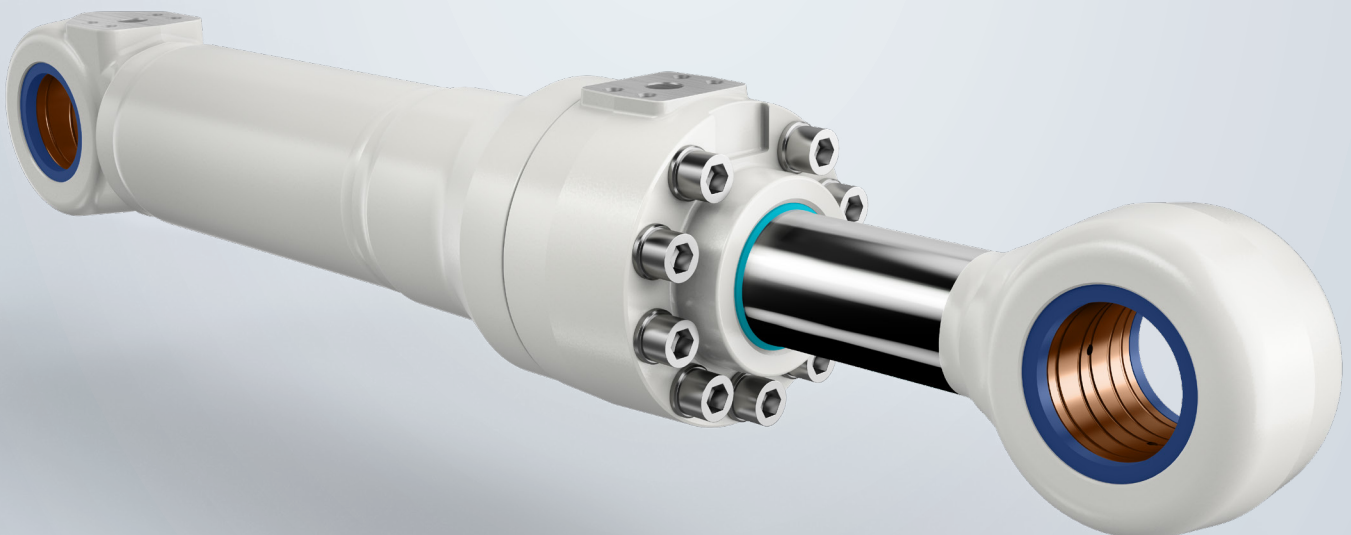

Robust

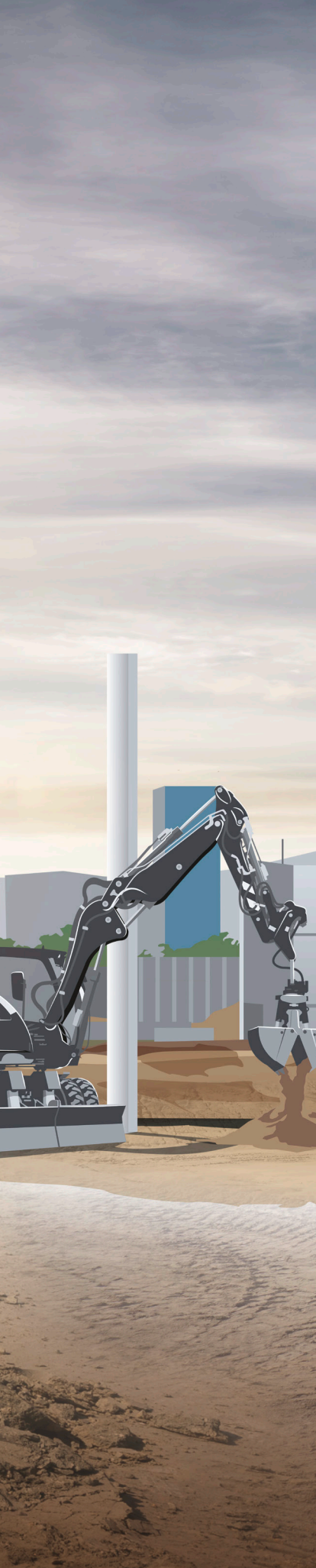
**Series-
production
range 380 bar**

LIEBHERR

Components
Hydraulic cylinders



Our super strength



The Liebherr 380 bar series-production range gives customers a broad choice of flexible cylinder variants which have been proven under the toughest operating conditions. The use of standardised components means that new hydraulic cylinders and spare parts are quickly available despite the high degree of flexibility. The 380 bar series includes 40 basic variants for nominal diameter combinations of piston and piston rod. Besides stroke, numerous options can be configured for each of these basic variants.

