ROEMHELD
HILMA ▪ STARK

Everything for the Quick Die Change

in automatic punching presses
and high-speed presses

Products | for | productivity

ROEMHELD
HILMA ▪ STARK

Everything for the Quick Die Change
in automatic punching presses and high-speed presses

Clamping Bars
single acting with spring return,
with press-in or built-in pistons
clamping force up to 48 kN, piston stroke 6 or 8 mm

WZ 2.2095

Hollow Piston Cylinders
single acting, hydraulic clamping and spring unclamping
max. clamping force of 30 kN up to 104 kN,
max. operating pressure 400 bar

WZ 3.2130S

Sliding Clamps compact
single acting, with spring return
max. operating pressure 400 bar, clamping force from 19 kN to 78 kN

WZ 3.2202

Angular Clamps, hydraulic
single acting, with spring return
max. operating pressure 400 bar, clamping force from 19 to 78 kN

WZ 3.2206

Sliding Clamps, mechanical
with integral high-pressure spindle
clamping force 40 and 80 kN

WZ 6.2210

Clamping nuts, hydro-mechanical
with through-hole thread and optional clamping force display

WZ 6.2276

Power unit
max. flow rate 0.82 / 2.1 / 3.5 l/min
max. operating pressure 500 / 250 / 160 bar

WZ 7.1600

Ball Bars, hydraulic
with lifting of the individual balls
max. load 70 kN/m, max. operating pressure 100 bar

WZ 8.18341

Ball Bars, mechanical
with spring pack
loads up to 27 kN/m

WZ 8.18343

Hilma Div. of Carr Lane Roemheld Fenton, MO 63026 Tel: (636) 386-8022 Fax: (636) 386-8034 Email: info@clrh.com

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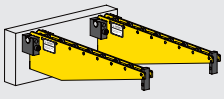
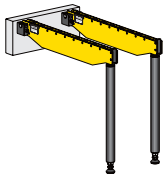
Everything for the Quick Die Change
in automatic punching presses and high-speed presses



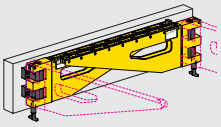
Carrying consoles, hanging
load per pair 5 to 30 kN

WZ 8.18350



Carrying consoles, supported
load per pair 20 to 250 kN

WZ 8.18351



Carrying consoles, swivelling to the left and right
load per pair of 10 to 60 kN

WZ 8.18352

Hydraulic Pump, manually operated
max. operating pressure 100, 200 and 500 bar

WZ 8.800

Die Changing Cart RW, manually movable
with optional auxiliary drive, with safety docking station
max. load capacity 500 kg

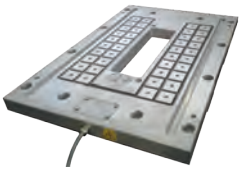
WZ 8.8900

Die Changing Cart RW, manually movable
with safety docking station
max. load capacity 1,000 kg

WZ 8.8901

Die Changing Carts RWA with Electric Drive
with electro-hydraulic lifting platform
and hydraulic ball bars
max. load capacity 1600 kg

WZ 8.8902

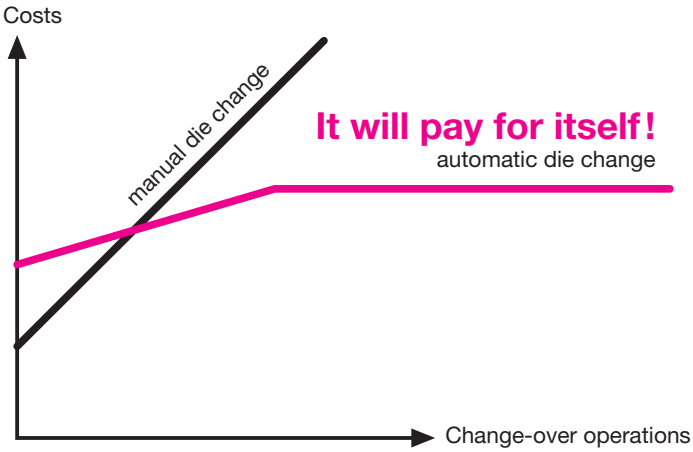


Magnetic Clamping Systems M-TECS 80
for temperatures up to 80 °C

RR 1.1132

Advantages of Die Clamping Systems

Why die clamping systems?



Innovative technology and many years of experience are the basis for our range of die clamping and changing systems.

Rationalise your operation by using automatic die changing systems.

Increased productivity
- more capacity thanks to reduced set-up times
- less downtime, e.g. due to tool breakage or reworking the die
- short test period

Automation
- power-operated elements
- monitoring elements, in particular for pressure and position
- short cycles thanks to automatic triggering of functions
- integration with process monitoring and control

Increase in quality
- consistent quality
- repeatability of die position
- low-distorsion clamping

Operating facility
- operate under extreme circumstances (high temperature, spray)
- clamping in barely accessible positions without any problems
- clamping using high clamping forces
- dies may be changed by relatively unskilled workers
- repeatable die change process

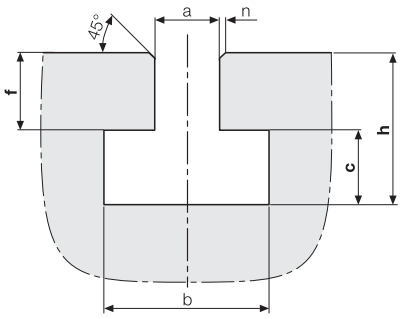
Efficiency
- short set-up times even for small batches, smaller stock of parts
- simplified die change, also for the machine operator
- fewer jigs and fixtures required
- enhanced tool life as a result of less wear
- reduced run-in period for moulds and dies, i.e. fewer test pieces and less time required

Reduced rate of wear
- uniform and low-distortion clamping with high clamping forces
- compensating clamping force (elasticity)
- repeatable positioning and clamping process
- optimum selection of clamping points

T-slot dimensions as per DIN 650

Dimensions and tolerances for T-slots as per DIN 650. Applicable to machine beds, pallets or die clamping fixtures on presses

a	[mm]	**14 H12** ($14^{+0,18}$)	**18 H12** ($18^{+0,18}$)	**22 H12** ($22^{+0,21}$)	**28 H12** ($28^{+0,21}$)	**36 H12** ($36^{+0,25}$)
f min.	[mm]	12	16	20	26	33
f max.	[mm]	19	24	29	36	46
b	[mm]	23^{+2}	30^{+2}	37^{+3}	46^{+4}	56^{+4}
c	[mm]	9^{+2}	12^{+2}	16^{+2}	20^{+2}	25^{+3}
h min.	[mm]	23	30	38	48	61
h max.	[mm]	28	36	45	56	71
n max.	[mm]	1.6	1.6	1.6	1.6	2.5



The **slot depth h** and the **web height f** must be exactly measured and checked for possible tolerances. If your T-slot is not within the specified tolerance range, customised solutions are also possible.

Recommended clamping forces for T-slots as per DIN 650

T-slot	Clamping force max.
14 mm	40 kN
18 mm	60 kN
22 mm	60 kN
28 mm	100 kN
36 mm	160 kN

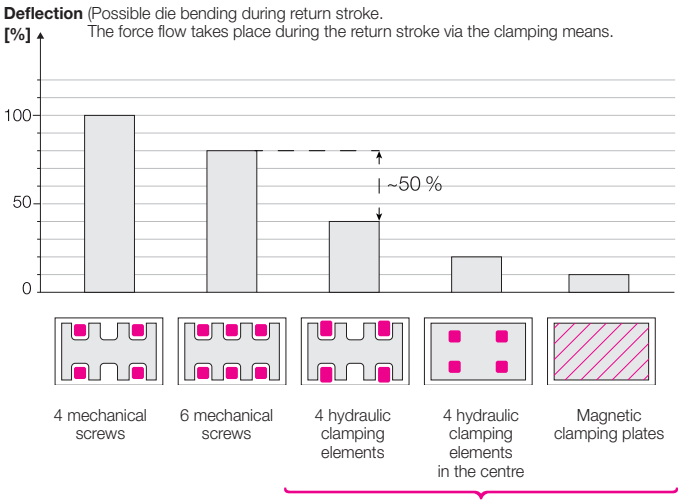
Important note

If the above clamping forces are exceeded, permanent deformation of the T-slots may be caused.

Influence of the clamping situation on the forming process

Vibrations in forming dies result in an increased wear of dies and a reduced workpiece quality. An optimum design of the clamping situation has a significant influence on the vibration behaviour and thus also the process stability.
A stiffer clamping of the die results in a minimisation of the accelerations and vibrations. A stiffer clamping is obtained by the number of clamping points and an optimum force application close to the process force in the die. The system rigidity can be considerably increased with swing sink clamps which, due to their design, apply force close to the die centre. Even with the same number of clamping points, the vibration or die bending of the lower die can be reduced with the use of hydraulic or magnetic rapid clamping systems by up to 50 % compared to traditional clamping elements such as screws or clamps.
This improvement is due to the shortening of the lever arm between the process force and the clamping point.

Clamping situation in comparison



- uniform application of force
- considerably higher punctual clamping force
- improved rigidity of the clamping situation

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Request Checklist for
Die Clamping and Changing Systems

CUSTOMER DATA

Company / Customer | Town | Customer no.

Person to contact | Department

Email | Phone

from

Request recorded by (name / company) | Date

Press / machine
(manufacturer / type) _____

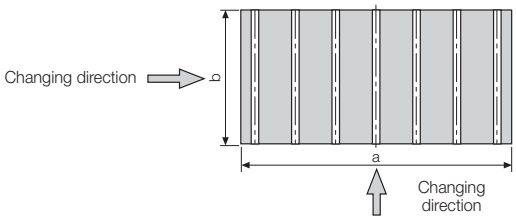
☐ **new press**
☐ **retrofitting**

Press / close force [kN] _____ Operating temperature [°C] _____ Upper die [kg] _____

Retraction force [kN] _____ Stroke frequency [strokes/min] _____ Lower die [kg] _____

Ejection force bed / ram [kN] _____ Acceleration [g] _____ Change frequency [per day / week] _____

Changing direction ☐ **sideward** ☐ **forward, backward**



Ram dimensions [mm] a _____ b _____

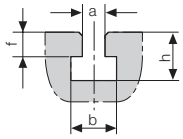
Bed dimensions [mm] a _____ b _____

T-slot DIN 650 [mm] a _____ b _____

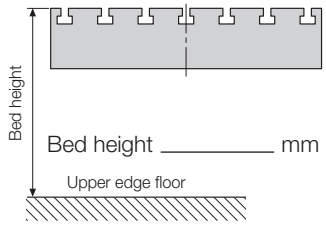
Ram [mm] h _____ f _____

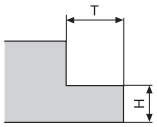
[mm] a _____ b _____

Bed [mm] h _____ f _____

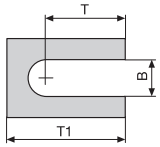


T-slot DIN 650



Clamping edge* 

[mm] T _____
[mm] H _____

Clamping slot* 

[mm] T _____
[mm] T1 _____
[mm] B _____

* possible clamping principles, see catalogue sheet WZ 1.1000, page 4

Existing **clamping points** on the ram (example: 6 x M20) _____

Existing **clamping points** on the bed (example: 4 x M20) _____

Proposal **clamping elements** Ram _____

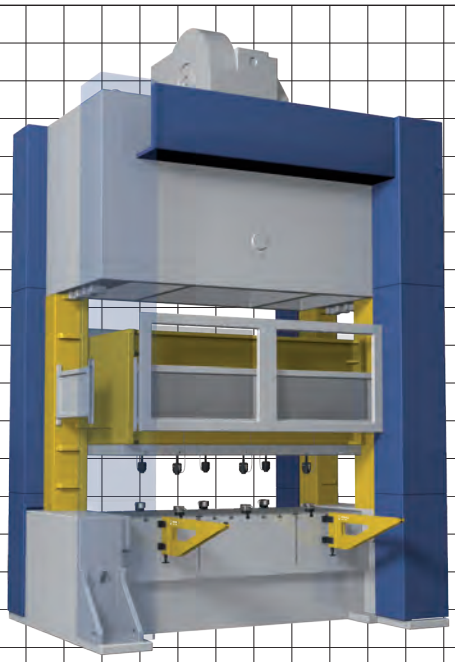
Bed _____

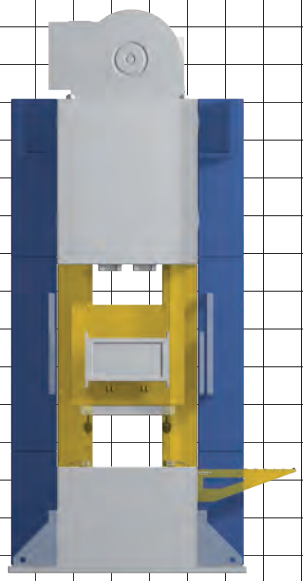
Proposal **changing technology** _____

Proposal **power unit** _____

Please turn the page

Installation situation





Other comments

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Request Checklist for
Die Changing Carts

CUSTOMER DATA

Company / Customer | Town | Customer no.

Person to contact | Department

Email | Phone

from

Request recorded by (name/company) | Date

Information on the die/mould

Weight min./max. [kg] ____/____ **Load centre of gravity** ☐ centric ☐ eccentric

Width B min./max. [mm] / **Height H** min./max. [mm] ____/____ **Length L** min./max. [mm] ____/____

Nature of bottom side of the die/mould ☐ plane/smooth ☐ uneven/interrupted (please attach photo)

Information on the press bed

Table height F1 min./max. [mm] ____/____

Information on the lifting range

Lifting height F min./max. [mm] ____/____

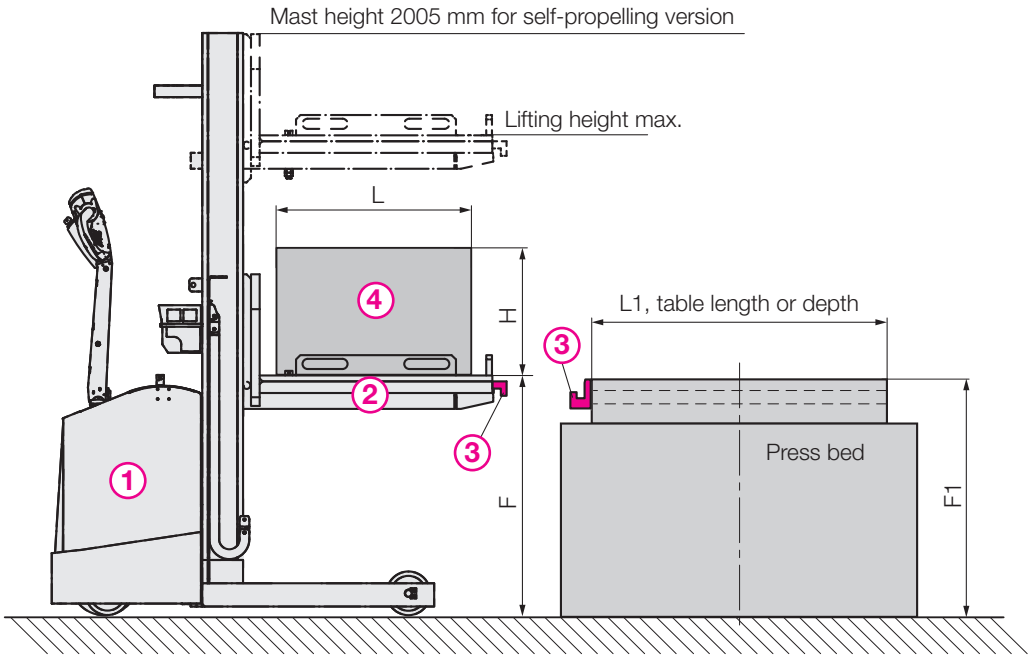
Ceiling height [mm] ____

1 = Die changing cart

2 = Load pick-up table

3 = Hooks

4 = Die/mould



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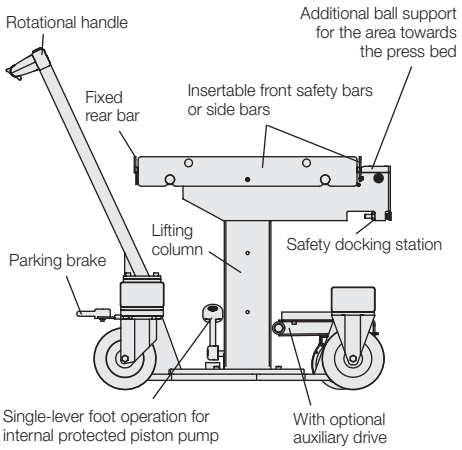
Version of die changing cart



Load max. 500 kg

☐ **manually movable**
hydraulic lifting operation by pedal

Option

☐ with auxiliary drive

☐ Battery charger Standard

☐ Battery charger Quick

Table size, ball table

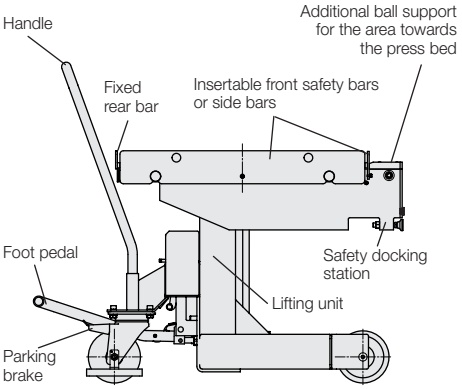
☐ 720 x 720 mm

☐ 720 x 450 mm

☐ other table sizes [mm] _____

Lifting range
Dimensions in mm

	Usable stroke	Min. table height H	Max. table height H
☐	140	540	680
☐	240	620	860
☐	340	720	1060



Load max. 1,000 kg

☐ **manually movable**
hydraulic lifting operation by pedal

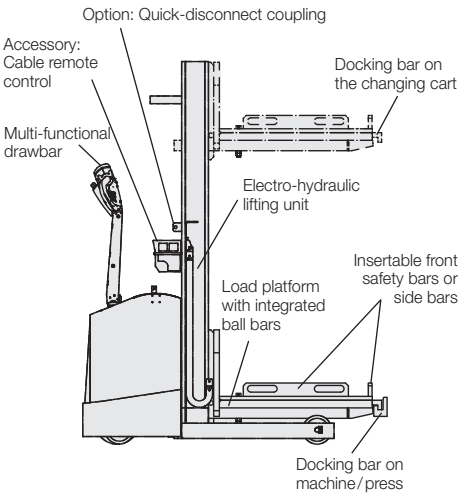
Table size, ball table

☐ 720 x 720 mm

☐ other table sizes [mm] _____

Lifting range
Dimensions in mm

	Usable stroke	Min. table height H	Max. table height H
☐	635	650	1285



Load max. 1,600 kg

☐ **with electric drive**
electro-hydraulic lifting operation by slide switch

Accessories

☐ docking bar on the press

☐ with quick-disconnect coupling for external roller / ball bars in the press bed

☐ cable remote control

Max. die weight	[kg]	1600
Platform size	[mm]	1150 x 800*
Lifting range	[mm]	250 – 1650
Stroke of ball/roller bars	[mm]	2
Max. lifting force / bar	[kN]	8.8
Load capacity at the load centre of gravity 400/ 600 mm	[kg]	1600 / 600
Ball / roller spacing	[mm]	76

Type	**RWA 1600/4**	**RWA 1600/6**	**RWA 1600/8**
Number of ball / roller bars (each 744 mm long)	4	6	8
	☐	☐	☐

☐ other platform sizes [mm] _____

☐ other ball or roller bars or spacings _____

Version of load pick-up table

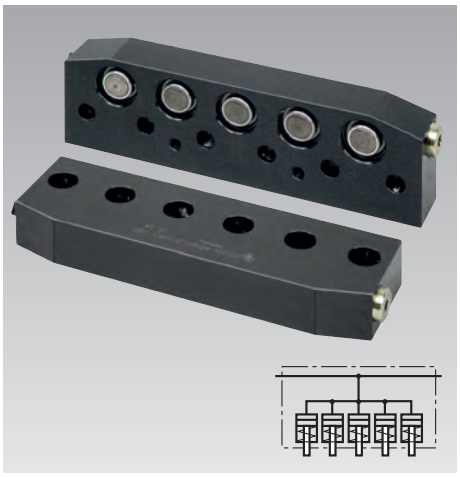
☐ **with rollers**
for die/mould movement in <u>one</u> direction

☐ **with rollers**
for free die/mould movement in <u>all</u> directions

WZ 2.2095

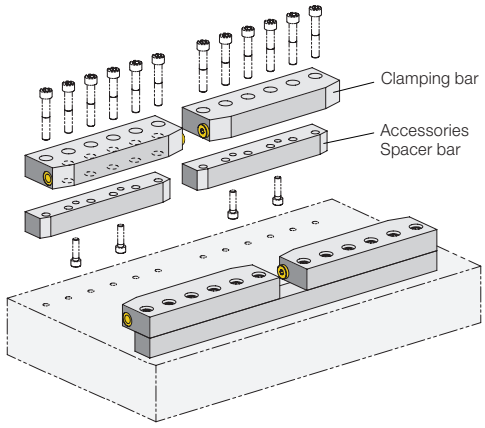
Clamping Bars

single acting with spring return, with press-in or built-in pistons clamping force up to 48 kN, piston stroke 6 or 8 mm



Advantages

- Piston stroke 6 or 8 mm
- Flat and compact design
- Fully resilient stroke limitation
- Easy installation
- Easy to retrofit



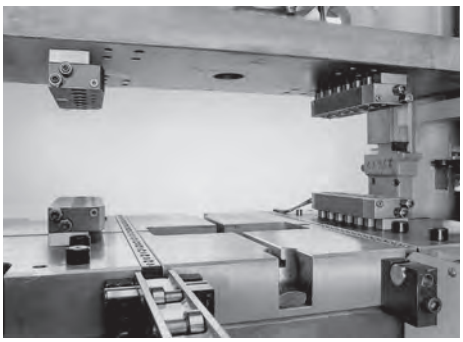
Application

The clamping bars are used permanently installed on press beds and rams, on machines and plants for clamping and locking.

Description

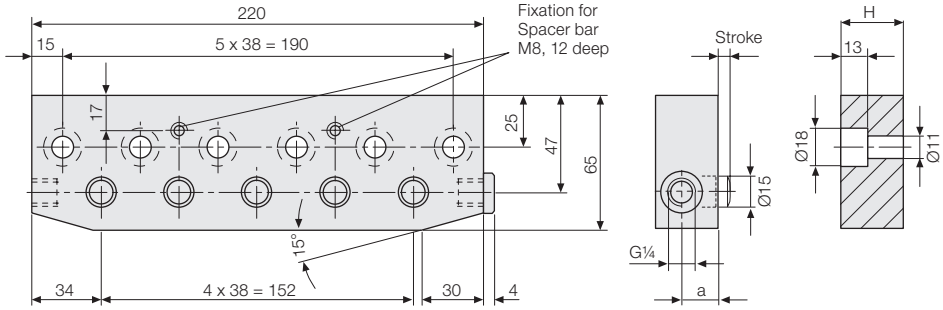
The clamping bar is directly screwed on the press bed or ram using a spacer bar. Clamping is carried out on the die clamping edge by applying hydraulic pressure to the 5 pistons which are arranged side by side with a pressure medium and mechanical unclamping by a spring return. Hydraulic oil is supplied through G 1/4 ports provided on both sides. Flat design with die inlet chamfer. Clamping force up to 48 kN uniformly distributed over 5 pistons.
When using several clamping bars in a row, the elements are interconnected by means of hoses or pipes.

Application example



Clamping bars installed in press bed and ram. Easy loading of dies using die change consoles and lateral guide rollers.

