OIL AND GAS

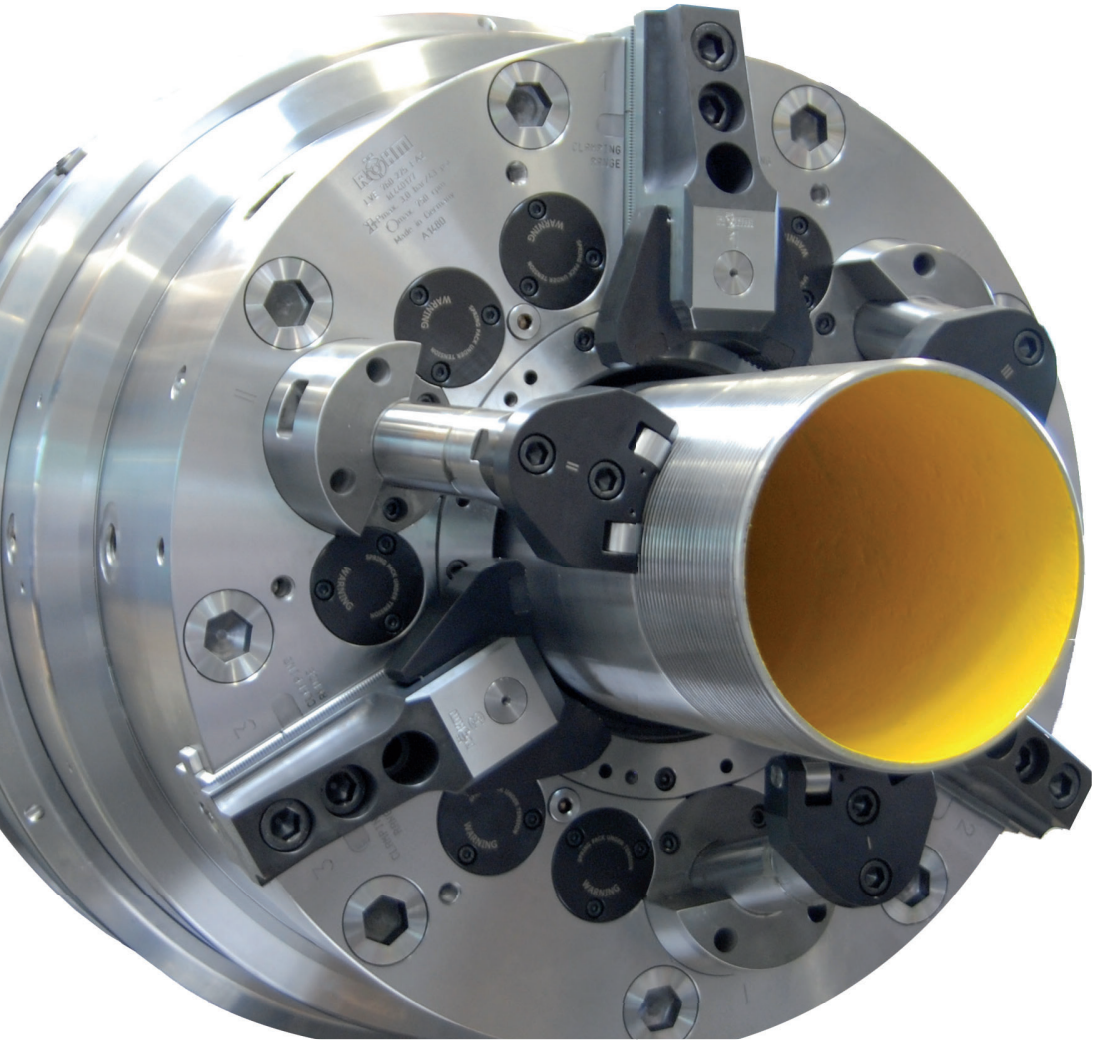
Clamping technology for crude oil and natural gas industries

RÖHM
driven by technology

CRUDE OIL AND NATURAL GAS - THE ENERGY OF TODAY

RÖHM is the specialist for clamping technology with a wide product range, unrivaled with regard to variety. This solutions for special requirements are also unlimited in the oil and gas extraction areas.

The crude oil and natural gas industries are still the center of the worldwide energy production today. The extraction and further processing of these two raw materials require top precision and maximum safety. RÖHM products are characterized by just these properties. In the past years, RÖHM was able to increasingly adapt the product range to the most important industries. Sophisticated products allow the reliable machining of a wide range of workpieces. It goes without saying that RÖHM has high safety standards. RÖHM products are specially tailored to the special needs of this important market. Our strengths not only involve offering an especially wide range of standard products, but also to convince our customers with individually developed special designs.



CONTENT

PIPE MACHINING: PNEUMATIC FRONT-END CHUCKS

The pneumatic front-end chucks are optimally suited for machining the ends of pipes, especially large and long pipes like the ones used for extracting crude oil or natural gas. For this, a chuck is mounted to the front and rear sides of the machine spindle. This combination allows large chipcutting performance at high turning precision.

APPLICATION

Optimal for the end machining of large and long pipes, e.g. for the oil and gas industry (especially as front and rear chuck).

TYPE

Power chuck with integrated pneumatic cylinder and cylindrical centre mount. 3-jaw version with serration 90°.

CUSTOMER BENEFITS

- Extra-large through-hole
- Can be easily exchanged with manual clamping chuck
- Compact system dimensions because it is self-contained
- Unobstructed bore through spindle thanks to omission of the draw tube
- Flange and bar machining possible without retrofitting

TECHNICAL FEATURES

- Clamping and unclamping only when spindle at standstill
- Wedge hook system with integrated clamping cylinder
- Control valves maintain the clamping pressure during machining
- Short clamping cycle thanks to rapid and clamping stoke (optionally)
- Permanent monitoring of the clamping pressure while machining (optionally)

Note:
Other versions on request: e.g. front-end chucks for compensating clamping, compensating self-contained chucks and chucks that can be converted from selfcentering to compensating.

Included in scope of delivery:
Chuck, chuck and jaw mounting screws, slot nuts (without top jaws)

LVE = air-operated, self-contained chuck

Possible application

Two chucks are mounted on the front and rear sides of the machine spindle. Via a selection switch on our electronic control unit DF type 525-90 combined with one pneumatic control unit LSV type 525-91 each, the two chucks can be used together or separately and also with different clamping pressures. This combinations make a high cutting capacity and high turning precision possible for the end machining of long pipes.

Air-operated self-contained chucks, sizes 400-1000

Characteristic for this chuck is a pneumatic piston integrated in the chuck body for generating the clamping force. To clamp or unclamp the workpiece, the compressed air is conducted to the pneumatic piston while the chuck is stationary via the distributor ring and non-return valve. The pneumatic piston is screwed to the clamping piston, with which, in turn, the base jaws are connected via a wedge hook system. An axial movement of the pneumatic piston therefore causes a radial movement of the base jaws.

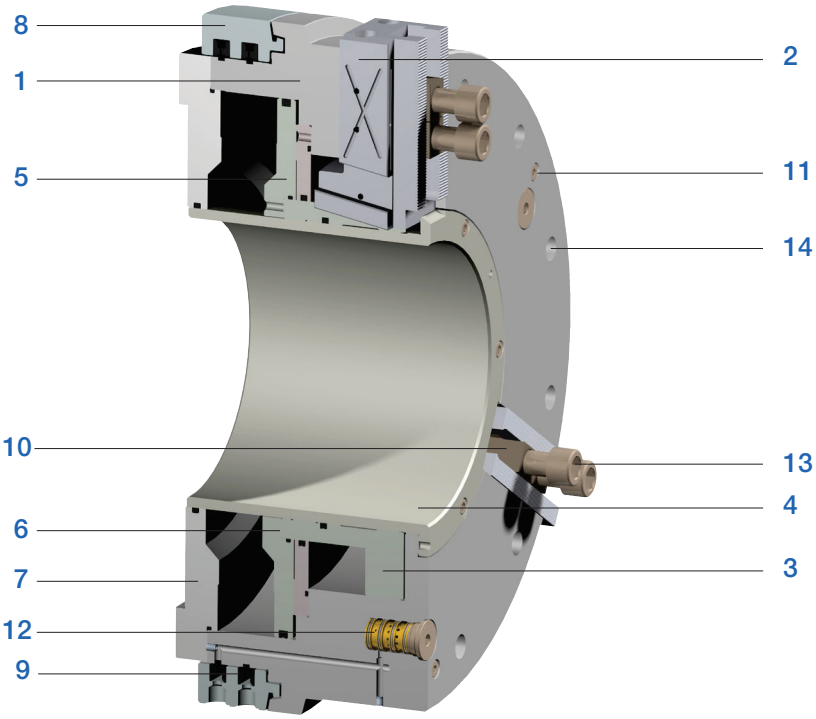
Distributor ring

The distributor ring has the function of transferring compressed air from the outside into the chuck. This means that the distributor ring is always stationary, while the chuck rotates during workpiece machining. It is therefore mounted to the spindle box, and is therefore secured against rotating along. Special seals seal the gap between the distributor ring and chuck during the clamping operation so that the pressure can be transferred with no problems.
Important: To prevent the sealing ring from being destroyed, the pressure may only be transferred when the chuck is at a standstill.

