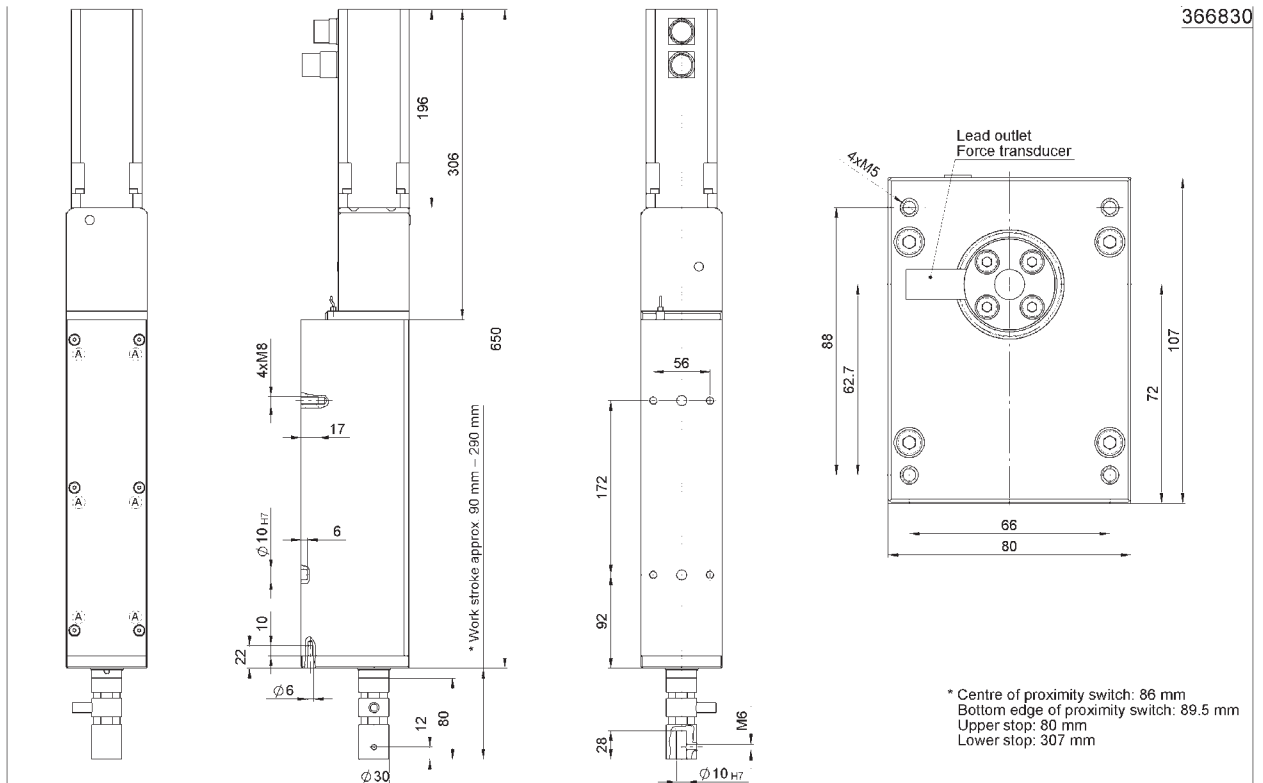
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



366830

Zum Schmieren des Kugelgewindetriebes Fügemodul so weit wie möglich ausfahren. Anschließend den Deckel abschrauben (6 Schrauben A) und die Spindel direkt schmieren. Schmierintervall 1000 h oder 250000 Hübe
 In order to lubricate the ball screw extend the press unit as much as possible. Afterwards unscrew the cap (6 bolts A) and lubricate the ball screw directly. Lubricating intervals 1000 h or 250000 strokes

COMPACT SERIES

PROMESS electro-mechanical assembly presses are particularly suitable for demanding joining, forming or testing tasks with integrated force-distance monitoring. A typical area of application is automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

DESIGN

The assembly press is based on a spindle with guidance, which is installed in a solid steel housing. The systems consist of robust mechanical components with AC servo motor, ball or roller gear drive spindle for converting rotational movement into linear movement, integrated force transducer for direct measurement of the joining forces, as well as the control.

KEY FEATURES

- Integrated force, position and signal control
- Real-time force-distance analysis directly in the servo amplifier
- No external analysis system required
- Safety brake for category 4 optional
- Envelope and window functions
- Robust, tried-and-tested servo drive technology, no special hollow shaft motor solution

