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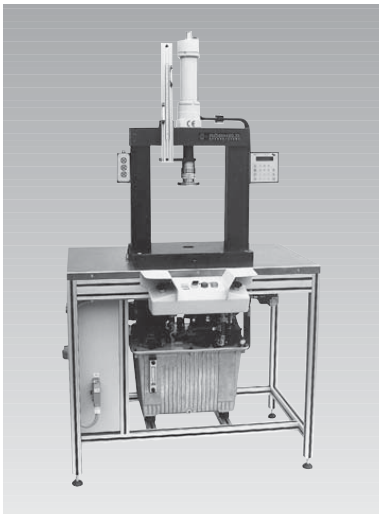
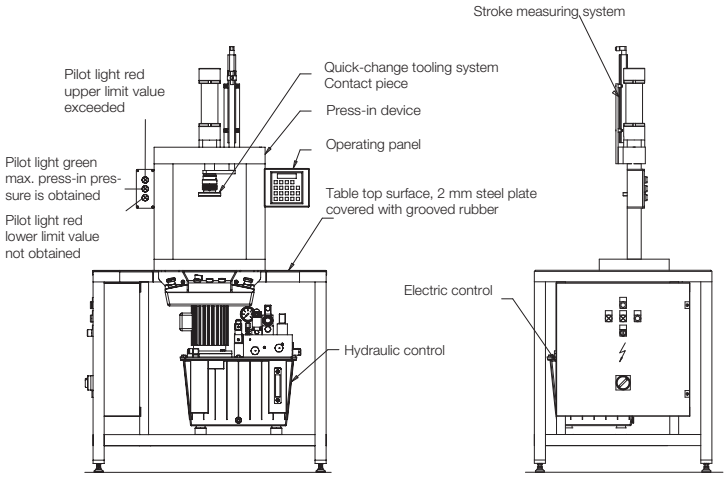
Issue 9-07 E

P 6.6060

Press-In Devices 25 -100 kN
with press-in force control and interpretation of the press-in process



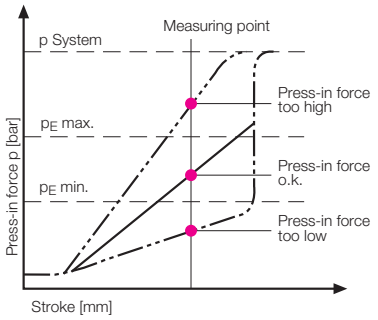


Application
Press-in devices for assembly with press-in force control and quality assurance of the press-in operation are preferably used in assembly processes for production of longitudinal pressed joints; in addition perfect press fit of frictionally-engaged joinings is guaranteed. Quality assurance and the proof of realisation of longitudinal pressed joints are more and more demanded due to product liability and in accordance with ISO 9000. Due to their geometrical and simple shape it is normally cheaper to produce frictionally-engaged assemblies than positive assemblies.

Description
Press-in devices as bench devices with press-in force control and interpretation of the press-in operation are complete functional units and consist of 3 basic components: mechanical press-in frame, electro-hydraulic control and underframe for tables. Above the table plate there are - according to the application of ergonomic design rules - the mechanical press-in frame with the data input board for the process parameters and the indicator board. The two-hand operating panel is mounted to the exterior table frame. The electric control box and the hydraulic power unit are installed in the lower table area. Due to safety reasons, operation of the hydraulic cylinder is always made by a two-hand safety control.

Advantages
- High flexibility in assembly
- Improved ergonomics
- Quality assurance of operation
- Reduction of assembly time
- Short amortisation time
- Closed force-loop
- Defined force ratios
- Light component load
- Quick-change tooling system

Industry/applications (selection)
– Drive technology, gears box assembly
– Couplings, cardan shafts
– Compressors, pumps, hydraulic elements
– Industrial fittings
– Materials-handling technology
– Automotive industry and their suppliers
– Machine tool building
– Building and agricultural machines
– Electronics



Aplication example
This installation is adapted to the assembly process of electric motors: with a triple press-in device 3 stator bushings are pressed in into the housings in one cycle.
This corresponds to the assembly sequence of the preceding and following assembly steps in production, so that there will not be any waiting times.
The press-in device realises in each press-in axis a press-in force control, thereby the quality of the operation and a reliable further processing are guaranteed.

