



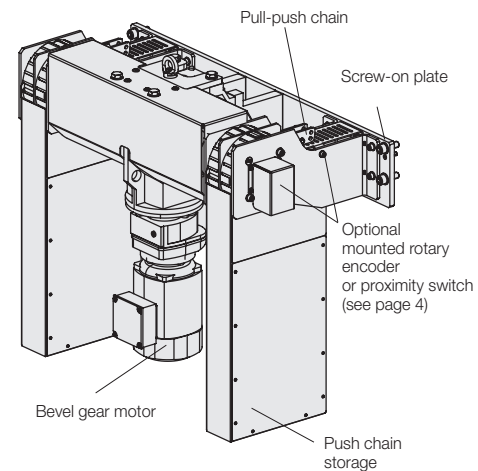
Push Chain Direct System with Push-Pull System

electrically driven, with push chain drive, die weight up to 40 tons



Advantages

- Safe, non-destructive die change of heavy dies
- Very small footprint
- Placement behind the press makes optimum use of the unused space (The press remains accessible from the front)
- High levels of automation can be achieved
- Can be combined with existing changing technology
- Two control variants with many options
- Modular design
- Simple operation via remote control
- Bevel gear motor



Application

The push chain direct system is adapted directly to the press and is suitable for handling heavy dies easily and quickly. The push chain direct system can be easily installed as it requires little space. Thus, it is ideally suited for both retrofitting and new constructions.

Description

The push chain direct system enables dies to be changed safely so that employees do not have to move about in the danger zone. The integrated pull-push chain allows the user to automatically extend and retract the die at the push of a button. The dies are moved at a speed of 33 mm/s. Moving at creep speed enables precise positioning of the dies in the press table. Different automation levels can be achieved with the option of direct integration into the machine control or two optional control variants. The push chain direct system makes it possible to combine different changing systems with minimal installation space.

Function

The push chain direct system is installed at the back of the machine table. The die is coupled to the push chain using a die adapter.

The push chain direct system allows the user to automatically retract, position, and extend the die at the push of a button on a remote control. An absolute encoder can be used to integrate sensors (for millimetre-precise die positioning) and possible stops into the control system.

Robust technology

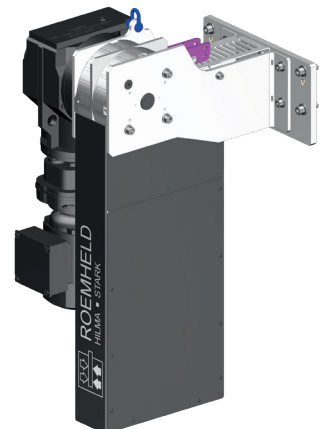
The installed bevel gear motor is relatively low-wear and low-maintenance. It is characterized by a highly efficient, compact design. The push chain consists of specially shaped links. The geometry of these links prevents buckling under push loads.

Accessories and equipment upon request

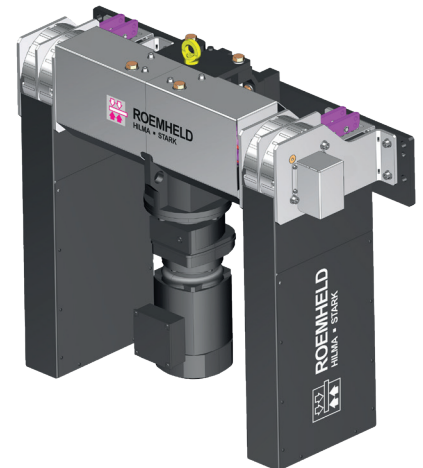
see page 4

Versions

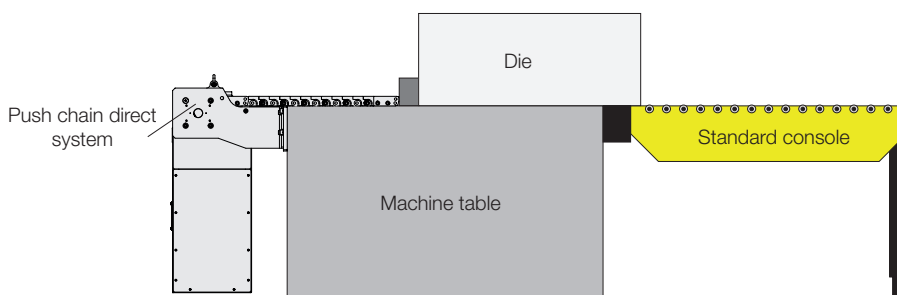
Push chain direct system with single strand chain