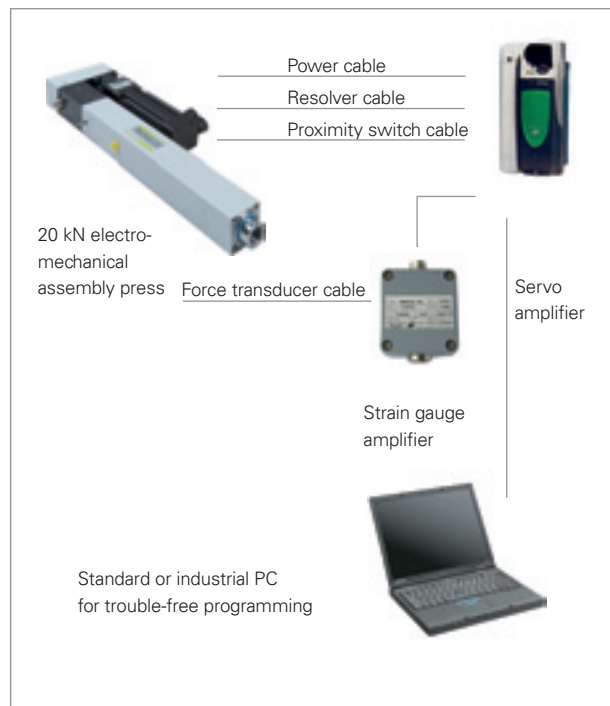
ADDITIONAL FEATURES

- Absolute encoder eliminates the need for a reference run
- Positioning by means of external position transducers possible
- Only one measurement range required, thanks to high-precision force transducer
- Drift-free force measurement with high-precision force transducer for push and pull forces
- All customary bus systems are supported
- Compensation against bending
- Service life of bearings and threaded drive > 12 million cycles
- In-house production
- Modular design allows versatile equipment configurations



FUNCTIONAL PRINCIPLE:

Actuation is performed by an AC servo motor. The rotational movement of the servo motor is transferred to the ball or roller gear drive and the press ram, where it is converted to linear movement. With the spindle drive, the assembly press is able to apply the full force both in push and pull directions. The sequence of movements can be easily specified using the included control and monitoring software. The envelope and window functions make full monitoring and documentation of the assembly process possible.



ELECTRO-MECHANICAL ASSEMBLY PRESS 01/100/400 ART. NO.: 364020

MAIN FUNCTIONS	
Nominal load	±1 kN
Stroke	100 mm
Nominal speed	400 mm/s
Acceleration	5000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	9.1 kg
Max tool weight	0.5 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	0.268 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0,07
Repeatability	< 0.002 mm*
SERVO AMPLIFIER / (W*H*D)	SP1401 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1 / 1 mm ²
Protection class	IP 20
Weight	5 kg
Recommended protection	IEC / 6 A
Temperature range	-10 to +50 °C
Power loss	45 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

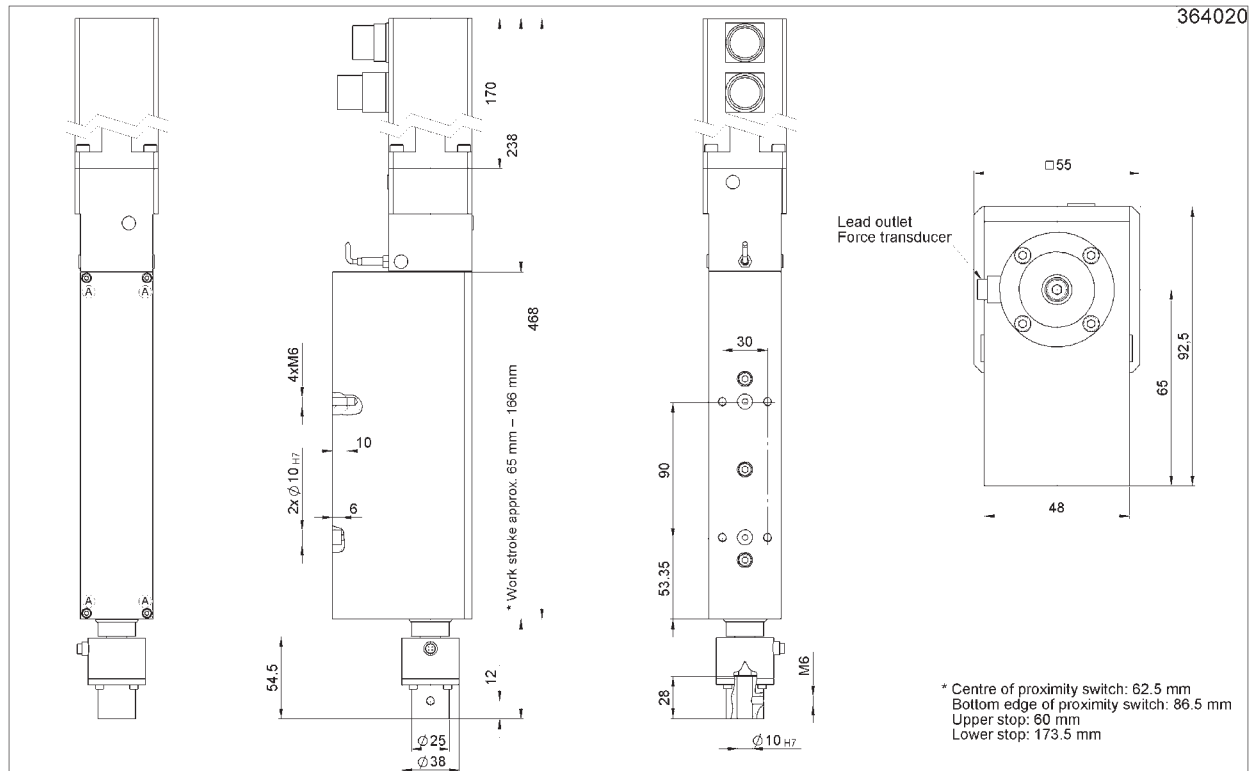
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