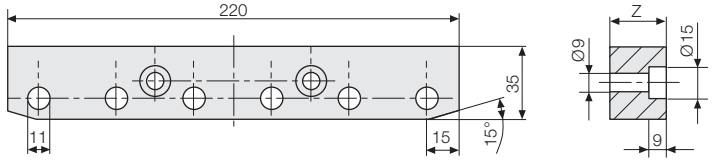
Dimensions



All dimensions in mm

Technical data		Version with press-in pistons	Version B built-in pistons
Clamping force at max. operating pressure	**[kN]**	**35**	**48**
Max. operating pressure	**[bar]**	**400**	**200**
Clamping force at 100 bar	**[kN]**	**8.7**	**24.0**
No. of pistons		5	5
Piston/Piston rod Ø	[mm]	23/15	25/15
Stroke	[mm]	6	8
Clamping bar height H	[mm]	30	40
a	[mm]	18	29
Oil volume	[cm³]	5,3	6,0
Weight	[kg]	2.8	3.5
Part no.		**2095120**	**820960250**

Accessories
Spacer bar
to obtain the required clamping edge height



All dimensions in mm

Height Z	[mm]	28	43
for clamping edge	[mm]	25 ± 1.5	40 ± 1.5
Part no.		**520710040**	**520710071**

Other heights on request

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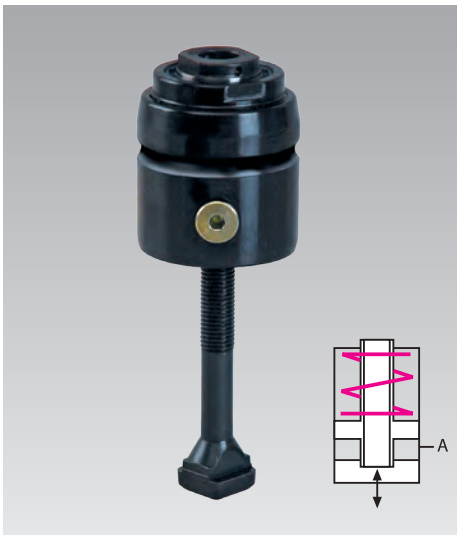
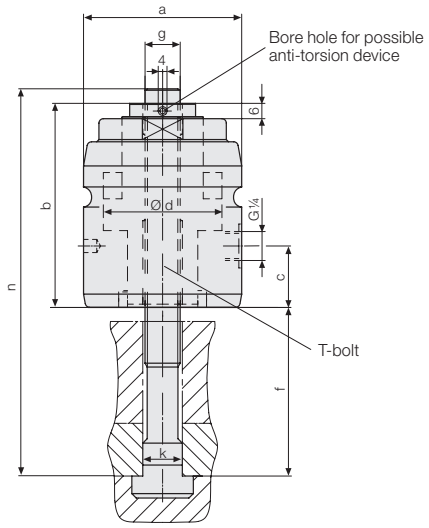
WZ 3.2130S

Hollow Piston Cylinder “L” design without spherical disk

single acting, hydraulic clamping and spring unclamping
max. clamping force of 30 kN up to 104 kN, max. operating pressure 400 bar



Hollow piston cylinder “L” design without spherical disk



Hollow piston cylinder “L” design without spherical disk with T-bolt

- with adjusted and secured T-bolt (specify dimension ‘f‘ when ordering)
- without spherical disk

For T-slot	[mm]	14	16	18	22	22	28	36
Clamping force at 400 bar	**[kN]**	**30**	**40**	**60**	**60**	**60**	**104**	**104**
Spring return force, min.	[N]	255	360	320	400	320	570	570
Piston Ø d	[mm]	35	42	54	54	54	70	70
Stroke	[mm]	8	8	12	6	12	12	12
Total oil volume	[cm³]	6	8	18	9	18	32	32
a	[mm]	50	58	72	72	72	90	90
b	[mm]	64.5	66.5	92.5	67	92.5	104	104
c	[mm]	13	14	28	12	28	24	24
g	[mm]	M12	M14	M16	M20	M20	M24	M30
k		14	16	18	22	22	28	36
m		G 1/8	G 1/8	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4
Weight	[kg]	1.0	1.2	2.5	2.0	2.8	4.8	5.4
Part no.		**821321432**	**821331632**	**821341832**	**821342222**	**821342232**	**821352832**	**821353632**

Max. operating pressure 400 bar

Hollow piston cylinde “L”design without spherical disk without T-bolt

- without spherical disk

For T-slot	[mm]	14	16	18	22	22	28	36
Weight	[kg]	0.75	1.0	2.2	1.7	2.2	3.8	3.6
Part no.		**821320132**	**821330132**	**821340132**	**821341122**	**821341132**	**821350132**	**821351132**

Important note!

If hollow piston cylinder and T-bolt are supplied separately, adjust them to suit dimension “f” and secure them.

Accessories

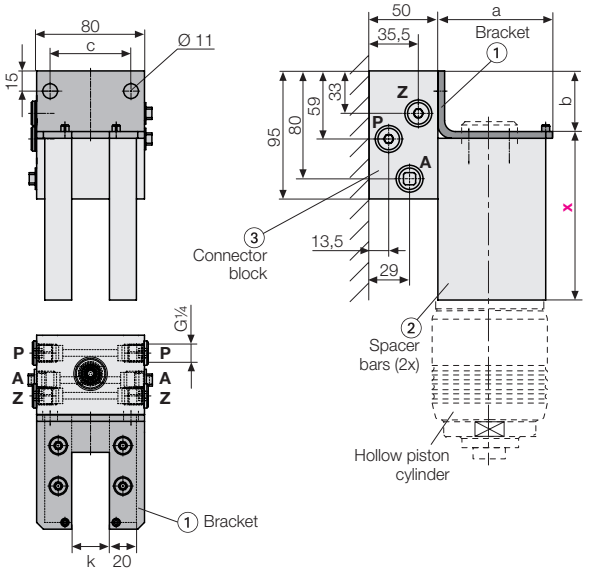
T-bolt, separate

For T-slot	[mm]	14	16	18	22	22	28	36
n	[mm]	125	125	160	200	200	250	250
Property class		12.9	8.8	12.9	12.9	12.9	12.9	8.8
Weight	[kg]	0.16	0.19	0.29	0.58	0.58	1.1	1.8
Part no.		**5700143**	**5700144**	**5700022**	**5700023**	**5700023**	**5700024**	**5700048**

Accessories

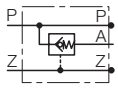
Parking station without position monitoring

accommodates the hollow piston cylinder during die change.

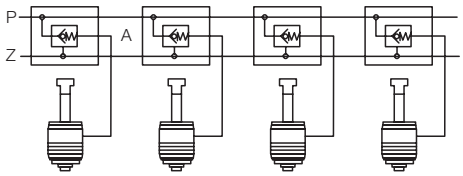


Distance dimension "x"
= Dimension "f" – ½ stroke
please specify when ordering

Hydraulic circuit diagram



Application with integral check valve



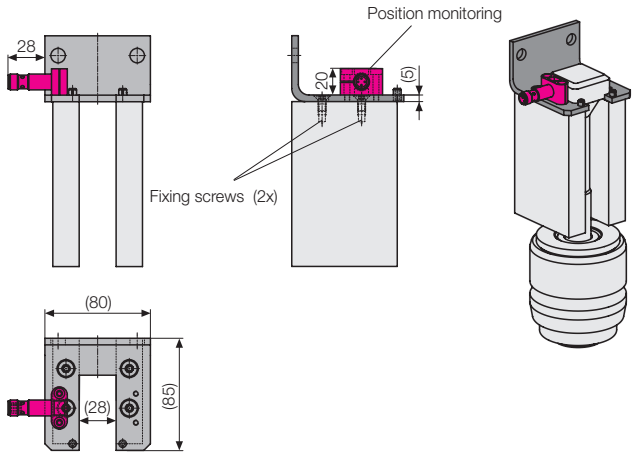
Part numbers

for hollow piston cylinder type		2132	2133	2134	2134	2135	2135
T-slot width k		14	16	18	22	28	36
a	[mm]	60	60	72	72	85	90
b	[mm]	40	40	45	45	45	45
c	[mm]	36	36	60	60	60	60
Bracket ①	**Part no.**	**2753140**	**2753160**	**2753180**	**2753220**	**2753280**	**2753360**
Bracket ① with mounted spacer bars ②	**Part no.**	**827531430**	**827531630**	**827531830**	**827532230**	**827532830**	**827533630**
Bracket ① with spacer bars ② and connector block ③	**Part no.**	**827531450**	**827531650**	**827531850**	**827532250**	**827532850**	**827533650**
Connector block ③ (separate) with integral check valve	**Part no.**	**827534012**	**827534012**	**827534002**	**827534002**	**827534002**	**827534002**

Special designs on request

Parking station with position monitoring

An inductive proximity switch indicates when a hollow piston cylinder is mounted to the parking station.



Position monitoring

Control options

- The correct number of clamping cylinders and thus sufficient clamping force is available
- Operator protection: no clamping cylinder will be forgotten
- Control of a selective selection per tool size is possible

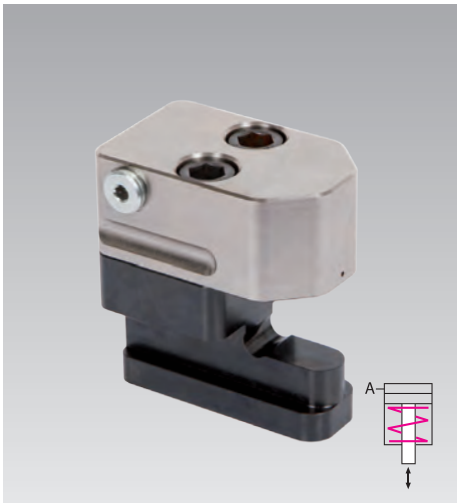
Please contact us!

Other accessories

- **Hydraulic power units**
  see product group 7
- **Hydraulic accessories**
  see product group 11
- **Angular rotary coupling**
  Part no. 9208176

Sliding Clamps compact

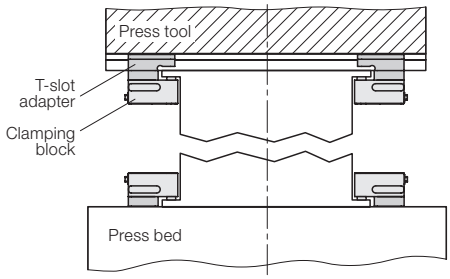
single acting, with spring return
max. operating pressure 400 bar, clamping force from 19 kN to 78 kN



Advantages

- High clamping force in combination with small size and low weight
- Ergonomic T-slot adapter for easy insertion
- High-quality surface protection on the clamping block
- Clamping block rounded and thus optimum adaptation in narrow construction spaces
- Safe handling by special recessed grip
- T-slot 14, 18, 22 and 28 mm are available
- Total stroke 8 and 12 mm
- Die standardisation with regard to the width and depth is not required
- Easy to retrofit

Installation option



Application

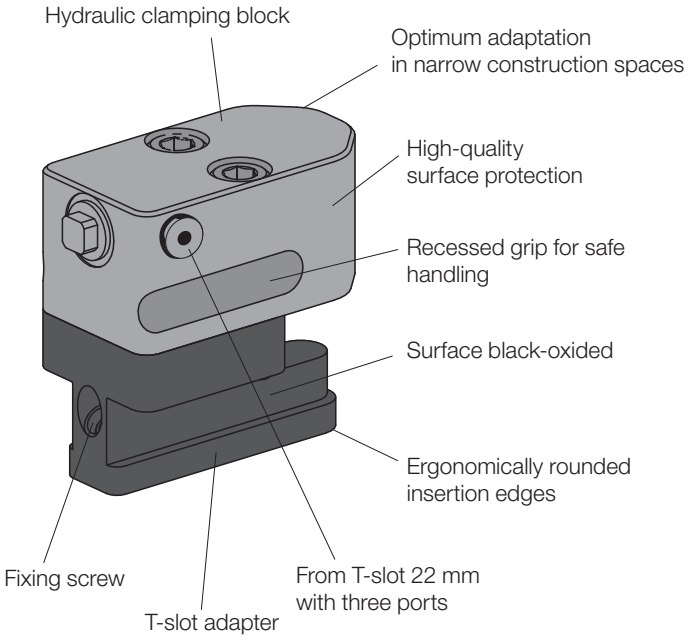
The "compact" sliding clamp is a hydraulic clamping element, used with minimum space requirements for clamping and locking on machines and plants, on press bed and ram.
Due to the manageable and rounded design, "compact" sliding clamps are especially suitable where space is limited as, for example, on high-speed punching presses. The use is possible at ambient temperatures up to a maximum of 120 °C.

Description

Manual positioning of the sliding clamp in the T-slots of the press ram or bed. Clamping on the die clamping edge by the application of hydraulic pressure to the piston and unclamping by spring force.
The “compact” sliding clamp consists of a hydraulic clamping block which will be fixed with two screws to a T-slot adapter.
The clamping block can also be directly screwed without T-slot adapter and can be ordered separately.

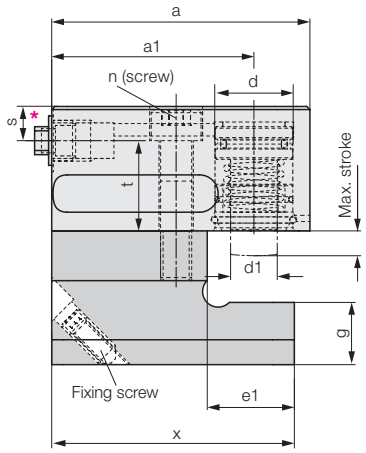
Application examples

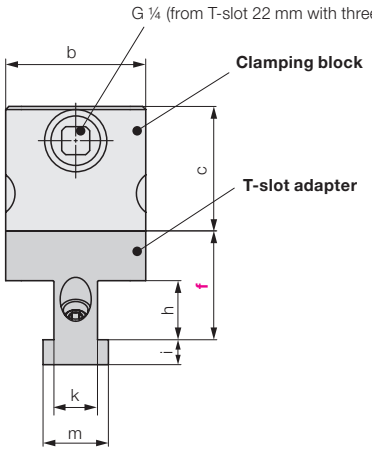
Sliding clamp with T-slot adapter in press bed and ram

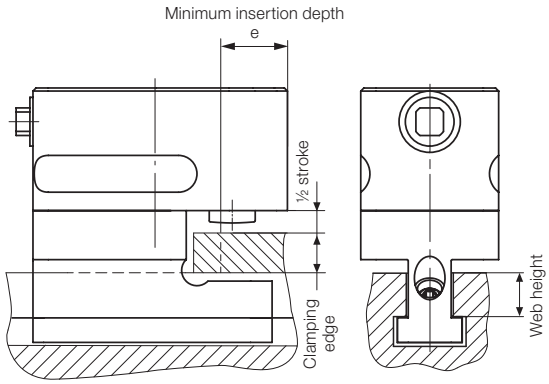


Sliding clamp compact

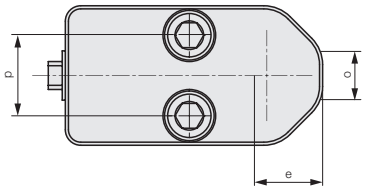
Hydraulic sliding clamp complete, with T-slot adapter







* From T-slot 22 mm with hydraulic ports at the rear and at the side



Functional dimension "f":
= ½ stroke
+ die clamping height
+ web height of the T-slot

Please specify when ordering.

Example of ordering

8 2202 1855 / F60

Sliding clamp	**T-slot**	**Functional dimension "f"** [mm]
Clamping force: 19.6 kN	18 mm	**Please specify when ordering**

T-slot as per DIN 650	**[mm]**	**14**	**18**	**22**	**22**	**28**	**28**
Clamping force at 400 bar	**[kN]**	**19.6**	**19.6**	**32**	**50**	**50**	**78**
Stroke	[mm]	8	8	8	8	8	12
Oil volume	[cm³]	4	4	7	10	10	24
Dimension "f" min.	**[mm]**	**30**	**41**	**50**	**50**	**55**	**60**
Dimension "f" max.	**[mm]**	**75**	**90**	**106**	**106**	**112**	**117**
a	[mm]	83	83	104	111	111	132
a1	[mm]	65	65	81	85	85	99
b	[mm]	45	45	65	65	65	80
c	[mm]	40	40	47	50	50	75
d	[mm]	25	25	32	40	40	50
d1	[mm]	15	15	15	20	20	25
e (min. insertion depth)	[mm]	22	22	28	31	31	38
e1	[mm]	28	33	41	48	48	60
g	[mm]	20	24	32	32	42	42
h	[mm]	19	25	30	30	37	37
i	[mm]	8	10	14	14	18	18
k	[mm]	14	18	22	22	28	28
m	[mm]	21	28	35	35	44	44
n (screw DIN 912, 10.9)		M 10	M 10	M 16	M 16	M 16	M 20
o	[mm]	18	18	20	20	20	28
p	[mm]	26	26	36	36	36	43
r	[mm]	40	40	50	50	50	57
s	[mm]	11	11	12	12	12	17.5
t	[mm]	29	29	29	32	32	53
x	[mm]	78	83	104	104	104	132
Clamping block with T-slot adapter							
Weight	[kg]	1.5	2.9	3.6	3.9	4.5	7.5
Part no.		**822021455**	**822021855**	**822032255**	**822042255**	**822042855**	**822052855**
Clamping block, separate							
Weight	[kg]	0.7	0.7	2.0	2.3	2.3	4.9
Part no.		**822021305**	**822021305**	**822031305**	**822041305**	**822041305**	**822051305**

Please consult us if aggressive spray is used.
Max. operating pressure 400 bar, max. operating temperature 120 °C.
Further sizes and special versions are available on request

Parking station

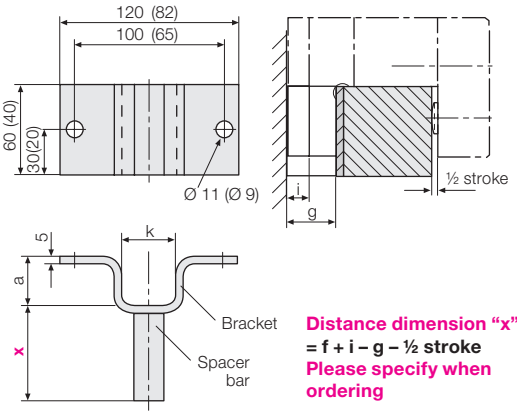
accommodates the sliding clamp during die change

T-slot as per DIN 650 [mm]		14	18	22	28
a	[mm]	21	25	33	43
k	[mm]	23	30	37	46
i	[mm]	8	10	14	18
g	[mm]	20	24	32	42

Parking station complete (with bracket and spacer bar)

	Part no.	**827541450**	**827541850**	**827542250**	**827542850**
Bracket	**Part no.**	**827541400**	**2754180**	**2754220**	**2754280**
Spacer bar	**Part no.**	**504951400**	**2754500**	**2754500**	**2754500**

Values in brackets for 14 mm T-slots

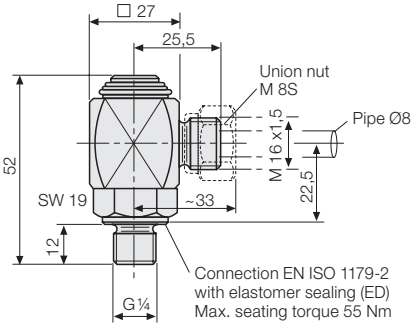


Distance dimension "x" = f + i – g – ½ stroke
Please specify when ordering

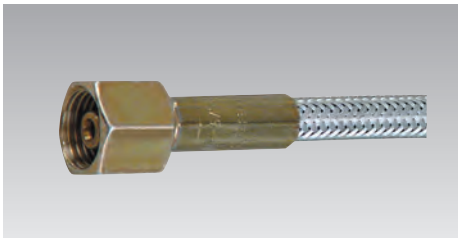
Angular rotary coupling (M 8S / G 1/4)

Part no. 9208176

For easier handling when changing dies.
Max. operating pressure 400 bar

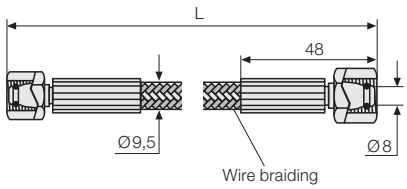


High-pressure hoses ND4



Technical data

Burst pressure	[bar]	2000
Smallest bending radius	[mm]	100
Further information see DIN 20066		



Notes on high pressure hoses

The freely selectable hose lengths should be generously dimensioned, in order to avoid kinking, abrasion marks, torsion, tensile and compressive stress and unacceptable bending radii. Protect against hot swarf.

Preferred lengths of the type 4500XXXX33
at both sides with hose connection
Union nut M 16 x 1.5 mm

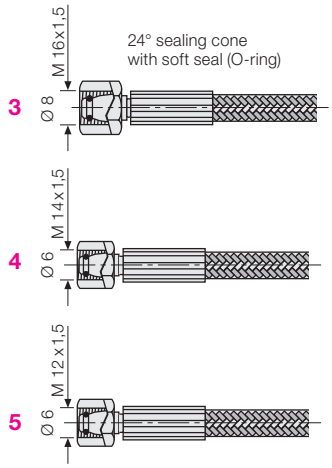
Length [mm]	**Part no.**
600	**270010131**
800	**270010133**
1200	**270010137**
1600	**270010141**

Code for part numbers for variable lengths and connections

4 500 XXXX X X

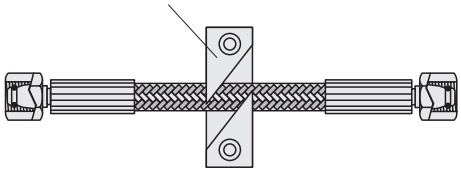
Internal hose diameter (mm)
Operating pressure
max. 500 bar
Hose length
L in mm
Hose connection on the left
Union nut
3 = M 16 x 1.5
4 = M 14 x 1.5
5 = M 12 x 1.5
Hose connection on the right
Union nut
3 = M 16 x 1.5
4 = M 14 x 1.5
5 = M 12 x 1.5

Hose connections on the left/right



Accessories

Hose holder made from Delrin
Part no. 550650003



Hydraulic power units

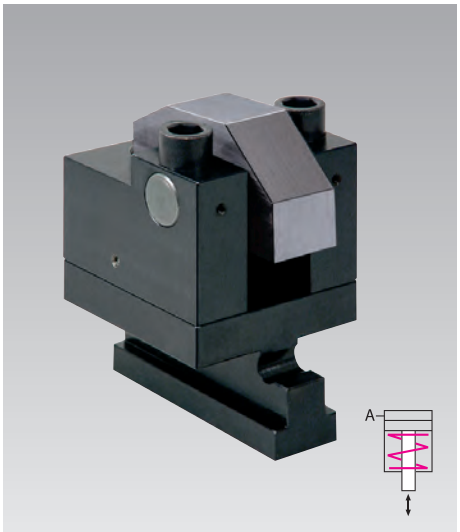
see product group 7

Hydraulic accessories

see product group 11

Angular Clamps, Hydraulic

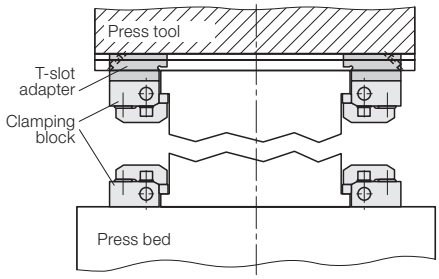
single acting, with spring return
max. operating pressure 400 bar, clamping force from 19 to 78 kN



Advantages

- Optimum force transmission
- Compact design
- Easy mounting
- Suitable for minimum clamping edges
- T-slot 18, 22, 28 and 36 mm are available
- Total stroke 5.5 – 6 mm
- Die standardisation with regard to the width and depth is not required
- Easy to retrofit

Installation option



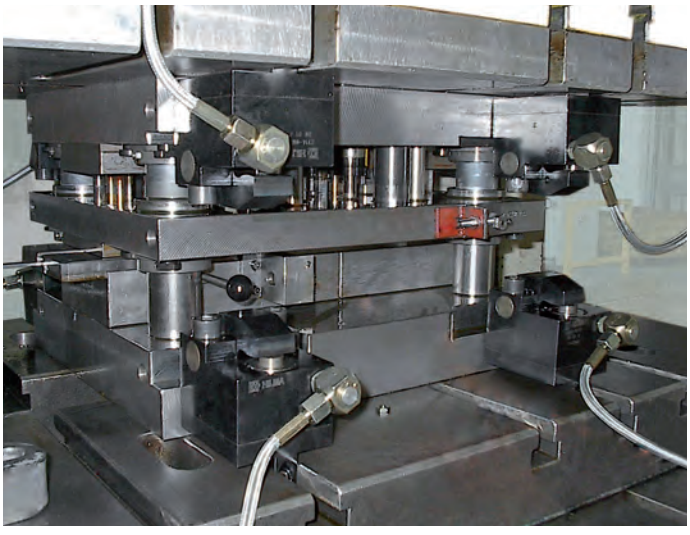
Application

Angular clamps are used for clamping and locking on machines and plants, on press bed and ram.
Due to the manageable and rounded design, angular clamps are especially suitable where space is limited and with small clamping edges. The use is possible at ambient temperatures up to a maximum of 120 °C.

