PROMESS

NC Servo Presses
UFM–C–Compact

TYPE TESTED SAFETY

Joining, Clipping, Bending, Testing, Measuring, Stamping, Flanging, Press-Fitting

- Install the compact press on a suitable surface and get started immediately!
- 100% quality assurance with documentation

Automotive industry

Electrical engineering

Micromechanics

Medical technology

Watchmaking

UFM–C–Compact, New Design …

Series M
With strain-gauge and high-resolution calibration of characteristics
Force levels: 10 kN and 30 kN

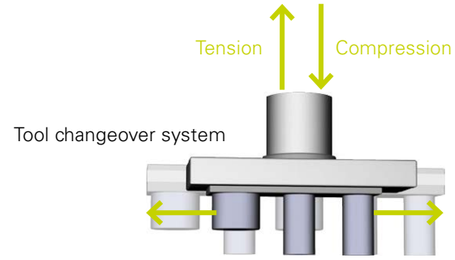
Series S
With piezo or strain-gauge force transducer and high-resolution calibration of characteristics *
Measuring ranges:
0…200 N
0…1000 N
0…3000 N

*As of 2014 also available for piezoelectric force transducers

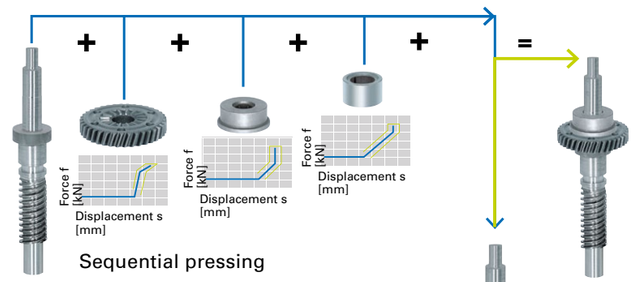
…Versatile for Different Applications

The robust machinery is controlled by powerful software UFM V5.xx so that dynamic joining processes can be performed with real-time monitoring of force-displacement data.

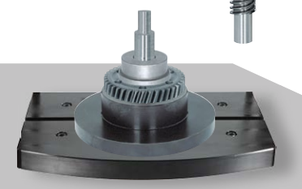
- Compact, «All-in-one»
- Different variants with nominal ranges of 50 N–30 kN
- Flexible, for NEW applications
- Extremely fast, for short cycle times
- Combine complex work steps in a single process
- 100% quality assurance, documented
- Quiet and clean – no oil or pneumatics
- Extremely fast changeover times, suitable for small production runs



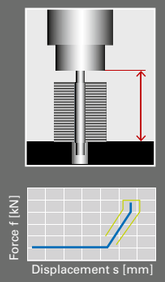
Easy assembly of components and modules



New applications: sequential pressing
Thanks to NC-controlled force and displacement specifications, NC-servo presses offer entirely new applications not possible with conventional presses.

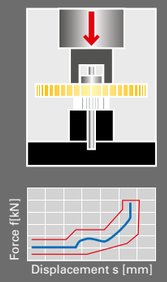


Precision Joining



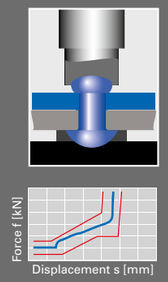
Precision joining < 0.002 mm
Collision-free due to electronic bending compensation.

Join on Contact



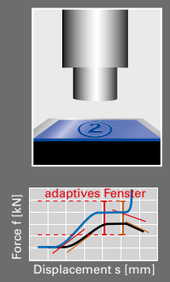
Joining on contact with precise shutdown once absolute shoulder position has been reached.

Riveting



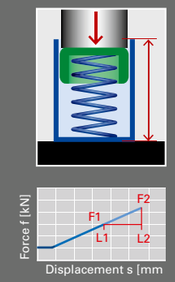
Rivet press with programmable press force and control of power press

Stamping/Forming



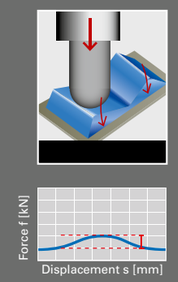
Stamping and forming with detection of part height and relative forming distance.