Corresponding 3D models can be supplied for each variant.

Area of application

The hydraulic cylinders of the 380 bar series-production range are employed in mobile applications. For example, they are used wherever durable and robust products are needed for highly dynamic applications. Such applications include construction machinery, e.g. as boom cylinder, stick cylinder or bucket cylinder for wheeled and crawler excavators.

There is something for everyone here

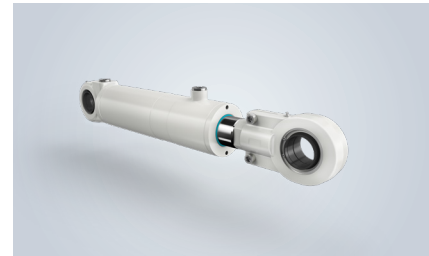
Intelligent - Series-production range according to ISO 6022

Designed specifically for industrial applications, the series-production range is designed and manufactured in accordance with the relevant ISO 6022 standards. The products are used in a wide variety of stationary applications, such as steel mills. A wide range of mounting options are available. In addition, the hydraulic cylinders can be fitted with a wide range of additional intelligent options as required (e.g. position transducer, end position cushioning or proximity switch).



Convertible - Series-production range 260 bar

With the series-production range 260 bar, Liebherr offers customers hydraulic cylinders that can be adapted to their specific application. The production range has been stripped down to the essentials and can still be used in demanding conditions - in both mobile and stationary applications. A wide range of mounting options are available, including alternative oil connections and piston rod designs. The hydraulic cylinder adapts to your application.



Series-production range 380 at a glance

Type	380 bar series-production range (optional as CRP hybrid cylinder)
Mounting type	Fixed bushing eye on both sides
Piston diameter	100-220 mm
Piston rod diameter	65-150 mm
Installation length	790-3447 mm
Stroke length	310-1969 mm
Piston rod coating	Double chrome coating AASS with 96 h Rating 10 (hardened), Nickel-chrome coating AASS with 240 h Rating 10, Nickel-chrome coating AASS with 500 h Rating 10
Hydraulic port	SAE port according to ISO 6162 (6000 PSI)
Hydraulic port location at head	0-324°
End of stroke cushioning	Without, Rod side, Piston side, Both sides
Paint	Primed white, Painted Liebherr grey (based on RAL 7043), Painted in RAL colour, Maritime paint
Cylinder tube surface quality (outside)	Unmachined (blasted), Mechanically processed (turned)
Applications	Mobile machinery e.g. construction machines, industrial applications

Now also available
as a hybrid version
with CRP!

In use always & every- where

1

Stick and hoist cylinders

For use in marine materials handling applications, marine paint and a hardened piston rod with AASS nickel-chrome coating with a 500 hour rating of 10 are standard options on the range.



2





The applications shown here are examples.



2

Bucket cylinder

The bucket cylinder, with its hardened piston rod and impact protection, delivers impressive performance and is one of the main contributors to the excavator's digging force.

3

Stick cylinder

The stick cylinder is the most heavily used hydraulic cylinder on the excavator. It moves the boom.

4

Hoist cylinder

The hoist cylinder is extremely corrosion resistant. It is also involved in the movement of the boom.