Description

The angular clamp is manually placed in the T-slots provided in press ram or bed.
Clamping on the die clamping edge by the application of hydraulic pressure to the piston and unclamping by spring force.
The clamping block can also be directly screwed without T-slot adapter and can be ordered separately.

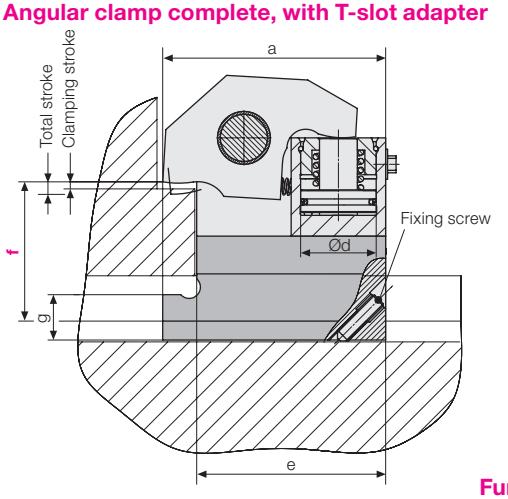
Application examples

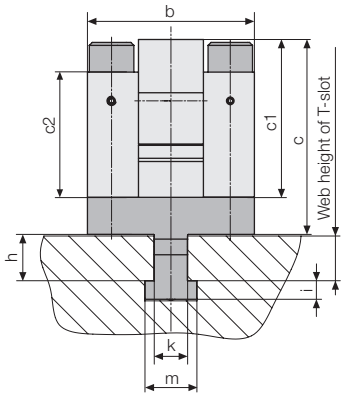


Angular clamp with T-slot adaptor in a high-speed punching press, the clamping force per clamping point is 66 kN

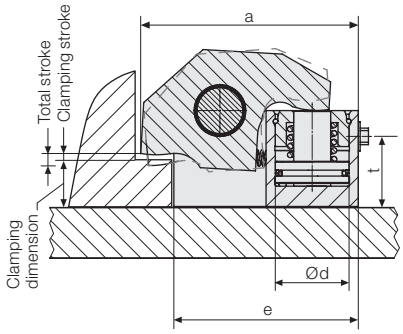
Angular clamp, hydraulic

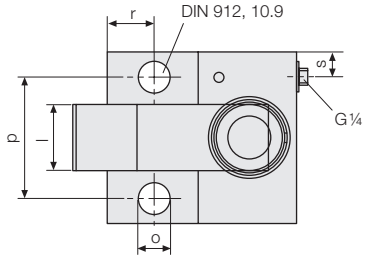
Angular clamp complete, with T-slot adapter



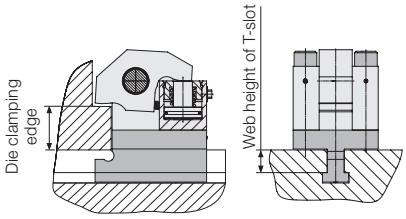


Clamping block separate, without T-slot adapter





Functional dimension "f":
= clamping stroke
+ die clamping edge
+ web height of T-slot
Please specify when ordering



Example of ordering

8 2314 2211 / F110

Angular clamp
Clamping force: 66 kN

T-slot
22 mm

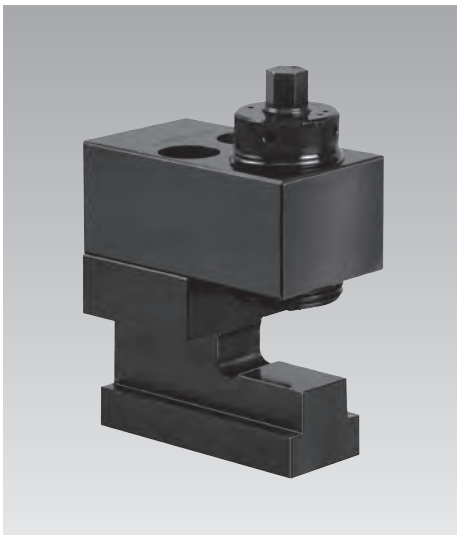
Functional dimension "f" [mm]
Please specify when ordering

T-slot as per DIN 650	**[mm]**	**18**	**22**	**22**	**28**	**28**	**36**
Clamping force at 400 bar	**[kN]**	**40**	**40**	**66**	**66**	**110**	**110**
Clamping force at 100 bar	**[kN]**	**10**	**10**	**16.5**	**16.5**	**27.5**	**27.5**
Total stroke	[mm]	5.5	5.5	6	6	6	6
Clamping stroke	[mm]	2.5	2.5	3	3	3	3
Clamping dimension	[mm]	±1	±1	±1.5	±1.5	±1.5	±1.5
Oil volume	[cm³]	6.5	6.5	10	10	16	16
Dimension "f" min.	**[mm]**	**61**	**66**	**76**	**83**	**97**	**107**
Dimension "f" max.	**[mm]**	**90**	**95**	**96**	**103**	**157**	**167**
a	[mm]	101	101	118	118	147	147
b	[mm]	75	75	90	90	120	120
c max. (at "f" min.)	[mm]	93	93	106	106	133	133
c1	[mm]	80	80	88	88	108	108
c2	[mm]	62.5	62.5	67.5	67.5	85.0	85.0
d	[mm]	32	32	40	40	50	50
e	[mm]	85	85	100	100	125	125
g	[mm]	24	32	32	42	41	53
h	[mm]	25	30	30	37	37	47
i	[mm]	10	14	14	18	18	23
k	[mm]	18	22	22	28	28	36
l	[mm]	25	25	35	35	55	55
m	[mm]	28	35	35	44	44	54
o	[mm]	12.5	12.5	16.5	16.5	22.0	22.0
p	[mm]	50	50	64	64	90	90
r	[mm]	20	20	25	25	30	30
s	[mm]	13	13	13	13	20	20
t	[mm]	32	32	38	38	45	45
Clamping block with T-slot adapter	**Part no.**	**823121802**	**823122202**	**823142211**	**823142811**	**823152811**	**823153611**
Weight	[kg]	4.0	4.4	6.7	7.4	14.2	15.5
Clamping block, separate	**Part no.**	**823120101**	**823120101**	**823140501**	**823140501**	**823150501**	**823150501**
Clamping dimension	[mm]	20.5 ±1	20.5 ±1	25 ±1.5	25 ±1.5	32 ±1.5	32 ±1.5
Weight	[kg]	2.6	2.6	4.0	4.0	8.6	8.6
Clamping block, separate with position monitoring	**Part no.**	**823120104**		**823140504**			

Please consult us if aggressive spray is used. Max. operating pressure 400 bar, max. operating temperature 120 °C.
Further sizes and special versions are available on request.

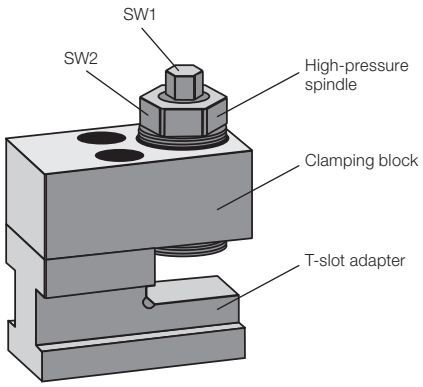
WZ 6.2210

Sliding Clamps, Mechanical
with integral high-pressure spindle clamping force 40 and 80 kN



Advantages

- Easy to retrofit
- Temperature resistance up to 250 °C
- Compact design
- Simple operation
- High clamping force with low torque
- Clamping force 40 kN and 80 kN
- Large clamping edge tolerances are possible
- Self-locking due to patented wedge system
- Die standardisation with regard to the width and depth is not required



Application

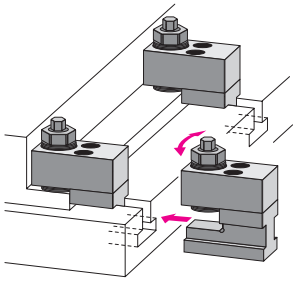
- Clamping and locking of dies on press bed and ram
- On machine tool tables
- When the available space is limited

Description

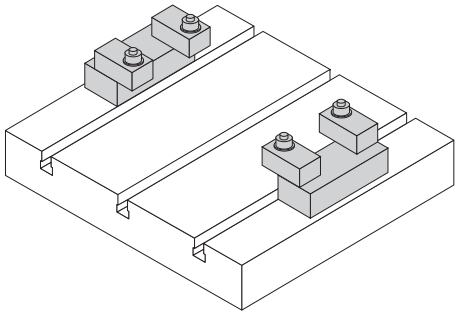
The sliding clamp is manually placed in the T-slots and screwed against the die clamping edge. Once the high-pressure spindle has been adjusted to suit the height of the clamping edge, the clamping force is built up by turning the hexagon nut (SW 1) in a clockwise direction. The clamping force achieved depends on the set tightening torque of the torque wrench.

The clamping block can also be directly screwed without T-slot adapter and can be ordered separately. When using the clamping block without T-slot adapter, the high-pressure spindle is to be manually screwed against the clamping edge so that there is no play.

Installation examples



Clamping block with T-slot adapter

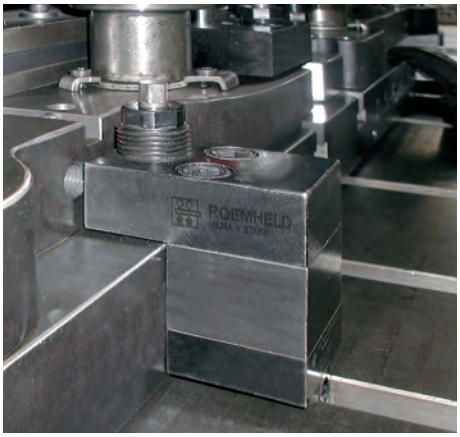


Clamping block with integral high-pressure spindle mounted on spacer bars

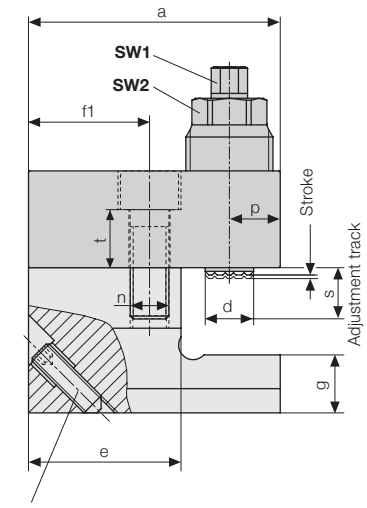
Important notes!

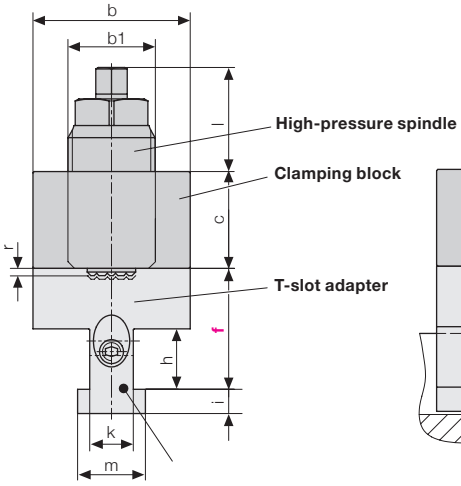
Before applying the tightening torque, the high-pressure spindle must be screwed against the clamping edge so that there is no play.
If the parts are not rigid, tighten the high-pressure spindle using the hexagon nut SW2 until there is no play.

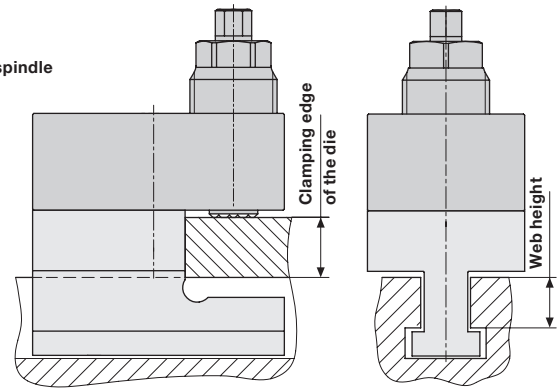
Application example

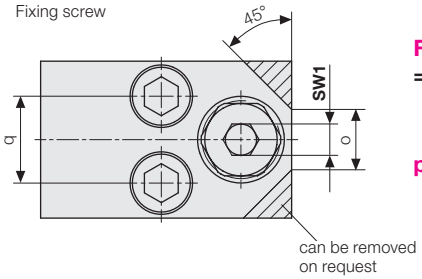


Use of mechanical sliding clamps on a machine table









Functional dimension "f":
= die clamping edge
+ web height of T-slot
+ 4 mm

please specify when ordering

Example of ordering

2212-185/ F80

Sliding clamp
mechanical
T-slot 18 mm
Clamping force 40 kN

Functional dimension "f"
= 80 [in mm]

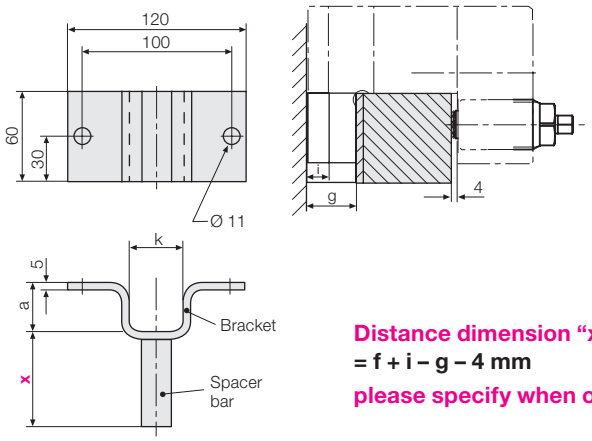
please specify when ordering

Technical data

T-slot as per DIN 650	**[mm]**	**18**	**22**	**28**
Clamping force	**[kN]**	**40**	**40**	**80**
Clamping stroke	[mm]	1.5	1.5	2.2
Max. tightening torque	[Nm]	30	30	70
Max. operating temperature	[°C]	250	250	250
a	[mm]	104	104	126
b	[mm]	65	65	80
b1	[mm]	M 36 x 3	M 36 x 3	M 48 x 3
c	[mm]	40	40	50
d	[mm]	19	19	28
e	[mm]	63	63	72
f min. – max.	[mm]	50 – 106	56 – 106	72 – 131
f1	[mm]	50	50	57
g	[mm]	24	32	42
h	[mm]	25	30	37
i	[mm]	10	14	18
k	[mm]	18	22	28
l	[mm]	50	50	60
m	[mm]	28	35	44
n (screw DIN 912, 10.9)	[mm]	M 16	M 16	M 20
o	[mm]	24	24	30
p	[mm]	21	21	27
q	[mm]	36	36	43
r	[mm]	3	3	3
Max. adjustment track s	[mm]	30	30	35
t	[mm]	24	24	29
SW 1	[mm]	13	13	17
SW 2	[mm]	30	30	41
Clamping block with T-slot adapter				
Weight	[kg]	3.7	4.0	6.5
Part no.		**2212185**	**2212225**	**2213285**
Clamping block, separate				
Weight	[kg]	2.3	2.3	4.0
Part no.		**2212111**	**2212111**	**2213111**

Accessory

Parking station accommodates the sliding clamp during die change



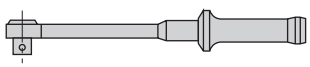
Distance dimension "x"
= f + i – g – 4 mm

please specify when ordering

Part numbers

T-slot as per DIN 650	**[mm]**	**18**	**22**	**28**
a	[mm]	25	33	43
k	[mm]	30	37	46
i	[mm]	10	14	18
g	[mm]	24	32	42
Parking station complete				
with bracket and spacer bar		**827541850**	**827542250**	**827542850**
Bracket separate		**2754180**	**2754220**	**2754280**
Spacer bar separate		**2754500**	**2754500**	**2754500**

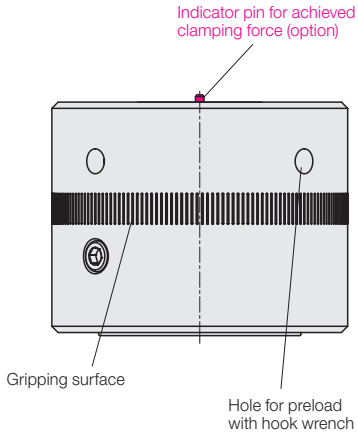
Torque wrench 20 – 100 Nm
Part no. 937926610



WZ 6.2276

Clamping Nuts, Hydro-Mechanical
with through-hole thread and optional clamping force display

Advantages
- Temperature resistance up to 120 °C
- Safe clamping with visual clamping force display (as an option)
- High clamping force with low torque
- Easy to retrofit
- Clamping nut with through-hole thread, therefore high adaptability to varying heights of clamping edges and tolerances
- No need for adaptation of the tie rod length
- Easy clamping and unclamping by hand
- Maintenance free
- Maximum force density in the smallest space



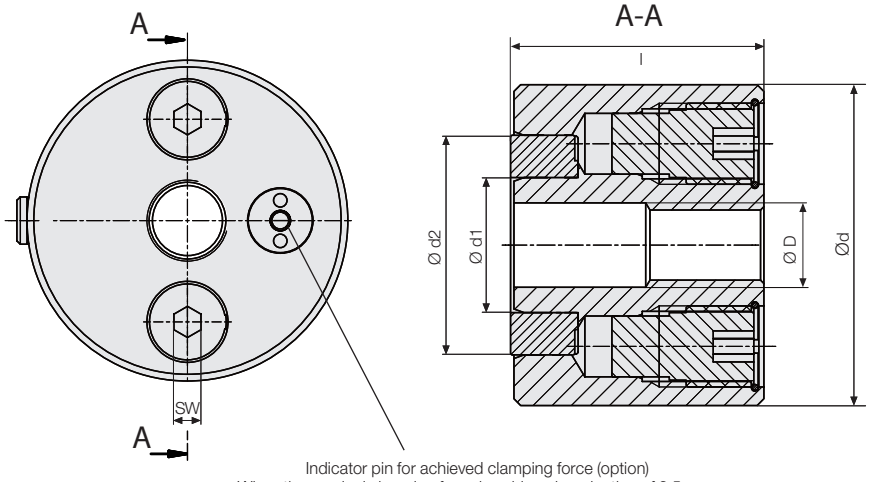
Application
- Clamping and locking of dies on press bed and ram
- When highest clamping force is required in the smallest possible space
- If no hydraulic power unit is available

Description
Following manual positioning of the clamping nut against the clamping edge, the integral hydraulic cushion is preloaded by turning the hexagon socket. A low torque is transmitted to a high clamping force.
For the version without clamping force display, use a torque wrench to ensure safe and defined build-up of the clamping force.
In the version with clamping force display, the clamping force indicator pin projects approx. 2.5 mm when the clamping force is reached.

Admissible temperature difference ± 20 °C

Temperature resistance up to max. 120 °C.

Clamping nut
with two tightening screws



Technical data

Clamping force	[kN]	15	30	60	100	100	150
Max. stroke*	[mm]	2	2	2	2	2	2
Tightening torque	[Nm]	9	9	9	30	30	40
D		M 12	M 16	M 20	M 24	M 30	M 30
d	[mm]	47	56	70	95	108	112
d1	[mm]	20	25	30	40	48	50
d2	[mm]	33	37	50	65	70	80
SW	[mm]	6	6	8	8	8	10
l	[mm]	54	61	71	75	75	90
Weight	[kg]	0.7	1.0	2.0	3.7	4.8	6.1
Clamping nut without T-bolt **without clamping force display**	**Part no.**	**–**	**–**	**822750001**	**822760001**	**–**	**822770001**
Clamping nut without T-bolt **with clamping force display****	**Part no.**	**822730002**	**822740002**	**822750002**	**822760002**	**822760005**	**822770002**

* Stroke at maximum adjustment of tightening screws. Before activating the tightening screws preload nut with hook wrench.
** Torque wrench is not required.

Accessories

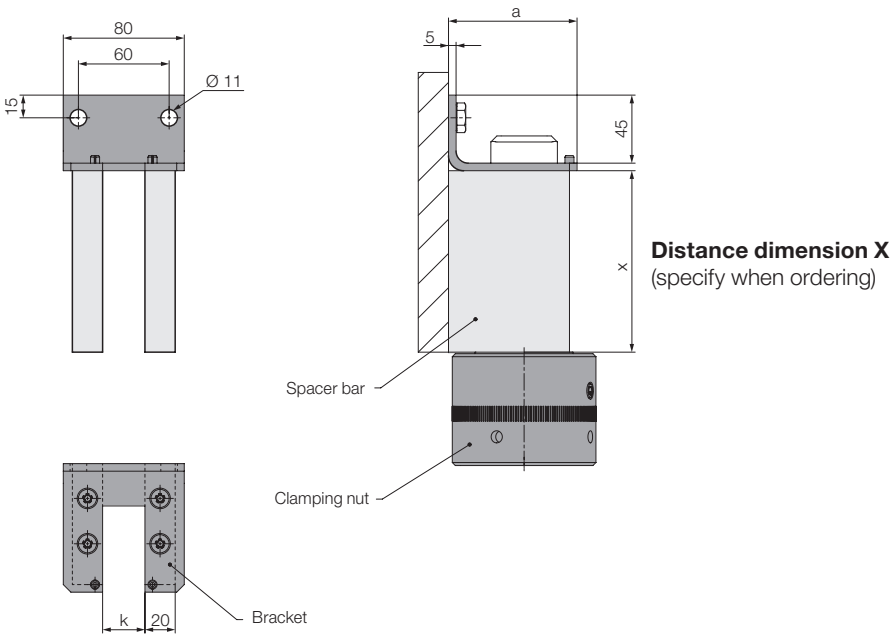
T-bolt, separate

For T-slot	[mm]	14	18	22	28	36
Thread		M12	M16	M20	M24	M30
Length	[mm]	160	160	200	250	250
Property class		8.8	12.9	12.9	12.9	8.8
Weight	[kg]	0.16	0.29	0.58	1.1	1.8
Part no.		**5700142**	**5700022**	**5700023**	**5700024**	**5700048**

Parking station during die change

Bracket mounted with spacer bars (without connecting block)	Part no.	827531430	827531830	827532230	827532830	827533630
T-slot width k	[mm]	14	18	22	28	36
a	[mm]	65	70	72	85	90
Bracket, separate	**Part no.**	**2753140**	**2753180**	**2753220**	**2753280**	**2753360**

Special designs on request



Distance dimension X
(specify when ordering)

ROEMHELD
HILMA ▪ STARK

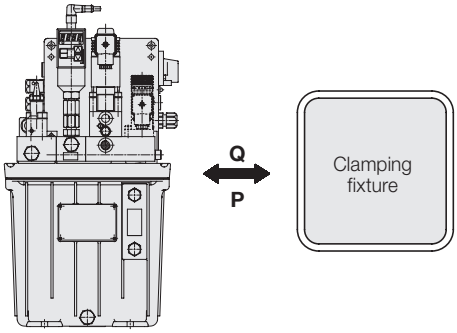
WZ 7.1600

Power units Series D 8.0115

ready for connection*, energy-saving intermittent cycling
max. flow rate 0.82/2.1/3.5 l/min, max. operating pressure 500/250/160 bar

Advantages

- Very compact design
- Energy-saving intermittent cycling
- Many control variants
- Electronic pressure switch
- Digital pressure display
- Quick pressure adjustment by teach-in function
- Electric control optimally adapted
- High-quality leakage-free poppet valves
- Pressure generator also without valves available
- Useful accessory already mounted
- Alternatively manual switch or foot switch
- Ready for connection*



Application

These power units are especially suitable for the operation of small to medium-sized hydraulic clamping fixtures.
Maximally two clamping circuits for single or double-acting cylinders are available, that can be controlled independently of each other.
Thereby also “shuttle machining” is possible, i.e. that during machining of the workpiece in one fixture, workpiece change on the second fixture can be made.