Testing/Measuring



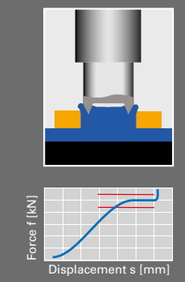
Logging of force-displacement data for multiple positions.

Surface Checks



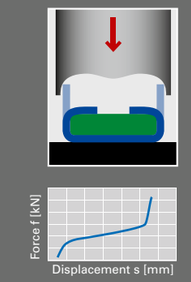
Logging of force-displacement data for multiple switch points.

Press-fitting



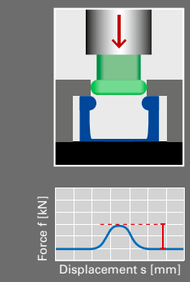
Press-fitting with controlled force for relative displacement.

Bending



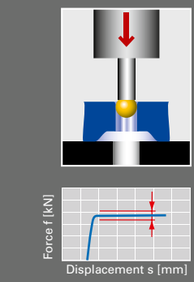
Monitored bending of straps, brackets etc. on safety components.

Clipping



Joining of plastic and medtech parts with monitoring of snapping force.

Calibrating



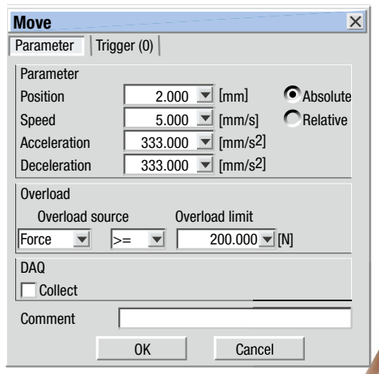
Calibration with quality assurance through monitored force.

UFM V5 – Intuitive Programming Software

- Force, displacement, time, speed, acceleration and braking rate are easy to program separately for each step
- Precise programming of displacement down to µm range
- Precise force controlling and monitoring of force-displacement slope
- Pressing force can be used throughout the entire stroke

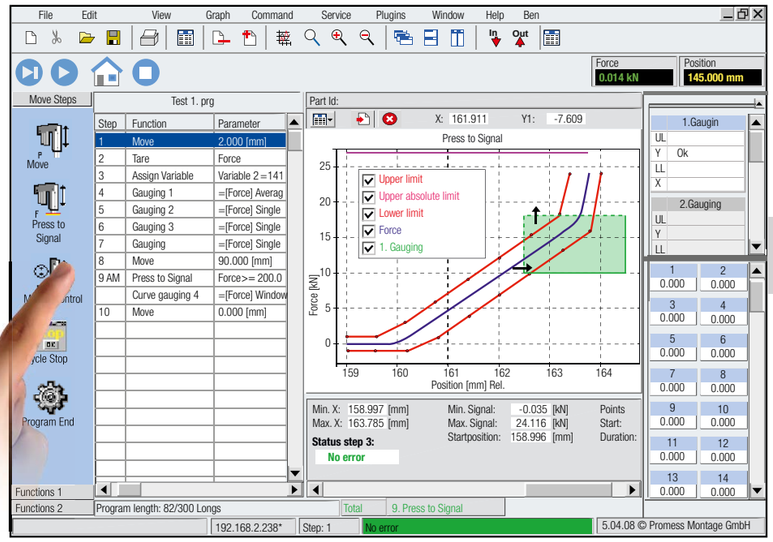
Unique in the World...

UFM-NC V5.xx from PROMESS is the most intuitive and easy-to-use software available in the world. It is a standard component of every UFM–C–Compact unit and is installed on an industrial panel PC with touchscreen.