Push chain direct system with double strand chain



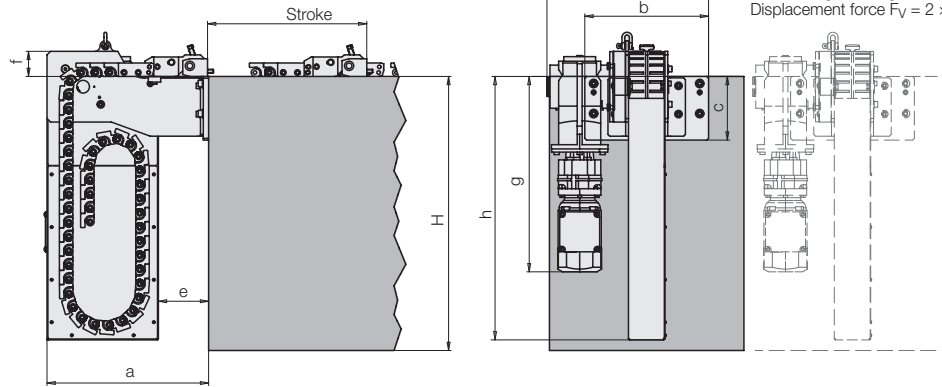
Combination of push chain direct system with standard carrying console



Push Chain Direct System with Single Strand Chain

Code for part numbers • Technical data

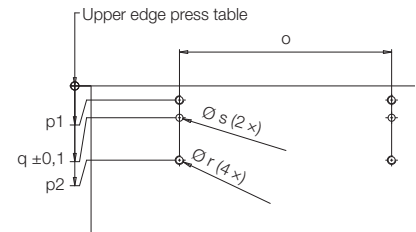
Dimensions



The single strand chain can be used individually or in pairs next to each other.

When using two single strand chains:
Displacement force $F_V = 2 \times$ single strand chain

Screw drilling template



Technical data single strand chain

Series		5	14	25
Die weight F_G^*	[kg]	5,500	14,000	25,000
Displacement force F_V	[kg]	500	1,500	2,700
Displacement speed	[mm/s]	33	33	33
Stroke	[mm]	800–1800	900–1980	1500–3000
Stroke interval	[mm]	200	300	500
Min. table height H	[mm]	775	885	
a	[mm]	457	620	
b	[mm]	350	450	
c	[mm]	180	240	
d	[mm]	457	615	
e	[mm]	142	160	
f	[mm]	71	113	
g	[mm]	553	703	
h	[mm]	745	855	
o	[mm]	300	400	
p1	[mm]	20	20	
p2	[mm]	105	170	
q ± 0.1	[mm]	45	90	
r	[mm]	M12	M16	
s	[mm]	10	12	
Motor voltage	[V/Hz]	230/400/50		
Nominal current	[A]	1.73/1.0	2.95/1.69	5.8/3.35
Max. motor rating	[kW]	0.37	0.75	1.5
Code class		IP 54		

Delivery

- Adaptor plate for screwing onto the machine
- 1 x chain box
- 1 x drive motor
- 1 x push chain
- Fastening material

Special solutions on request

- Chain with claw guides
- Special stroke
- Chain case upwards
- Heavier die weights
- Higher displacement speeds
- Individual push-pull docking device

Accessories and equipment upon request

From page 4

Important notes

With this design, it is necessary that the dies are guided with a tolerance of ± 2 mm.

* Maximum die weight is calculated on the basis of a factor of friction of 0.07 (use of roller/ball bars according to data sheet WZ 8.18340).

Code for part numbers

You can easily configure the desired variant using the code for part numbers. You are provided with a dimension drawing for the selected configuration and can send us your chosen configuration directly for an offer to be prepared.

81836-X-X-X

Series

- 05** = die weight up to 5,500 kg
- 14** = die weight up to 14,000 kg
- 25** = die weight up to 25,000 kg

Stroke

800 to 3000

See table "Technical characteristics"

Push-pull docking device

- 0** = without push-pull docking device
- 1** = push-pull docking device with semi-automatic connection
- 2** = push-pull docking device, 2 pcs with safety bolts
- 3** = push-pull docking device with screw-on plate