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Functions

Automatic mode

By operating the mushroom push-buttons at the two-hand operating panel simultaneously, the hydraulic cylinder extends rapidly starting from the retracted off-position. As soon as the hydraulic cylinder has reached the switching position, the control switches automatically to creep speed. Press-in force control is effected during joining of the components. When the maximum press-in pressure is obtained, reversing to retraction is automatically effected and the hydraulic cylinder retracts
rapidly until the off-position is obtained and the control is switched off. The automatic mode can only be started, if the hydraulic cylinder is in the retracted off-position.

Setting mode

In addition, the functions “Extend” and “Retract” can be separately selected by means of a selector switch at the two-hand operating panel. In the setting mode, the press-in device can only be operated in creep speed.

Function triggering is - in all operating conditions - only possible by operating simultaneously both mushroom push-buttons of the two-hand operating panel.

Press-in force control and interpretation

The press-in force is permanently measured during pressing-in and compared with the admissible limit values. The principles of assessment is based on the determination of admissible limit values in windowing and the control at a defined position during joining. If there are one or more measured values outside the admissible limit values, there is a NIO error signal, and this is shown by an illuminated push-button in the two-hand operating panel.
Before restart of the press-in device, the illuminated push-button has to be activated, in order to release the press-in device again for cylinder operation. A pilot light at the two-hand operating panel indicates the off-position.
In addition, there is an indicator board with 3 signal lamps in the visual range at the press-in frame.

Indicate:

– Upper limit value exceeded
– Max. press-in pressure is obtained
– Lower limit value not obtained

Data input

The electric control is equipped with a programmable control. Programming contains beside the measuring interpretation the application-oriented data input by records.

One record consists of the input of:

– Admissible upper limit value
– Maximum press-in pressure
– Admissible lower limit value
– Measuring position press-in force control
– Position: off-position
– Switching position rapid/creep speed

Up to 100 records can be programmed. Input of the records is made by means of the input board at the press-in frame. Activation of the desired record is made by input of the corresponding record-no.

Data output

An interface RS 232 is available to take the records and the data output.

Application and installation instructions

When installing the press-in device it has to be considered that it will be installed on a plain surface and will be carried by all 4 legs. According to the operating instructions the electric connection has to be effected and the hydraulic power unit must be filled with mineral oil.

Contact pieces

Quick-change tooling system

The quick-change tooling system offers the possibility to change to other press-in contact pieces within a very short time. Uncoupling of the quick-change tooling system is made by lifting of the exterior sleeve only. The contact piece can be detached and changed. After release of the exterior sleeve the quick-change tooling system engages automatically and locates the contact piece in a defined position. In unloaded mode the contact pieces are self-centering. During pressing-in the forces are compensated by the contact pieces and introduced to a spherical surface support, thereby they can align themselves parallel to the centre line and compensate the elastic deformation of the components.

A gentle press-in operation without lateral forces on the workpieces is realised.

Variants (selection)

– Base plate additionaly equipped with diagonal slots as per DIN 650
– Table frame out of aluminium
– Contact piece as per DIN 810
– Press-in frame with additional protection cover

