

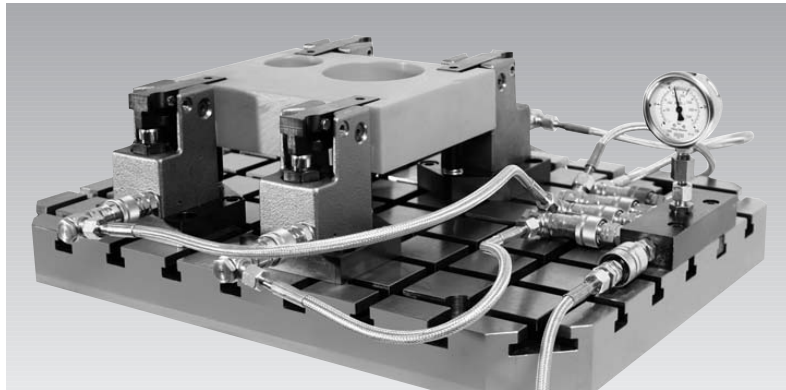


ROEMHELD

Issue 2-07 E

K 1.020

matrix - Hydraulic Workpiece Clamping System clamping sets with hand slide clamps single acting, max. operating pressure 200 bar



Advantages

- Direct clamping on the machine tool table
- No additional fixture costs
- Economic, especially with small batch sizes
- Clamping sets immediately ready for use
- Workpiece supports individually adaptable
- High precision of the workpieces by milling an exact reference system on the machine
- Workpiece supports for free loading and unloading
- Simple adaptation for parts families by displacement of the clamping elements
- 2 sizes available
- Clamping with minimum deformation by exact adjustment and uniform clamping forces
- Simple production of hydraulic fixtures
- Maintenance-free elements
- Saving compared with individual purchase

Application

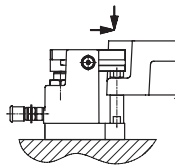
matrix clamping sets with hand slide clamps are especially indicated for clamping of plates, shafts and other workpieces with simple contours directly on the machine tool table. Construction of a clamping fixture is not required. Preparations are limited to place and adapt the integrated supports and stops. For repeated parts use of a workpiece-specific base plate can be useful.

matrix allows the flexible adaptation of very different workpieces and offers all advantages of hydraulic workpiece clamping.

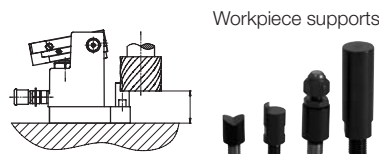
Function

The lever of the hand slide clamp as per data sheet B 1.8234 is manually pushed over the clamping point. Then hydraulic clamping is effected and the force of the hydraulic cylinder is deviated by 180°.

A further advantage is the high clamping force and the fact that clamping can be made in relatively small recesses and special clamping levers with special shape and length can be easily manufactured.



After positioning of the hand slide clamps the screwed-in support bolts can be milled vertically and horizontally.



Workpiece supports

Thereby *matrix* allows an exact reference system directly on the machine.

If required, further work supports can be used at critical points (see accessories page 2).

Description

Clamping sets with 3 or 4 simple acting hand slide clamps with integrated workpiece support and all required parts to clamp workpieces hydraulically directly on the machine table.

matrix consists of:

- Hand slide clamps with integrated support
- Distributor bar with pressure gauge
- High-pressure hoses with coupling
- Fixing parts
- Hydraulic clamping pump (optional)
- Clamping and support unit (optional)

Important notes

Considerable injuries can be caused to fingers in the effective area of the clamping arm. Therefore the clamping pump must only be operated when the clamping levers are in clamping position.

Operating conditions, tolerances and other data see data sheet A 0.100.