Details see page 4

Order example

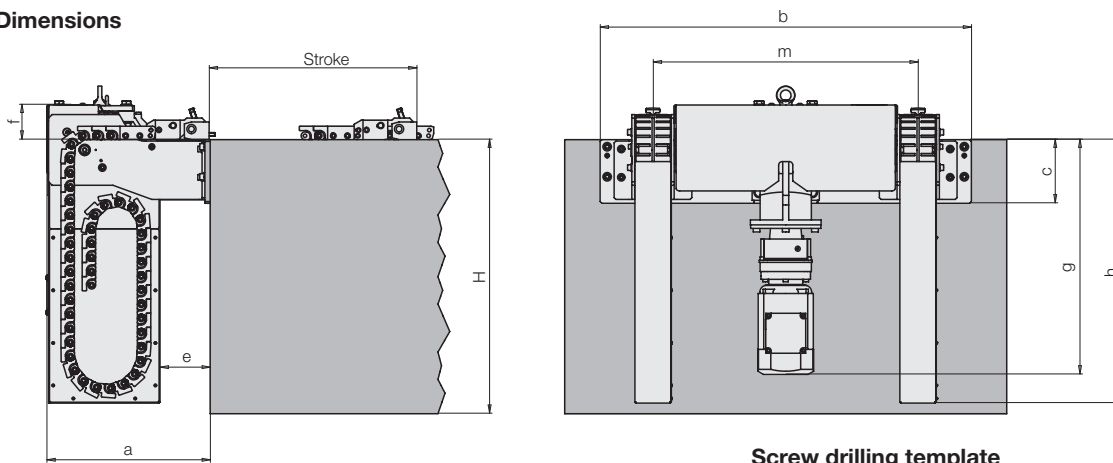
Die/mould weight: **5,500 kg**
 Series: **05**
 Stroke: **1,200 mm**
 With semi-automatic push-pull docking device: **1**

Part no. 81836-05-1200-1

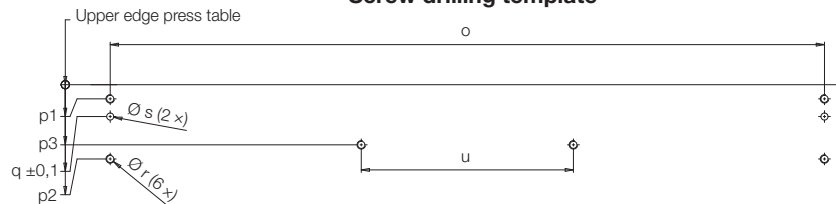
Push Chain Direct System with Double Strand Chain

Code for part numbers • Technical data

Dimensions



Screw drilling template



Technical data double strand chain

Series		11	28	40
Die weight F_g^*	[kg]	11,000	28,000	40,000
Displacement force F_v	[kg]	1,000	3,000	5,400
Displacement speed	[mm/s]	33	33	33
Centre distance m	[mm]	750–1500	1100–1800	1300–2000
Stroke	[mm]	800–1800	900–1980	1500–3000
Stroke interval	[mm]	200	300	500
Min. table height H	[mm]	775	885	
a	[mm]	457	620	
b	[mm]	m+300	m+400	
c	[mm]	180	240	
e	[mm]	142	160	
f	[mm]	100	135	
g	[mm]	664	810	
h	[mm]	745	855	
o	[mm]	m + 260	m + 360	
p1	[mm]	20	20	
p2	[mm]	105	105	
p3	[mm]	85	105	
q	[mm]	45	45	
r		M12	M16	
Ø s	[mm]	10	12	
u	[mm]	300	500	
Motor voltage	[V/Hz]	230/400/50		
Nominal current	[A]	2.95/1.69	5.80/3.35	11.4/6.6
Max. motor rating	[kW]	0.75	1.5	3.0
Code class		IP 54		

Delivery

- Adaptor plate for screwing onto the machine
- Sheet metal cover to protect drive shafts
- 2 x chain box
- 1 x drive motor
- 2 x push chain

Special solutions on request

- Chain with claw guides
- Special stroke
- Chain case upwards
- Heavier die weights
- Higher displacement speeds
- Individual push-pull docking device

Accessories and equipment upon request

From page 4

Important notes

With this design, it is necessary that the dies are guided with a tolerance of ± 2 mm.

* Maximum die weight is calculated on the basis of a factor of friction of 0.07 (use of roller/ball bars according to data sheet WZ 8.18340).

Code for part numbers

You can easily configure the desired variant using the code for part numbers. You are provided with a dimension drawing for the selected configuration and can send us your chosen configuration directly for an offer to be prepared.