Special versions on request

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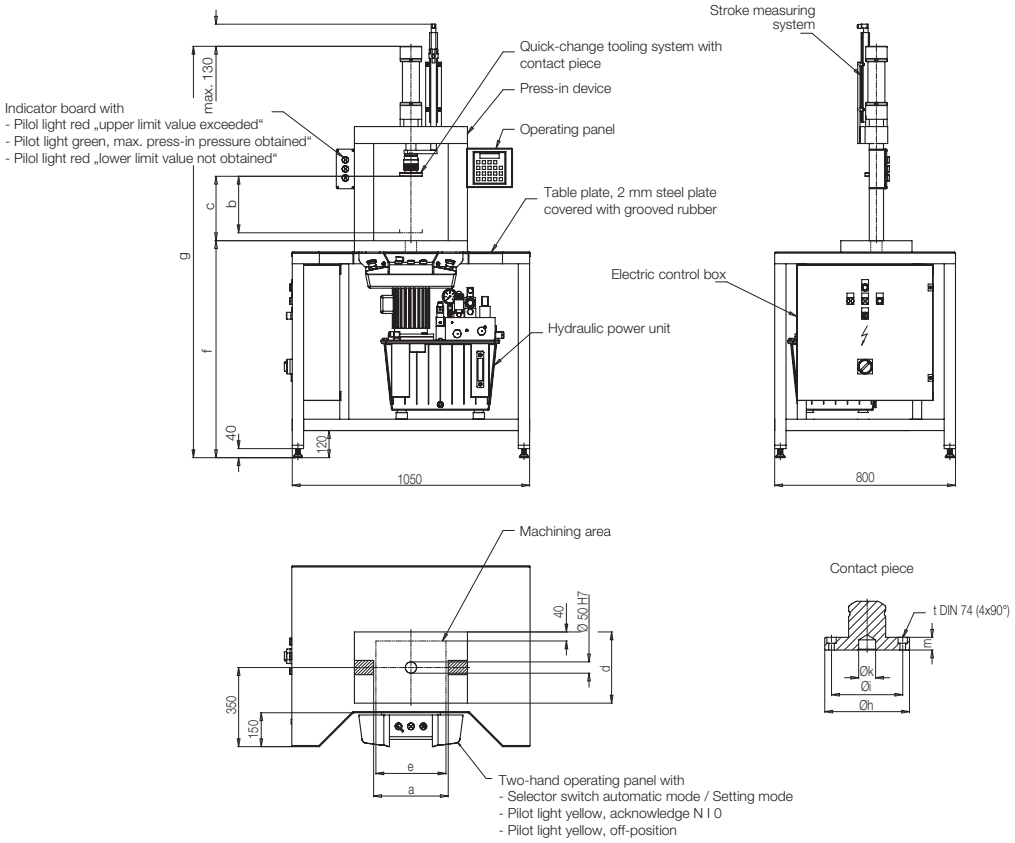
Technical characteristics



Press-in device		6606-30X-XXX	6606-35X-XXX	6606-40X-XXX	6606-45X-XXX	6606-50X-XXX	6606-55X-XXX	6606-60X-XXX	6606-65X-XXX
Nominal pressure force	[kN]	25	25	40	40	63	63	100	100
a = clear width	[mm]	250	350	250	350	330	460	430	600
b= cylinder stroke	[mm]	as per customer's specifications, see code for part-nos.							
c= clear height	[mm]	as per customer's specifications, see code for part-nos.							
d	[mm]	250	315	250	315	315	400	400	500
e= machining area	[mm]	250	330	250	330	330	330	330	330
f	[mm]	950	960	950	960	960	973	973	990
g= f+c+b+	[mm]	255	267	260	272	325	345	366	391
h	[mm]	60	60	60	60	100	100	100	100
i	[mm]	40	40	40	40	84	84	84	84
k	[mm]	12 H7 x 6	12 H7 x 6	12 H7 x 6	12 H7 x 6	20 H7 x 10	20 H7 x 10	20 H7 x 10	20 H7 x 10
m	[mm]	10	10	10	10	15	15	15	15
t as per DIN 74	[mm]	Jm5	Jm5	Jm5	Jm5	Km6	Km6	Km6	Km6
Flow rate	(l/min)	1,5/4,4	1,5/4,4	2,0/6,8	2,0/6,8	3,3/11,9	3,3/11,9	5,1/15,6	5,1/15,6
Max. operating pressure	[bar]	200/40	200/40	200/40	200/40	200/40	200/40	200/40	200/40
Oil volume of the reservoir	[l]	27	27	27	27	40	40	40	40
Rating	[kW]	0,75	0,75	1,1	1,1	1,5	1,5	2,2	2,2
Electric connection		3/PE (50 Hz 400 V)							
Code classIP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54
v-press-in stroke	[mm/s]	20	20	18	18	18	18	18	18
v-rapid speed extend	[mm/s]	78	78	75	75	80	80	70	70
v-rapid speed retract	[mm/s]	130	130	126	126	135	135	115	115
Contact piece		**6604-161**	**6604-161**	**6604-161**	**6604-161**	**6604-166**	**6604-166**	**6604-166**	**6604-166**

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Code for part numbers

Code for part numbers

6606-XX X - XXX

30 = 25 kN pressure force, 250 mm clear width
35 = 25 kN pressure force, 350 mm clear width
40 = 40 kN pressure force, 250 mm clear width
45 = 40 kN pressure force, 350 mm clear width
50 = 63 kN pressure force, 330 mm clear width
55 = 63 kN pressure force, 460 mm clear width
60 = 100 kN pressure force, 430 mm clear width
65 = 100 kN pressure force, 600 mm clear width

0 = 100 mm cylinder stroke
1 = 160 mm cylinder stroke
2 = 200 mm cylinder stroke
3 = 250 mm cylinder stroke
4 = 320 mm cylinder stroke
5 = 400 mm cylinder stroke
6 = 500 mm cylinder stroke

XXX = Clear height (dimension c) in mm, Range of height: 0 - 800 mm.
Note: The clear height must be bigger than the cylinder stroke!