Description

A special feature is the mounting of pump and electric motor in the reservoir. Thus hydraulic and electric control can be arranged in a space-saving way and easily accessible on the reservoir cover. The modular design enables a multitude of control variants.
The radial piston pump is available with three different flow rates and operating pressures.
To allow an energy-saving intermittent cycling only leakage-free poppet valves are used.

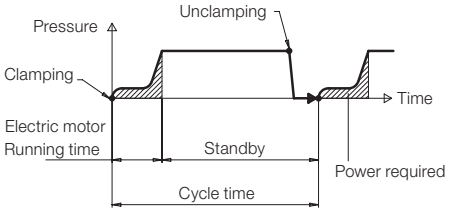
Important notes

These power units are exclusively designed for the industrial use of pressure generators for hydraulic clamping fixtures that allow intermittent cycling (see example).
All connected hydraulic components must be leakage-free and designed for the maximum operating pressure of the power unit.
The power unit supplies very high pressures. The connected clamping cylinders generate very high forces so that there is a permanent danger of crushing in the effective area of the piston rod. The manufacturer of the fixture or the machine is obliged to provide effective protection devices.
Installation, start up and maintenance have to be made according to the supplied operating instructions by authorised experts.

Energy-saving intermittent cycling

The electric motor is only running, as long as hydraulic oil is really required, that means to
- extend and retract the clamping cylinder
- build up the operating pressure

Example
Pressure-time diagram for single-acting clamping cylinders



In this example of a hydraulic clamping fixture the running time of the electric motor corresponds to the clamping time, which is only a few seconds.
In standby mode the power consumption is relatively low (see Electrical data).
Prerequisits are leakage-free clamping elements, valves and accessories.
The pressure control is made by an electronic pressure switch, that switches on the electric motor for a short time in case of a pressure drop.

Safety features

- Operating pressure infinitely adjustable, therefore precisely defined clamping force
- Electronic pressure switch with digital pressure display
- Repeatability ± 1 bar
- Pressure drop max. 10 %
- Hermetically sealed poppet valves
- Screen disks in the valve ports
- No pressure drop in case of power failure (see page 4)
- Control voltage 24 V DC
- Machine tool interlock (optional)
- Oil level and temperature control (optional)

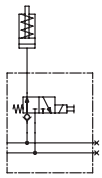
* Delivery

The power units are delivered ready for connection, i.e. after filling of hydraulic oil and connection of the hydraulic and electric lines they are ready for operation.

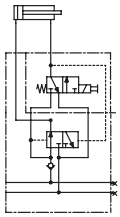
Control variants

1 clamping circuit

single acting

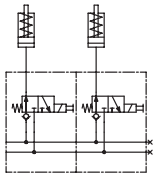


double acting

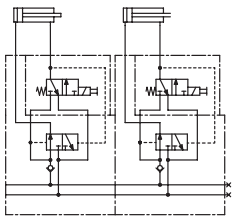


2 clamping circuits

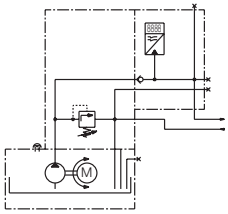
single acting



double acting



Without valve



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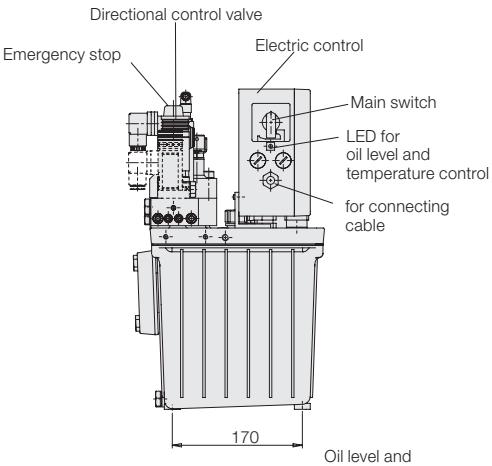
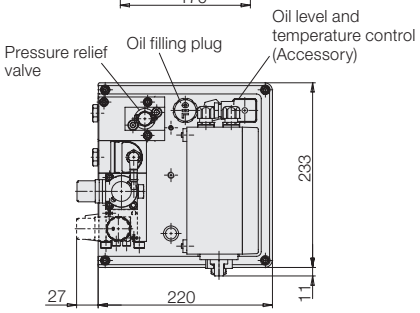




Switch (Clamping-Unclamping)

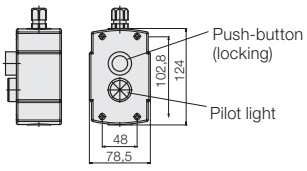
The power units are alternatively delivered with connected manual or foot switch (see chart). The pilot light in the switch signals:

1. Switch in clamping position
2. he adjusted clamping pressure is available

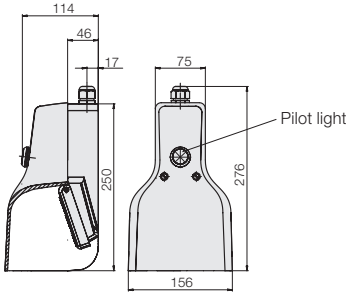
Important note!

This message signals that the clamping pressure is available at the electronic pressure switch of the power unit. The actual pressure of the clamping fixture can only be controlled by an installed pressure switch installed on the fixture (see machine tool interlock).

Manual switch

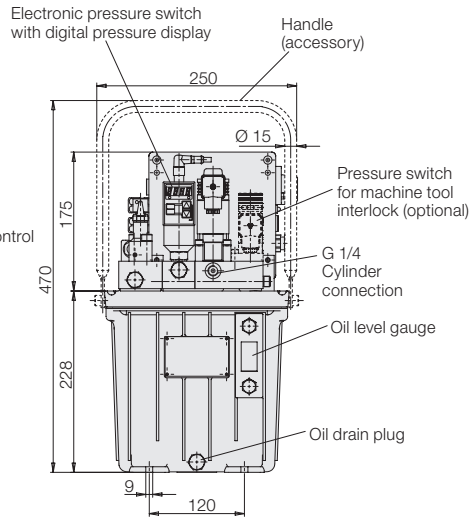


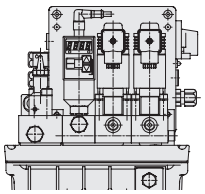
Foot switch

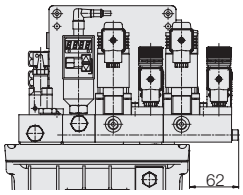


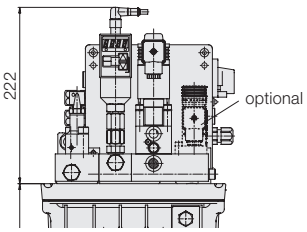
For start up it is imperative to pay attention to the supplied operating instructions!

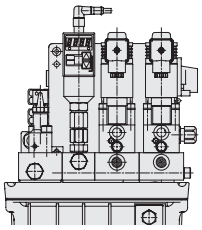
Note
Power unit with manual switch for coupling systems see ROEMHELD data sheet F 9.425.

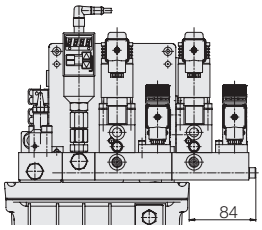


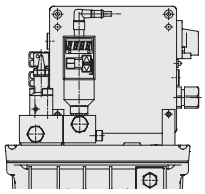












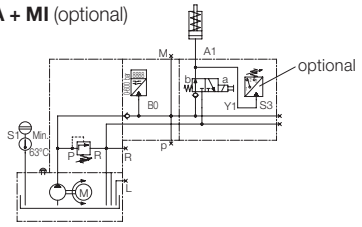
Hydraulic circuit diagrams

SA = Single-acting cylinders

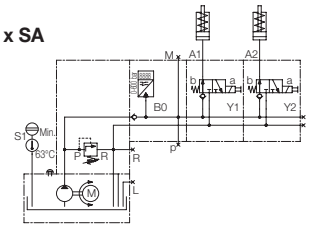
DA = Double-acting cylinders

MI = Machine tool interlock by additional pressure switch

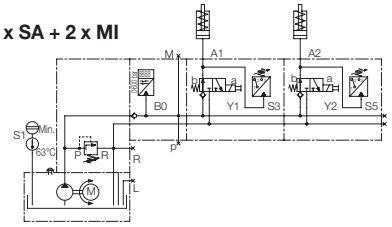
SA + MI (optional)



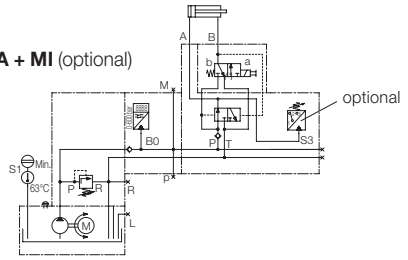
2 x SA



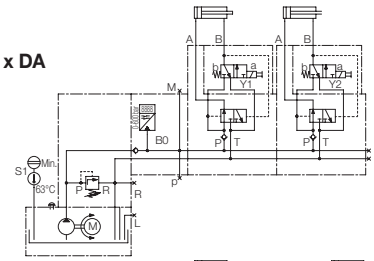
2 x SA + 2 x MI



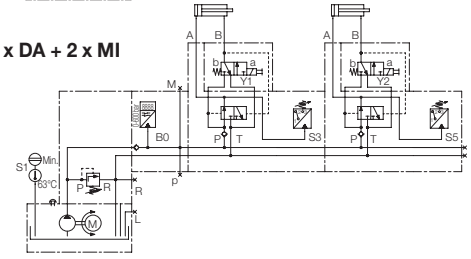
DA + MI (optional)



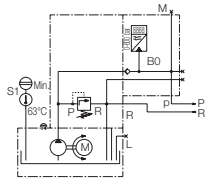
2 x DA

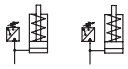
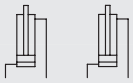
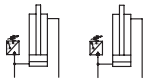


2 x DA + 2 x MI



Without valves



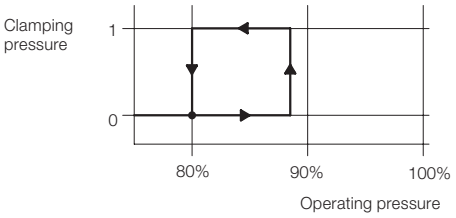
Cylinder type SA / DA without / with Pressure switch MI* (at power unit)	Directional control valve 3/2	Directional control valve 4/2	Electric control	Terminal box	Manual switch	Foot switch	without	Flow rate / max. operating pressure 13.67 0.82 500 Part no.	35 2.1 250 Part no.	58.5 3.51 160 Part no.	[cm³/s] [l/min] [bar] Weight [kg]
	1		•		1			**8405121**	**8405221**	**8405321**	29.5
	1		•			1		**8405122**	**8405222**	**8405322**	30.5
	1		•				•	**8405131**	**8405231**	**8405331**	28.5
	1			•			•	**8405141**	**8405241**	**8405341**	28
	1		•		1			**8405181**	**8405281**	**8405381**	30.5
	1		•			1		**8405182**	**8405282**	**8405382**	31.5
	1		•				•	**8405187**	**8405287**	**8405387**	29.5
	1			•			•	**8405143**	**8405243**	**8405343**	29
	2		•		2			**8405105**	**8405225**	**8405325**	31.5
	2		•			2		**8405106**	**8405226**	**8405326**	33.5
	2		•				•	**8405113**	**8405233**	**8405333**	29.5
	2			•			•	**8405142**	**8405242**	**8405342**	29
	2		•		2			**8405185**	**8405285**	**8405385**	32.5
	2		•			2		**8405186**	**8405286**	**8405386**	33.5
	2		•				•	**8405189**	**8405289**	**8405389**	31.5
	2			•			•	**8405145**	**8405245**	**8405345**	29
		1	•		1			**8405109**	**8405209**	**8405309**	30
		1	•			1		**8405111**	**8405211**	**8405311**	31
		1	•				•	**8405112**	**8405212**	**8405312**	29
		1		•			•	**8405147**	**8405247**	**8405347**	28.5
		1	•		1			**8405117**	**8405217**	**8405317**	31
		1	•			1		**8405118**	**8405218**	**8405318**	32
		1	•				•	**8405119**	**8405219**	**8405319**	30
		1		•			•	**8405148**	**8405248**	**8405348**	29.5
		2	•		2			**8405107**	**8405207**	**8405307**	32.5
		2	•			2		**8405108**	**8405208**	**8405308**	33.5
		2	•				•	**8405115**	**8405215**	**8405315**	31.5
		2		•			•	**8405146**	**8405246**	**8405346**	31
		2	•		2			**8405137**	**8405237**	**8405337**	34
		2	•			2		**8405138**	**8405238**	**8405338**	35
		2	•				•	**8405139**	**8405239**	**8405339**	33
		2		•			•	**8405140**	**8405240**	**8405340**	33
-	-	-	•				•	**8405110**	**8405210**	**8405310**	27.5

***) Machine tool interlock**

As an option, every clamping circuit is checked by an additional pressure switch, which has to be electrically connected directly to the control of the processing machine.

Messages:

1. Clamping pressure available
   → Workpiece can be machined
2. Clamping pressure dropped below 80 %
   → Stop machining immediately



The switching point must be adjusted to 80% of the adjusted clamping pressure.

Note

If the pressure must be frequently changed, the electronic pressure switch is easier to adjust (identification letter “E”).

Handle “B”

With the handle, the power unit can be easily transported by two persons to different places of installation.

Example of ordering

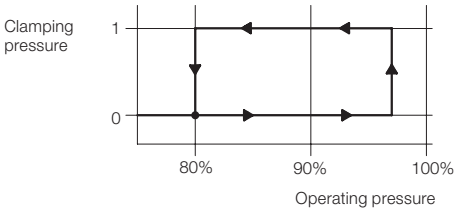
Power unit 8405221 with handle

Part no. 8405221B

Electronic pressure switch for machine tool interlock “E”

(instead of the mechanical pressure switch)

The lower switching point (80 % of the clamping pressure) of electronic pressure switches is firmly programmed and can be stored in teach mode for every desired clamping pressure by pressing a button.

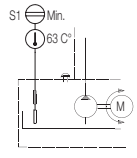


Example of ordering

Power units 8405185 with two electronic pressure switches for machine tool interlock

Part no. 8405185E

Oil level and temperature control “T”



The oil level and temperature control is installed in the reservoir cover and electrically connected to the control box. In case of an error message, the control LED below the main switch is lit.

Possible errors:

1. Oil filling quantity < 2.3 l
   Shortage 0.7 l below the minimum oil level gauge.
   Required refilling quantity min.1.5 l
2. Oil temperature > 63 °C

Important note!

As long as the error message is available the electric motor does no longer start to avoid damages due to overheating. This means that in the case of a pressure drop the pump does not deliver!!!

Recommendation

Above all with automated operation the oil level and temperature control should only be used for machine tool interlock in combination with pressure switches. This is the only way to ensure that during the switch-off of the electric motor the workpiece machining will be interrupted in the case of a pressure drop of more than 20 %.

Example of ordering

Power unit 8405238 with machine tool interlock and oil level and temperature control

Part no. 8405238T

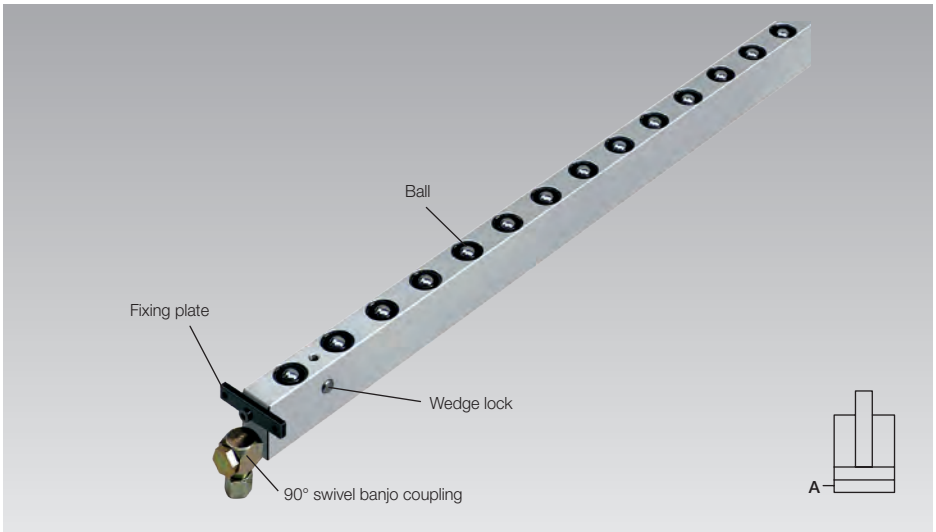
Different combinations

The three options described above are also available in combination. When placing the order please stick to the following sequence :

“T” + “B”	8405 XXX**TB**
“T” + “E”	8405 XXX**TE**
“B” + “E”	8405 XXX**BE**
“T” + “B” + “E”	8405 XXX**TBE**

WZ 8.18341

Ball Bars, Hydraulic
with lifting of the individual balls
max. load 70 kN/m, max. operating pressure 100 bar



Advantages

- Easy and safe die change
- Variant program with many selection possibilities
- Hydraulic lifting of each individual ball
- Variable length in a single piece design up to 2900 mm
- Slot depth, ball spacing and bar length configurable for every application
- Low weight (version in aluminium)

Application

- In T-slots and rectangular slots of the press bed for easy die change without any problems
- Die change streamlining

Delivery

- Ball bar
- Fixing plate
- 90° swivel banjo coupling

Description

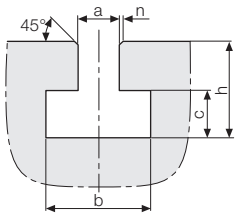
Ball bar with hydraulic lifting of the individual balls for medium loads and flexible horizontal movement of the dies.
Oil pressure is applied to lift each ball insert individually. The die positioned on the ball bars is not in contact with the table top and can be easily moved and positioned.

Technical data

Max. operating pressure	[bar]	100
Max. load	[kN/m]	70
Ball spacing		flexible
Material of the bar		aluminium or steel
Max. temperature	[°C]	with aluminium bars: 100 with steel bars: 250
Fixing of the bar		fixing plate or wedge lock
Max. bar length*	[mm]	variable* up to 2900

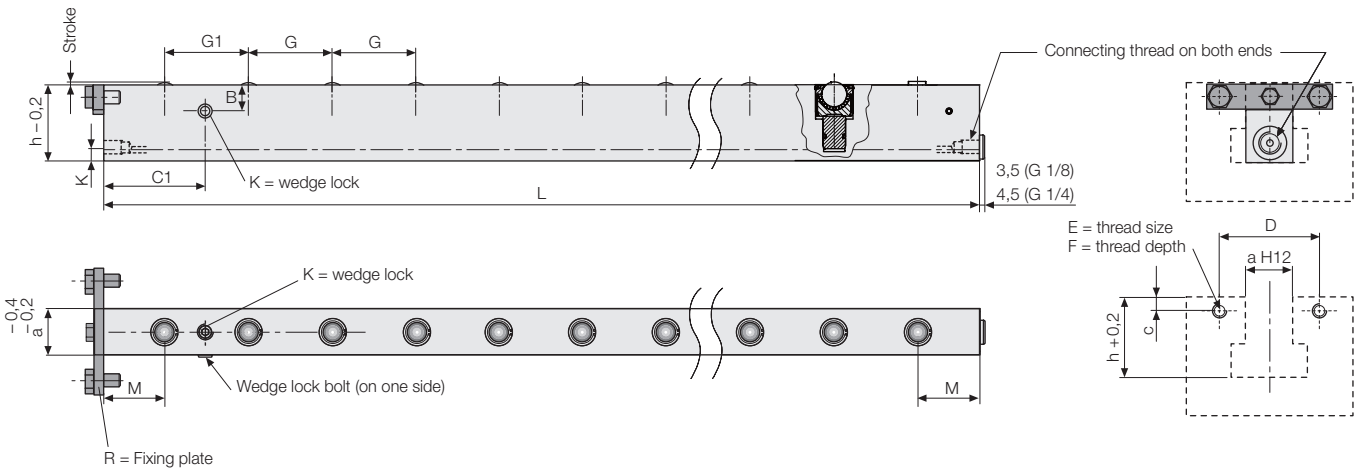
* The minimum bar lengths depends on the ball spacing G with at least 3 balls (see page 2)

T-slot tolerances as per DIN 650



a	b	c	h min.	h max.	n max.
18 H12	30^{+2}	12^{+2}	**30**	36	1.6
22 H12	37^{+3}	16^{+2}	**38**	45	1.6
28 H12	46^{+4}	20^{+2}	**48**	56	1.6
36 H12	56^{+4}	25^{+3}	**61**	71	2.5

Dimensions in mm
$\mathbf{h_{min.}}$ = minimum dimension as per DIN 650



Technical data

Slot width (a)	**[mm]**	**18**	**22**	**28**	**36**	**13/16"**	**1 1/16"**
Slot depth min. (h)	[mm]	29.5	37	42	53	29.4	37.4
Slot depth standard (h)	**[mm]**	**30**	**38**	**48**	**61**	**29.4**	**38.9**
Slot depth max.** (h)	[mm]	45	55	60	75	40	58
Ball spacing G min.	[mm]	20	23	28	34	20	23
Ball spacing G1 min.	[mm]	26	32	37	43	26	32
Ball spacing G/G1 standard	**[mm]**	**30**	**40**	**45**	**50**	**30**	**40**
Ball spacing G/G1 max.	[mm]	60	80	90	100	60	80
L min.	[mm]	*)	*)	*)	*)	*)	*)
L max.	[mm]	2900	2900	2900	2900	2900	2900
Stroke	[mm]	1	2	2	2	1	2
Longer stroke	[mm]	–	–	3	3	–	–
Load/ball	[kN]	0.79	1.1	1.5	2.5	0.79	1.1
Connecting thread		G ⅛	G ⅛	G ¼	G ¼	G ⅛	G ¼
Oil volume/ball insert	[cm³]	0.08	0.23	0.31	0.51	0.08	0.23
B	[mm]	12	16	16	16	12	16
C	[mm]	5	7	9	10	5	7
C1	[mm]	35	46	51	56.5	35	46
D	[mm]	36	40	50	55	36	40
E	[mm]	M5	M5	M6	M6	M5	M5
F	[mm]	8	8	12	12	8	8
K	[mm]	8	8.5	11	11	8	11
M	[mm]	22.5	30	32.5	35	22.5	30

*) L min. depends on the ball spacing G with at least 3 balls
**) only with steel bars
Fixing plate and 90°elbow coupling are included in the delivery.

Product configurator

For the selection and configuration of roller and ball bars, a product configurator is available on our website.
After entering the parameters, the configurator determines the desired roller or ball bars with all technical data and the identification number of the characteristics which are identical with the order number. In addition, a drawing with all dimensions will be provided.

Link to the configurator:
www.roemheld-gruppe.de/productconfigurator/?lang=en

Code for part numbers
Variant program

Ball bars with hydraulic lifting are individually configured and manufactured depending on the application.
Within the limits specified in the measurement chart, the following parameters can be selected based on a code for part numbers:
bar material, slot width, bar lengths, fixation, slot depth, ball spacing and ball orientation.

- **Stroke**
  The ball bar is equipped with standard stroke (1 or 2 mm). For slot width 28 and 36, alternatively a larger stroke of 3 mm is available.