Zum Schmieren des Kugelgewindetriebes Fügmodul so weit wie möglich ausfahren. Anschließend den Deckel abschrauben (4 Schrauben A) und die Spindel direkt schmieren. Schmierintervall 1000 h oder 250000 Hübe
 In order to lubricate the ball screw extend the press unit as much as possible. Afterwards unscrew the cap (4 bolts A) and lubricate the ball screw directly. Lubricating intervals 1000 h or 250000 strokes

ELECTRO-MECHANICAL ASSEMBLY PRESS 25/350/250 ART. NO.: 378025

MAIN FUNCTIONS	
Nominal load	±25kN
Stroke	350 mm
Nominal speed	250 mm/s
Acceleration	2000 mm/s ²
Dwell time of the nominal load	At least 6 s
Weight	46.2 kg
Max tool weight	10 kg
FORCE MEASURING	
Characteristic value	0.5 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	6.25 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.5 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1406 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	2.5 / 1.5 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC / 16 A
Temperature range	-10 to +50 °C
Power loss	158 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

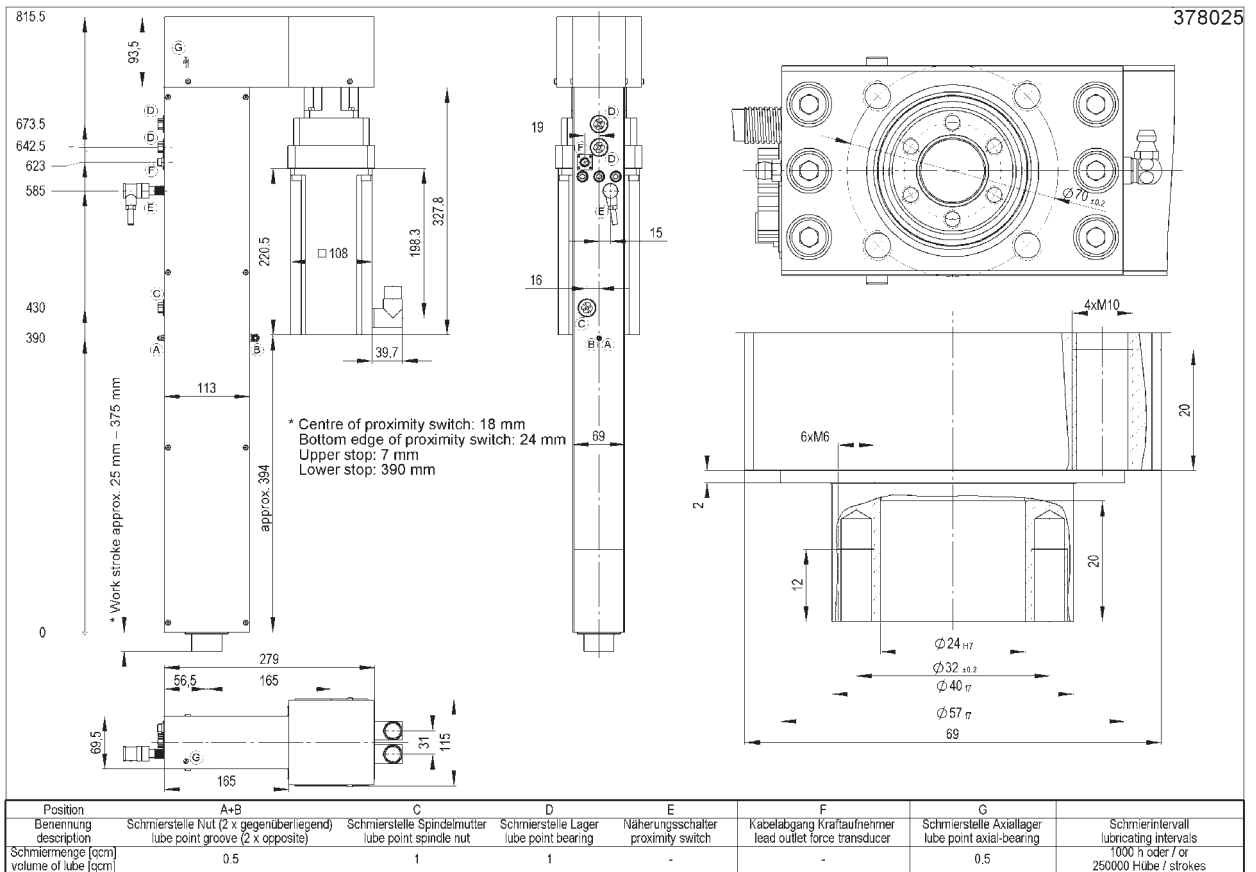
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 50/250/150 ART. NO.: 378050