Control valve

The control valve has the job of securing the compressed air required for clamping in a closed system throughout machining. It automatically secures that piston side which is pressurized, whereby the compressed air of the opposite-lying piston side is unclamped automatically. The valve can be dismounted as a complete unit and is available as replacement unit.

PIPE MACHINING: PNEUMATIC FRONT-END CHUCKS



Components LVE

1. Body
2. Base jaw
3. Piston
4. Protective bush
5. Intermediate washer
6. Piston plate
7. Flange
8. Distributor ring
9. Seal
10. T-Nut
11. Air-vent screw
12. Control valve
13. Jaw fixing screws
14. Chuck fixing screws

Control system

The clamping safety mainly depends on the leak-tightness of the closed pneumatic chamber. A pressure drop during machining causes a reduction in the clamping force.

The „**RÖHM control system**“ is used to control the pressure of the closed pneumatic chamber. If the pressure falls below a defined minimum level, a spring-loaded pin attached to the rear side of the chuck moves out to the rear.

At the same height as the pin, a contactless inductive probe is fastened at a certain radial distance. If the extended pin moves through the magnetic field of the probe, an electrical pulse is triggered, which can be used to shut the machine down.

Wedge hook system

The axial piston force is transferred and transmitted into the radial jaw force via the proven wedge hooks. The large force transfer surfaces guarantee a long service life and a sustainably high clamping precision.These features apply both to the chuck with normal jaw stroke as well as to chucks with rapid and gripping jaw movements.

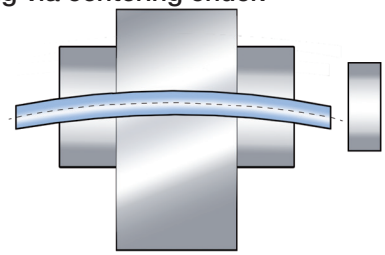
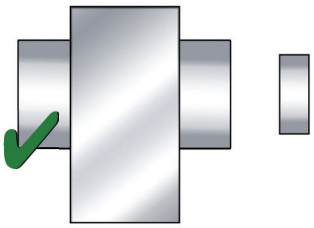
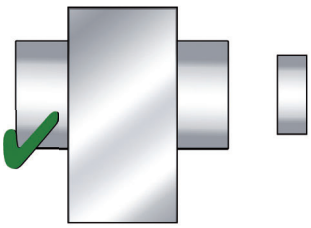
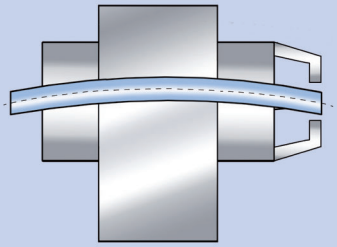
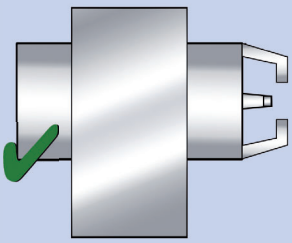
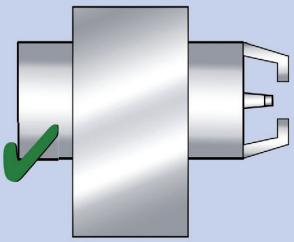
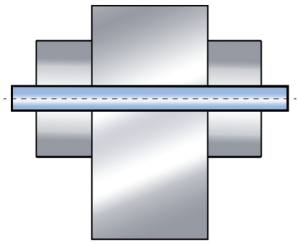
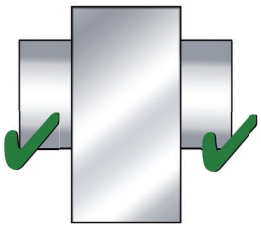
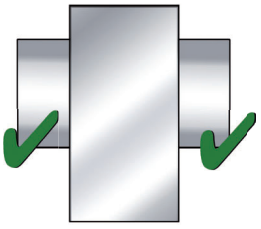
PNEUMATIC CONTROL UNIT

Control voltage 24 V
Connection R 1/2" inside thread
Weight approx. 3 kg
Dimensions: 280x250x100 mm (WxHxD)
Item no.: 426560

CONTROL UNIT FOR DUAL CHUCKS

With dual foot switch, wired, 6m cable
Control voltage 24 V
Dimensions: 300x300x120 mm (WxHxD)
Width with plug: 340 mm
Item no.:
426482 without pressure monitoring
426464 with pressure monitoring

OPERATION GUIDE LVE

TYPE	LVE	LVE-ES
Description	- Pneumatic front-end chuck - Concentric clamping	- Pneumatic front-end chuck - Concentric clamping - With rapid stroke and clamping stroke
Page	8	9
Characteristics		
Machining situation: Bent pipe **Centering via centering chuck** 		
Machining situation: Bent pipe **Centering by front-end chuck** 		
Machining situation: Exactly straight pipe **No centering required** 		

 pneumatic

 hydraulic

 spring

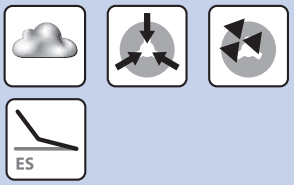
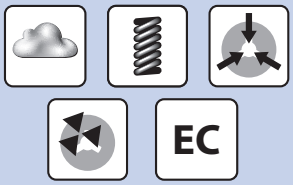
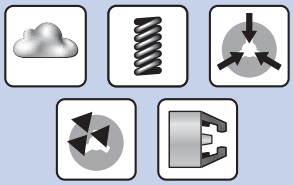
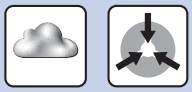
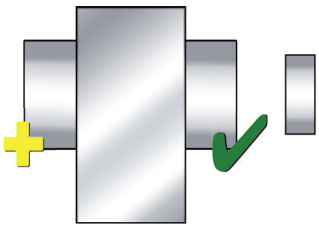
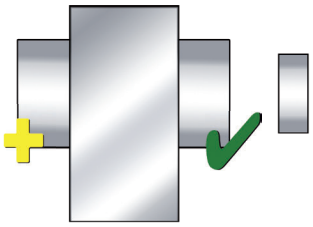
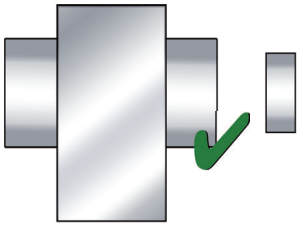
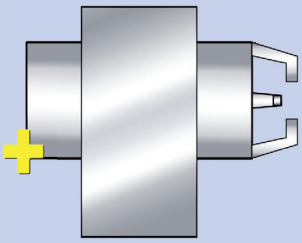
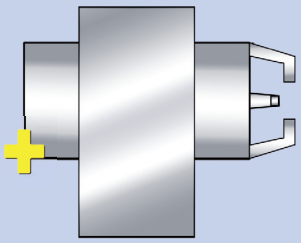
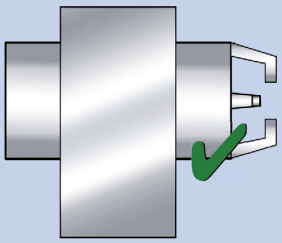
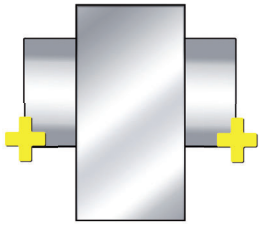
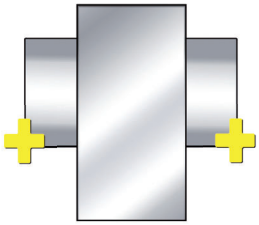
 rapid stroke and clamping stroke

 centering

 with compensation

 retractable clamping arms for pre-centering

EC low-maintenance (Easy Care)

LVE-AZ ES	LVE-FAZ EC	LVE-VZA	Centering chuck KFG
- Pneumatic front-end chuck - Concentric clamping or with compensation - With rapid stroke and clamping stroke	- Front-end chuck - Clamping with springs, pneumatic release - Concentric clamping or with compensation - Low-maintenance design	- Pneumatic/spring-operated front-end chuck - Concentric clamping or with compensation - Retractable clamping arms for pre-centering the workpiece	- Pneumatic angle lever chuck - Concentric clamping - Integrated flapper with stroke inquiry
10	11	12	13
			
			
			