- **Bar material / operating temperature**
  Aluminium or steel can be selected as bar material. For operating temperatures > 100 °C, a steel version is required. Depending on the temperature range, the admissible carrying force of the ball bars is reduced:

  up to 100 °C: 100 % of the carrying force
  > 100 – 150 °C: 95 % of the carrying force
  > 150 – 200 °C: 70 % of the carrying force
  > 200 – 250 °C: 60 % of the carrying force

  e.g. steel up to 200 °C with 70 % of the carrying force

- **Slot width (a)**
  Selection from the table on page 2

  e. g. a = 28 mm

- **Bar lengths (L)**
  Depending on the ball spacing (G) and the parameter (M) results the possible bar length. Indicate the desired length (e.g. bed length) for your ball bar. Please note that a ball bar must be equipped with at least 3 balls.

  e.g. L = 1445 mm

- **Fixation**
  K = wedge lock
  R = fixing plate

  e.g. fixing plate = R

- **Slot depth (h)**
  If the slots in your application are lower than the default value, specify the corresponding dimension (up to h min.)
  For slots which are deeper than the default value, spacer bars can be inserted. For steel versions, specify the corresponding dimension (up to h max.).

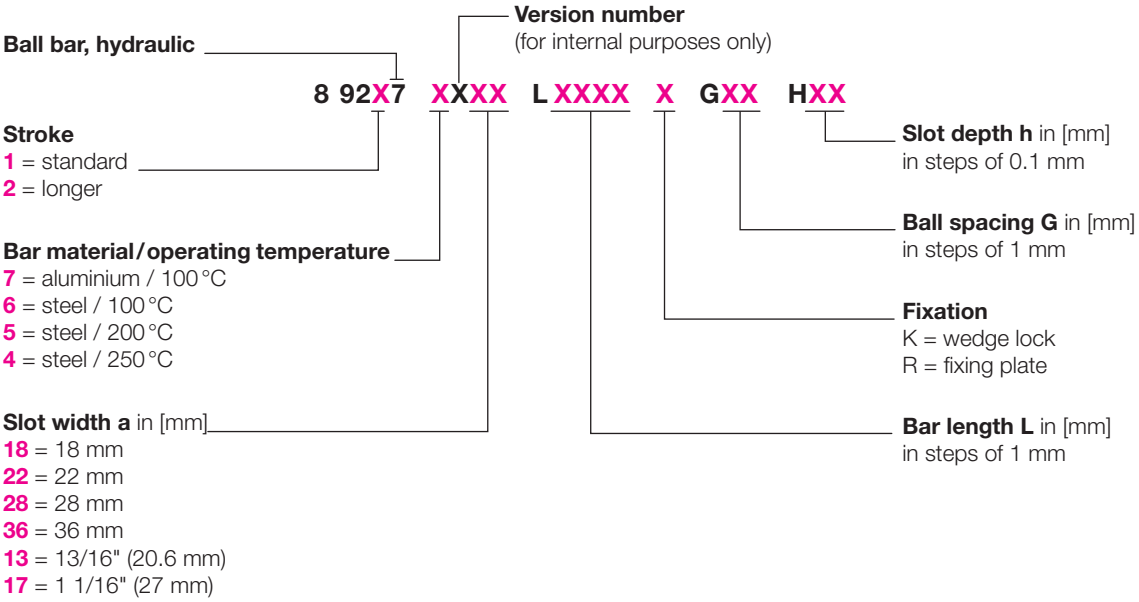
  e.g. h = 43 mm

- **Ball spacing (G) or load of the bar**
  By changing the spacing of the balls, the load of the ball bar can be varied. Please note that the load is indicated for the full length of the bar. Therefore, both the load and the ball spacing must be selected to suit the die weight and the die supporting length.
  Please indicate the desired ball spacing or load of the ball bar, or the maximum die weight and the die dimensions.

Note for the calculation of the bar length
The spacing of the first two balls G1 is limited by the position of the wedge lock.
The following applies: G = G1, however when selecting G < G1 min the spacing G1 will not be reduced below the minimum value.

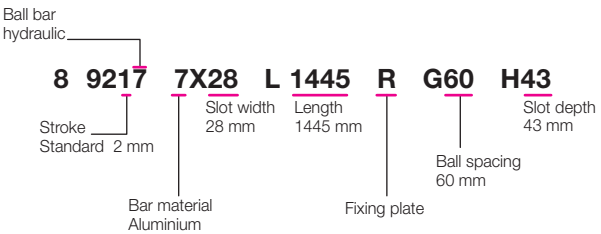
e.g. G = 60 mm
or **load per bar = 36 kN**
or **number of balls = 24**
or **die weight and exterior dimensions**

Code for part numbers
Variant program



Page 4 shows an example of the part numbers for aluminium bars with standard ball spacing “G” and standard slot depth “h”.

Example of ordering



Extract from the possible variants for ball bars
with standard ball spacing “G”, standard slot depth “h” and bar material aluminium

for slot width a = 18 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
105	2.3	3	**892177118 L 105 R**
135	3.1	4	**892177118 L 135 R**
165	3.9	5	**892177118 L 165 R**
195	4.7	6	**892177118 L 195 R**
255	6.3	8	**892177118 L 255 R**
315	7.9	10	**892177118 L 315 R**
375	9.4	12	**892177118 L 375 R**
435	11.0	14	**892177118 L 435 R**
495	12.6	16	**892177118 L 495 R**
555	14.2	18	**892177118 L 555 R**
615	15.8	20	**892177118 L 615 R**
675	17.3	22	**892177118 L 675 R**
735	18.9	24	**892177118 L 735 R**
795	20.5	26	**892177118 L 795 R**
855	22.1	28	**892177118 L 855 R**
915	23.7	30	**892177118 L 915 R**
other lengths are possible up to max. 2895			
2895	75.8	96	**892177118 L 2895 R**

for slot width a = 22 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
140	3.3	3	**892177122 L 140 R**
180	4.4	4	**892177122 L 180 R**
220	5.5	5	**892177122 L 220 R**
260	6.6	6	**892177122 L 260 R**
340	8.8	8	**892177122 L 340 R**
420	11.0	10	**892177122 L 420 R**
500	13.2	12	**892177122 L 500 R**
580	15.4	14	**892177122 L 580 R**
660	17.6	16	**892177122 L 660 R**
740	19.8	18	**892177122 L 740 R**
780	20.9	19	**892177122 L 780 R**
820	22.0	20	**892177122 L 820 R**
900	24.2	22	**892177122 L 900 R**
980	26.4	24	**892177122 L 980 R**
1060	28.6	26	**892177122 L 1060 R**
1140	30.8	28	**892177122 L 1140 R**
1220	33.0	30	**892177122 L 1220 R**
1300	35.2	32	**892177122 L 1300 R**
other lengths are possible up to max. 2900			
2900	79.2	72	**892177122 L 2940 R**

for slot width a = 28 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
155	4.5	3	**892177128 L 155 R**
200	6.0	4	**892177128 L 200 R**
245	7.5	5	**892177128 L 245 R**
290	9.0	6	**892177128 L 290 R**
380	12.0	8	**892177128 L 380 R**
470	15.0	10	**892177128 L 470 R**
560	18.0	12	**892177128 L 560 R**
650	21.0	14	**892177128 L 650 R**
695	22.5	15	**892177128 L 695 R**
740	24.0	16	**892177128 L 740 R**
830	27.0	18	**892177128 L 830 R**
920	30.0	20	**892177128 L 920 R**
965	31.5	21	**892177128 L 965 R**
1010	33.0	22	**892177128 L 1010 R**
1100	36.0	24	**892177128 L 1100 R**
1190	39.0	26	**892177128 L 1190 R**
1280	42.0	28	**892177128 L 1280 R**
other lengths are possible up to max. 2900			
2900	96	64	**892177128 L 2945 R**

for slot width a = 36 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
170	7.5	3	**892177136 L 170 R**
220	10.0	4	**892177136 L 220 R**
270	12.5	5	**892177136 L 270 R**
320	15.0	6	**892177136 L 320 R**
420	20.0	8	**892177136 L 420 R**
520	25.0	10	**892177136 L 520 R**
620	30.0	12	**892177136 L 620 R**
720	35.0	14	**892177136 L 720 R**
820	40.0	16	**892177136 L 820 R**
920	45.0	18	**892177136 L 920 R**
1020	50.0	20	**892177136 L 1020 R**
1120	55.0	22	**892177136 L 1120 R**
1220	60.0	24	**892177136 L 1220 R**
1320	65.0	26	**892177136 L 1320 R**
other lengths are possible up to max. 2870			
2870	142.5	57	**892177136 L 2920 R**

for slot width a = 13/16”

Length (L) [mm]	Load [kN]	Number of balls	Part no.
105	2.3	3	**892177113 L 105 R**
135	3.1	4	**892177113 L 135 R**
165	3.9	5	**892177113 L 165 R**
195	4.7	6	**892177113 L 195 R**
255	6.3	8	**892177113 L 255 R**
315	7.9	10	**892177113 L 315 R**
375	9.4	12	**892177113 L 375 R**
435	11.0	14	**892177113 L 435 R**
495	12.6	16	**892177113 L 495 R**
555	14.2	18	**892177113 L 555 R**
615	15.8	20	**892177113 L 615 R**
675	17.3	22	**892177113 L 675 R**
735	18.9	24	**892177113 L 735 R**
795	20.5	26	**892177113 L 795 R**
855	22.1	28	**892177113 L 855 R**
915	23.7	30	**892177113 L 915 R**
other lengths are possible up to max. 2895			
2895	75.8	96	**892177113 L 2925 R**

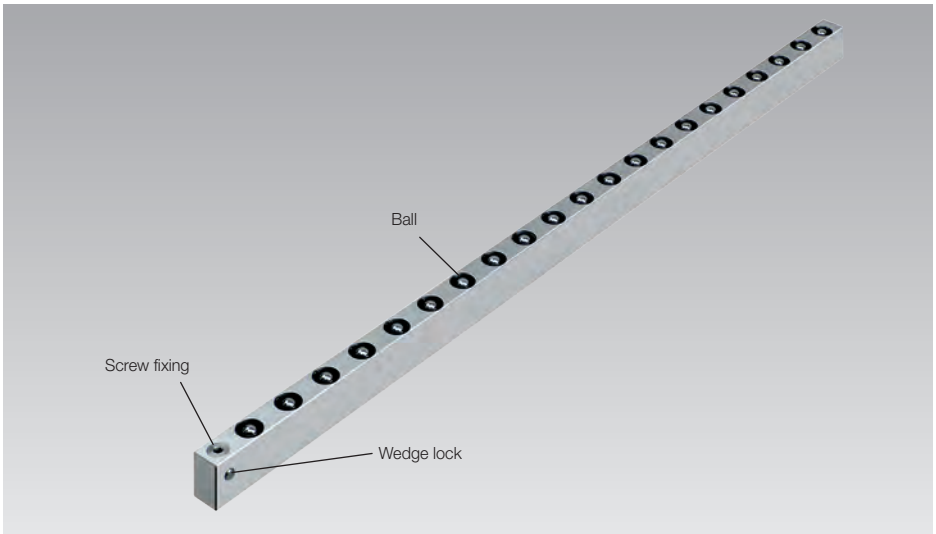
for slot width a = 1 1/16"

Length (L) [mm]	Load [kN]	Number of balls	Part no.
140	3.3	3	**892177117 L 140 R**
180	4.4	4	**892177117 L 180 R**
220	5.5	5	**892177117 L 220 R**
260	6.6	6	**892177117 L 260 R**
340	8.8	8	**892177117 L 340 R**
420	11.0	10	**892177117 L 420 R**
500	13.2	12	**892177117 L 500 R**
580	15.4	14	**892177117 L 580 R**
660	17.6	16	**892177117 L 660 R**
740	19.8	18	**892177117 L 740 R**
820	22.0	20	**892177117 L 820 R**
900	24.2	22	**892177117 L 900 R**
980	26.4	24	**892177117 L 980 R**
1060	28.6	26	**892177117 L 1060 R**
1140	30.8	28	**892177117 L 1140 R**
1220	33.0	30	**892177117 L 1220 R**
1300	35.2	32	**892177117 L 1300 R**
other lengths are possible up to max. 2900			
2900	79.2	72	**892177117 L 2940 R**

Fixing plate = **R**
Wedge lock = **K**

WZ 8.18343

Ball Bars, Mechanical
with spring pack
loads up to 27 kN/m



Advantages
- Easy and safe die change
- No hydraulic supply required
- Variant program with many selection possibilities
- Variable length in a single piece design up to 2900 mm
- Slot depth, ball spacing and bar length configurable for every application
- Low weight (version in aluminium)

Application
- In T-slots and rectangular slots of the press bed for easy die change without any problems
- Die change streamlining

Delivery
- Ball bar
- Wedge lock (option)

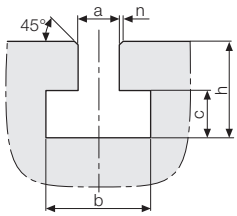
Description
Ball bar with spring pack for light loads and flexible horizontal movement of the dies. When preloaded, the balls project over the bed level by up to 2 mm. When the die is clamped, the balls are pressed into the bar body against the spring force until they are flush with the bed level.

Technical data

Max. load	[kN/m]	27
Ball spacing		flexible
Material of the bar		aluminium or steel
Max. temperature	[°C]	with aluminium bars: 100 with steel bars: 250
Fixing of the bar		Screw fixing or wedge lock
Max. bar length*	[mm]	variable* up to 2900

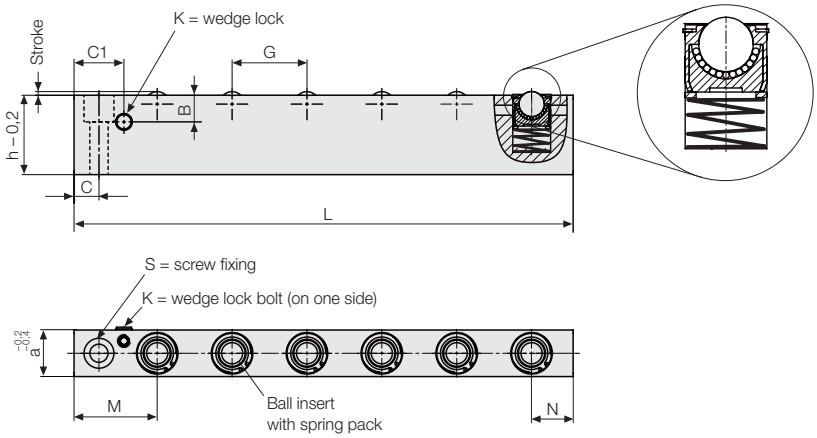
* The minimum bar lengths depends on the ball spacing G with at least 3 balls (see page 2)

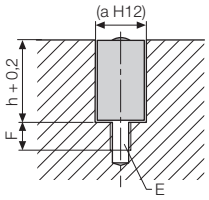
T-slot tolerances as per DIN 650



a	b	c	h min.	h max.	n max.
14 H12	23^{+2}	9^{+2}	**23**	28	1,6
18 H12	30^{+2}	12^{+2}	**30**	36	1,6
22 H12	37^{+3}	16^{+2}	**38**	45	1,6
28 H12	46^{+4}	20^{+2}	**48**	56	1,6
36 H12	56^{+4}	25^{+3}	**61**	71	2,5

Dimensions in mm
$\mathbf{h_{min.}}$ = minimum dimension as per DIN 650





Technical data

Slot width (a)	**[mm]**	**18**	**22**	**28**	**36**	**13/16"**	**1 1/16"**
Slot depth min. (h)	[mm]	29.4	38	48	46	29.4	38
Slot depth standard (h)	**[mm]**	**30**	**38**	**48**	**61**	**29.4**	**38.9**
Slot depth max.** (h)	[mm]	45	55	60	75	40	58
Ball spacing G min.	[mm]	20	23	28	34	20	23
Ball spacing G standard	**[mm]**	**30**	**40**	**45**	**50**	**30**	**40**
Ball spacing G max.	[mm]	60	80	90	100	60	80
L min.	[mm]	*)	*)	*)	*)	*)	*)
L max.	[mm]	2900	2900	2900	2900	2900	2900
Stroke	[mm]	1	2	2	2	1	2
Load/ball	[kN]	0.22	0.42	0.63	1.00	0.22	0.42
B	[mm]	12	16	16	16	12	16
C	[mm]	10	12.5	15	20	10	12.5
C1	[mm]	10	24.5	30	35	10	24.5
E	[mm]	M6	M8	M10	M10	M6	M8
F	[mm]	11	13	15	15	11	13
M	[mm]	27.5	40	50	57.5	27.5	40
N	[mm]	12.5	15	25	27.5	12.5	15

*) L min. depends on the ball spacing G with at least 3 balls
**) only with steel bars

Product configurator

For the selection and configuration of roller and ball bars, a product configurator is available on our website.
After entering the parameters, the configurator determines the desired roller or ball bars with all technical data and the identification number of the characteristics which are identical with the order number. In addition, a drawing with all dimensions will be provided.

Link to the configurator:
www.roemheld-gruppe.de/productconfigurator/?lang=en

Code for part numbers
Variant program

Ball bars with spring pack are individually configured and manufactured depending on the application.
Within the limits specified in the measurement chart, the following parameters can be selected based on a code for part numbers:
bar material, slot width, bar lengths, fixation, slot depth and ball spacing.

• Bar material / operating temperature
Aluminium or steel can be selected as bar material. For operating temperatures >100 °C, a steel version is required. Depending on the temperature range, the admissible carrying force of the ball bars is reduced:

up to 100 °C: 100 % of the carrying force
>100 – 150 °C: 95 % of the carrying force
>150 – 200 °C: 70 % of the carrying force
>200 – 250 °C: 60 % of the carrying force

e.g. steel up to 200 °C with 70 % of the carrying force

• Slot width (a)
Selection from the table on page 2

e. g. a = 36 mm

• Bar lengths (L)
Depending on the ball spacing (G) and the parameter (M) results the possible bar length. Indicate the desired length (e.g. bed length) for your ball bar. Please note that a ball bar must be equipped with at least 3 balls.

e.g. L = 1380 mm

• Fixation
K = wedge lock
S = screw fixing

e.g. screw fxing = S

• Ball spacing (G) or load of the bar
By changing the spacing of the balls, the load of the ball bar can be varied. Please note that the load is indicated for the full length of the bar. Therefore, both the load and the ball spacing must be selected to suit the die weight and the die supporting length.
Please indicate the desired ball spacing or load of the ball bar, or the maximum die weight and the die dimensions.

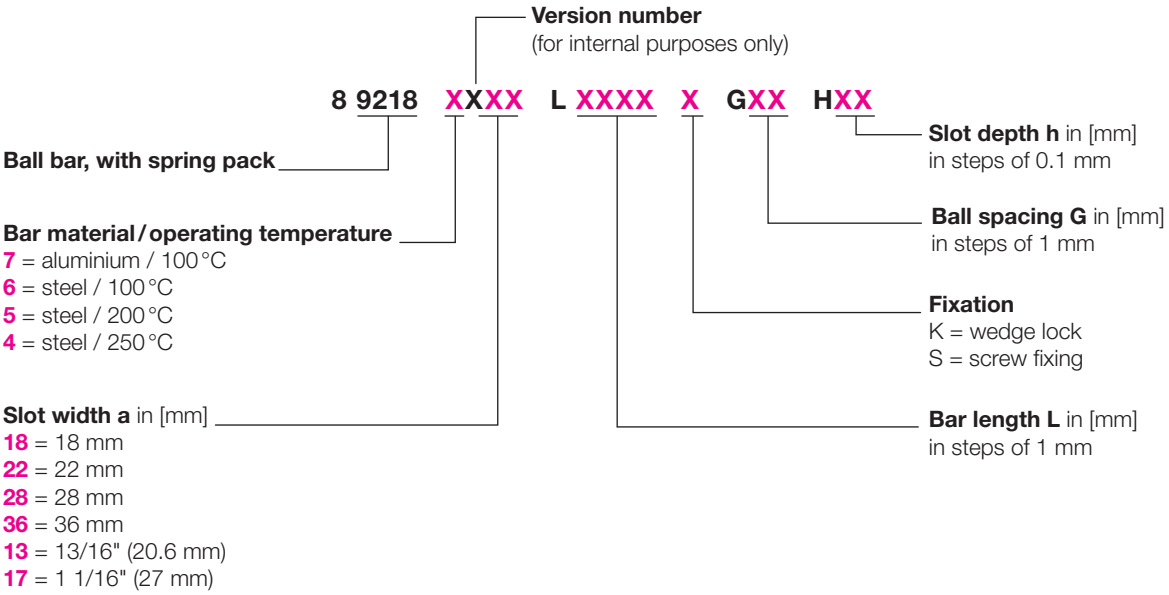
e.g. G = 35 mm

or **load per bar = 38 kN**
or **number of balls = 38**
or **die weight and exterior dimensions**

• Slot depth (h)
If the slots in your application are lower than the default value, specify the corresponding dimension (up to h min.) For slots which are deeper than the default value, spacer bars can be inserted. For steel versions, specify the corresponding dimension (up to h max.).

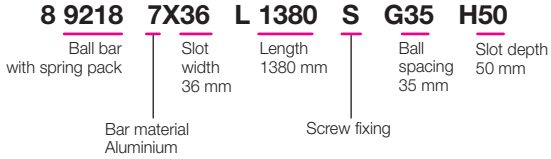
e.g. h = 50 mm

Code for part numbers
Variant program



Page 4 shows an example of the part numbers for aluminium bars with standard ball spacing “G” and standard slot depth “h”.