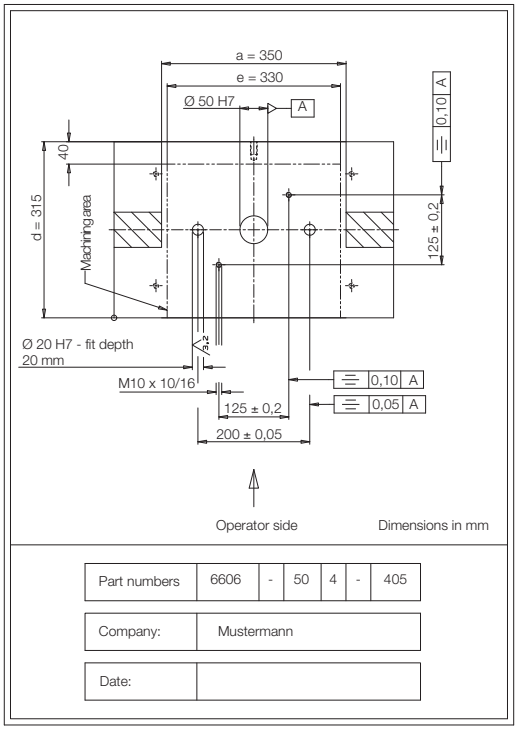
Drilling pattern

Please indicate the desired drilling pattern with complete dimensions of shape and position in the following cartoon on page 5 and join this information to your order. Please consider that machining is only admissible **within the indicated machining area**:

- max. diameter of bore holes : 75 mm
- max. diameter of internal threads: : M 16
- max. bore quality as per DIN 7151 : 7
- max. admissible number of bore holes : 4
- max. number of internal threads : 6
- min. admissible tolerance of length : ± 0.02mm

Example of ordering:

Press-in device with:
- 63 kN press force
- 330 mm clear width
- 320 mm cylinder stroke
- 405 mm clear height
- 2 fit holes 20 H7-fit depth 20 mm
- 2 internal threads M10 – 10 deep



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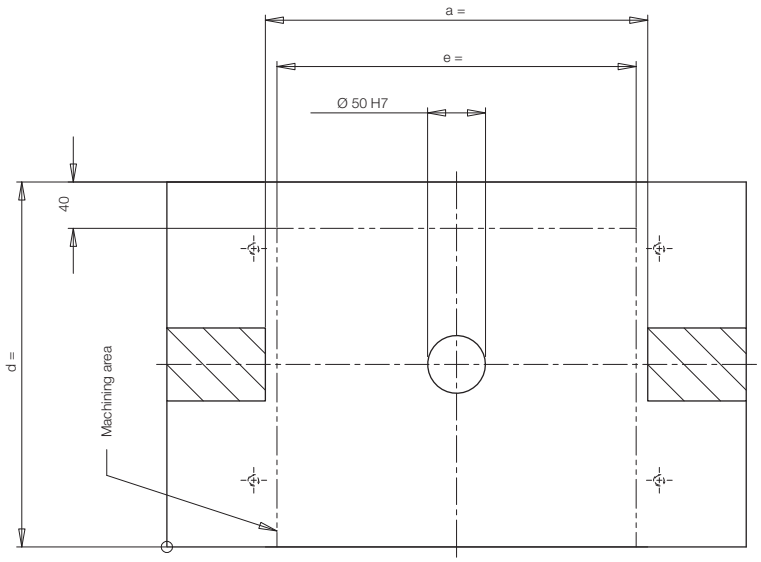
Order pattern
Fax +49 6405/89-211



Note:
Dimensions a, d and e see dimension chart on page 3.

Operator side

Dimensions in mm

Part numbers	6606	-				

Company:	
Date:	