			

ideally suited

suited

bent pipe

exactly straight pipe

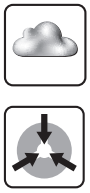
rear-end chuck

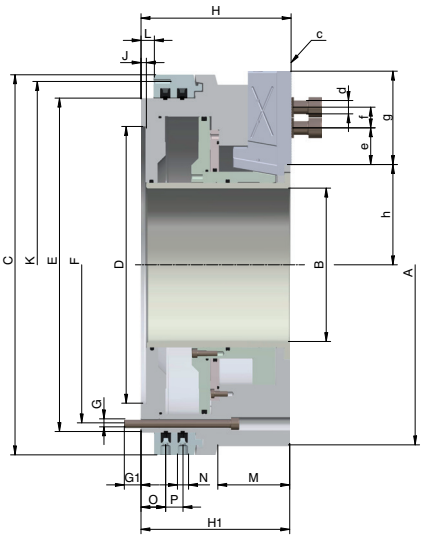
front-end chuck

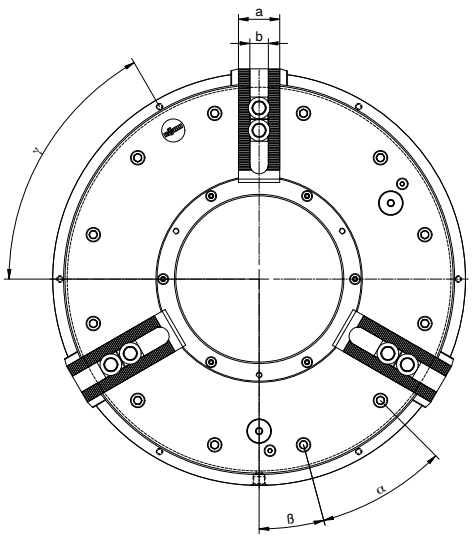
front-end chuck with centering

centering chuck

LVE - large through-hole







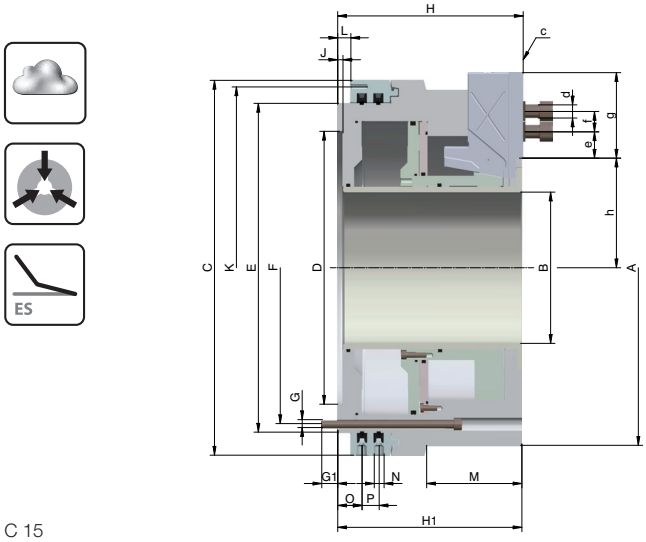
C 15

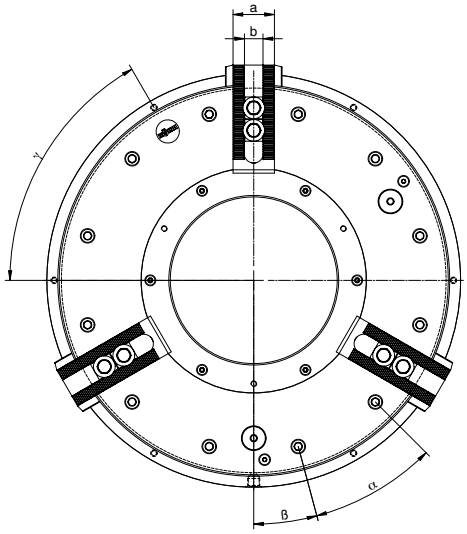
3-jaw self-contained **chucks LVE,** with **large through-hole, max. operating pressure 8 bar,** with **serration, cylindrical center mount**

Standard design Item No.	**169400 ▲**	**169401 ▲**	**169402 ▲**	**169403 ▲**	**169404 ▲**	**169405 ▲**	**169406 ▲**	**169407 ▲**	**169409 ▲**
With pressure control device for external clamping Item No.	**169411 ▲**	**169412 ▲**	**169413 ▲**	**169414 ▲**	**169415 ▲**	**169416 ▲**	**169417 ▲**	**169418 ▲**	**169420 ▲**
Size	400	400	500	500	600	600	600	700	800
LVE	LVE 420-140	LVE 480-185	LVE 540-205	LVE 570-230	LVE 600-275	LVE 640-275	LVE 680-325	LVE 730-375	LVE 830-410
Jaw travel mm	7	8,5	8,5	8,5	8,5	10	10	10	12
A mm	425	480	540	570	605	640	685	735	835
B mm	140	185	205	230	275	275	325	375	410
C mm	470	530	570	570	605	685	685	735	850
D^{H6} mm	310	365	415	415	450	510	510	560	700
E mm	400	460	500	500	535	610	610	660	775
F mm	374	434	474	474	500	580	580	630	745
G	M12	M12	M12	M12	M12	M16	M16	M16	M16
G1 mm	25	25	25	25	25	30	30	30	30
H mm	196	225	225	225	225	263	263	263	305
H1 mm	194	223	223	223	223	261	261	261	303
J mm	8	8	8	8	8	8	8	8	8
K mm (6xM8)	448	510	550	550	585	666	666	666	830
L mm	20	20	20	20	20	20	20	20	25
M mm	70	90	100	-	-	110	-	-	155
N	G 3/8	G 3/8	G 3/8	G 3/8	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2
O mm	37	37	37	37	37	39,5	39,5	39,5	44,5
P mm	26	26	26	26	26	33	33	33	33
a mm	57	57	57	57	57	75	75	75	75
b^{H7} mm	25,5	25,5	25,5	25,5	25,5	30	30	30	30
c inch	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°
d	M20x50	M20x50	M20x50	M20x50	M20x50	M24x60	M24x60	M24x60	M24x60
e mm	20	20	20	20	20	28	28	28	28
f min.	32	32	32	32	32	42	42	42	42
f max.	85	85	105	100	105	100	100	100	125
g mm	120	120	140	140	135	145	145	145	173
h min.	94	118.5	131.5	141.5	164	175	195	220	242.5
h max.	101	127	140	150	172,5	185	205	230	254.5
α degree	30°	30°	30°	30°	30°	30°	30°	30°	30°
β degree	15°	15°	15°	15°	15°	15°	15°	15°	15°
y degree	60°	60°	60°	60°	60°	60°	60°	60°	60°
Min. operating pressure bar	2	2	2	2	2	2	2	2	3
Max. operating pressure bar	8	8	8	8	8	8	8	8	8
Total clamping force at 6 bar kN	140	155	210	190	200	240	155	175	360
Cylinder surface area cm^2	710	899	1045	939	1010	1414	1181	1307	2121
Air consumption (total stroke) l	20	31	36	32	35	58	49	55	104
Max. admissible speed min^{-1}	1700	1500	1300	1300	1200	1000	900	800	750
Moment of inertia kgm^2	3,50	7,00	10,50	12,50	15,5	24,75	29,50	38,50	76,25
Weight kg	150	215	263	272	289	423	426	470	723

▲ on request

LVE ES - large through-hole, with rapid and clamping jaw movements





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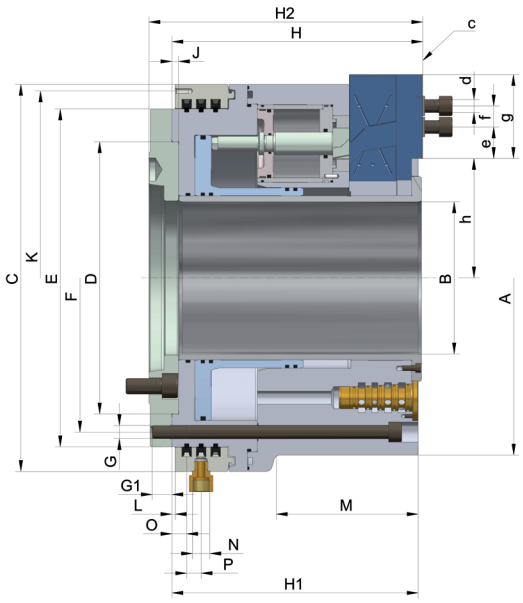
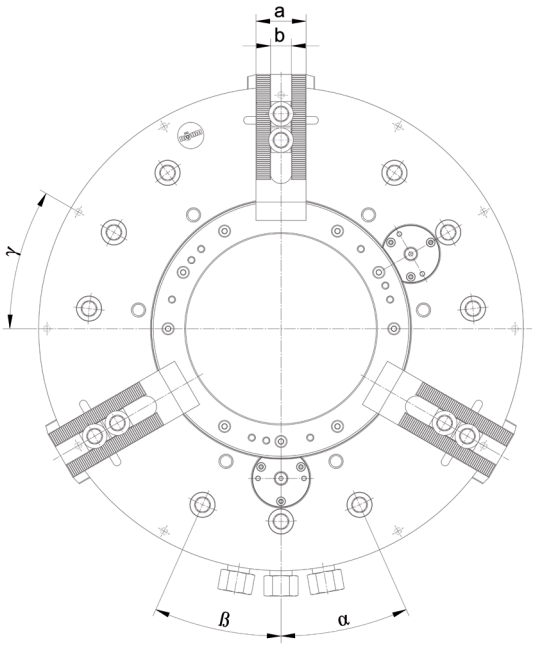
3-jaw self-contained chucks **LVE,** with **rapid and clamping jaw movements,** with **large through-hole,** external chucking, **max. operating pressure 8 bar,** with **serration, cylindrical center mount**