Example of ordering



Extract from the possible variants for ball bars
with standard ball spacing “G”, standard slot depth “h” and bar material aluminium

for slot width a = 18 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
100	0.6	3	**892187218 L 100 S**
130	0.8	4	**892187218 L 130 S**
160	1.1	5	**892187218 L 160 S**
190	1.3	6	**892187218 L 190 S**
250	1.7	8	**892187218 L 250 S**
310	2.2	10	**892187218 L 310 S**
370	2.6	12	**892187218 L 370 S**
430	3	14	**892187218 L 430 S**
490	3.5	16	**892187218 L 490 S**
550	3.9	18	**892187218 L 550 S**
610	4.4	20	**892187218 L 610 S**
670	4.8	22	**892187218 L 670 S**
730	5.2	24	**892187218 L 730 S**
other lengths are possible up to max. 2890			
2890	21.1	96	**892187218 L 2890 S**

for slot width a = 22 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
135	1.2	3	**892187222 L 135 S**
175	1.6	4	**892187222 L 175 S**
215	2.1	5	**892187222 L 215 S**
255	2.5	6	**892187222 L 255 S**
335	3.3	8	**892187222 L 335 S**
415	4.2	10	**892187222 L 415 S**
495	5	12	**892187222 L 495 S**
575	5.8	14	**892187222 L 575 S**
655	6.7	16	**892187222 L 655 S**
735	7.5	18	**892187222 L 735 S**
815	8.4	20	**892187222 L 815 S**
895	9.2	22	**892187222 L 895 S**
975	10	24	**892187222 L 975 S**
1055	10.9	26	**892187222 L 1055 S**
1135	11.7	28	**892187222 L 1135 S**
1215	12.6	30	**892187222 L 1215 S**
1295	13.4	32	**892187222 L 1295 S**
other lengths are possible up to max. 2895			
2895	30.2	72	**892187222 L 2895 S**

for slot width a = 28 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
165	1.8	3	**892187228 L 165 S**
210	2.5	4	**892187228 L 210 S**
255	3.1	5	**892187228 L 255 S**
300	3.7	6	**892187228 L 300 S**
390	5	8	**892187228 L 390 S**
480	6.3	10	**892187228 L 480 S**
570	7.5	12	**892187228 L 570 S**
660	8.8	14	**892187228 L 660 S**
750	10	16	**892187228 L 750 S**
840	11.3	18	**892187228 L 840 S**
930	12.6	20	**892187228 L 930 S**
1020	13.8	22	**892187228 L 1020 S**
other lengths are possible up to max. 2865			
2865	39.6	63	**892187228 L 2865 S**

for slot width a = 36 mm

Length (L) [mm]	Load [kN]	Number of balls	Part no.
185	3	3	**892187236 L 185 S**
235	4	4	**892187236 L 235 S**
285	5	5	**892187236 L 285 S**
335	6	6	**892187236 L 335 S**
435	8	8	**892187236 L 435 S**
535	10	10	**892187236 L 535 S**
635	12	12	**892187236 L 635 S**
735	14	14	**892187236 L 735 S**
835	16	16	**892187236 L 835 S**
935	18	18	**892187236 L 935 S**
1035	20	20	**892187236 L 1035 S**
1135	22	22	**892187236 L 1135 S**
other lengths are possible up to max. 2885			
2885	57	57	**892187236 L 2985 S**

for slot width a = 13/16”

Length (L) [mm]	Load [kN]	Number of balls	Part no.
100	0.6	3	**892187213 L 100 S**
130	0.8	4	**892187213 L 130 S**
160	1.1	5	**892187213 L 160 S**
190	1.3	6	**892187213 L 190 S**
250	1.7	8	**892187213 L 250 S**
310	2.2	10	**892187213 L 310 S**
370	2.6	12	**892187213 L 370 S**
430	3	14	**892187213 L 430 S**
490	3.5	16	**892187213 L 490 S**
550	3.9	18	**892187213 L 550 S**
610	4.4	20	**892187213 L 610 S**
670	4.8	22	**892187213 L 670 S**
730	5.2	24	**892187213 L 730 S**
other lengths are possible up to max. 2890			
2890	21.1	96	**892187213 L 2890 S**

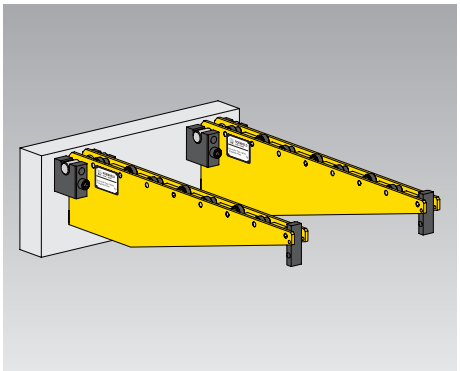
for slot width a = 1 1/16"

Length (L) [mm]	Load [kN]	Number of balls	Part no.
135	1.2	3	**892187217 L 135 S**
175	1.6	4	**892187217 L 175 S**
215	2.1	5	**892187217 L 215 S**
255	2.5	6	**892187217 L 255 S**
335	3.3	8	**892187217 L 335 S**
415	4.2	10	**892187217 L 415 S**
495	5	12	**892187217 L 495 S**
575	5.8	14	**892187217 L 575 S**
655	6.7	16	**892187217 L 655 S**
735	7.5	18	**892187217 L 735 S**
815	8.4	20	**892187217 L 815 S**
895	9.2	22	**892187217 L 895 S**
975	10	24	**892187217 L 975 S**
1055	10.9	26	**892187217 L 1055 S**
1135	11.7	28	**892187217 L 1135 S**
1215	12.6	30	**892187217 L 1215 S**
1295	13.4	32	**892187217 L 1295 S**
other lengths are possible up to max. 2895			
2895	30.2	72	**892187217 L 2895 S**

Screw fixing = **S**
Wedge lock = **K**

WZ 8.18350

Carrying Consoles, Hanging
for easy and efficient die change on the press bed
load per pair 5 to 30 kN

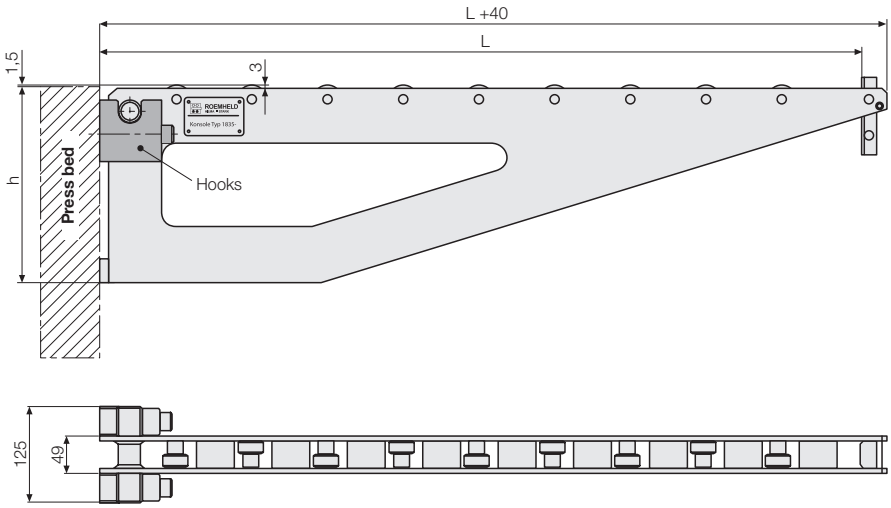


Advantages
- Safe handling of heavy dies with ease
- Less downtime by easy and efficient die change
- High-quality, shock-resistant coating
- High load

Application
Carrying consoles allow a safe, effort and time-saving change of heavy dies on the press bed.

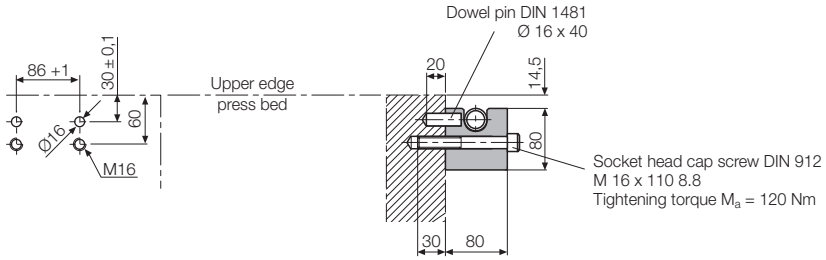
Description
The carrying consoles are hung in the hooks on the die changing side of the press. The hooks are supplied with the consoles. The consoles are used as a pair. Their size must be selected to suit the highest die weight.

The die is loaded onto the consoles using a crane or a forklift truck. The carrying rollers consist of high-strength hardened needle bearings. The end stop can be bypassed in one direction.
The surface is provided with a shock-resistant coating in RAL1004, golden yellow.



Delivery
2 carrying consoles (pair)
1 set of hooks (4 off)

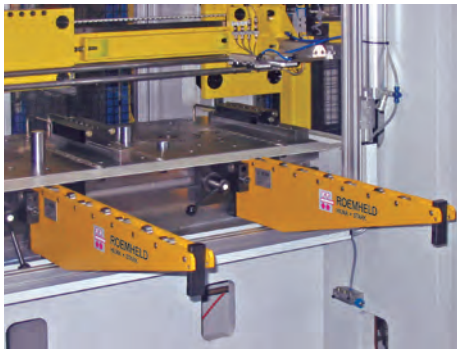
Hole pattern for hooks



Accessories

Hooks
Hanging consoles may be used for several presses. In this case, an additional set of hooks is required and can be ordered as an accessory or replacement (1 set = 4 off).
Part no. 7 18350 0007

Customised carrying consoles
as e.g. sliding carrying consoles are available on request.

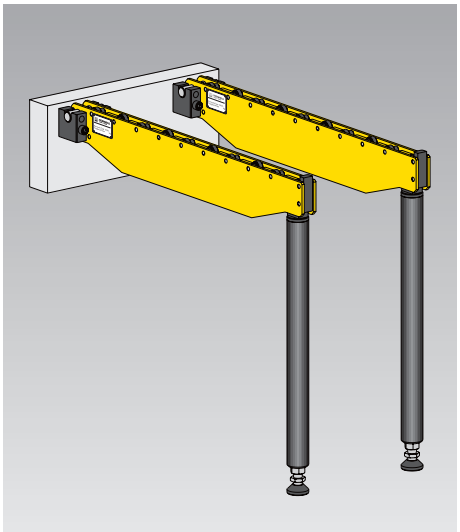

Hanging, sliding carrying consoles

Technical data

Load (pair) [kN]	Support length L [mm]	Height h [mm]	Weight (pair) [kg]	**Part no.** (pair)
5	500	120	23	**8 18350 0001**
10	500	150	26	**8 18350 0002**
10	800	180	40	**8 18350 0003**
10	1000	250	48	**8 18350 0104**
20	800	250	40	**8 18350 0105**
20	1000	300	57	**8 18350 0006**
20	1250	350	80	**8 18350 0107**
30	800	400	60	**8 18350 0008**
30	1000	450	74	**8 18350 0009**
30	1250	500	107	**8 18350 0010**

WZ 8.18351

Carrying Consoles, Supported
for easy and efficient die change on the press bed
load per pair 20 to 250 kN



Advantages
- Safe handling of heavy dies with ease
- Less downtime by easy and efficient die change
- High-quality, shock-resistant coating
- High load

Application
Carrying consoles allow a safe, effort and time-saving change of heavy dies on the press bed.

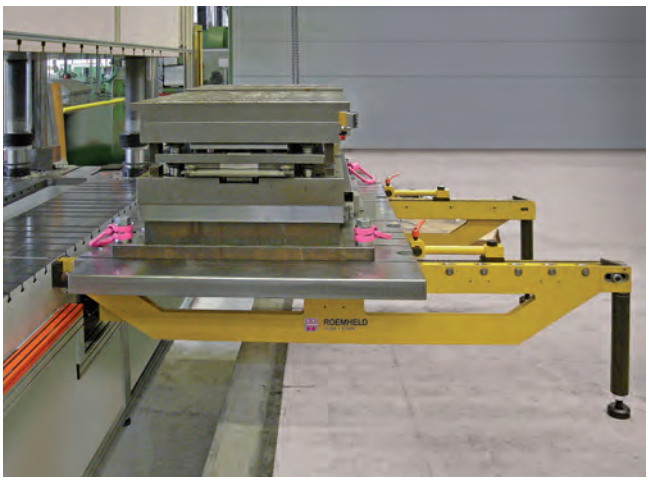
Delivery
2 carrying consoles (pair)
1 set of hooks (4 off)
2 supporting feet

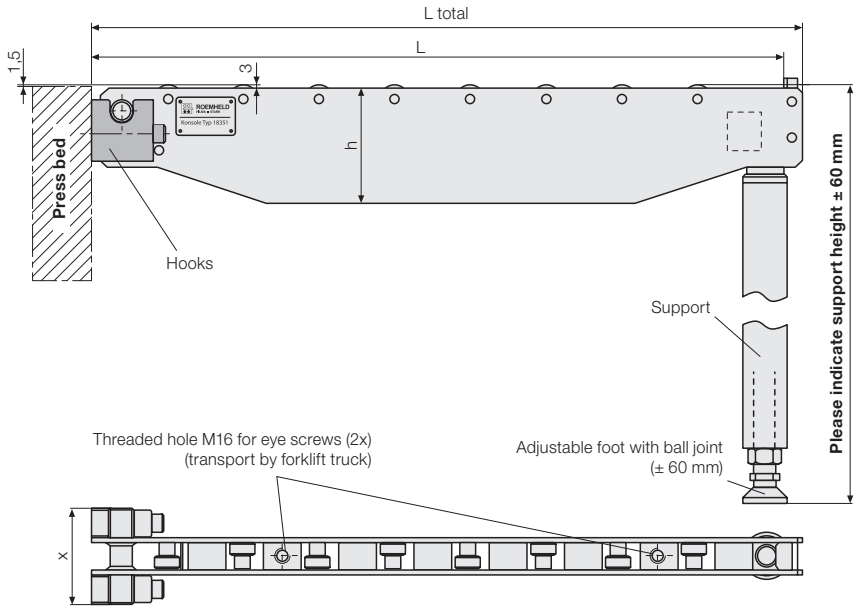
Description
The carrying consoles are hung in the hooks on the die changing side of the press. The hooks are supplied with the consoles. The consoles are used as a pair. Their size must be selected to suit the highest die weight. In order to cope with heavy and large dies, the console is provided with an additional support.
To compensate the unevenness on the floor, the supports are designed as adjustable supports with a ball-and-socket joint. The support height may be changed subsequently by ± 60 mm.

The die is loaded onto the consoles using a crane or a forklift truck. The carrying rollers consist of high-strength hardened needle bearings. The end stop can be bypassed in one direction.
The surface is provided with a shock-resistant coating in RAL1004, golden yellow.

Accessories
Hooks
Hanging consoles may be used for several presses. In this case, an additional set of hooks is required and can be ordered as an accessory or replacement. (1 set = 4 off)

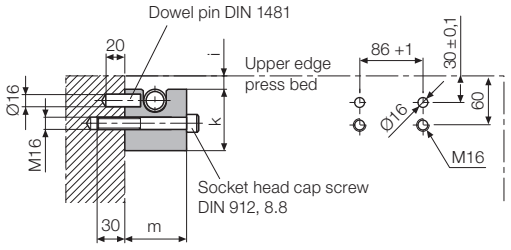
Load [kN]	Part no.
20 – 40	**7 18350007**
60 – 100	**7 18350021**
160 – 250	**7 18350022**

Application example




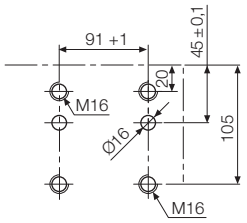
Hole pattern for hooks

Console 20 – 40 kN



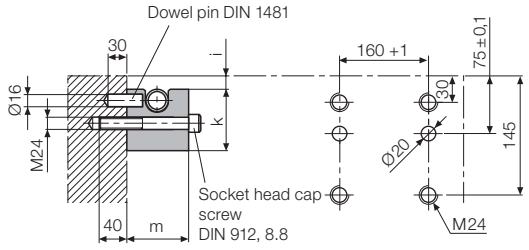
Socket head cap screws DIN 912
M16 x 100
Tightening torque Ma = 120 Nm
Dowel pin DIN 1481 Ø16 x 40

Console 60 – 100 kN



Socket head cap screws DIN 912
M16 x 50 and M16 x 110
Tightening torque Ma = 120 Nm
Dowel pin DIN 1481 Ø16 x 50

Console 160 – 250 kN



Socket head cap screws DIN 912
M24 x 70 and M24 x 160
Tightening torque Ma = 250 Nm
Dowel pin DIN 1481 Ø20 x 80

Technical data

Load (pair) [kN]	Support length L [mm]	L total [mm]	Dimensions [mm] h	i	k	m	x	Weight [kg]	**Part no.** (pair)
20	1000	1040	150	14.5	80	80	125	82	**8 18353001**
20	1250	1290	180	14.5	80	80	125	100	**8 18353102**
20	1600	1640	200	14.5	80	80	125	116	**8 18353003**
40	1000	1040	200	14.5	80	80	125	80	**8 18353204**
40	1250	1290	200	14.5	80	80	125	90	**8 18353205**
40	1600	1640	225	14.5	80	80	125	110	**8 18353206**
60	1000	1030	200	5	115	100	131	85	**8 18353209**
60	1250	1280	220	5	115	100	131	100	**8 18353210**
60	1600	1630	240	5	115	100	131	125	**8 18353211**
60	2000	2030	270	5	115	100	131	150	**8 18353212**
100	1250	1280	250	5	115	100	131	115	**8 18353213**
100	1600	1630	280	5	115	100	131	140	**8 18353214**
100	2000	2030	320	5	115	100	131	175	**8 18353215**
160	1600	1685	260	5	170	150	216	390	**8 18353216**
160	2000	2085	260	5	170	150	216	475	**8 18353217**
160	2500	2585	280	5	170	150	216	605	**8 18353218**
250	2500	2585	360	5	170	150	216	615	**8 18353220**

Delivery
2 carrying consoles (pair)
1 set of hooks (4 off)
2 supporting feet

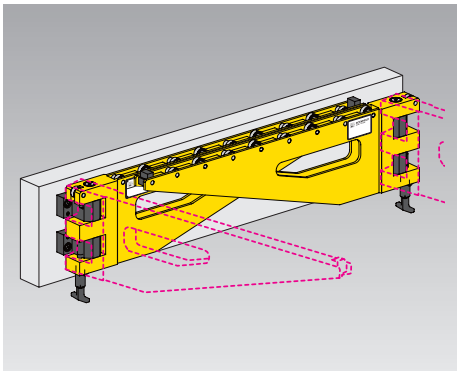
Please specify the exact support height when ordering.

Example of ordering:
8 18353001, support height 1000 mm
Console 1000 mm long
max. 20 kN
Support height 1000 mm

ROEMHELD
HILMA ▪ STARK

WZ 8.18352

Carrying Consoles, Swivelling to the Left and Right
for easy and efficient die change on the press bed
load per pair 10 to 60 kN



Advantages
- Safe handling of heavy dies with ease
- Less downtime by easy and efficient die change
- High-quality, shock-resistant coating
- High load
- Low space requirement due to swivelling carrying consoles

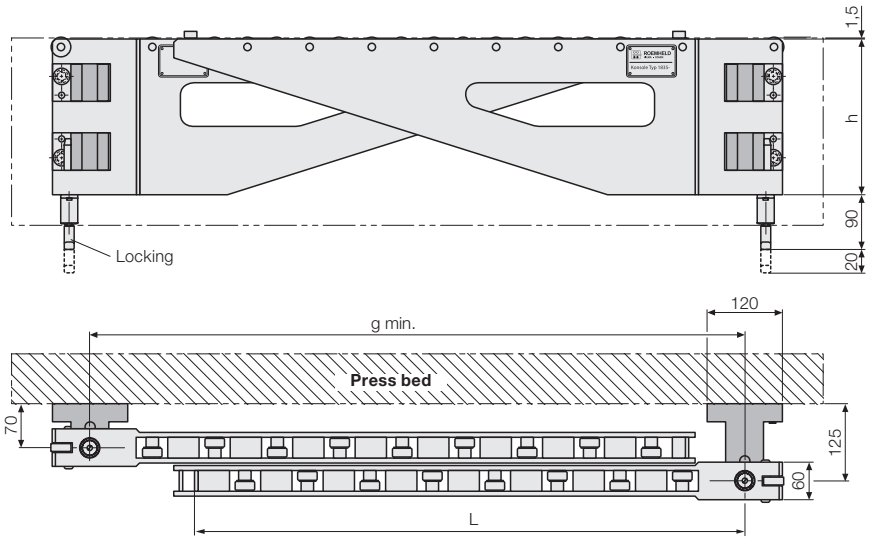
Application
Carrying consoles allow a safe, effort and time-saving change or transport of heavy dies.

Description
This console is permanently fixed to the press bed and can be swivelled into the die changing position.
This type is particularly recommended when the available space in front of the press bed is limited, or if removal and intermediate storage of the console is not possible or wanted.

The die is loaded onto the consoles using a crane or a forklift truck.
The carrying rollers consist of high-strength hardened needle bearings. The end stop can be bypassed in one direction.
The surface is provided with a shock-resistant coating in RAL1004, golden yellow.

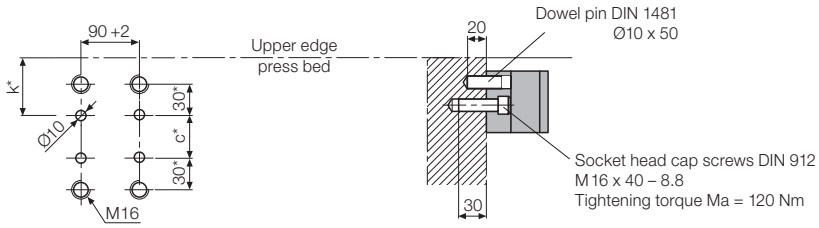
Swivelling carrying consoles are supplied in pairs with pre-mounted holders, ready for connection.
Special designs and double-swivel carrying consoles are available on request.

Delivery
2 carrying consoles (left and right side)
4 holders (pre-mounted)



The carrying consoles can be swivelled to the left and right

Hole pattern for holders



* Tolerance: ±0.1 mm

Application example

Swivelling carrying consoles on a press

Technical data

Load (pair) [kN]	Support length L [mm]	Dimensions [mm] c ±0.1	g	h	k ±0.1	Weight (pair) [kg]	**Part no.** (pair)
10	500	20	550	200	91.5	46	**8 1835 1001**
10	1000	70	1050	250	91.5	74	**8 1835 1002**
20	1000	120	1050	300	91.5	85	**8 1835 1003**
20	1250	170	1300	350	91.5	108	**8 1835 1004**
40	1000	210	1050	450	121.5	130	**8 1835 1105**
40	1250	260	1300	500	121.5	160	**8 1835 1106**
60	1000	310	1050	550	121.5	165	**8 1835 1107**
60	1250	460	1300	700	121.5	230	**8 1835 1108**

Hilma Div. of Carr Lane Roemheld Fenton, MO 63026 Tel: (636) 386-8022 Fax: (636) 386-8034 Email: info@clrh.com

WZ 8.800

Hydraulic Pump
manually operated, with overload protection
max. operating pressure 100, 120 and 400 bar

Advantages
- Compact and self-contained design
- Pumping and unclamping or releasing with the same lever
- 3 pressure stages selectable
- Alternatively with overload protection, pressure gauge, hand or foot operation, with holder or base
- Nearly wear-free
- Completely assembled, ready-for-connection unit

Application
Lifting and lowering of dies using roller or ball bars.

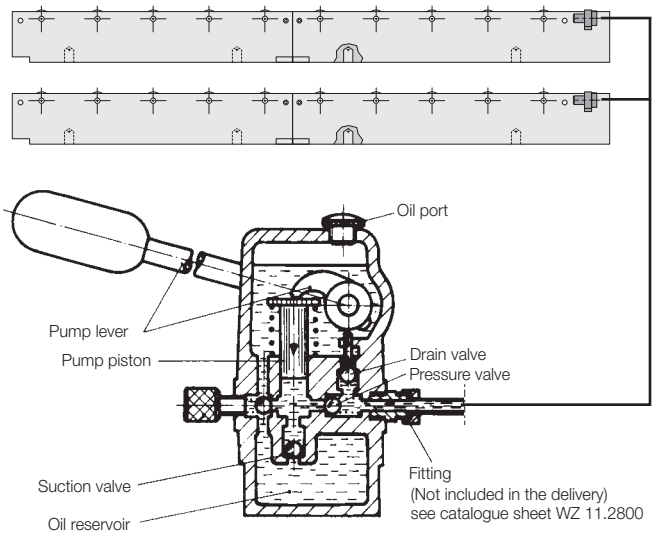
Overload protection
It may happen that the lifted roller or ball bars are overloaded and destroyed by e.g. unintentional closing of the press or excessive die weights.
To protect the ball or roller bars, the hydraulic pump can be supplied with a special pressure relief valve (DBV). In the case of an overload, a valve on the pump opens, the bars are lowered and remain undamaged.

Description
Compact hydraulic pump with hand lever or foot pedal for pumping and releasing.
Due to the metallic seal on the pump piston, the pump is almost wear-free.
The hydraulic pump is delivered completely assembled, including the filling with hydraulic oil HLP32 as a ready-for-connection unit.

In addition to three maximum operating pressures, the following options can be selected:

- Holder for fixing the pump at the press bed or with a base for good stability.
- Pressure gauge to display the pressure reached. Display range 0 to 100 / 120 or 400 bar.
- Adjusted overload protection (DBV) to protect the roller and ball bars against damage.

Principle of a manually-operated hydraulic pump with 2 ball or roller bars



Code for part numbers

8455 PXXX X MX DX BX

Max. operating pressure
100 = 100 bar
120 = 120 bar
400 = 400 bar

Operation
H = Hand lever
F = Foot pedal

Pressure gauge
M1 = with pressure gauge
M0 = without

Overload protection (DBV)
D1 = with DBV
D0 = without

Fixation
BT = Table holder
BS = Base
BF = Flange
B0 = without

Technical data

Max. operating pressure	[bar]	100	120	400
Displacement per stroke	[cm³]	8	8	2
Oil volume, usable	[cm³]	150	150	150
Oil volume	[cm³]	300	300	300
Operating force - hand lever	[N]	250	300	500
Hydraulic connection		G 1/4	G 1/4	G 1/4
Weight	[kg]	7.3	7.3	7.3

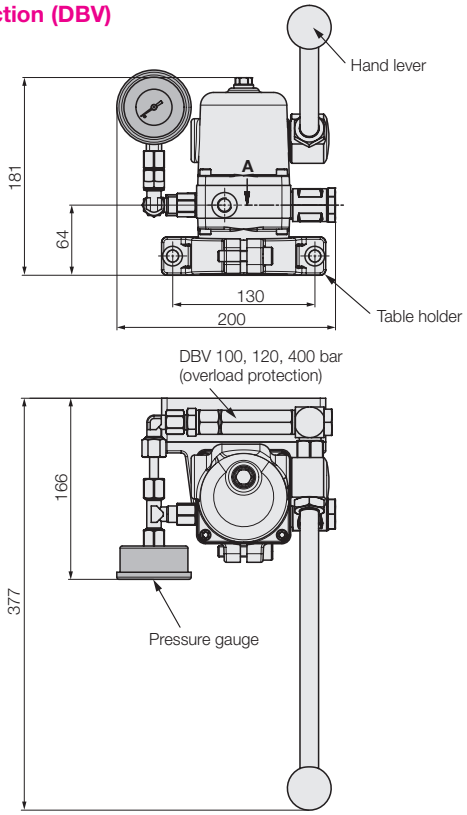
Accessories
To connect the hydraulic pump to the hydraulic elements, a series of connecting components such as hydraulic hoses and fittings are available as accessories (see catalogue sheets WZ 11.2800 and WZ 11.3800).