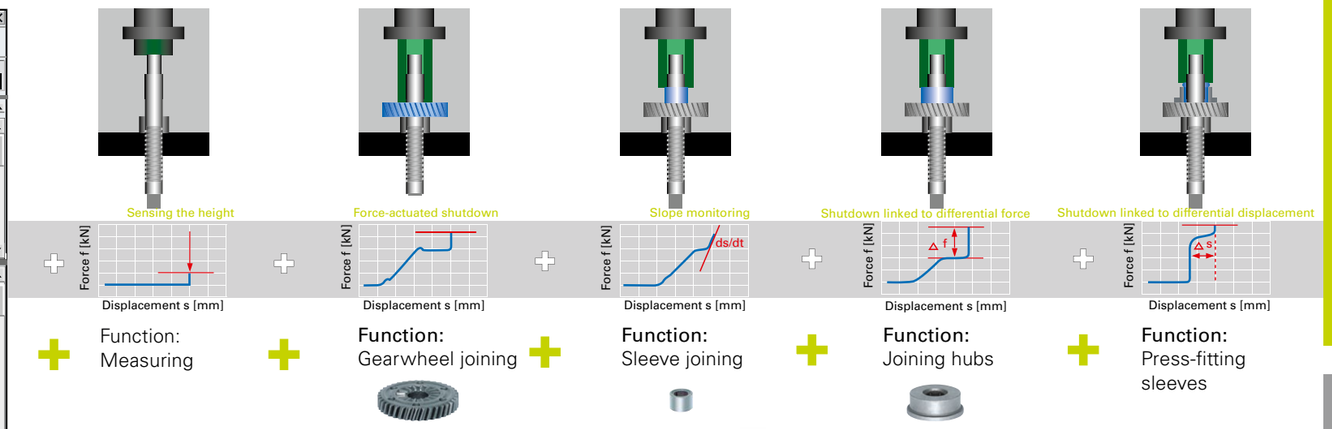


Positioning screen:
Parameters
Enter the various parameters such as position (absolute or relative), speed etc. in each screen to define the permissible overload.

Trigger
Up to seven triggers can be used to initiate different speeds, switch outputs in real-time and much more.



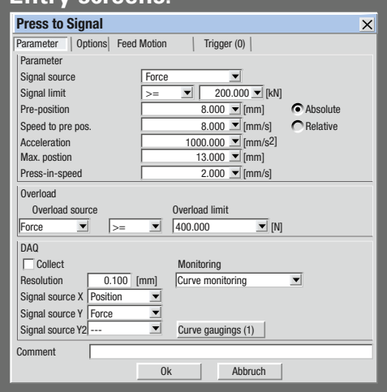
Program creation
All of the program steps are listed in the main window together with their functions and these can be processed as a sequence of steps ✚...✚...✚.... Each function has its own input screen, see below. Simply fill out the various input screens to complete your joining program.

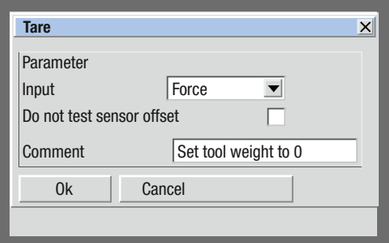


...✚for ✚component assembly✚...✚...

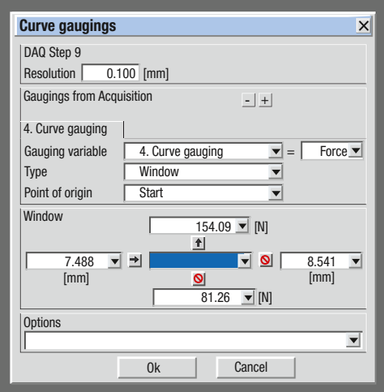
Components can be assembled from parts using a single joining program with different steps. After joining a part, the protective door opens and the operator inserts the next part. Depending on the part, an automatic tool changeover may be necessary and this is performed automatically by the press.

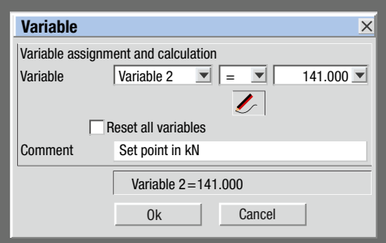
Entry screens:





Force and speed
can be programmed separately within a press or joining process.