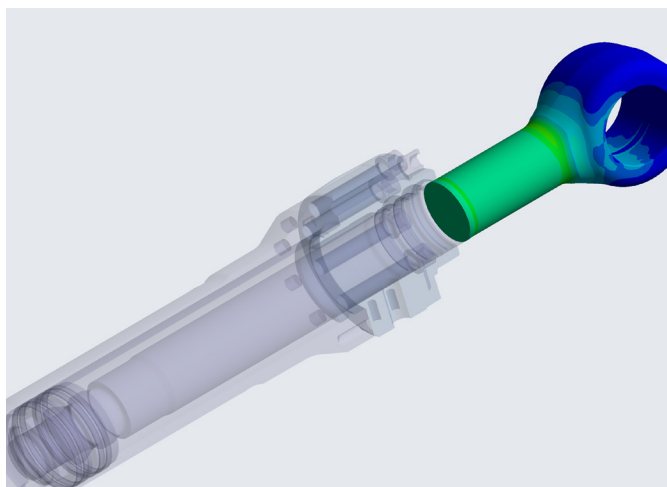
Technical design

Hydraulic cylinder configuration

The hydraulic cylinders are calculated and designed using the latest technology. For example, the finite element method is used to help configure designs. The 380 bar series is designed for highly dynamic mobile applications. The design of the hydraulic cylinders is based on extreme external forces as they occur in construction machinery. Liebherr sets a reliable standard in terms of durability and resilience in heavy-duty applications.

Piston rod coating

High quality chrome and nickel-chrome coatings are used as standard. Depending on the application, either a normal resistance coating (AASS acetic acid salt spray test to DIN EN ISO 9227 at 96 hours) or an enhanced resistance coating (AASS at 240 hours) is used. A seawater coating (AASS 500 hours) is also available. The assessment basis for all coatings is rating 10 according to DIN EN ISO 10289
Rating 10: AASS - 96 h hardened, AASS - 240 h, AASS - 500 h



Hydraulic cylinder configuration

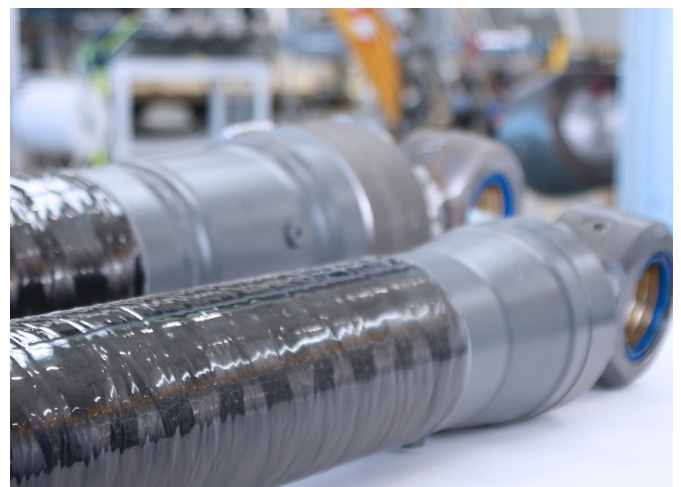
The hydraulic cylinders are designed using the latest technology. The focus is always on meeting the requirements of your application.

Hybrid hydraulic cylinders with CRP

Liebherr combines steel and fibre composites to offer weight-optimised hydraulic cylinders in the form of so-called hybrid cylinders. The use of carbon-fibre reinforced plastic not only reduces the weight of the component, but also the weight of the machine. The properties of the hydraulic cylinder remain the same and are even improved, while the design of the equipment remains unchanged. The weight savings can increase the efficiency of the machine, for example by increasing digging and handling capacity. The aim is to offer customers economic added value based on the total cost of ownership.

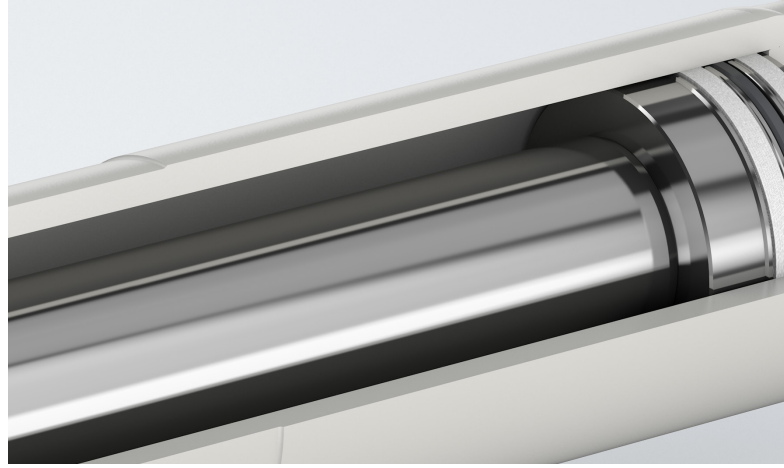
End of stroke cushioning

Controlled and gentle approach to the end positions is also important for highly dynamic movements. Here, Liebherr offers the option of an optimised cushioning system that has proven its worth in practice many times over. The customer can choose between piston-side and/or rod-side damping. Alternatively, the hydraulic cylinder can be configured to allow cushioning to be retrofitted if required. The system ensures that the hydraulic cylinder operates smoothly and without stuttering.