MAIN FUNCTIONS	
Nominal load	±50 kN
Stroke	250 mm
Nominal speed	150 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 4 s
Weight	89.5 kg
Max tool weight	50 kg
FORCE MEASURING	
Characteristic value	0.5 mV / V
Transducer accuracy	0,2 %
System accuracy	< 1 %
Smallest measuring step	13.43 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	0.05 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	
SP2403 / (155*389*260 mm)	
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	6 / 6 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC / 32 A
Temperature range	-10 to +50 °C
Power loss	320 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

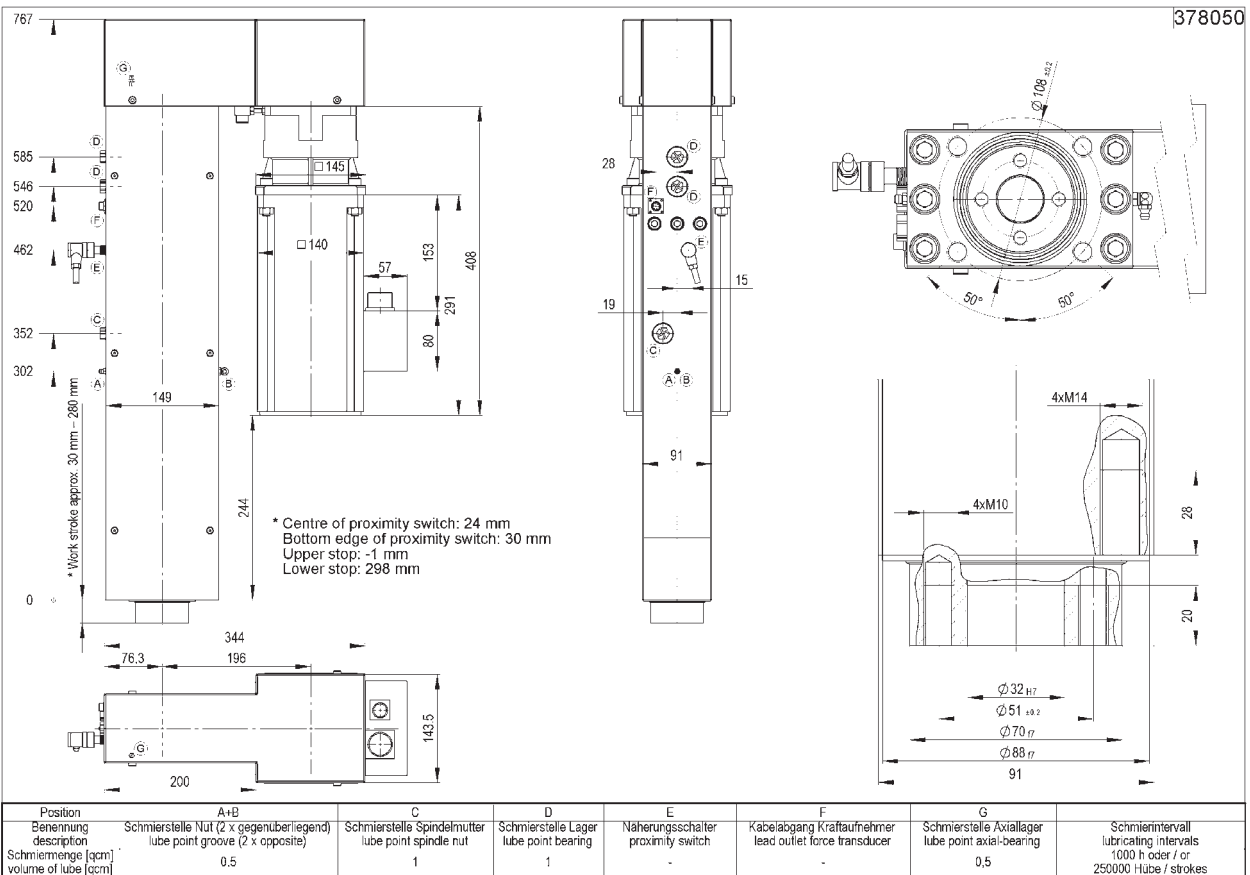
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 50/250/240 ART. NO.: 378055

MAIN FUNCTIONS	
Nominal load	±50 kN
Stroke	250 mm
Nominal speed	240 mm/s
Acceleration	1000 mm/s ²
Dwell time of the nominal load	At least 10 s
Weight	106.6 kg
Max tool weight	50 kg
FORCE MEASURING	
Characteristic value	0.5 mV / V
Transducer accuracy	0,2%
System accuracy	< 1%
Smallest measuring step	13.43 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	16384 I/U, ≈ 0.1 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	6 / 6 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC / 32 A
Temperature range	-10 to +50 °C
Power loss	320 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