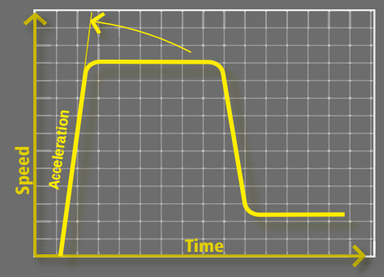




Edit variables
Variables can be used to transmit setpoints, perform calculations and to generate counters.

Positioning accuracy < 0.01 mm
Positions and travel distances are permanently monitored and controlled using an encoder.

Faster cycle times using optimized speed profiles:
feed quickly and join in a controlled manner



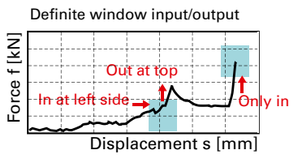
UFM–C–Compact with State-of-the-Art Touchscreen Industrial PC...

« All-in-One » operating and control unit with complete process monitoring

An exclusive feature:
dF/ds: slope-actuated shutdown

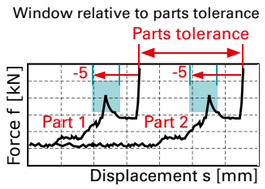
Window technology
Measurement windows are rectangular and are used to localize max., min. and average values within a window range so that they can be compared with tolerance limits. Thus, you can monitor curve inputs and outputs in a window, e.g., inputs at left and outputs at top or only inputs at bottom.

Definite window input/output



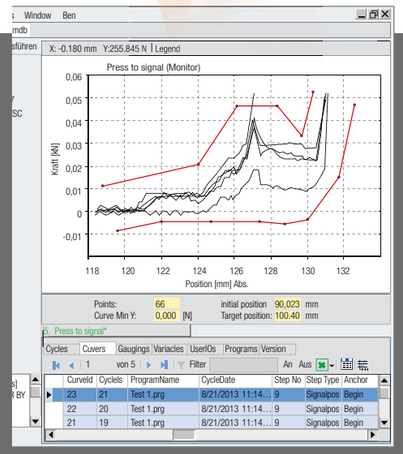
The advantage of measurement windows is that they can be aligned relative to the parts tolerances.

Window relative to parts tolerance



User Management
For safety components, various access levels and login options are available.

Envelope Curve Technology
Envelope curves are created for the entire press operating range on the basis of lower and upper parts tolerances.



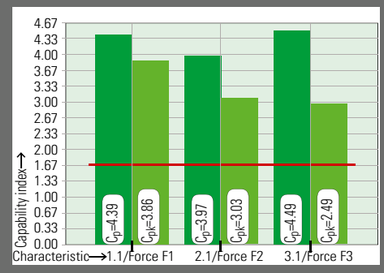
Quality management with statistics software for precision parts and safety components

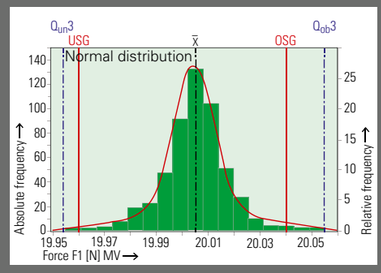
100% Quality Assurance
All force and displacement data is recorded and compared with the setpoint values. If the tolerance limits (envelope curve) are violated, an error message appears. The process data can be displayed, stored, statistically analyzed and printed.

100 % process documentation
Process data can be analyzed and archived using the Ethernet interface of the "all-in-one" operating and control unit. The data and their analyses can be printed at any time (documented quality assurance, calculated according to normal distribution). Editable curves. Process values that violate the envelope curve will cause the joining process to stop and will cause an NIO assessment.

100% process analysis
CP/CPK values and histograms
At the press of a button, CP and CPK analyses can be performed for each quality characteristic in a manufacturing job. The histograms allow the data to be quickly analyzed so that they can be used to set tolerances and demonstrate trends.