Hybrid hydraulic cylinder

Carbon-fibre reinforced plastic is suitable for use in hydraulic cylinders. With the hybrid cylinder option, the hydraulic cylinders are lighter than ever without compromising performance.



Piston rod coating

The high quality coatings are adapted for use in hydraulic cylinders.

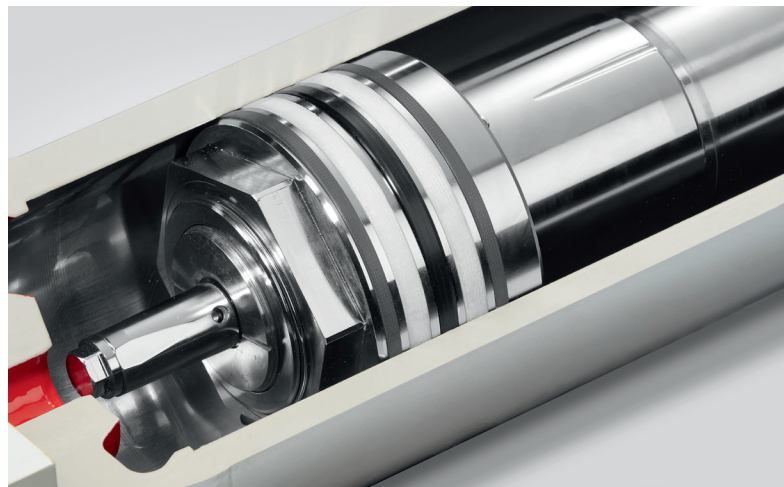
Seals

Seals are critical to the reliability of hydraulic cylinders. Only when properly selected for the application will they last and not leak. In this series, Liebherr uses a compact seal arrangement and an innovative sealing system to meet the most demanding requirements.

The rod seal uses a tandem sealing system consisting of a primary and secondary seal. This relieves the intermediate pressure and reduces the stick-slip effect.

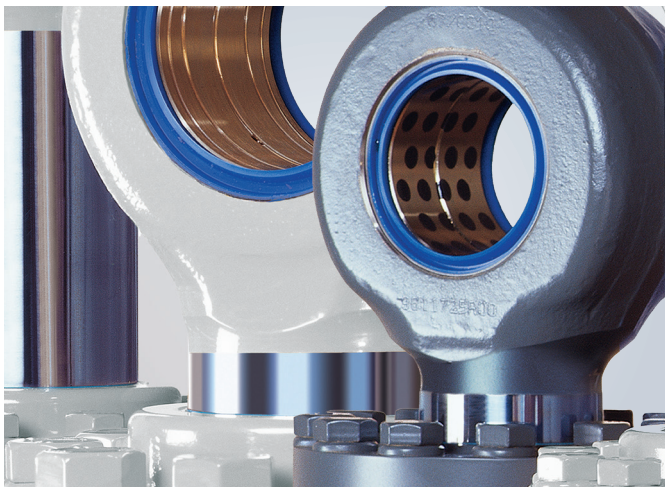
Bearing positions

To ensure optimum operation of the hydraulic cylinders, Liebherr has designed the bearing positions for maximum loads in both static and dynamic applications. The 380 bar series-production range uses bearing bushes with optimised lubrication surfaces to ensure good emergency running characteristics. Each bearing position has an M10x1 thread for lubrication.



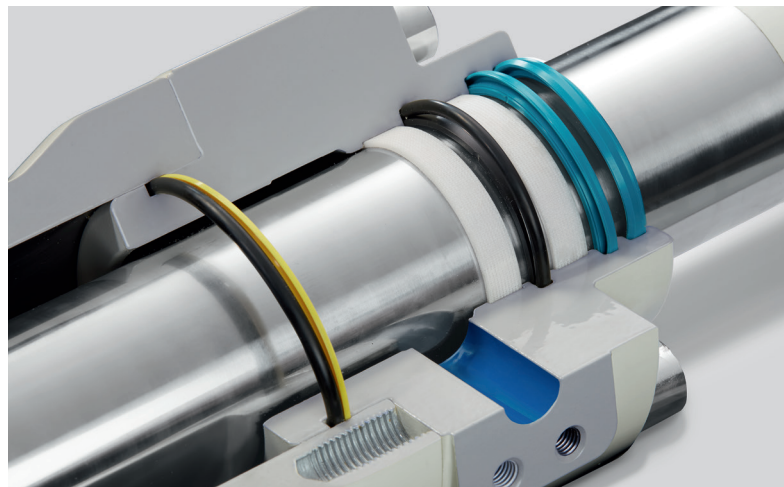
End of stroke cushioning

End of stroke cushioning can be configured on the rod, piston or on both sides.