Application example

Version with foot pedal and base

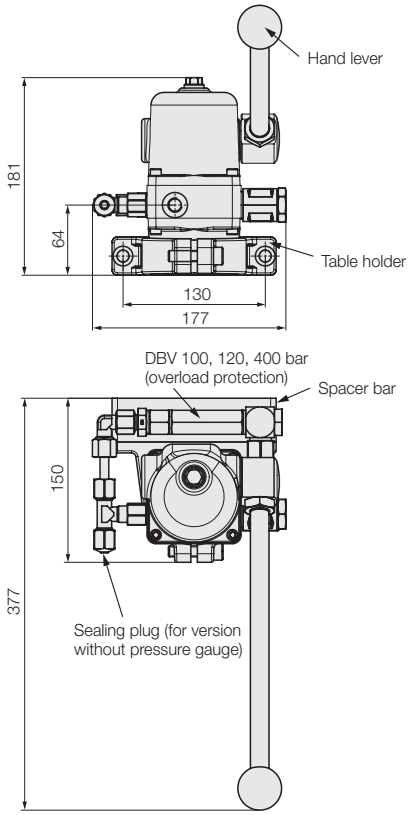
Part no.: 8455 PXXX H M1 D1BT

– with pressure gauge
– with hand lever
– table holder
– with overload protection (DBV)



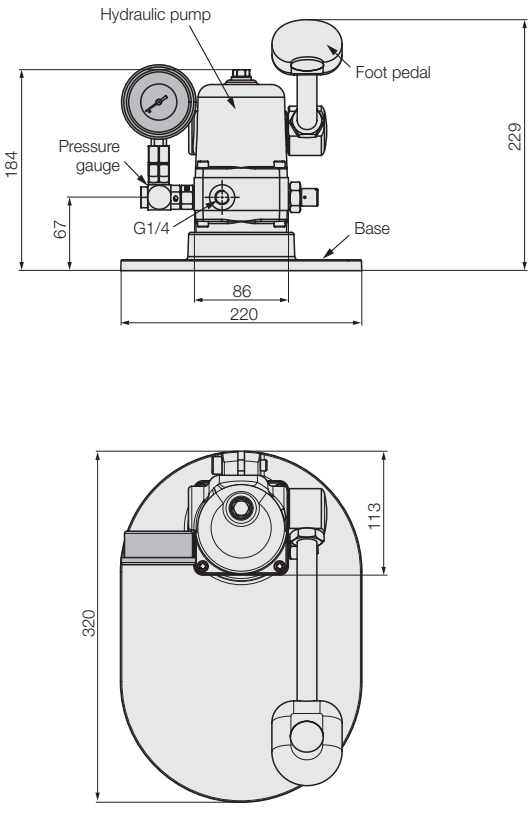
Part no.: 8455 PXXX F M0 D1BT

– with hand lever
– table holder
– with overload protection (DBV)



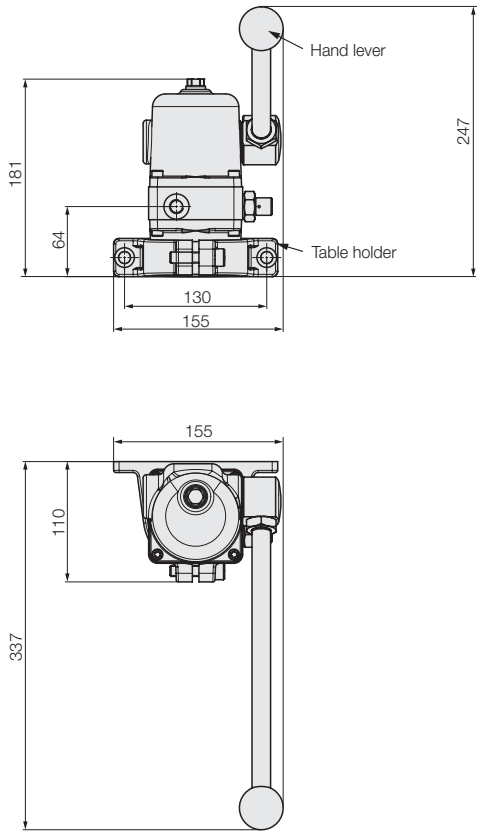
Part no.: 8455 PXXX F M1 D0 BS

– with pressure gauge
– with foot pedal
– base
– without overload protection (DBV)



Part no.: 8455 PXXX H M0 D0 BT

– with hand lever
– table holder
– without overload protection (DBV)

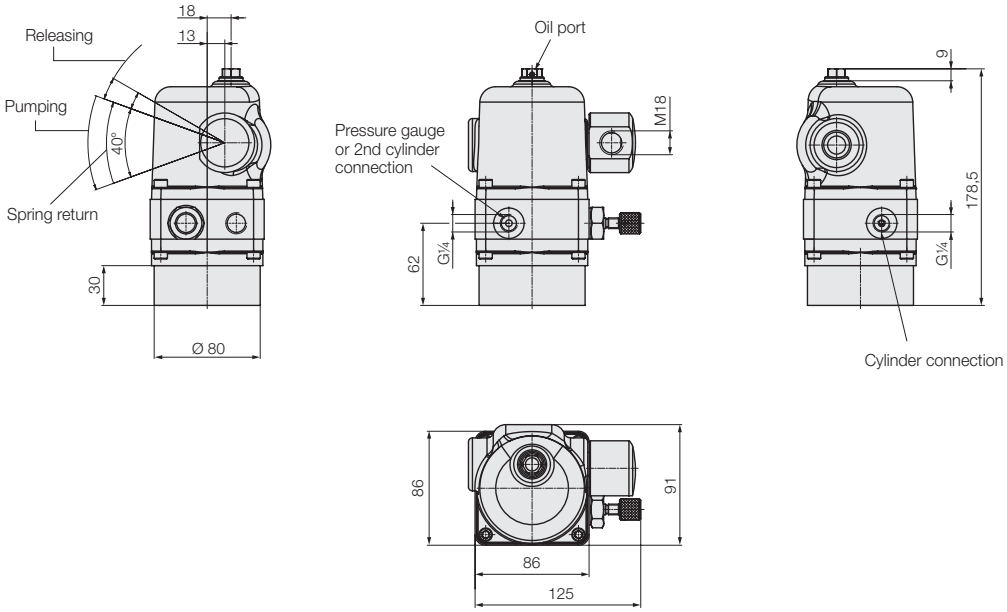


Individual order

On request, the pump components can also be ordered individually and assembled as required.
Please note: Hydraulic pumps with overload protection (DBV) and versions with pressure gauge are not available for individual orders.

Hydraulic pump

Max. operating pressure [bar]	100	120	400
Part no.	**8804813**	**8804812**	**8816813**



Base

Part no. 3533001

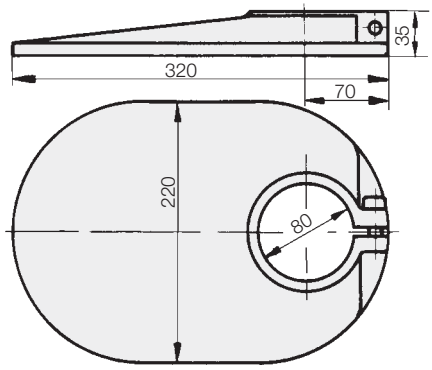
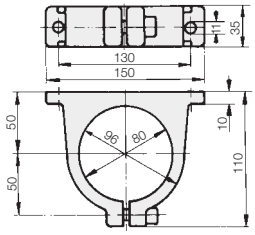


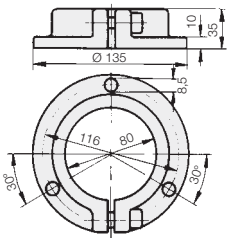
Table holder

Part no. 3533002



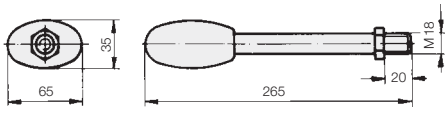
Flange

Part no. 3533003



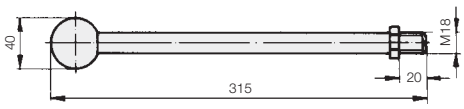
Foot pedal

Part no. 0990102



Hand lever

Part no. 0990103



ROEMHELD
HILMA ▪ STARK

WZ 8.8900

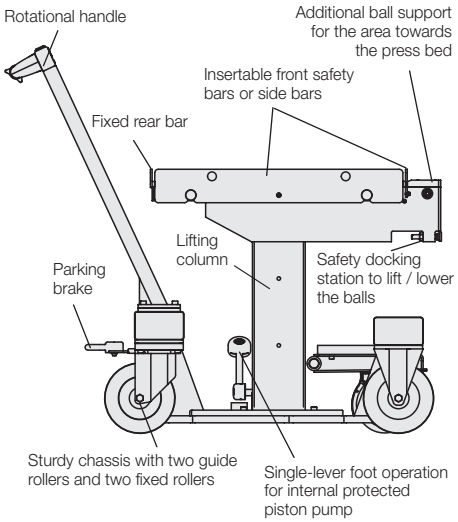
Die Changing Cart RW

manually movable, with optional auxiliary drive with safety docking station, max. load capacity 500 kg

Figure RW with auxiliary drive

Advantages

- Time-saving die change
- Material gentle transport
- Highest safety by automatic docking station and anti-slip protection
- Easy movement by optional battery driven auxiliary drive
- Sturdy and scratch-proof ball table with hard-anodized surface
- Documentation and design in compliance with CE standards
- Exact positioning
- Exact height adjustment by precision lowering
- Improved ergonomics for the user
- Protection against falling down of dies by inserted and secured front bar and side bars
- Safe positioning of the cart by pedal parking brake



Application

Die changing carts RW facilitate the handling of medium-weight dies and enable dies weighing up to 500 kg to be safely transported in an easy and time saving way.
All cart types are especially designed for pressing and punching dies as well as for injection and casting moulds.

Description

Die changing carts RW are manually moved. For easier movement, the front axle can optionally be equipped with a battery driven auxiliary drive.
The die changing table is equipped with ball inserts which facilitate the manual insertion of the dies. During the transport, the ball inserts are lowered and the die is protected against movement. In addition, the die is secured against falling down by safety bars at all sides of the die changing table.
The die changing table can be adjusted in height by a hydraulic lifting column with single-lever foot operation.
For transport, the centre of gravity of the load must be positioned in the centre of the cart and the lifting columns must be completely lowered.

Safety docking station

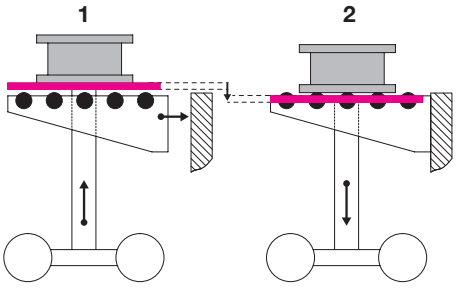
During the transport of the die, the balls are always lowered and the die is protected against movement. Lifting of the ball inserts is made by successful docking to the press bed. The die weight is supported at the press bed.

1. Transport

- Lifting column extended
- Ball inserts lowered
- Die on table plate

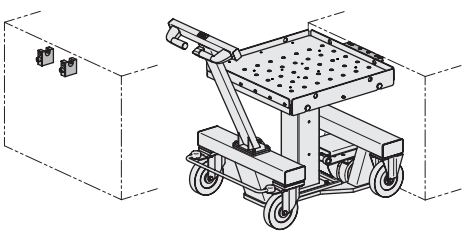
2. Docking

- Lifting column lowered
- Ball inserts lifted
- Die on ball inserts



Version with safety docking station and ball table

Docking situation

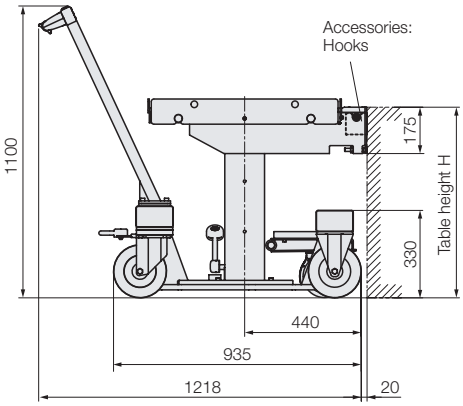


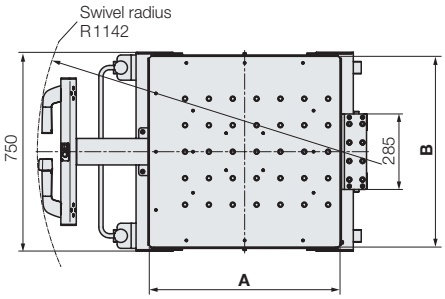
Versions

The die changing cart RWA is available in 2 table sizes and 3 stroke ranges.
Every version can optionally be equipped with an auxiliary drive.

Option - auxiliary drive

All elements of the auxiliary drive are integrated in the front axle: the electric motor including gear, long-life batteries with high energy density and a power control for optimum control of the motor.
The rotational handle consists of two solid handles, speed and direction of the drive can be controlled by means of a lever at the right handle.
An integrated level compensation ensures an optimum contact pressure of the drive wheel on the hall floor.
A covering protects the drive against shocks and splash water. The high drive torque of the electric motor (17 Nm / 20 da N) facilitates considerably the movement of the changing cart.





Technical data

Max. load capacity: 500 kg

Table sizes

Version		1	2
Length A x width B	**[mm]**	**720 x 720**	**720 x 450**

Lifting range

Version		1	2	3
Total stroke	**[mm]**	**200**	**300**	**400**
Usable stroke	[mm]	140	240	340
Min. table height H	[mm]	540	620	720
Max. table height H	[mm]	680	860	1060

Technical data auxiliary drive

Running performance	[km]	2 with full load (5 with average load)
Displacement speed	[km/h]	3
Charging time (approx. 90 %)	[h]	1.5 to 3 (depending on the battery charger)
Battery		24 V DC, Ni-MH, 140 Wh (6 Ah)

Part numbers

Table size [mm]	**Total stroke** [mm]	**Auxiliary drive**	**Part numbers**
720 x 720	200	without	**889130100**
720 x 720	300	without	**889130101**
720 x 720	400	without	**889130102**
720 x 450	200	without	**889130103**
720 x 450	300	without	**889130104**
720 x 450	400	without	**889130105**
720 x 720	200	with	**889130106 X**
720 x 720	300	with	**889130107 X**
720 x 720	400	with	**889130108 X**
720 x 450	200	with	**889130109 X**
720 x 450	300	with	**889130110 X**
720 x 450	400	with	**889130111 X**

Selection battery charger
Standard 1.8 A = **S**
Quick 4.0 A = **Q**

Delivery

One set (2 off) of hooks is included in the delivery of the die changing cart; the hooks can also be ordered as an accessory.
The versions with auxiliary drive are delivered with a battery charger. You can choose between between **type S** or **type Q**. Both battery charges can be ordered as an accessory.

Accessories

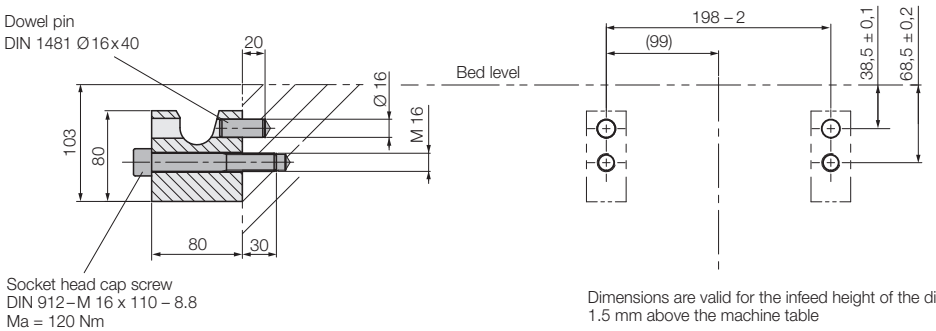
Battery chargers

Type S = Standard 1.8 A
100 … 230 VAC, 50/60 Hz
Charging time 3 h (approx. 90 %)
Part no. 789130013

Type Q = Quick battery charger 4,0 A
100 … 230 VAC, 50/60 Hz
Charging time 1.5 h (approx. 90 %)
Part no. 789130015

Hooks (1 set = 2 off)

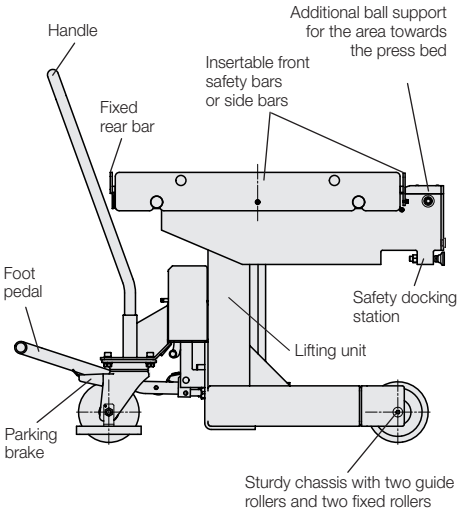
to position and lock the die changing cart
Part no. 789130001



WZ 8.8901

Die Changing Cart RW
manually movable, with safety docking station
max. load capacity 1,000 kg

Advantages
- Time-saving die change
- Material gentle transport
- Highest safety by automatic docking station and anti-slip protection
- Sturdy and scratch-proof ball table with hard-anodized surface
- Documentation and design in compliance with CE standards
- Exact positioning
- Exact height adjustment by precision lowering
- Improved ergonomics for the user
- Protection against falling down of dies by inserted and secured front bar and side bars
- Safe positioning of the cart by pedal parking brake



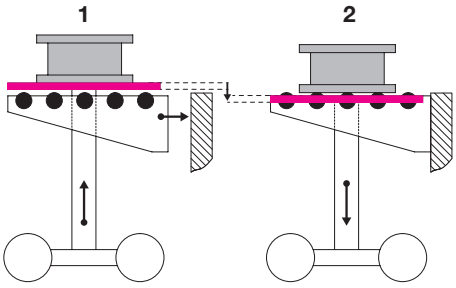
Application
Die changing carts RW facilitate the handling of heavy dies and enable dies weighing up to 1000 kg to be safely transported in an easy and time saving way.
All cart types are especially designed for pressing and punching dies as well as for injection and casting moulds.

Description
Die changing carts RW are manually moved.
The die changing table is equipped with ball inserts which facilitate the manual insertion of the dies. During the transport, the ball inserts are lowered and the die is protected against movement. In addition, the die is secured against falling down by safety bars at all sides of the die changing table.
The die changing table can be adjusted in height by means of a pedal-operated lifting unit. Precision lowering is effected by a pedal – additional precision lowering for lowering the lifting unit with millimetre accuracy.
For transport, the centre of gravity of the load must be positioned in the centre of the cart and the lifting columns must be completely lowered.

Safety docking station
During the transport of the die, the balls are always lowered and the die is protected against movement. Lifting of the ball inserts is made by successful docking to the press bed. The die weight is supported at the press table.

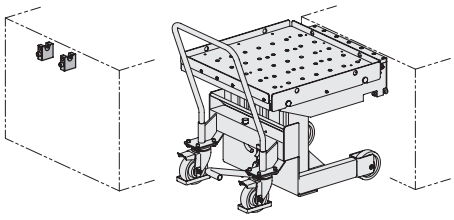
1. Transport
- Lifting unit extended
- Ball inserts lowered
- Die on table plate

2. Docking
- Lifting unit lowered
- Ball inserts lifted
- Die on ball inserts



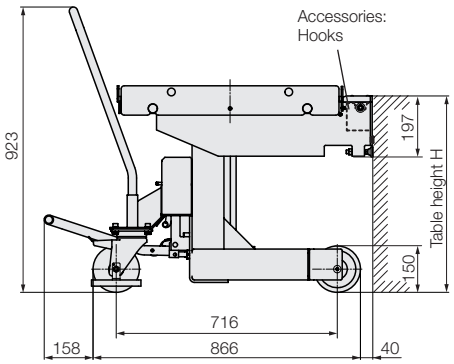
Version with safety docking station and ball table

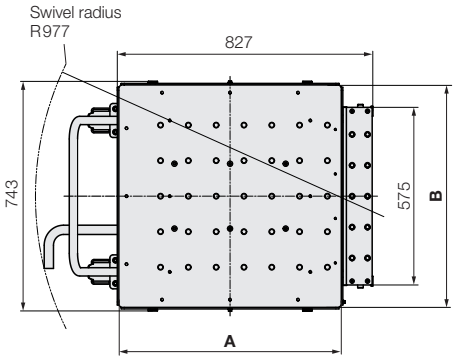
Docking situation



Version
Table size:	720 x 720 mm
Usable stroke:	635 mm

Precision lowering
for lowering of the lifting unit with millimetre accuracy by pedal.





Technical data

Max. load capacity: 1000 kg

Lifting range

Total stroke	[mm]	700
Usable stroke	[mm]	635
Min. table height H	[mm]	650
Max. table height H	[mm]	1285

Table size* [mm]		Total stroke [mm]	Auxiliary drive**	Part number
A	B			
720	720	700	without	**8 89131000**

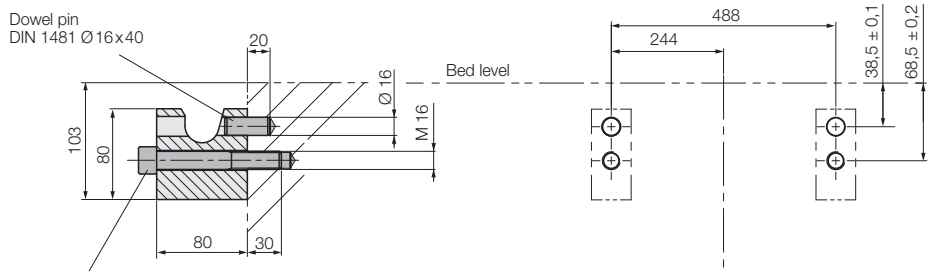
* other table sizes on request
** with auxiliary drive on request

Delivery

One set (2 off) of hooks is included in the delivery of the die changing cart; the hooks can also be ordered as an accessory.

Accessories

Hooks (1 set = 2 off)
to position and lock the die changing cart
Part no. 7 89130001



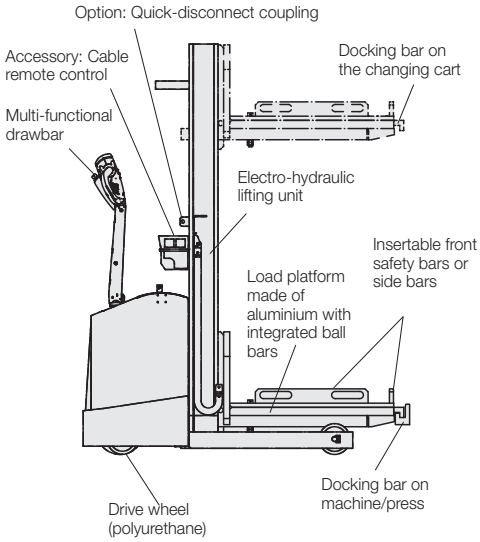
All dimensions in [mm]

Die Changing Carts RWA with Electric Drive

with electro-hydraulic lifting platform, die changing table and hydraulic ball bars, max. load capacity 1600 kg

Advantages

- Safe and gentle die transport of heavy dies
- Time-saving die change
- Integrated die changing table with hydraulic ball bars
- High safety by docking bars and lowerable ball bars
- Protection against falling down of dies by inserted and secured side bars
- Simple and central operation with multi-functional drawbar
- Multi-function display on the drawbar
- Robust vehicle technology
- Modular design with standard drive



Application

The die changing cart RWA is used for the transport and the change of pressing and punching dies as well as injection and casting moulds up to a weight of 1600 kg.