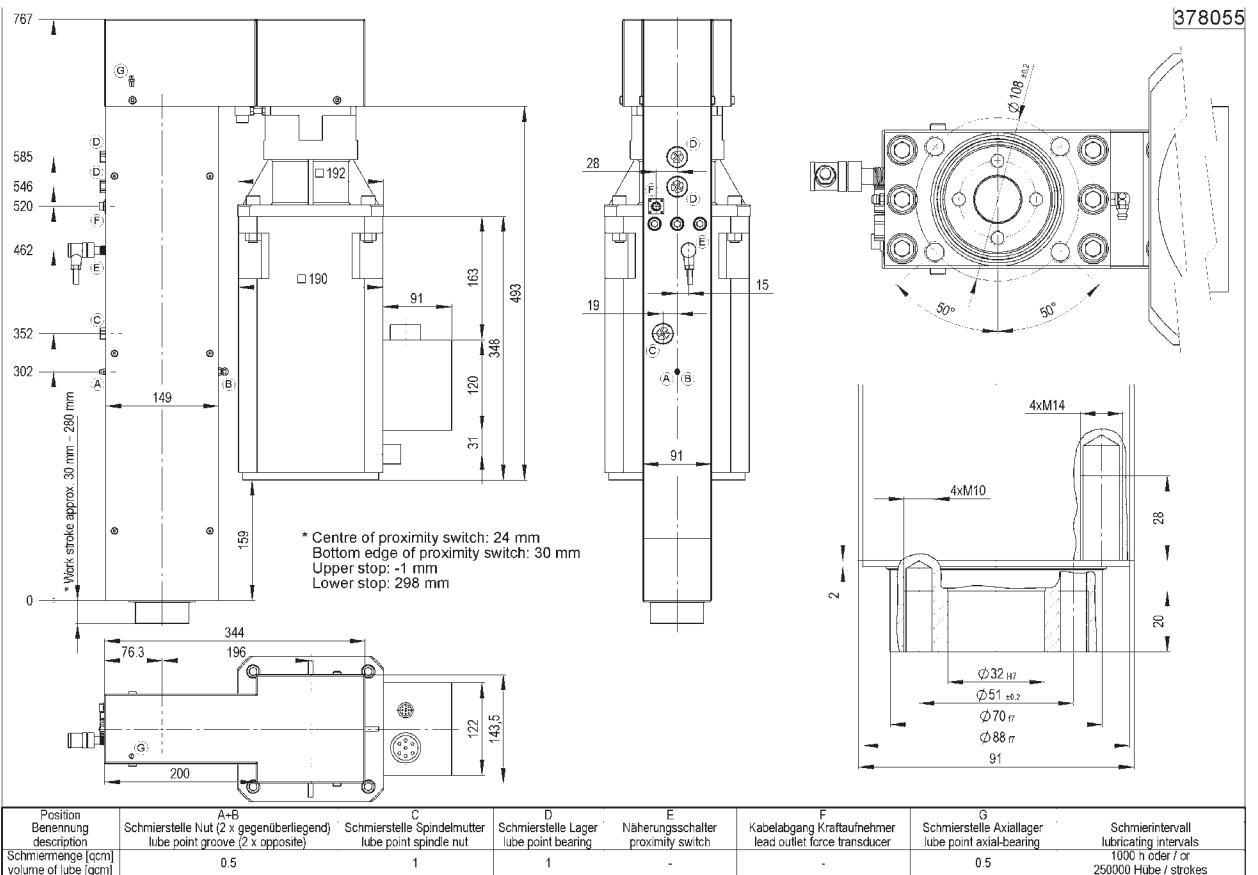
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



BASIC SERIES

PROMESS electro-mechanical assembly presses are particularly suitable for demanding joining, forming or testing tasks with integrated force-distance monitoring. A typical area of application is automated assembly processes that require high repeatability and monitoring of the joining quality, as well as documentation options.

DESIGN

The assembly press is based on a spindle with guidance, which is installed in a solid steel housing. The systems consist of robust mechanical components with AC servo motor, ball or roller gear drive spindle for converting rotational movement into linear movement, integrated force transducer for direct measurement of the joining forces, as well as the control.

SPECIAL FEATURES

- Integrated force, position and signal control
- Real-time force-distance analysis directly in the servo amplifier
- No external analysis system required
- Safety brake for category 4 optional
- Envelope and window functions
- Robust, tried-and-tested servo drive technology, no special hollow shaft motor solution

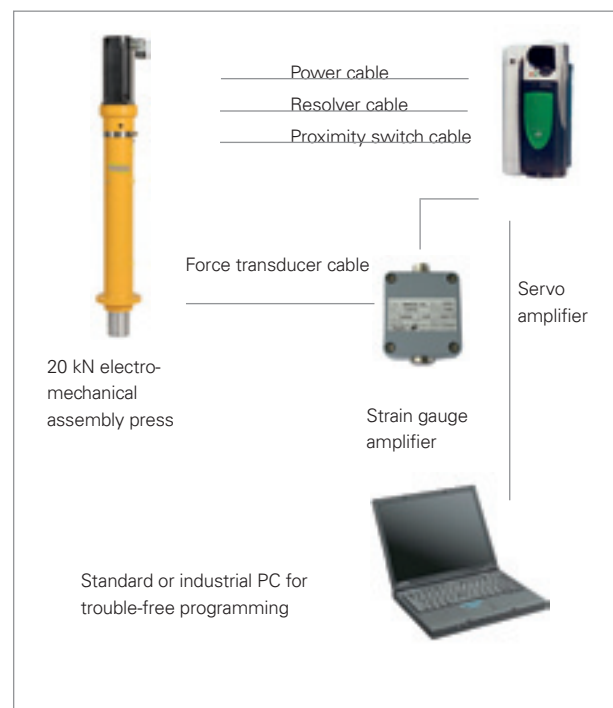
ADDITIONAL FEATURES

- Absolute encoder eliminates the need for a reference run
- Only one measurement range required, thanks to high-precision force transducer
- Drift-free force measurement with high-precision force transducer for push and pull forces
- All customary bus systems are supported
- Service life of bearings and threaded drive > 12 million cycles
- In-house production
- Compact controller group
- Simple operating concept
- Preconfigured program steps reduce the set-up time for creating assembly programs