Bearing positions

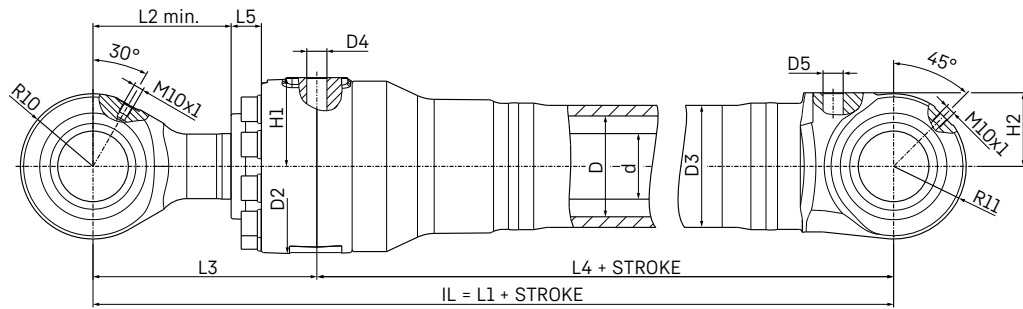
The bearing bushes of the series-production range 380 bar of hydraulic cylinders have special lubricating surfaces for optimum performance.



Seals

With an innovative sealing system, the hydraulic cylinder meets all requirements.