81836-X-X-X-X

Series

- 11** = die weight up to 11,000 kg
- 28** = die weight up to 28,000 kg
- 40** = die weight up to 40,000 kg

Stroke

800 to 3000

See table "Technical characteristics"

Push-pull docking device

- 0** = without push-pull docking device
- 1** = push-pull docking device with semi-automatic connection
- 2** = push-pull docking device, 2 pcs with safety bolts
- 3** = push-pull docking device with screw-on plate

Details see page 4

Centre distance in [mm]

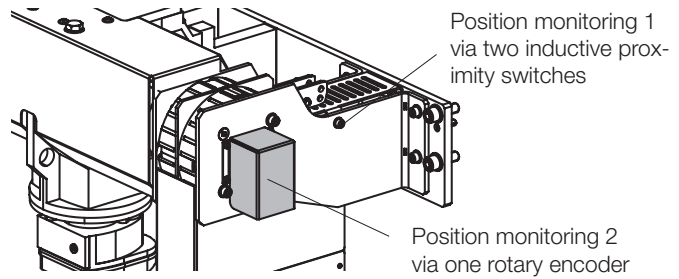
Order example

Die/mould weight: **10,000 kg**
 Series: **11**
 Stroke: **1,200 mm**
 Centre distance: **950 mm**
 without push-pull docking device: **0**
Part no. 81836-11-1200-950-0

Accessories and Equipment upon Request

Position monitoring 1 (standard)

With position monitoring 1, the position of the back and front die position can be monitored via two inductive proximity switches.

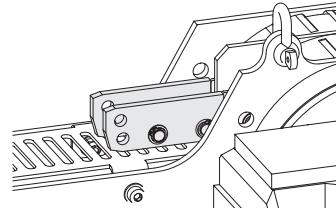


Position monitoring 2

Alternatively, the die position can be monitored via a side-mounted rotary encoder (version with rotary encoder in combination with "Advanced" control). Each die position can be determined individually here.

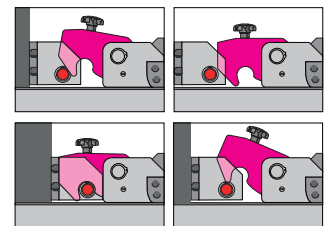
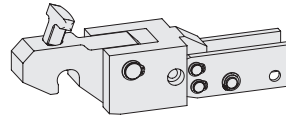
Version without push-pull docking device

In this version, the unit is supplied with a front-end link. This allows for the adaptation of existing or self-designed push-pull docking devices.



Push-pull docking device with semi-automatic connection

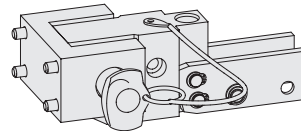
The die is connected automatically and loosened manually.



Push-pull docking device, 2 pcs with safety bolts

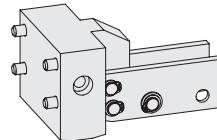
For connecting the push-pull docking device and push-pull docking device block (bolted to the die)

The connection is secured by a locking bolt and can be removed manually when in neutral position. Equipped with push-pull docking device and push-pull docking device block.



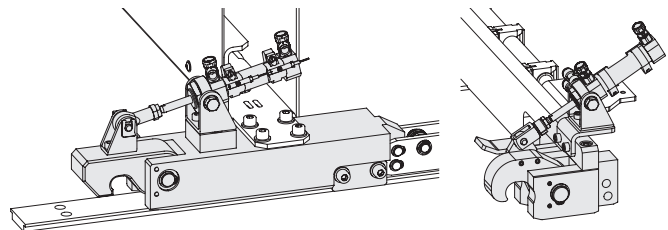
Push-pull docking device with screw-on plate

This version facilitates a permanent connection between the push chain direct system and the base plate.



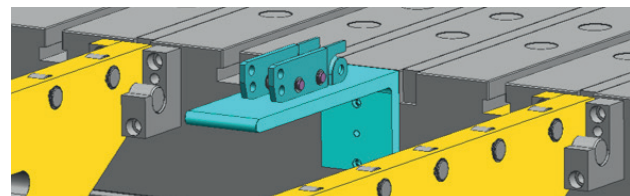
Fully automatic push-pull docking device

Connecting the dies to the push chain direct system is handled entirely by the control. Pneumatic or electric cylinders are used to activate the push-pull docking device when a predefined distance to the die is reached, enabling fully automated tool changes.



Transfer plate

The chain must be supported by a transfer plate if it is lifted past the machine table.