FUNCTIONAL PRINCIPLE:

Actuation is performed by an AC servo motor. The rotational movement of the servo motor is transferred to the ball or roller gear drive and the press ram, where it is converted to linear movement. With the spindle drive, the assembly press is able to apply the full force both in push and pull directions. The sequence of movements can be easily specified using the included control and monitoring software. The envelope and window functions make full monitoring and documentation of the assembly process possible.



ELECTRO-MECHANICAL ASSEMBLY PRESS 10/350/150 ART. NO.: 375010

MAIN FUNCTIONS	
Nominal load	10 kN
Stroke	350 mm
Nominal speed	150 mm/s
Dwell time of the nominal load	At least 0.5 s
Weight	35.2 kg
Max tool weight	10 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	2.4 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	16384 I/U, ≈ 0.1 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	SP1405 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1.5 / 1 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC gG / 12 A
Temperature range	-10 to +50 °C
Power loss	139 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

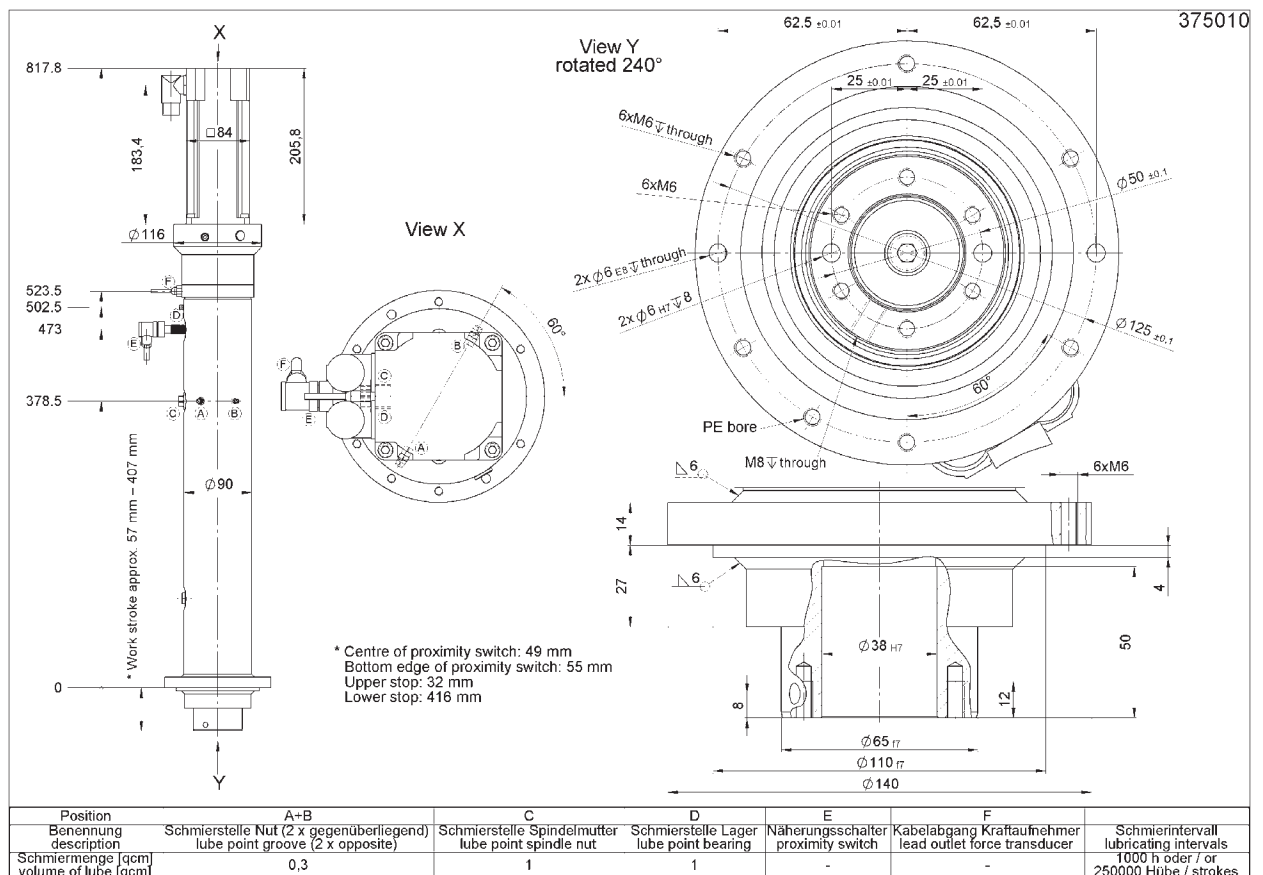
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the PROMESS BASIC operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 25/350/150 ART. NO.: 375025