Standard design Item No.	**169422 ▲**	**169423 ▲**	**169424 ▲**	**169425 ▲**	**169426 ▲**	**169427 ▲**	**169428 ▲**	**169429 ▲**	**169431 ▲**
With pressure control device for external clamping Item No.	**169433 ▲**	**169434 ▲**	**169435 ▲**	**169436 ▲**	**169437 ▲**	**169438 ▲**	**169439 ▲**	**169440 ▲**	**169442 ▲**
Size	400	400	500	500	600	600	600	700	800
LVE	LVE 470-140 ES	LVE 490-185 ES	LVE 570-205 ES	LVE 570-230 ES	LVE 600-275 ES	LVE 640-275 ES	LVE 680-325 ES	LVE 730-375 ES	LVE 850-410 ES
Jaw travel mm	19	25,4	25,4	25,4	25,4	25,4	25,4	25,4	25,4
Rapid movement mm	12	16.9	16,9	16.9	16.9	16,9	16.9	16.9	14,9
Clamping movement mm	7	8.5	8,5	8.5	8.5	8,5	8.5	8.5	10,5
A mm	470	490	570	570	605	645	685	735	850
B mm	140	185	205	230	275	275	325	375	410
C mm	470	530	570	570	605	685	685	735	850
D^{H6} mm	310	365	415	415	450	510	510	560	700
E mm	400	460	500	500	535	610	610	660	775
F mm	374	434	474	474	509	580	580	630	745
G	M12	M12	M12	M12	M12	M16	M16	M16	M16
G1 mm	25	25	25	25	25	30	30	30	30
H mm	240	282	282	282	282	308	308	308	322
H1 mm	238	280	280	280	280	306	306	306	320
J mm	8	8	8	8	8	8	8	8	8
K mm (6xM8)	448	510	550	550	585	666	666	716	830
L mm	20	20	20	20	20	20	20	20	25
M mm	-	140	100	-	-	150	-	-	-
N	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8	G1/2	G 1/2	G 1/2	G 1/2
O mm	37	37	37	37	37	39,5	39,5	39,5	44,5
P mm	26	26	26	26	26	33	33	33	33
a mm	57	57	57	57	57	75	75	75	75
b^{H7} mm	25,5	25,5	25,5	25,5	25,5	30	30	30	30
c inch	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°	3/32"x90°
d	M20x50	M20x50	M20x50	M20x50	M20x50	M24x60	M24x60	M24x60	M24x60
e mm	20	20	20	20	20	28	28	28	28
f min.	32	32	32	32	32	42	42	42	42
f max.	80	80	95	95	90	95	95	95	120
g mm	112	112	130	130	125	140	140	140	170
h min.	126	132.6	142,1	154.6	177.1	182,6	202.6	227.6	234,6
h max.	145	158	167,5	180	202.5	208	228	253	260
α degree	30°	30°	30°	30°	30°	30°	30°	30°	30°
β degree	15°	15°	15°	15°	15°	15°	15°	15°	15°
γ degree	60°	60°	60°	60°	60°	60°	60°	60°	60°
Min. operating pressure bar	2	2	2	2	2	2	2	2	3
Max. operating pressure bar	8	8	8	8	8	8	8	8	8
Total clamping force at 6 bar kN	120	150	210	170	180	185	180	200	325
Cylinder surface area cm^2	700	862	1024	895	958	1203	1181	1307	2121
Air consumption (totalstroke) l	32	42	50	45	46	58	57	63	113
Max. admissible speed min^{-1}	1500	1300	1200	1200	1100	900	800	750	750
Moment of inertia kgm^2	6,50	8,75	15,50	15,00	19,00	30,5	35,25	45,75	84,50
Weight kg	200	267	348	334	356	515	505	554	785

▲ on request

LVE-AZ ES

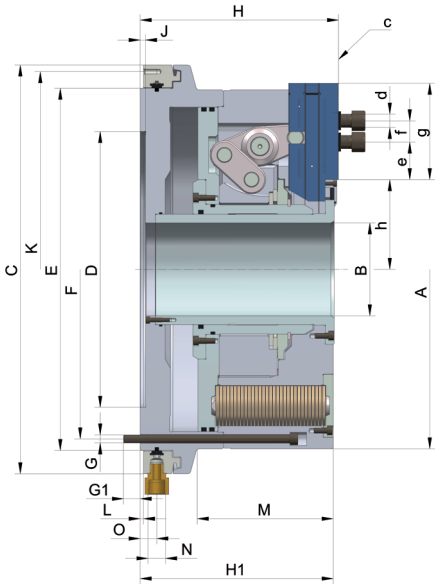


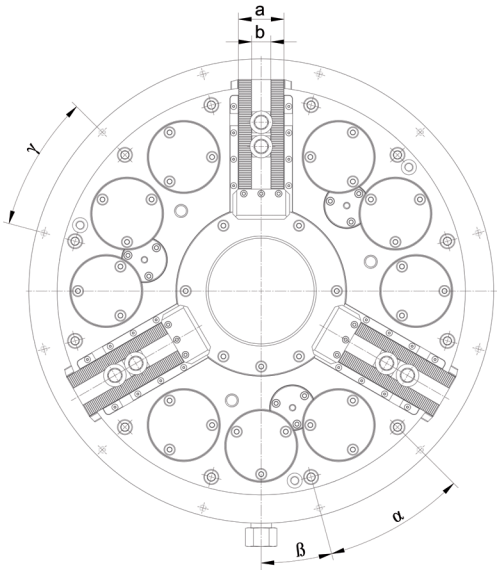


	LVE-AZ ES 570-220 KK15	LVE-AZ ES 650-275 KK15 - KK20	LVE-AZ ES 760-375 KK20
Item no.	**169519**	**169520**	**169521**
Jaw stroke mm	25,4	25,4	25,4
Rapid/clamping mm	15,9/9,5	15,9/9,5	15,9/9,5
Min./max. Operating pressure bar	2/8	2/8	3/8
Gripping force concentric kN at 6bar	155	180	240
Gripping force comp. kN at 6bar	75	85	100
Max. Speed min^{-1}	1200	1000	750
-Z-/-A- Cylinder area cm^2	1015/520	1360/680	1620/680
-Z-/-A- Air consumption l	50/70	67/90	80/100
Weight kg	535	730	925
Moment of inertia kgm^2	25,00	45,00	80,00
A mm	570	650	760
B mm	220	275	375
C mm	570	685	780
D^{H6} mm	415	510	590
E mm	500	615	710
F Pitch diameter mm	470	555	640
G/G1 mm	M20/30 (9x)	M20/35 (9x)	M20/35 (12x)
H mm	382	382	382
H1/H2 mm	375/417	375/(417) 422	375/422
J mm	10	10	10
K Pitch diameter (12x30°) M8-20 mm	555	670	765
L mm	10	10	10
M mm	-	220	220
N Pneumatic connection	G 3/4	G 3/4	G 3/4
O mm	25	25	25
P mm	22	22	22
a mm	61	75	75
b^{H7} mm	25,5	30	30
c Serration inch	3/32"x90°	3/32"x90°	3/32"x90°
d Screw DIN 912-12.9 mm	M20x55	M24x65	M24x65
e min.	20	25	25
f min./max.	32/90	40/95	40/95
g mm	128	140	140
h min./max.	154,1/179,5	179,4/205,0	232,1/257,5
a degree	22,5°	25°	20°
b degree	22,5°	25°	20°
g degree	30°	30°	30°