QS-STAT
The UFM-C-Compact servo presses provide a standardized interface to QS-STAT.





...for Compact Manual Workstations

Protective Plexiglas shield
Before starting the press, the light Plexiglas shield can be used to quickly close off the work area. Multiple cycles can be run immediately thereafter. Collisions with a worker's hand would be hardly noticeable and the press stops immediately.

Lots of space for workpieces
The provided area offers much free space for optimum arrangements of pre-assembled parts and workpieces.

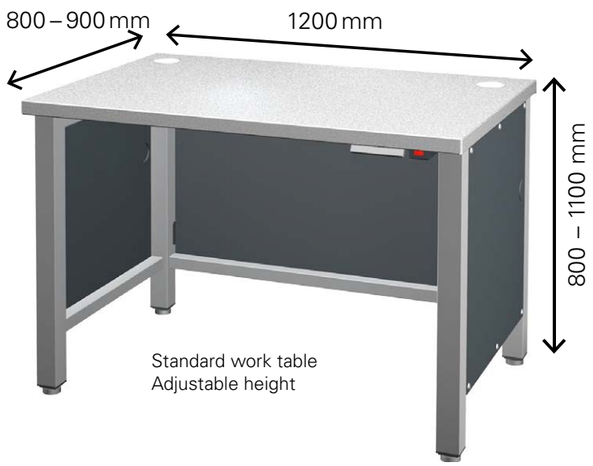
Modern Industrial PC with Touchscreen
This is directly fastened to the press and is easy to operate by simply tapping one's finger on the screen. Thus, a lot of space remains free on the machine table for other components.

UFM–C–Compact Unique selling points:

Table with adjustable height

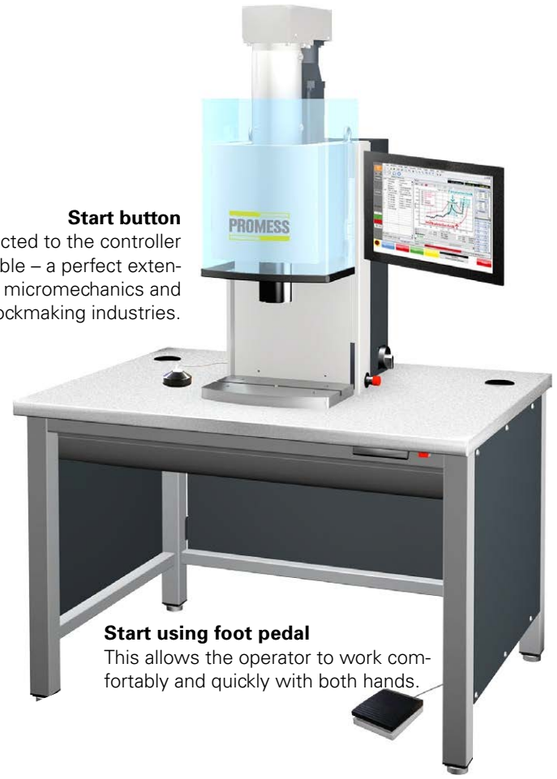
Custom Workstation
UFM–C–Compact unit recessed in a watchmaker worktable. Table top and drawers on front made of precious wood.

Worktable with electrically adjustable height
A massive construction made of welded steel. The standard work table is made of grey plastic but can be optionally made of precious wood or laminates and recessions can be cut for lowering the press.



Touchscreen

Panel IPC with touchscreen 15" and Ethernet network connection
Industrial PCs connected to servo presses allow permanent visualization of process data. Minor changes to the process parameters or changes to the program can be made directly on the touchscreen without the need for a keyboard and mouse.



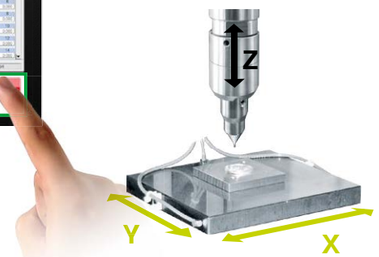
Start button
It is connected to the controller using a 2 m cable – a perfect extension for the micromechanics and clockmaking industries.