MAIN FUNCTIONS	
Nominal load	25kN
Stroke	350 mm
Nominal speed	150 mm/s
Dwell time of the nominal load	At least 0.5 s
Weight	72 kg
Max tool weight	15 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	6.1 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	16384 I/U, ≈ 0.1 µm
Repeatability	< 0.01 mm *
SERVO AMPLIFIER / (W*H*D)	SP1405 / (100*386*219 mm)
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	1.5 / 1 mm ²
Protection class	IP 20
Weight	5.8 kg
Recommended protection	IEC gG / 12 A
Temperature range	-10 to +50 °C
Power loss	139 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

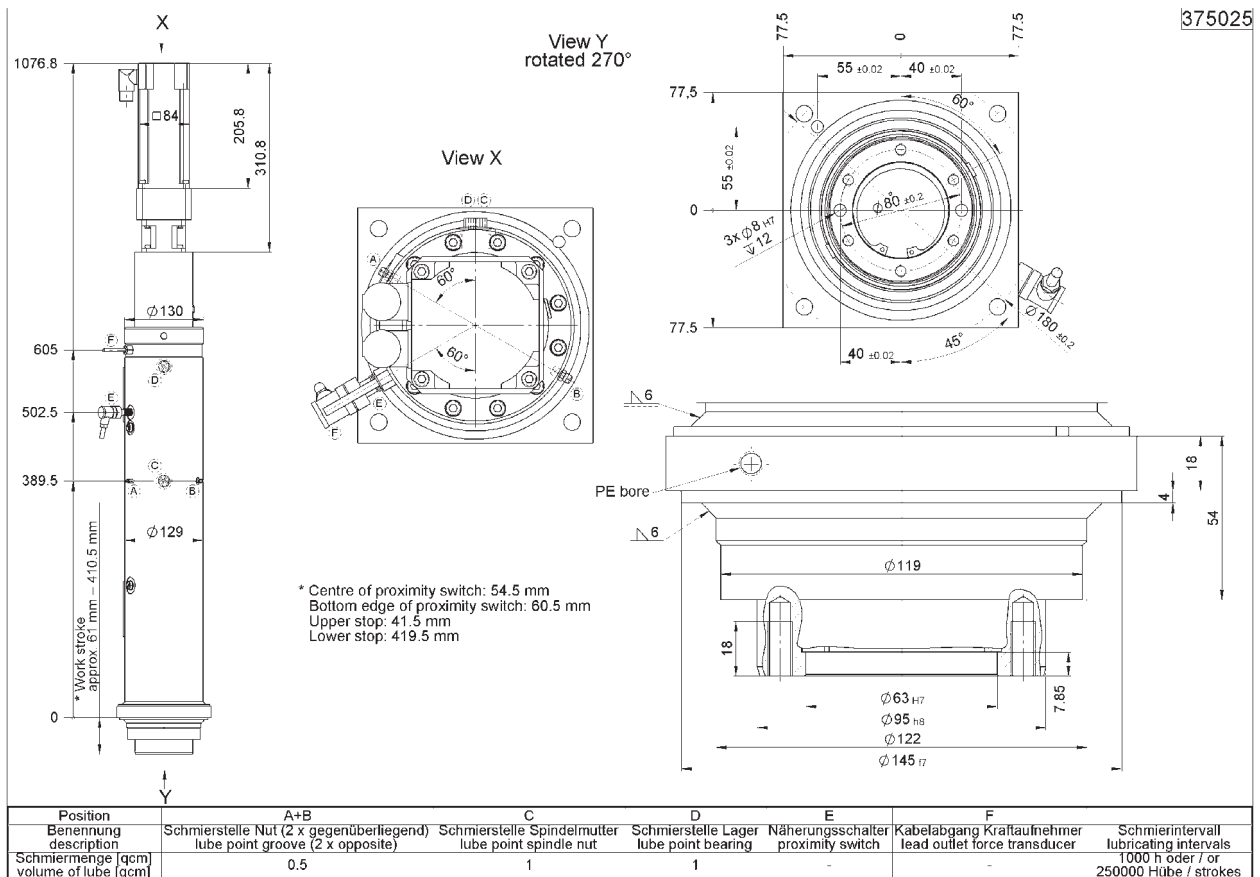
* at thermal steady-state

SCOPE OF SUPPLY AND SERVICE

A complete package consisting of press mechanics with drive chain, servo amplifier and the Windows-based operating software is included in the scope of supply of an assembly unit. The entire system is completely preconfigured and calibrated by PROMESS and ready for operation.

The system can be optionally modified using cable sets, field busses, press frames, mounting plates or electric cabinets.

PROMESS offers first-rate support with spare parts and service from a single source. This includes pilot testing, process analysis, start-up support and maintenance contracts.