▲ on request

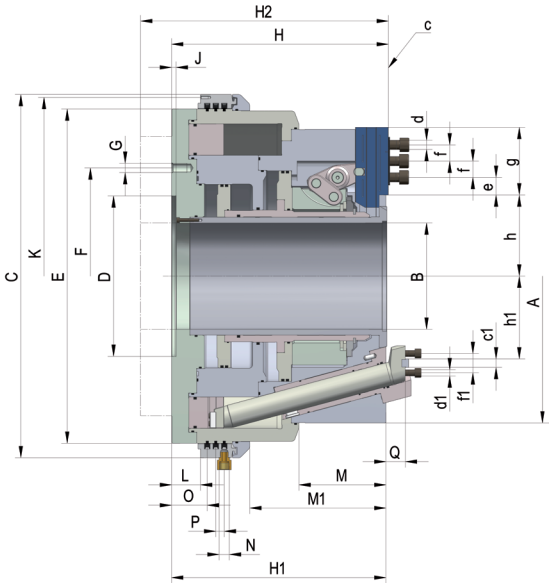
LVE-FAZ EC

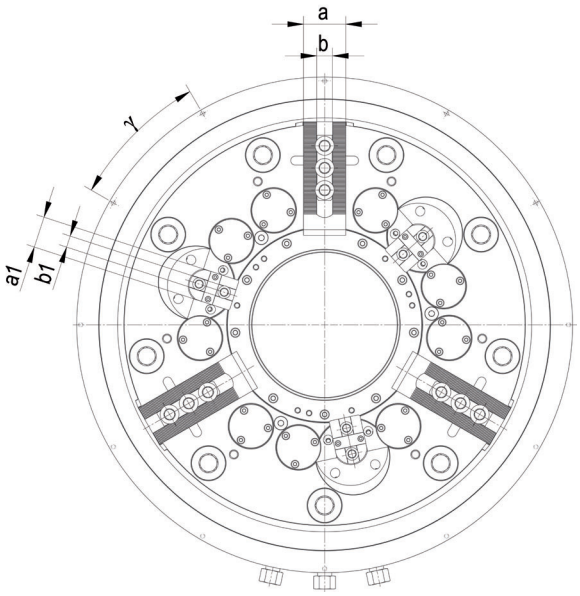




	LVE-FAZ EC 675-275	LVE-FAZ EC 825-395	LVE-FAZ EC 1000-570
Item no.	**169516**	**169517**	**169518**
Jaw stroke mm	18,0	22,0	22,0
Min./max. Opening pressure bar	3/5	5/8	5/8
Max. Gripping force kN	30/60/90 (3/6/9 Federn)	90/135/180 (6/9/12 Federn)	90/135/180 (6/9/12 Federn)
Max. Speed min^{-1}	1000	750	450
Cylinder area cm^2	2170	2890	3790
Air consumption l	50	60	80
Weight kg	525	900	1150
Moment of inertia kgm^2	35,00	95,00	190,00
A mm	675	825	1000
B mm	275	395	570
C mm	750	900	1075
D^{H6} mm	510	700	870
E mm	680	830	1000
F Pitch diameter (12x30°) mm	640	785	960
G/G1 mm	M12/25	M16/30	M16/30
H mm	298	320	320
H1 mm	290	310	310
J mm	8	10	10
K Pitch diameter (12x30°) M8-20 mm	730	880	1055
L mm	20	20	20
M mm	205	225	225
N Pneumatic connection inch	G 3/4	G 3/4	G 3/4
O mm	25	25	25
a mm	60	80	80
b^{H7} mm	25,5	30	30
c Serration inch	3/32"x90°	3/32"x90°	3/32"x90°
d Screw DIN 912-12.9 mm	M20x45	M24x65	M24x65
e min.	14	28	28
f min./max.	32/115	40/105	40/105
g mm	145	155	155
h min./max. mm	184,5/202,5	238,0/260,0	328,0/350,0
a degree	30°	30°	30°
b degree	15°	15°	15°
g degree	30°	30°	30°

LVE-VZA

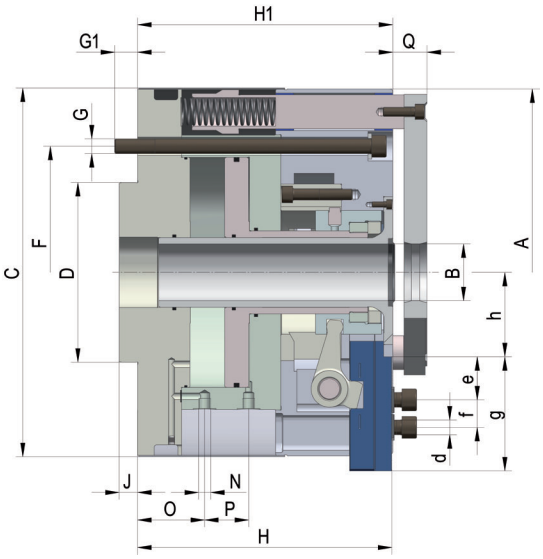


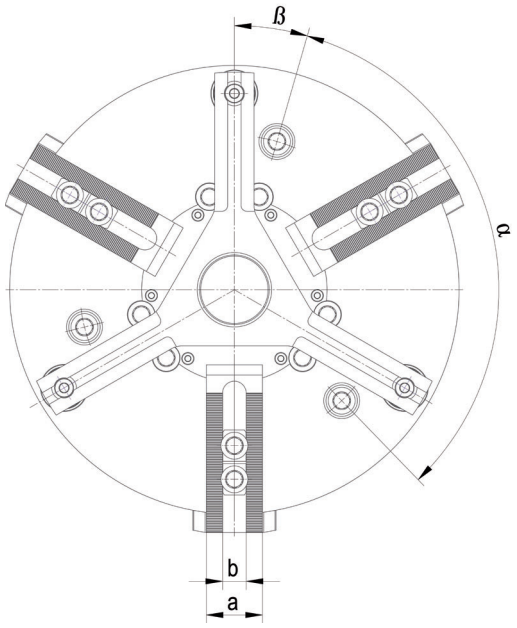


	LVE-VZA 760-275	LVE-VZA 860-375	LVE-VZA 960-475
Item no.	**169522**	**169523**	**169514**
Clamping jaw stroke mm	20	20	20
+/- Compensation mm	±5	±6	±6
Centering jaw stroke mm	38,5	38,5	38,5
Min./max. Opening pressure bar	4/8	4/8	4/8
Max. Gripping force 3/6/9/12 Springs kN	40/80/120	40/80/120	40/80/120/160
Max. Centering pressure bar	3	3	3
Max. Centering force kN at 3 bar	85	100	120
Max. Speed min^{-1}	750	500	450
Min. Air consumption opening l	50	75	115
Air consumption center. l	80	95	110
Weight kg	1250	1475	1705
Moment of inertia kgm^2	107,50	170,00	252,50
A mm	760	860	960
B mm	275	375	475
C mm	900	1000	1100
D^{H6} mm	415	560	680
E mm	825	925	1025
F Pitch diameter (9x40° / 12x30°) mm	540	640	740
G/G1 mm	M24/--	M24/--	M24/--
H mm	496	496	496
H1/H2 mm	490/580	490/580	490/580
J mm	12	12	12
K Pitch diameter (12x30°) M8-20 mm	885	985	1085
L mm	70	70	70
M/M1 mm	172,5/297,5	172,5/297,5	172,5/297,5
N Pneumatic connection inch	G 3/4	G 3/4	G3/4
O mm	87,5	87,5	87,5
P mm	22	22	22
Q min./max.	50/195	50/195	50/195
a/a1 mm	80/60	80/60	80/60
$b/b1^{H7}$ mm	30/22	30/22	30/22
c Serration inch	3/32"x90°	3/32"x90°	3/32"x90°
$c1^{g6}$ mm	22	22	22
d / d1 Screw DIN 912-12.9 mm	M24x60 / M16x60	M24x60 / M16/60	M24x60 / M16/60
e min./max. mm	20/70	20/70	20/70
f / f1 mm	42 / 50	42/50	42/50
g mm	175	175	175
h min./max. mm	190,0/210,0	240,0/260,0	290,0/310,0
h1 min./max. mm	175,5/214,0	225,5/264,0	275,5/314,0
g degree	30°	30°	30°

▲ on request

CENTERING CHUCK KFG



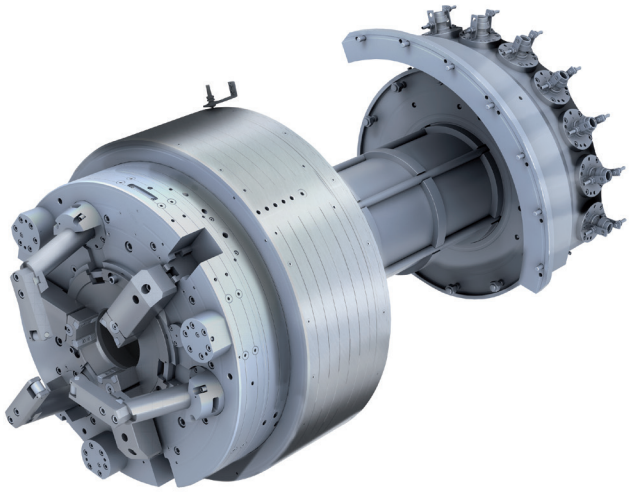


	KFG 400-62
Item no.	**435160**
Jaw stroke mm	15
Flapper stroke mm	50
Restoring force of flapper kN	0,5
Min./max. Operating pressure bar	2/10
Total gripping force kN at 6bar	45
Cylinder area cm^2	430
Air consumption/Jaw stroke/6bar l	12
Weight kg	165
A mm	400
B mm	62
C mm	405
D^{H6} mm	196
F Pitch diameter (3x120°) mm	275
G/G1 mm	M16/25
H mm	277
H1/H2 mm	278/--
J mm	20
N Pneumatic connection inch	G 1/4
O mm	70
P mm	50
Q min./max. mm	-10/+40
a mm	50
b^{H7} mm	21
c Serration mm	1,5x60°
d Screw DIN 912-12.9 mm	M16x30
e min. mm	18
f min./max. mm	30/95
g mm	125
h min./max. mm	77.0/92.0
a degree	120°
b degree	16°

The centering chuck offers one of many options in the RÖHM product range for centering pipes.
Alternative solutions are available on request.