Subject to change without prior notice



ROEMHELD

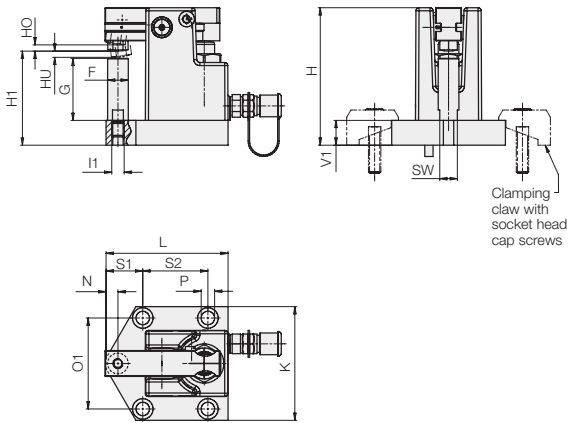
Part numbers
Technical data and
dimensions

Part-nos. and parts included in the clamping sets

		6 [kN]				10 [kN]			
Part-No.:		4415-300	4415-320	4415-330	4415-340	4415-400	4415-420	4415-430	4415-440
	Hand slide clamp	4412-992	3	3	4	4			
	Hand slide clamp	4412-995					3	3	4
	Hydraulic clamping pump	8804-006	1			1	1		1
	Hydraulic oil, 1 litre	9895-001	1			1	1		1
	Hand lever	0990-103	1			1	1		1
	Locking flange	3533-466	1			1	1		1
	Distributor bar	2360-219	1	1	1	1	1	1	1
	Hose 500 mm long	9375-616	2	2	2	2	2	2	2
	Hose 750 mm long	9375-636	1	1	2	2	1	1	2
	Hose 1000 mm long	9375-619	1	1	1	1	1	1	1
	Hose 2500 mm long	9375-623	1	1	1	1	1	1	1
	Clamping claw	3533-462	8	8	8	8	8	8	8
	Support bolts D20	3443-675	3	3	4	4			
	Support bolts D38	3443-676					3	3	4
	Screw-in plug	3610-006	4	4	4	4	4	4	4
	Tube male stud coupling	9208-003	8	8	8	8	8	8	8
	Swivel banjo coupling	9208-004	3	3	3	3	3	3	3
	Couplings and Dust caps	9384-106							
	Couplings and Dust caps	9384-300	3	3	4	3	3	3	4
	Coupling nipples and Dust caps	9384-206							
	9384-400								

Components of clamping elements

Hand slide clamp



Clamping unit

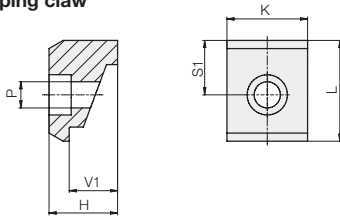
Part-No.:		4412-992	4412-995
Clamping force at 200 bar	[kN]	6	10
Oil volume clamping	[cm ³]	5	8
F	[mm]	20	38
G	[mm]	60	62
H	[mm]	133	140
H1	[mm]	91	95
HO	[mm]	6	6
HU	[mm]	6	6
I1	[mm]	M12	M20
K	[mm]	110	130
L	[mm]	118	146
N	[mm]	11,5	20
O1	[mm]	88	108
P	[mm]	13	13
S1	[mm]	35,5	39
S2	[mm]	63	94
V1	[mm]	24	24
SW	[mm]	17	30



ROEMHELD

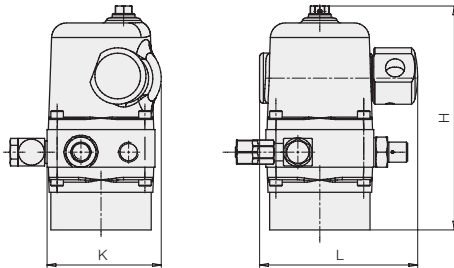
Technical characteristics
Dimensions

Clamping claw



Clamping claw	Part-no.	3533-462
H	[mm]	34
K	[mm]	40
L	[mm]	50
P	[mm]	13
S1	[mm]	27
V1	[mm]	24

Hydraulic clamping pump



Hydraulic clamping pump	Part-no.	8804-006
Max. operating pressure	[bar]	200
Oil volume V	[cm ³]	300
Oil volume, usable	[cm ³]	150
Displacement per stroke	[cm ³]	4
Weight	[kg]	6,1
H	[mm]	178
K	[mm]	91
L	[mm]	126

The *matrix* clamping sets with hydraulic clamping pumps are supplied with hand lever 0990-103 as well as 1 litre hydraulic oil HLP 32.