Sizes and dimensions



Basic dimensions

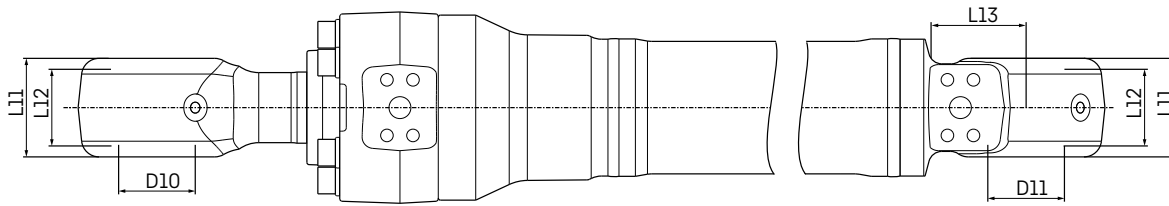
Oil connection at piston rod end

Oil connection at base

D	d	D2	D3 max.	L1	Stroke min.	Stroke max.*	L3	D4**	H1	L4	D5**	H2
100	65	175	126	483	310	2300	222	3/4"	201	60	3/4"	73
100	70	175	126	473	310	2300	222	3/4"	191	60	3/4"	73
105	70	175	132	477	310	2300	223	3/4"	194	60	3/4"	73
105	75	175	132	478	310	2300	223	3/4"	195	60	3/4"	73
110	70	175	138	481	310	2300	204	3/4"	217	60	3/4"	73
110	75	175	138	482	310	2300	204	3/4"	218	60	3/4"	73
115	75	180	144	526	315	2300	261	3/4"	197	68	3/4"	81
115	80	180	144	521	315	2300	261	3/4"	192	68	3/4"	81
120	80	190	150	520	315	2300	259	3/4"	193	68	3/4"	81
120	85	190	150	518	315	2300	259	3/4"	191	68	3/4"	81
125	80	190	157	523	315	2300	256	3/4"	199	68	3/4"	85
125	85	190	157	521	315	2300	256	3/4"	197	68	3/4"	85
130	85	211	162	562	340	2300	262	1"	224	76	1"	90
130	90	211	162	561	340	2300	262	1"	223	76	1"	90
135	85	211	168	566	340	2300	253	1"	237	76	1"	90
135	95	211	168	564	340	2300	253	1"	235	76	1"	90
140	90	223	174	599	340	2300	278	1"	241	80	1"	95
140	100	223	174	599	340	2300	278	1"	241	80	1"	95
145	95	223	180	602	340	2300	271	1"	251	80	1"	95
145	100	223	180	606	340	2300	271	1"	255	80	1"	95
150	95	234	186	616	340	2300	282	1"	249	85	1"	102
150	105	234	186	614	340	2300	282	1"	247	85	1"	102
155	100	234	194	620	340	2300	278	1 1/4"	257	85	1 1/4"	102
155	110	234	194	618	340	2300	278	1 1/4"	255	85	1 1/4"	102
160	105	249	198	622	340	2300	274	1 1/4"	263	85	1 1/4"	102
160	110	249	198	622	340	2300	274	1 1/4"	263	85	1 1/4"	102
165	105	249	204	625	340	2300	276	1 1/4"	264	85	1 1/4"	103
165	115	249	204	629	340	2300	276	1 1/4"	268	85	1 1/4"	103
170	110	264	210	707	350	2300	330	1 1/4"	277	100	1 1/4"	118
170	120	264	210	723	350	2300	330	1 1/4"	293	100	1 1/4"	118
180	115	264	223	729	350	2300	321	1 1/2"	303	105	1 1/2"	135
180	125	264	223	728	350	2300	321	1 1/2"	302	105	1 1/2"	135
190	125	307	236	750	350	2300	344	1 1/2"	301	105	1 1/2"	135
190	140	307	236	720	350	2300	304	1 1/2"	311	105	1 1/2"	135
200	125	307	248	780	350	2300	341	1 1/2"	329	110	1 1/2"	142
200	140	307	248	750	350	2300	311	1 1/2"	329	110	1 1/2"	142
210	140	325	262	760	360	2300	314	1 1/2"	336	110	1 1/2"	142
210	150	325	262	790	360	2300	344	1 1/2"	336	110	1 1/2"	142
220	140	325	273	770	360	2300	317	1 1/2"	343	110	1 1/2"	142
220	150	325	273	800	360	2300	347	1 1/2"	343	110	1 1/2"	142

* Reduction of maximum stroke can be necessary depending on the load and the result of the buckling calculation.