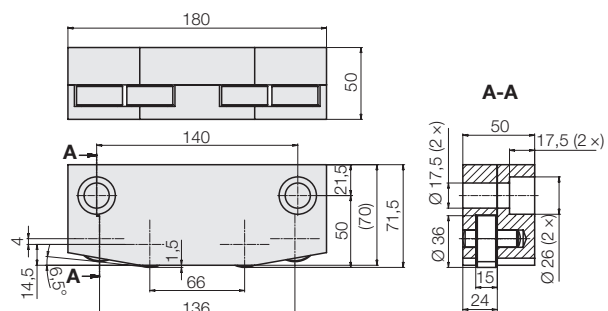


Guide bars for fixing on the press table

To guide and centre the dies with the required accuracy, the press table can be equipped with guide bars.

Special versions on request

Part no. 8 1844 8003



Electric controls for use on driven die changing systems

Driven die changing systems can be controlled by the customer using an existing machine control or a standard control from Römheld. We offer a ready for connection plug & play system that has been specially designed for controlling the driven carrying console or pull-push chain.

For optimum operation of the driven die changing systems, we recommend the following minimum requirements for control:

- Integration in the press emergency stop (terminal strip)
- Position monitoring: front and rear end position
- Wired remote control, soft start, deceleration ramp and overload protection
- Two speeds: Normal speed & creep speed

Depending on the degree of automation, we offer three different electric controls with corresponding operating units:

Basic control	Required specifications
Input voltage flexible 400–480 V, 50/60 Hz, 3~ three-phase current	
Voltage supply and signal exchange to the terminal strip (cable not included in delivery) For controlling 1 or 2 three-phase motors up to max. 1.5 kW	
Connecting cable “control - drive unit” 10 m cable (1 cable per drive motor) permanently connected to the control and to the drive unit	
End position control via inductive proximity switches	
Standard remote control with 5 m cable, permanently connected to the control, without end position indicator light	
Soft start, deceleration ramp and overload protection via speed starter (fixed setting)	
Standard components for motors: KEB, speed starter: Phoenix, control box: Rittal (600×600×250 mm), UL-conform components	
Safety Collective signal input “Release of press”, emergency stop for press, two-channel (PL “D”)	

Possible options for Basic control	
Creep speed Additional switch on remote control for creep speed, 20 %	<input type="radio"/> With creep speed

Advanced control like Basic, additionally with

Connecting cable for power supply, 10 m, with open cable end, permanently connected to the control

Connecting cable for signal exchange with the press, 10 m, with open cable end, permanently connected to the control unit

Connecting cable "control - drive unit" 10 m cable (1 cable per drive motor) permanently connected to the control and to the drive unit

Standard remote control with 5 m cable, connected to the control, insertable (Harting connector), with end position indicator light

Built-in PLC control module (Beckhoff) for an optional remote maintenance module and provision of the following contacts:

- Signal to external "End position at the rear" (= drive/die completely out of the press in end position)
- Additional emergency stop signal contact

Standard components Beckhoff control module, KEB motors, Phoenix speed starter, Rittal control box 600 × 600 × 250 mm), UL-compliant components

Safety Collective signal input "Release of press", emergency stop for press, two-channel (PL "D")

Possible options for Advanced control

Safety remote control

Sturdy housing, with panic buttons and dead man's switch (two-hand operation), connecting cable 5 m, ☐ With safety remote control
connected to the control, insertable (Harting connector)

Creep speed

Additional switch on remote control for creep speed, 20 % ☐ With creep speed

Remote maintenance unit

in the switch cabinet. ☐ With remote maintenance unit
Ethernet connection or via mobile radio (SIM card not included)

Advanced Plus control like Advanced, with additional options:

Radio remote control

☐ With radio remote control

Display package: 3.5" display panel on the control box with text display of function and fault signals, programming of stopping points in conjunction with absolute rotary encoders on each drive

☐ With display package

Signal exchange package: Available individually on terminal strip

- Release signal 1 (e.g. "roller bars lifted")
- Release signal 2 (e.g. "press/ram in top dead centre")
- Release signal 3 (e.g. ...)
- Ext. signal "Die position 1" (from here onwards, retracting speed at creep speed 20 %)
- Ext. signal "Die position 2" (STOP retraction movement, end position in the press reached)

☐ With signal exchange package

Control unit

Control box: Rittal (600 × 600 × 250 mm)



Standard remote control



Safety remote control

Sturdy housing, with panic buttons and dead man's switch (two-hand operation)



Display package

3.5" panel on control box