Description

The die changing cart RWA is an electrically driven walking and lifting cart, especially equipped for the transport and the change of dies.
The electro-hydraulic lifting platform is designed as die changing table with integrated hydraulic ball bars, which facilitate the manual insertion of the dies onto the press table.
During the transport, the balls are always lowered and the die is protected against movement.
A safety circuit ensures that the die changing cart can only be displaced with lowered ball bars.
In addition, the die is secured on the lifting platform by insertable front safety bars or side bars.
For the transfer of the die to the press, the lifting platform is equipped with a protrusion.

Versions

The die changing cart RWA is available with 4, 6 or 8 ball bars and with different table sizes.

Power supply

The power supply of the electric drive, the lifting platform and the ball bars is made via an installed battery 24 V DC with 240 Ah.
This battery can be completely charged with the battery charger included in the delivery within 12 hours.
Automatic slow driving at low battery status as well as automatic lift cutout in the case of further discharge.
The maximum running performance is approximately 3 hours at full load.

Option

Die chancing cart with quick-disconnect coupling for external ball or roller bars

The die changing cart RWA can optionally be equipped with an additional hydraulic control circuit with quick-disconnect coupling for the operation of the hydraulic ball and roller bars in the press table.
The operating pressure is 80 bar.

Quick-disconnect coupling

Operation

The operation of the die changing cart RWA is completely made at the multi-functional drawbar.

- Rotary switch
  for continuous and sensitive driving (speed control)
- Toggle switch
  for reduced speed 2.0 km/h
- Push-button
  for driving with reduced speed and vertical drawbar position
- Steering (by drawbar)
- Slide switch
  for sensitive lifting and lowering of the lifting platform
- Push-button
  for lifting/lowering of the balls (as an option)
- Signal horn and key switch
- Main current safety switch (EMERGENCY STOP)

Multi-functional display

for display of
- battery status and operating hours
- maintenance intervals and error messages

Versions as per customer's request

- Roller bars instead off ball bars
- Ball or roller distance
- Dimensions of the lifting platform
- Radio remote control

Please contact us.

Accessories

see page 3

Technical data
Dimensions

Technical data		
Max. die weight	[kg]	1600
Platform size	[mm]	1150 x 800*
Lifting range	[mm]	250 – 1650
Stroke of the ball bars	[mm]	2
Max. lifting force / bar	[kN]	8.8
Load capacity at the load centre of gravity 400/ 600 mm	[kg]	1600 / 600
Ball spacing	[mm]	76
Max. driving speed	[km/h]	5
Running performance		approx. 3 h at full load
Empty weight	[kg]	1200

* Individual platform sizes and ball distances on request

Scope of supply:
- Changing cart with built-in battery
- Battery charger
- Lifting platform
- 4, 6 or 8 installed ball bars
- Insertable side and front bars
- Battery filling system Aquamatic
  Filling station with electric pump for fast filling of the batteries with water.

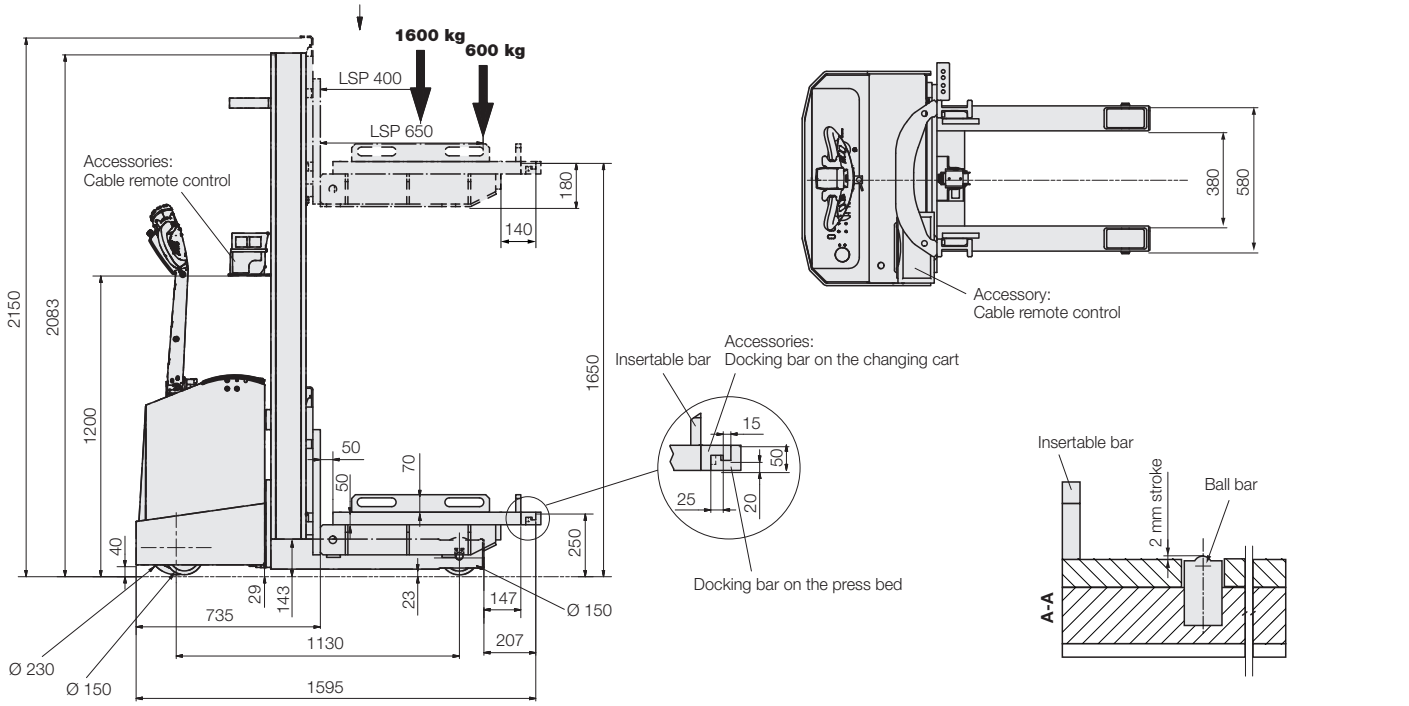
Further accessories and options in addition to the standard scope of delivery see page 3.

Type	RWA 1600/4	RWA 1600/6	RWA 1600/8
Number of ball bars (each 744 mm long)	4	6	8
Part no.	**88913 1600**	**88913 1610**	**88913 1620**

Die changing cart with quick-disconnect coupling

Part no.	**88913 1601**	**88913 1611**	**88913 1621**

Dimensions

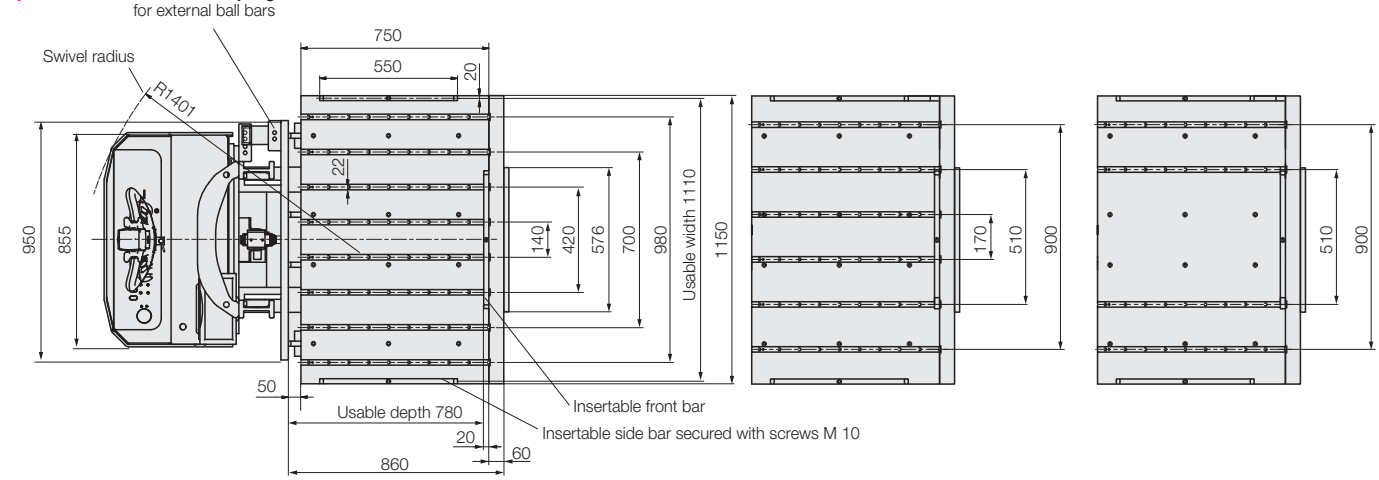


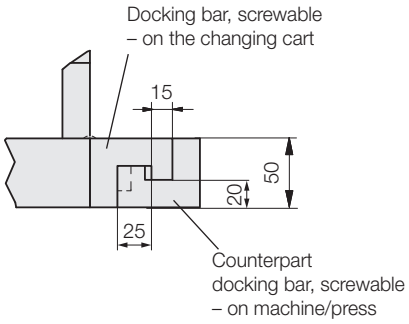
Option: Quick-disconnect coupling
for external ball bars

RWA 1600
with 8 hydraulic ball bars

Plate thickness
with 6 hydraulic ball bars

Plate thickness
with 4 hydraulic ball bars

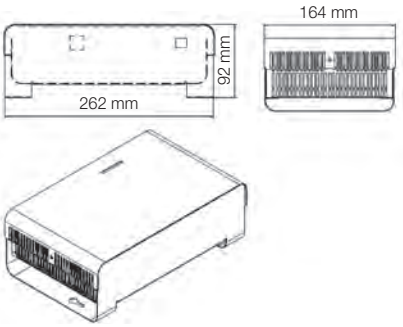




Docking bars
To obtain the exact insertion height at the press table, the lifting platform and the press table can be provided with docking bars.

Docking bars
for fixing at the changing cart, L = 1150 mm
Part no. 889130022

Docking bars
for fixing at the machine, L = 576 mm
Part no. 889130023



Extra battery charger E 230 G*
Charging time: 12 h
Code class: IP 21
Part no. 889130025

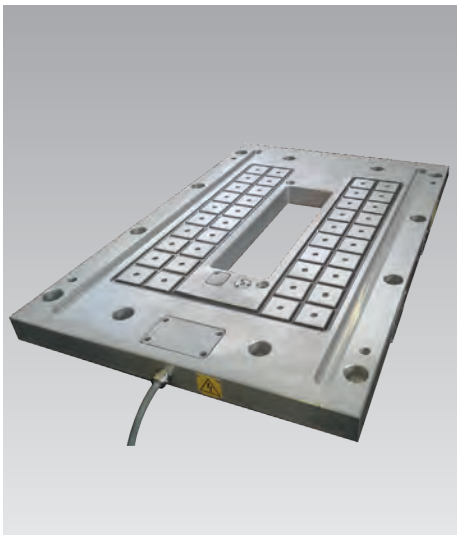
* USA version on request

Cable remote control
with the functions:
- lifting/lowering
- driving: forwards/backwards
- emergency stop

(Mounting position see drawing on page 2)

Part no. 889130026

Magnetic Clamping Systems M-TECS 80
for temperatures up to 80 °C



Advantages
- Standardisation of dies no longer required
- High safety by process monitoring
- Clamping of the dies within a few seconds
- Ergonomic handling with ease
- Die clamping also in heated condition
- No further mounting holes required
- Minimum wear of the dies
- Motion detection of the die
- Die clamping on the complete surface with minimum deformation

Application
M-TECS 80 magnetic clamping systems are primarily used for automatic clamping of different dies on sheet metal forming presses and automatic punching machines.

Description
With M-TECS 80 magnetic clamping systems, the dies are magnetically clamped or unclamped at the touch of a button within a few seconds.
Since the force of the magnetic clamping plates is generated by permanent magnets, electric clamping is only required to magnetise the plates.
The magnetic clamping plates are de-energised in clamped condition and thus absolutely safe in the case of power failure.
In addition, the complete clamping cycle is monitored by different sensors and thus a reliable die clamping is guaranteed.
All M-TECS 80 magnetic clamping systems carry the CE mark.

Scope of system and delivery
M-TECS 80 magnetic clamping systems are delivered as complete clamping systems with all required system components. The essential components of a system are:
- two magnetic clamping plates
- electric control in a splash-proof control box
- a manual remote control
- required electrical connection cables

Electric control
see catalogue sheet RR 1.5660

Customised versions
All M-TECS 80 magnetic clamping systems are customised and manufactured to meet the specific requirements.
For example, the size and pole technology of the magnetic clamping plates are selected according to the application and the machine.
Please contact us.

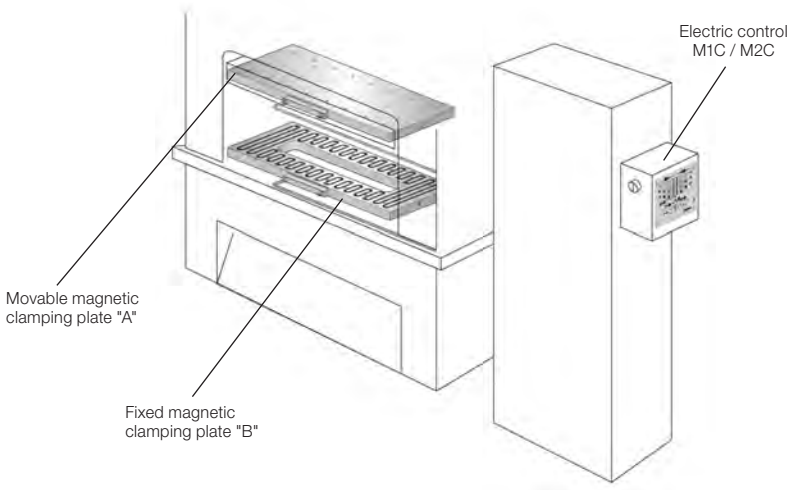
Safeties
- The inductive limit switch checks the form-fit contact of the die and guarantees a clamping without loss of force.
- Sensors in the interior of the coils to register the slightest die movements due to changes of the magnetic flow between the magnetic clamping plate and die.
- A temperature sensor in the magnetic clamping plate prevents overheating and thus damage to the system.

Technical basic data

Size of the magnetic clamping plates		customised
Pole technology		square pole
Max. temperature	[°C]	80 (on request up to 240)
Specific magnetic force*	[kg/cm²]	18
Effective magnetic force	[kg/cm²]	5 – 12
Magnetic penetration depth	[mm]	20
Plate thickness	[mm]	min. 55
Part no.		**81132 (basic version)**

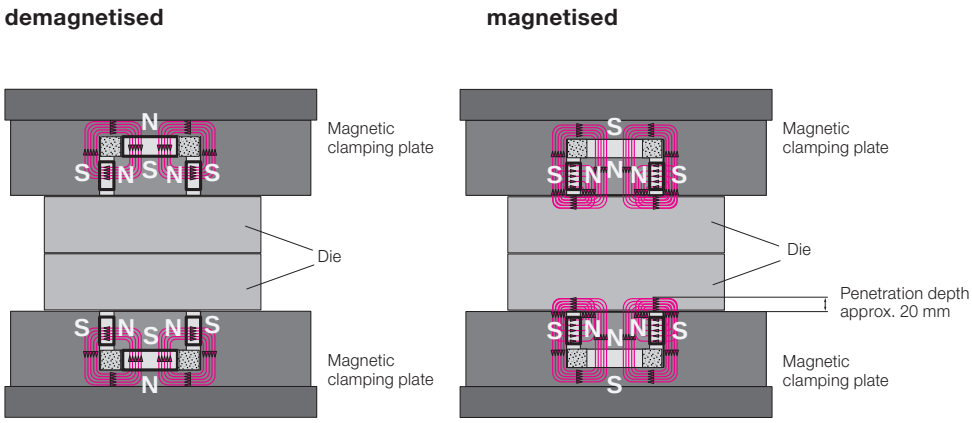
* force directly on the magnet

Installation on a sheet metal forming press



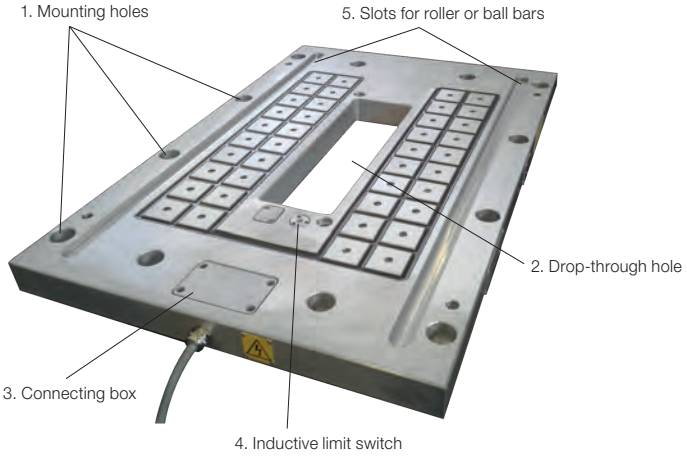
Functioning of the magnetic clamping plates

Basically, the electric permanent magnet clamping system is firmly kept in place even in the case of a power failure: power is only required for approx. 1 to 2 seconds to magnetise the system. Then, the clamping system works independently of any power supply. The magnetic clamping force is exclusively generated by the permanent magnets. Only for unclamping the die, electrical energy is required again (for 1 to 2 seconds) to demagnetise the clamping plate. An existing AlNiCo magnet in the core is re-polarised by a current pulse. This magnet affects the magnetic field and relocates it to the interior of the magnetic clamping plate (demagnetised) or approx. 20 mm outside the plate (magnetised).



Structure of the magnetic clamping plates

1. The mounting holes are designed according to the already existing mounting grid in the press bed.
2. An optional drop-through hole for punching waste is provided in the lower magnetic clamping plate as per customer's request.
3. The completely sealed connecting box guarantees permanent access to the wiring of the plate connection.
4. The inductive limit switch checks the perfect contact of the die and then releases the magnetisation.
5. Optional slots for roller or ball bars (also part of the ROEMHELD Group product range) can be inserted in the lower magnetic clamping plate to simplify die change.



Further safety equipment in the plate:

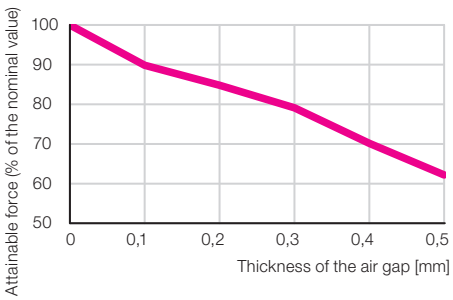
- Sensors in the interior of the coils respond to induction and report the slightest die movements.
- A temperature sensor in the magnetic clamping plate prevents overheating and thus damage to the system.

Accessory

Force sensor "FES"

Force sensor "FES" for measuring the air gap and continuous monitoring and display of the retention force.

Reduction of the clamping force



Electric Control M1C and M2C
for magnetic clamping systems M-TECS

Advantages

- Highest safety standards (as per EN 201/EN 289)
- Standardised integration via EUROMAP 70 interface
- Simple error diagnosis by software readout
- Easy to maintain by exchangeable master module
- Compact design
- Status display on the LED panel

Description

Electric control M1C

The electric control M1C is used for small and medium-sized machines.

Dimensions	500 x 500 x 250 mm
Error display	not available
Connections	1 to 2

Electric control M2C

The electric control M2C is used for large machines.
An additional LCD display allows a quick diagnosis by the display of the error code.

Dimensions	vary depending on the machine size
Error display	yes
Connections	1 to 8

Manual remote control

With removable key-operated switch on the manual remote control to prevent unauthorised actuation.

Integration into the machine

For the integration of the magnetic clamping system into the machine, there are the following three alternatives:

Euromap 70.0 (complete integration)

- Two-channel release signal to the machine
- 3 release signals from the machine to the magnetic clamping system
- Control via remote control with key-operated switch (included in the delivery)
- Interface cable with plug connection

Euromap 70.1 (complete integration)

- Two-channel release signal to the machine
- 3 release signals from the machine to the magnetic clamping system
- Control via machine panel
- Interface cable with plug connection

Retrofit interface (partial integration)

- Two-channel release signal to the machine
- Without release signal from the machine to the magnetic clamping system
- 3-minute timer as a time slot for demagnetisation
- Second key-operated switch as safe state for the release of the magnetic clamping system
- Interface cable with plug connection

Technical basic data

Voltage*	[V]	380 – 480
Frequency*	[Hz]	50 / 60
Fuses	[A]	32
Code class		IP 54

* as per customer's request

ROEMHELD
RIVI MAGNETICS

Request Checklist for
M-TECS Magnetic Clamping Systems

CUSTOMER DATA

Company / Customer | Town | Customer no.

Person to contact | Department

Email | Phone

from

Request recorded by (name / company) | Date

Machine

☐ **new machine** ☐ **retrofitting** ☐ **drawing of machine plate available**

Machine manufacturer _____ Machine type _____

Closing force [kN] _____ Opening force [kN] _____

Nozzle contact force (when mould is open) [kN] _____ Ejecting force _____

Temperature range [°C] _____ Machine operation mode ☐ horizontal ☐ vertical

Plate geometry

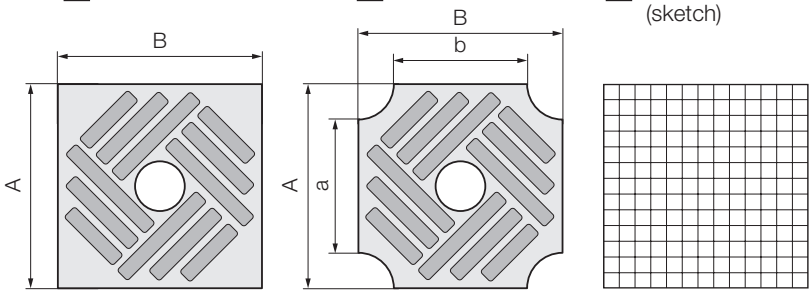
☐ **rectangle** ☐ **cross** ☐ **another type** (sketch)

A [mm] _____

B [mm] _____

a [mm] _____

b [mm] _____

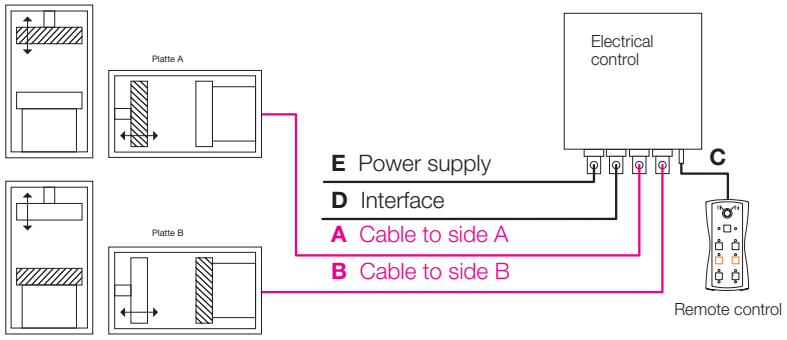


Mould/die dimensions

Smallest mould/die [mm] _____ Weight [kg] _____

Largest mould/die [mm] _____ Weight [kg] _____

Cable lengths



Desired cable length

A [mm] _____

B [mm] _____

C [mm] _____

D [mm] _____

E [mm] _____

Remarks

_____

_____

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Xpsmexjef dpnqfufodf

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