PIPE MACHINING: HYDRAULIC FRONT-END CHUCKS

The hydraulic front-end chucks are optimally suited for machining the ends of pipes, especially large and long pipes like the ones used for extracting crude oil or natural gas. For this, one chuck is mounted to the front and one to the rear side of the machine spindle. This combination allows large chip-cutting performance at high turning precision.



Actuation HVE-IZ
During pipe machining, the clamping system is decoupled from the supply via relief valves. A pressure accumulator ensures a sufficient resupply. A sensor system detects any drop in pressure. The HVE-IZ chuck is actuated via injection cylinders. These are arranged radially with respect to the rotary axis.

Actuation HVE-EK
The HVE-EK chuck has stationary actuation, which is decoupled from the rotating system during machining. The stationary actuating unit is located between the chuck and spindle box, and is separated from the rotating components.

Setup and mode of operation
RÖHM offers two concepts for hydraulically actuating the front-end chucks:

HVE-IZ: Actuation is done via injection cylinder
HVE-EK: Stationary actuation which is decoupled during rotation

The two variants can be used both with centric clamping as well as clamping with compensation. For this, the floating clamping claw disc is merely fastened with two bolts, or released for compensating clamping. The clamping jaws with rapid and clamping stroke ensure large strokes with short stroke times. The hydraulically operated chucks are available with central lubrication.

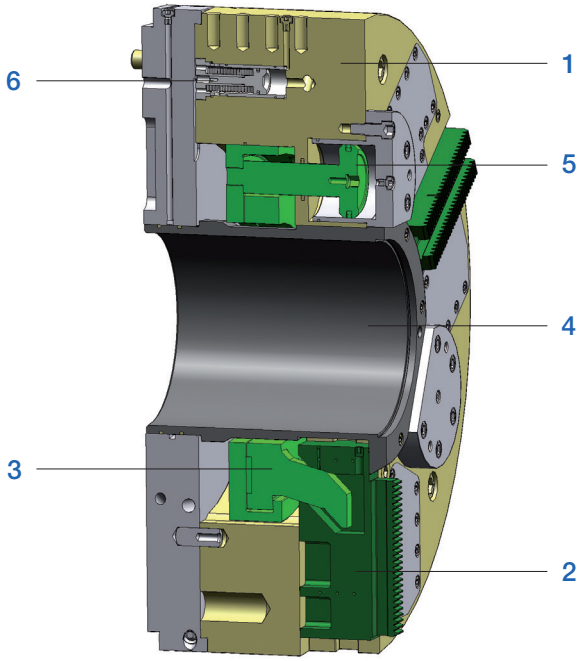
The individual clamping chucks are supplied either

- via a distributor flange for each chuck, on the front and rear side of the spindle box
- via a distributor flange on the rear side of the spindle box and supply of the front-end chuck via the oil supply pipe or
- via a distributor flange on the front side of the spindle box and supply of the rear-end chuck via the oil supply pipe

To couple the injection cylinder, it is necessary to exactly position the machine spindle. Here, the injection cylinder is monitored by limit switches. Decoupling is done without pressure. The generously dimensioned interface from the stationary to rotating areas allows short switching times, as little as one second per clamping function.

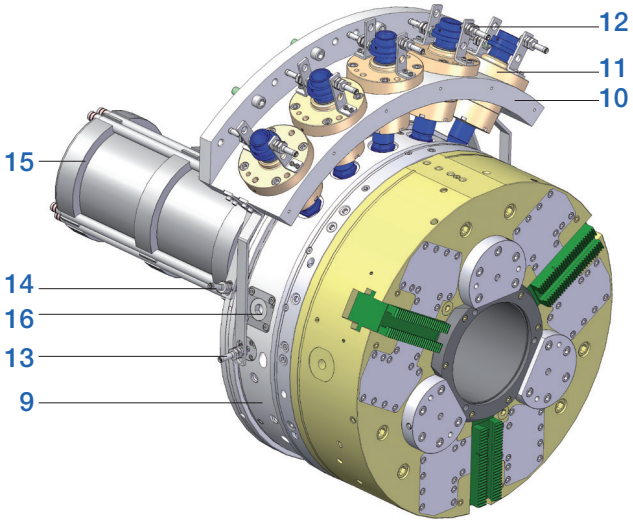
PIPE MACHINING: HYDRAULIC FRONT-END CHUCKS

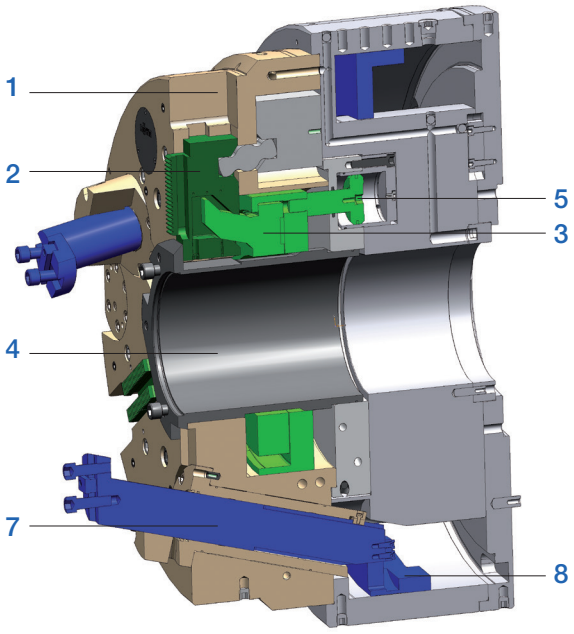
HVE with injection cylinders



Components HVE-IZ

1. Body
2. Base jaw
3. Clamping piston with floating clamping claw disc, concentric positionable
4. Protection bush
5. Piston
6. Pressure accumulator
7. Centering bar
8. Centering piston
9. Oil supply flange
10. Retaining ring
11. Injection cylinder
12. Control injection cylinder
13. Pressure control
14. Additional control for spindle zero point
15. Oil supply pipe for front-end chuck
16. Relief valve

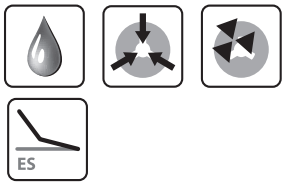
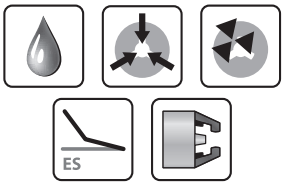
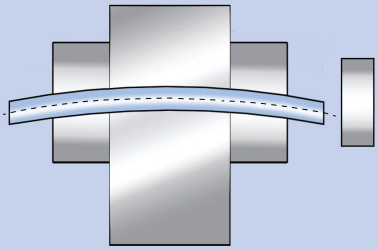
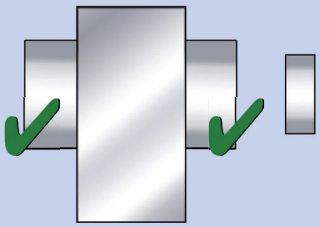
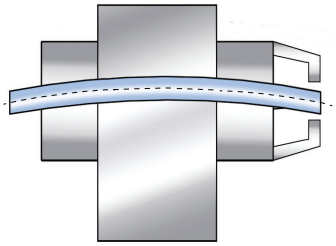
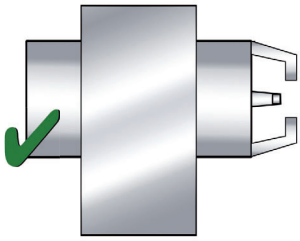
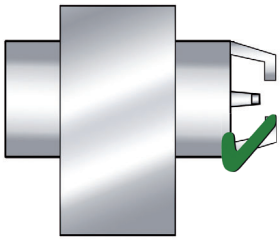




Different versions available on request

The hydraulic chuck as well as the necessary accessories are available on request. We would be happy to advise you with regard to the different variants in a personal meeting and design the optimal solution for your application.