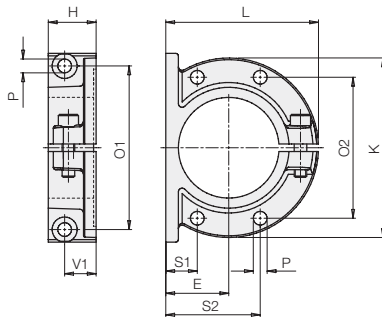
Accessories

Suitable hand lever	Part-no.	0990-103
Suitable foot pedal	Part-no.	0990-102

Further variants, data and accessories see data sheets D 8.800 and D 8.817.

Locking flange

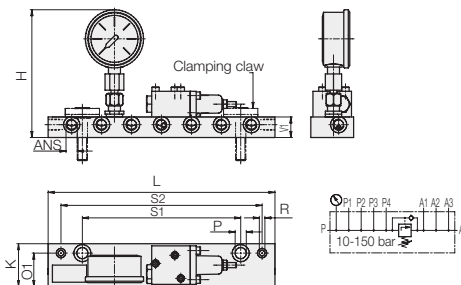
for hydraulic clamping pump



Locking flange	Part-no.	3533-466
E	[mm]	50
H	[mm]	38
K	[mm]	143
L	[mm]	121
O1	[mm]	130
O2	[mm]	112
P	[mm]	11
S1	[mm]	25
S2	[mm]	75
V1	[mm]	25

Further flanges and accessories see data sheet D8.800.

Distributor bar



Part-No.:	Distributor bar without sequence valve	Distributor bar with sequence valve
	2360-219	2360-218
Min. sequence pressure	[bar]	30
Connecting thread	ANS	6 x G1/4
H	[mm]	approx. 150
K	[mm]	50
L	[mm]	265
O1	[mm]	39
P	[mm]	13
R	[mm]	6,5
S1	[mm]	80
S2	[mm]	120
V1	[mm]	24

Description

Sequence valves are used in power workholding for pressure-dependent sequence controls.

In *matrix* systems the functions extending and locking of the support elements is controlled by the sequence valve.



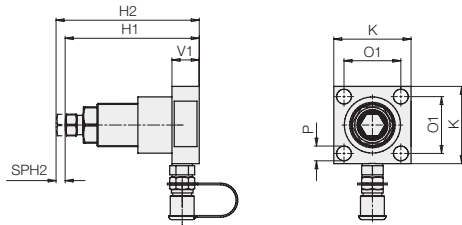
ROEMHELD

Accessories

Accessories:

Support element

for additional support points



Support element

Adm. support force at 200 bar

5.6 kN

10 kN

Part-No.:

4412-989

4412-990

		5.6 kN 4412-989	10 kN 4412-990
Off-position of the bolt		retracted	extended
Support stroke	SPH2 [mm]	8	16
Operating pressure, min.	[bar]	50	100
H1	[mm]	118	122
H2	[mm]	126	106
K	[mm]	68	75
O1	[mm]	50	57
P	[mm]	13	7
V1	[mm]	24	24

Description

Hydraulic work supports are used to provide a self-adjusting rest for the workpiece during the machining operations. They compensate the workpiece surface irregularities, also deflection and vibration under machining loads. The support plunger moves with spring force against the workpiece.

Off-position retracted:

The bolt contacts the workpiece by hydraulic pressure.

Off-position extended:

Bolt is retracted by the workpiece.

Other accessories:

Pressure switch	see data sheet F 9.731
Hydraulic high-pressure hoses	see data sheet F 9.360
Fittings, hydraulic oil, seamless precision steel tubes	see data sheet F 9.300
Pressure gauge,	
Hydraulic intensifier	see data sheet D 8.755
Distributor, quadruple	Part-no. 3534-395