Start using foot pedal
This allows the operator to work comfortably and quickly with both hands.

Setup with touchscreen handwheel
The NC handwheel allows fine positioning adjustments and is used to set up the servo presses. Scalable resolution in the software makes the procedure highly comfortable in manual mode. The machine can also be switched over to force-actuated shutdown.

Precision accessories

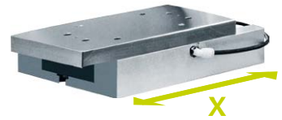
Precision probe for: Series S
- Touching reference heights of parts before press-fitting
- Check the insertion depth of the part directly after press-fitting
- Press-fit processes with precisions less than +/-0.005 mm should definitely be performed using the probe.



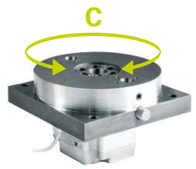
XY stage, for S series
For assembly of watch PCBs and micromechanical components. Air bearing, 2 precision linear motors, X, Y glass scales +/- 0.002 mm and Z NC-controlled. This makes it possible to assebmle entire components with perfectly controlled single steps.

Precision translation stage with air bearing
used for freely programmable positioning of parts e.g.:
- Press-fitting identical parts in series
- Precision gripping of a part in position A and press in position B

Lift 70 mm, freely programmable positioning accuracy +/-0.005 mm
axial run-out +/-0.01mm



Precision rotary indexing table with air bearings
with 2 positions and electrical precision drive. This halves the cycle time of the servo press. While the press is running, operators can insert the next part.



Highest safety – approved – CE conformity
Personal protection must be used on servo presses where parts are inserted manually. On the UFM–C–Compact, this is provided through electrically actuated guards. The UFM–C–Compact series are approved. A CE declaration of conformity is provided with each servo press.

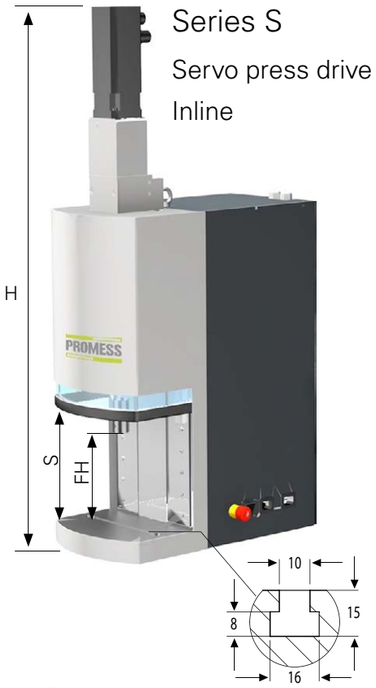
UFM–C–Compact Technical Data

The 2 series of the available servo presses are identical in terms of functionality. They differ only in the forces available.
Series S: 0…200 N, 0…1000 N, 0…3000 N,
Series M: 0.05 – 10 kN, 0.10 – 30 kN