OPERATION GUIDE HVE

TYPE	HVE-IZ AZ ES	HVE-IZ V AZ ES
Description	- Hydraulically operated front-end chuck - Actuation via injection cylinders - Concentric clamping or with compensation - With rapid stroke and clamping stroke	- Hydraulically operated front-end chuck - Actuation via injection cylinders - Concentric clamping or with compensation - With rapid stroke and clamping stroke - Retractable clamping arms for pre-centering the workpiece
Characteristics		
Machining situation: Bent pipe **Centering via centering chuck** 		
Machining situation: Bent pipe **Centering by front-end chuck** 		

 pneumatic

 hydraulic

 spring

 rapid stroke and clamping stroke

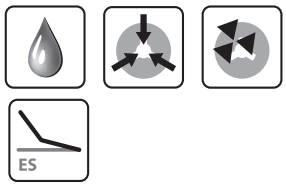
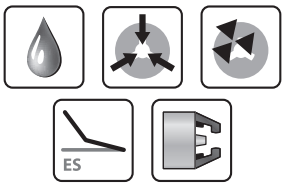
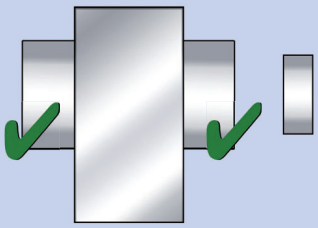
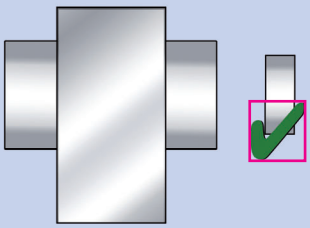
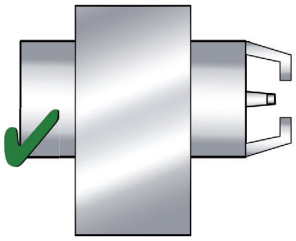
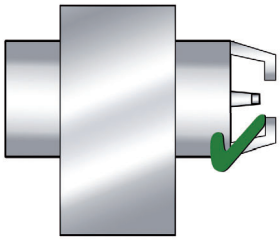
 centering

 with compensation

 retractable clamping arms for pre-centering

EC low-maintenance (Easy Care)

The optimal hydraulic chuck for your application is available on request. We would be happy to advise you with regard to the different variants in a personal meeting.

HVE-EK AZ ES	HVE-EK V AZ ES	Centering chuck
- Hydraulically operated front-end chuck - Stationary actuation - Concentric clamping or with compensation - With rapid stroke and clamping stroke	- Hydraulically operated front-end chuck - Stationary actuation - Concentric clamping or with compensation - With rapid stroke and clamping stroke - Retractable clamping arms for pre-centering the workpiece	From a wide range of centering options, we will select the right centering chuck for your machining application
		
		
		

ideally suited

suited

 bent pipe

 exactly straight pipe

 rear-end chuck

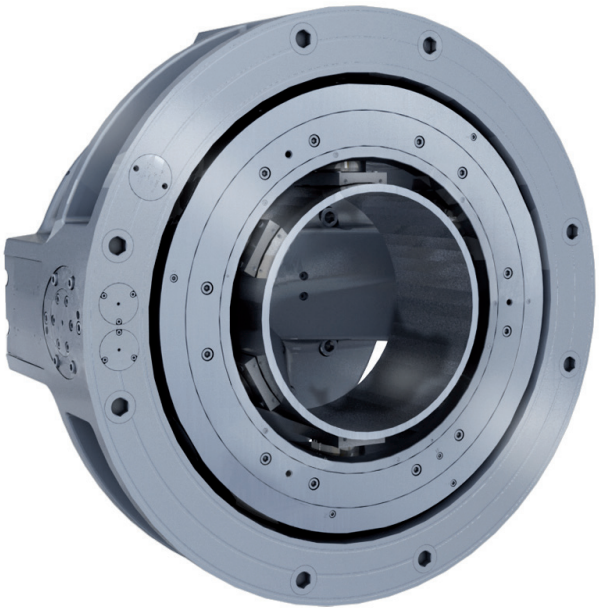
 front-end chuck

 front-end chuck with centering

 centering chuck

BUSHING MACHINING: SWIVEL CHUCKS

Swivel chucks are optimally suited for machining bushings or connection pieces on both sides. With the swivel axis, which lies 90° relative to the rotary axis, the workpiece is brought into the respective machining positions fully automatically.



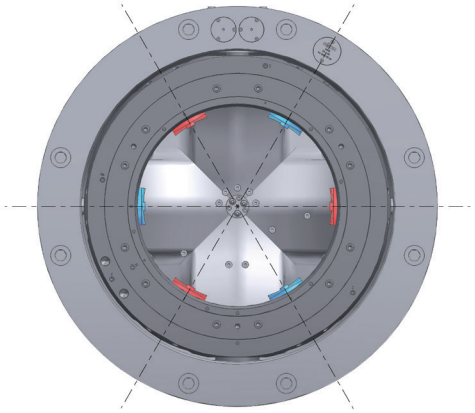
Setup and mode of operation
The swivel chuck has a closed chuck body, in which a ring, which can be swiveled by 180°, is supported with two gear racks. This serves as a clamping ring and has three concentric clamping jaws and three compensating clamping jaws. The clamping ring is fixed laterally on the outer diameter via two indexing bolts. The compact design of the chuck ensures a favorable ratio of workpiece diameter to chuck size and weight.

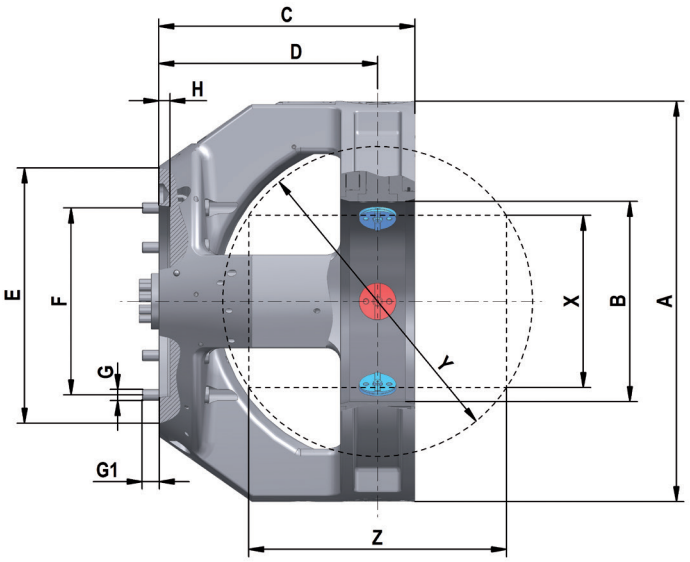
Machining in one setup offers two decisive advantages:

- Maximum axial precision
- Minimum setup effort

Actuation
The swivel chucks are supplied with the required energy via a 9- or 11-way oil distributor. The oil distributors are located at the end of the spindle. The matching oil distributors and hydraulic units are available on request.

Control
A check is done via a feedback cylinder on the hydraulic unit in the swivel positions 0° and 180° and during locking. Even if there is a pressure drop, the clamping as well as the locking are maintained by means of safety valves.





	HSFZ 560	HSFZ 710	HSFZ 860
Idem no.	**439237**	**439022**	**439023**
Size mm	560	710	860
Total stroke per jaw mm	8	10	10
Recommended clamping stroke per jaw mm	6	7	7
Clamping reserve per jaw mm	2	3	3
Operating pressure bar	45	45	45
Total gripping force kN at 45 bar	130	159	159
Max. Speed min^{-1}	1000	800	650
Weight kg	360	650	920
Moment of inertia kgm^2	14	38	86
A mm	560	710	860
B mm	216	280	430
C mm	376	475	550
D mm	312	395	470
Spindle connection	DIN 55021 size 15	DIN 55026 size 11	DIN 55026 size 20
E mm	410	280	520
F Pitch diameter mm	330 (6x60°)	235 (6x60°)	463,6 (12x30°)
G / G1 mm	M24 / 36 (4x)	M20 / 30 (6x)	M24 / 36 (8x)
H mm	21	21	24
X_{max} Max. Work piece diameter mm	160	220	370
Y_{max} Max. Interference circle diameter mm	405	516	666
Max. Work piece length Z, depending on Work piece diameter X (at centric operation) mm	$Z = \sqrt{Y^2 - X^2}$		

POWER-OPERATED SWIVEL CHUCK KSFZ

The power-operated swivel chuck KSFZ is suitable as an alternative clamping solution for bushings. The workpiece is clamped at four points via two concentric clamping jaws. The clamping jaws are actuated via a clamping cylinder on the end of the spindle. Concentric clamping swivel chucks are available from a diameter of 210 mm to 820 mm and according to the individual wishes of the customer.