ELECTRO-MECHANICAL ASSEMBLY PRESS 50/330/150 ART. NO.: 375050

MAIN FUNCTIONS	
Nominal load	50 kN
Stroke	330 mm
Nominal speed	150 mm/s
Dwell time of the nominal load	At least 0.5 s
Weight	159 kg
Max tool weight	20 kg
FORCE MEASURING	
Characteristic value	1 mV / V
Transducer accuracy	0.5 %
System accuracy	< 1 %
Smallest measuring step	12.2 N
Amplifier / (W*H*D)	Aluminium die-cast / (64*35*58 mm)
Output signal	±10 V DC
Protection class	IP 54
DISTANCE MEASURING	
Smallest measuring step	4096 I/U, = 0.5 µm
Repeatability	< 0.01 mm*
SERVO AMPLIFIER / (W*H*D)	
Mains voltage	3 AC 380 V – 480 V, ±10
Cable cross-section; input/output	4 / 4 mm ²
Protection class	IP 20
Weight	7 kg
Recommended protection	IEC gG / 25 A
Temperature range	-10 to +50 °C
Power loss	286 W

ADDITIONAL INPUTS	
1x analog / 1x incremental	11-bit / encoder (max. 410 kHz)
PC INTERFACE	
Ethernet / RS 485	
PLC INTERFACE (24 V DC)	
Standard (optional link module)	3I / 4O (16I / 16O)
OPTION: PLC FIELDBUS INTERFACES	
Profibus, CANOpen, Interbus, DeviceNet	

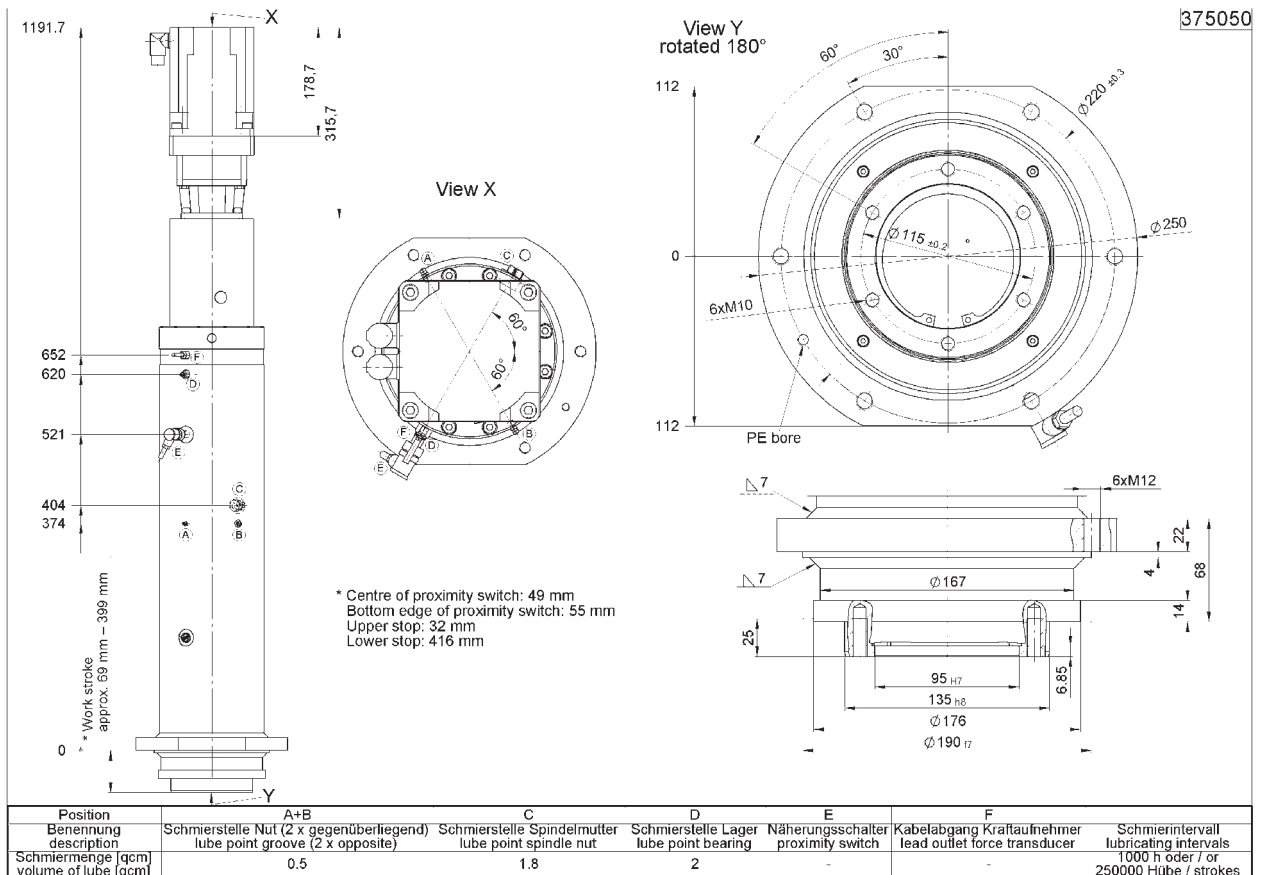
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All specifications in the data sheets are valid at the print date. Before basing your own calculations/usage on the listed information, please inform yourself whether the information at your disposal is up-to-date. We do not accept any liability for correctness of the information.

Status: July 2009



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