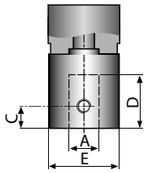
Series S

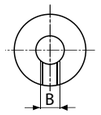
Servo press drive

Inline

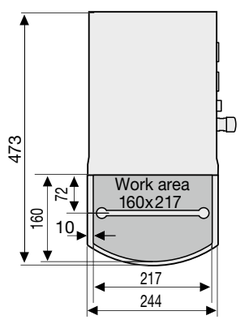


Tool receptacle on slide



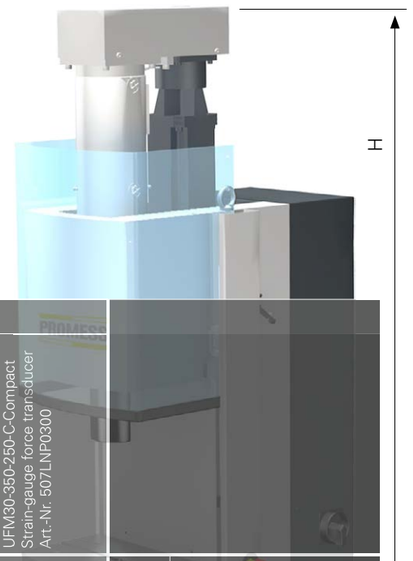


Front of slide



Series M

Servo press drive:
Bent



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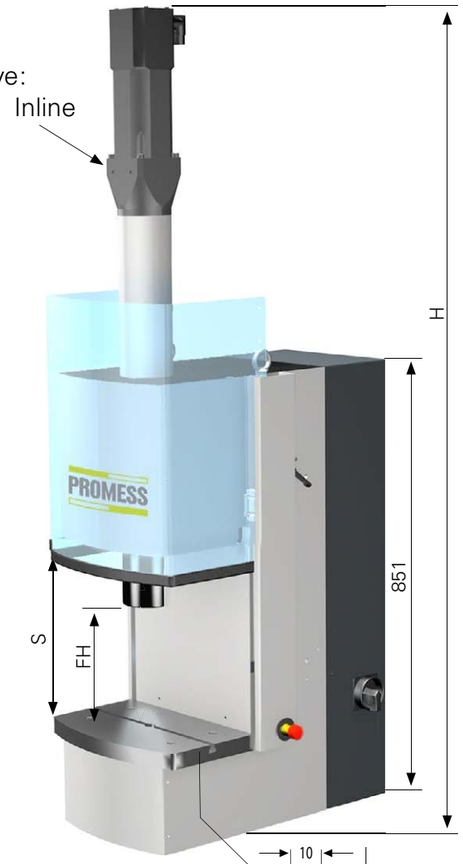
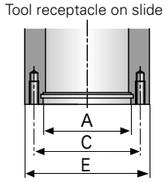
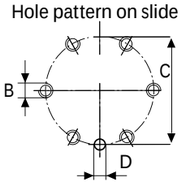