PNEUMATIC FRONT-END CHUCK LVE

Another option for machining bushings is to use a LVE or LVE-ES front-end chuck. With this, the workpiece can be machined in two setups. The corresponding data can be found on pages 8 and 9.

SPECIAL SOLUTIONS: PIPE MACHINING CENTERING AND CLAMPING UNIT

The stationary centering and clamping unit is used for clamping pipes, to allow the tapered outer thread to be attached to the ends of the pipes. Here, the pipe is clamped stationary and the tool moves to the pipe. The centering and clamping unit allows compensating, clampable and centric clamping.

Actuation

The centric clamping is synchronized via a rack and toothed wheel. Compensating clamping and hydraulic clamping are done via a separately attachable compensating and clamping unit.

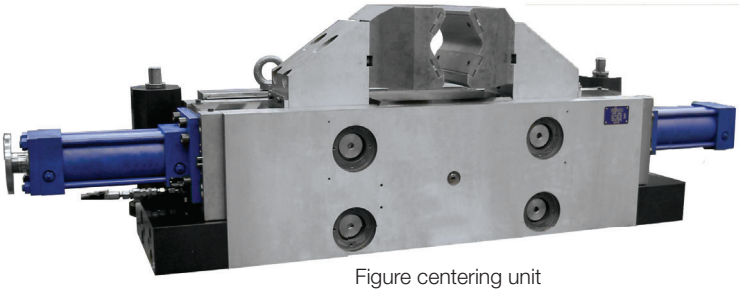
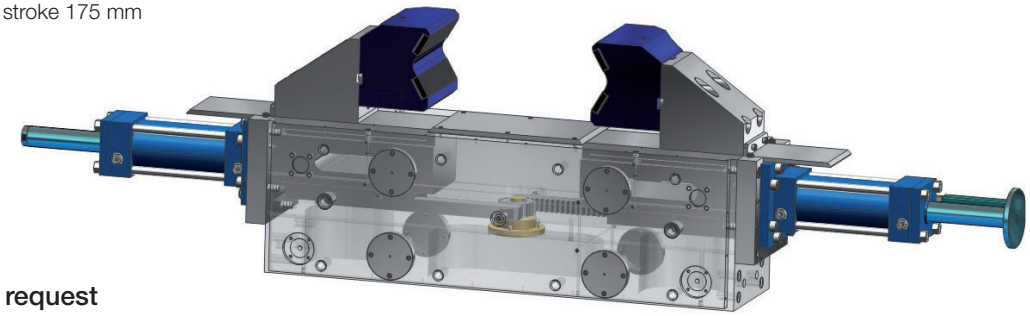
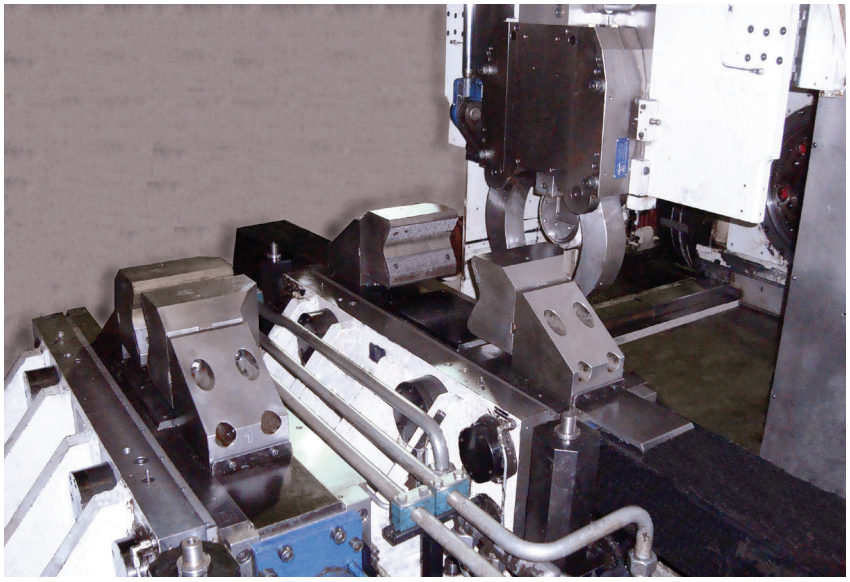


Figure centering unit
Jaw stroke 175 mm



Different versions available on request

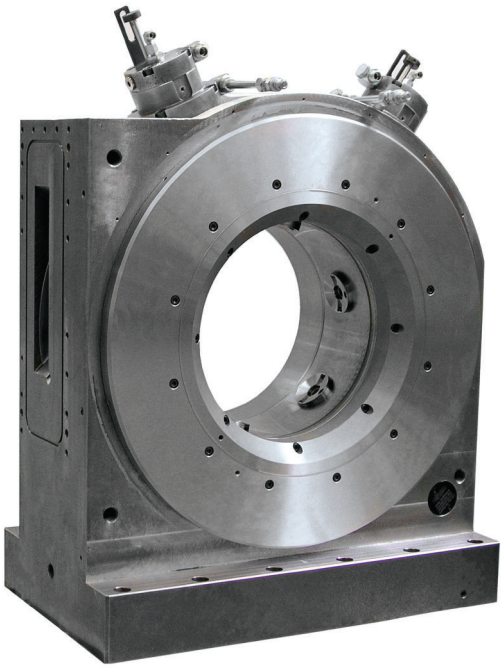
The centering and clamping unit in the respectively required size and with the required equipment are specially produced according to customer wishes.



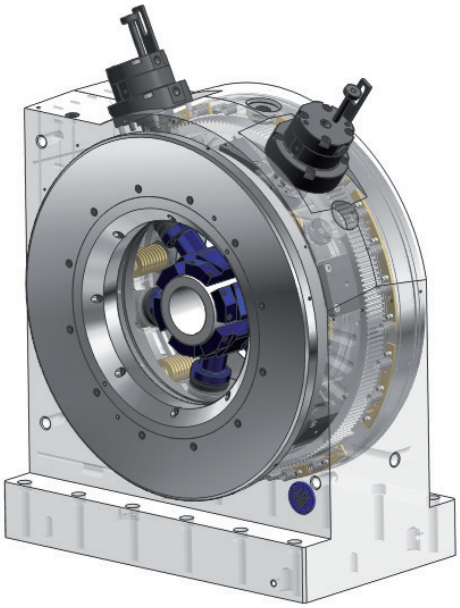
Use of two centering and clamping units with compensating and clamping units. Centric alignment of the ends of the pipes via additional steady rest.

SPECIAL SOLUTIONS: BUSHING MACHINING CENTER DRIVE CHUCK HMAF

The stationary set-up center drive chuck allows the tapered bushing inner threads to be brought in on both sides simultaneously.



Setup and mode of operation
The bushings are taken up by a rotating inner chuck part and first clamped by three leading, centering clamping jaws and then by three compensating, trailing clamping jaws. The machine drives it via a drive-in spur gear onto a corresponding equivalent one, which is fastened with a form-fit to the rotating inner chuck part. Central lubrication ensures it is maintenance-free.



Actuation
The rotating inner chuck body is hydraulically operated. The energy for the piston which is responsible for centering and the following compensating clamping jaws (via the pressure connecting valve) is supplied via the injection cylinder during a defined standstill. The holding pressure is secured via a safety non-return valve and a pressure-controlled pressure accumulator. The pressure is monitored indirectly via a pin communicating with it, which energizes a sensor in the standing housing.

Different versions available on request
The chuck is specially produced in the required size and with the required equipment according to customer wishes. We would be happy to support you with your project planning with our knowledge and our decades of experience.

SPECIAL SOLUTIONS: DRILL BIT MACHINING

RÖHM offers individual special solutions for machining drill bits. Thanks to numerous, often very different contours, which often occur in crude oil and natural gas extraction, specially designed chucks are necessary for machining drill bits. Extreme precision as well as a high degree of safety and modern production are top priorities. The workpieces can be clamped in on the head side. This allows the thread to be machined.

Jaws
The perfect adjustment of the chuck to the workpiece to be machined also requires the jaws to be adjusted. A wide range of standard jaws and different specially designed jaws round off the product range for machining drill bits.

Drill bit requirements
The drill bit must meet numerous requirements for drilling. In the case of crude oil or natural gas extraction, drilling is done both on land as well as on the sea floor. The drill bit must penetrate through different layers of rock. This not only requires high demands on the material of the head, but also extremely exact contours. The numerous fast movements which the head must execute during drilling machining require considerable precision, which can only be achieved with exact dimensions and shape precision.

Different versions available on request
Please request clamping chucks for machining drill bits for the crude oil and natural gas industry directly from RÖHM. The chuck is produced according to the workpiece requirements.

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