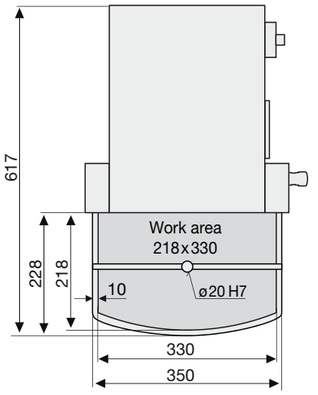
Tool receptacle on slide



Hole pattern on slide



Front of slide



Type designation		Series S					Series M					
		UFM002-60-250-C-Compact Piezoelectric force transducer Art.-Nr. 50765802	UFM01-100-400-C-Compact Piezoelectric force transducer Art.-Nr. 50764830	UFM01-100-400-C-Compact Strain-gauge force transducer Art.-Nr. 50764017	UFM03-200-250-C-Compact Piezoelectric force transducer Art.-Nr. 50766830	UFM03-200-250-C-Compact Strain-gauge force transducer Art.-Nr. 50766030	UFM10-350-300-C-Compact Strain-gauge force transducer Art.-Nr. 507LNI0100	UFM10-350-300-C-Compact Strain-gauge force transducer Art.-Nr. 507LNP0100	UFM30-350-250-C-Compact Strain-gauge force transducer Art.-Nr. 507LNI0300	UFM30-350-250-C-Compact Strain-gauge force transducer Art.-Nr. 507LNP0300		
Joining force, compression/ tension	N	0…200	0…1000	0…1000	0…3000	0…3000	10	10	30	30	kN	Joining force, compression/ tension
Resolution of force	N	0.055	0.27	0.27	0.83	0.83	0.46	0.46	1.39	1.39	N	Resolution of force
Standard stroke	mm	60	100	100	200	200	310	310	330	330	mm	Standard stroke
Speed	mm/s	250	400	400	250	250	300	300	250	250	mm/s	Speed
Resolution of distance	µm	0.15	0.25	0.25	0.31	0.31	0.08	0.08	0.06	0.06	µm	Resolution of distance
Reproducibility	mm	± 0.001	± 0.001	± 0.001	± 0.001	± 0.001	± 0.01	± 0.01	± 0.01	± 0.01	mm	Reproducibility
Guiding accuracy slide	mm	± 0.002	± 0.002	± 0.005	± 0.005	± 0.005	± 0.05	± 0.05	± 0.05	± 0.05	mm	Guiding accuracy slide
Rot. backlash slide	backlash-free	Yes	Yes	Yes	Yes	Yes	± 0.05	± 0.05	± 0.05	± 0.05	mm	Rot. backlash slide-Ø
Overload protection	kN	10	12	2	12	5	15	15	45	45	kN	Overload protection
Servo press drive		Inline	Inline	Inline	Inline	Inline	Inline	bent	Inline	bent	type	Servo press drive
Force measurement	type	piezo-electric	piezo-electric	strain-gauge	piezo-electric	strain-gauge	strain-gauge	strain-gauge	strain-gauge	strain-gauge	type	Force measurement
Power supply	VAC Hz/A	230 50/6	230 50/10	230 50/10	230 50/10	230 50/10	3x400 50/14	3x400 50/14	3x400 50/22	3x400 50/22	VAC Hz/A	Power supply
Weight	kg	60	65	65	70	70	330	330	350	350	kg	Weight
Mass of tool receptable												Mass of tool receptable
H Total height	mm	621	752	752	983	983	1490	ca. 1100	1818	ca. 1500	mm	H Total height
FH Free height	mm	160	160	160	198	198	312	312	332	332	mm	FH Free height
S Stroke of protective cover	mm	215	215	215	215	215	320	320	320	320	mm	S Stroke of protective cover
A Tool receptacle hole	mm	Ø 10 H6	Ø 10 H7	Ø 10 H7	Ø 10 H7	Ø 16 H7	Ø 38H7 ↓8	Ø 38H7 ↓8	Ø 63H7 ↓7.85	Ø 63H7 ↓7.85	mm	A Tool receptacle hole
B Thread of hole	mm	M5	M6	M6	M6	M6	6xM6 ↓12	6xM6 ↓12	6xM8 ↓18	6xM8 ↓18	mm	B Thread of hole
C Thread position	mm	10	12	12	12	12	Ø 50 ± 0.2	Ø 50 ± 0.2	Ø 80 ± 0.2	Ø 80 ± 0.2	mm	C Pitch circle Ø
D Hole depth	mm	14	28	24	24	36	Ø 6H7 ↓15	Ø 6H7 ↓15	Ø 8H7 ↓12	Ø 8H7 ↓12	mm	D Pin hole Slide
E Slide diameter	mm	Ø 22.5	Ø 25	Ø 30	Ø 30	Ø 38	Ø 65f7	Ø 65f7	Ø 95f7	Ø 95f7	mm	E Slide diameter

Our Product Range

Universal Joining Modules

ADVANTAGES

- Force range: 0.2 – 500 kN
- Integrated controllers for force, positioning and signals
- Real-time analysis of force-strain data using power amplifier
- Digital force measurement technology
- Envelope curves and windows
- Absolute encoder eliminates need for reference runs
- Simple programming
- Life of bearing and screw drive > 12 million cycles

Universal Torque Modules

ADVANTAGES

- Excellent performance using transparent technology
- Superb functionality
- Envelope curves and windows
- Absolute encoder eliminates need for reference runs
- Simple programming
- Life of bearing and screw drive > 12 million cycles

PROMESS develops, produces and sells components and systems for the assembly and automation industries.

In addition to high-quality standard components, PROMESS develops comprehensive technology solutions for complex and highly specialized assembly and testing applications.

Our products are used for mass manufacturing by all renowned automobile companies as well as in testing and lab environments.

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