** SAE-connection according to ISO 6162 6000 PSI-line



Specific dimensions regarding mounting type										Other details			Volume flow at 0,1m/s			
L11	L12	D10 (H9)	D11 (H9)	L2	L5	L13	R10	R11	Compr [kN]	Tension [kN]	Piston area [mm ²]	Annular area [mm ²]	Area ratio	V _{Extend} [l/min]	V _{Retract} [l/min]	
90	70	70	70	125	60	87	72	72	298	172	7.854	4.536	1,70	47	27	
90	70	70	70	115	60	87	72	72	298	152	7.854	4.006	2,00	47	24	
90	70	70	70	115	60	87	72	72	329	183	8.659	4.811	1,80	52	29	
90	70	70	70	116	60	87	72	72	329	161	8.659	4.241	2,00	52	25	
90	70	70	70	115	60	87	72	72	361	215	9.503	5.655	1,70	57	34	
90	70	70	70	116	60	87	72	72	361	193	9.503	5.085	1,90	57	31	
90	70	80	80	142	68	89	85	80	395	227	10.387	5.969	1,70	62	36	
90	70	80	80	137	68	89	85	80	395	204	10.387	5.360	1,90	62	32	
90	70	80	80	137	68	89	85	80	430	239	11.310	6.283	1,80	68	38	
90	70	80	80	135	68	89	85	80	430	214	11.310	5.635	2,00	68	34	
90	70	80	80	137	68	85	85	78	466	275	12.272	7.245	1,70	74	43	
90	70	80	80	135	68	85	85	78	466	251	12.272	6.597	1,90	74	40	
90	70	90	90	152	76	101	97	86	504	289	13.273	7.599	1,70	80	46	
90	70	90	90	151	76	101	97	86	504	263	13.273	6.912	1,90	80	41	
90	70	90	90	152	76	101	97	86	544	328	14.314	8.639	1,70	86	52	
90	70	90	90	150	76	101	97	86	544	275	14.314	7.226	2,00	86	43	
100	80	90	90	145	80	111	92	90	585	343	15.394	9.032	1,70	92	54	
100	80	90	90	145	80	111	92	90	585	287	15.394	7.540	2,00	92	45	
100	80	90	90	141	80	111	92	90	627	358	16.513	9.425	1,80	99	57	
100	80	90	90	145	80	111	92	90	627	329	16.513	8.659	1,90	99	52	
110	90	100	100	146	85	121	97	97	672	402	17.671	10.583	1,70	106	63	
110	90	100	100	144	85	121	97	97	672	342	17.671	9.012	2,00	106	54	
110	90	100	100	146	85	121	97	97	717	419	18.869	11.015	1,70	113	66	
110	90	100	100	144	85	121	97	97	717	356	18.869	9.366	2,00	113	56	
110	90	100	100	144	85	121	97	97	764	435	20.106	11.447	1,80	121	69	
110	90	100	100	144	85	121	97	97	764	403	20.106	10.603	1,90	121	64	
110	90	100	100	144	85	121	97	97	813	483	21.382	12.723	1,70	128	76	
110	90	100	100	148	85	121	97	97	813	418	21.382	10.996	1,90	128	66	
130	105	120	120	192	100	128	120	125	863	501	22.698	13.195	1,70	136	79	
130	105	120	120	208	100	128	120	125	863	433	22.698	11.388	2,00	136	68	
130	105	120	120	195	105	126	120	125	967	572	25.447	15.060	1,70	153	90	
130	105	120	120	194	105	126	120	125	967	501	25.447	13.175	1,90	153	79	
130	105	120	120	194	105	126	120	125	1.077	611	28.353	16.081	1,80	170	96	
130	105	120	120	164	105	126	118	125	1.077	492	28.353	12.959	2,20	170	78	
150	124	130	130	201	110	159	136	135	1.194	727	31.416	19.144	1,60	188	115	
150	124	130	130	171	110	159	136	135	1.194	609	31.416	16.022	2,00	188	96	
150	124	130	130	174	110	159	136	135	1.316	731	34.636	19.242	1,80	208	115	
150	124	130	130	204	110	159	136	135	1.316	645	34.636	16.965	2,00	208	102	
150	124	130	130	177	110	159	136	135	1.445	860	38.013	22.619	1,70	228	136	
150	124	130	130	207	110	159	136	135	1.445	773	38.013	20.342	1,90	228	122	

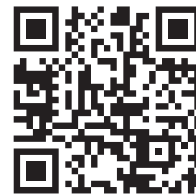
General Information

The maximum operating pressures must be less than or equal to the rated pressure of 380 bar. In case of increased loads, such as pressure peaks or high operating frequency, the design of the hydraulic cylinder must be checked.

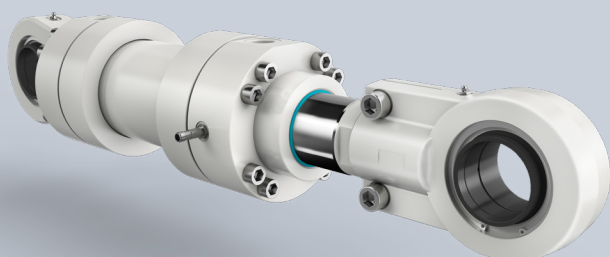
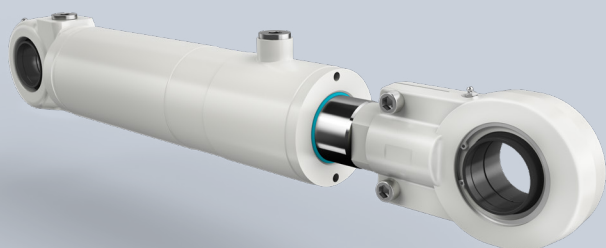
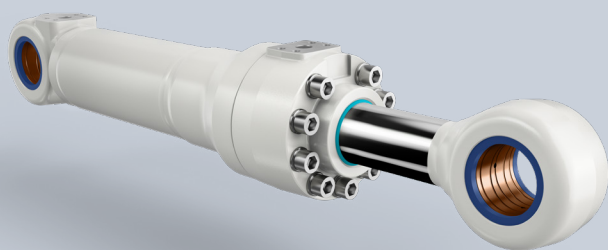
For the installation, commissioning, safe use and maintenance of hydraulic cylinders in the 380 bar series, the relevant operating and maintenance instructions in the latest version must be observed. In general, the seals selected for the hydraulic cylinders are suitable for operation with mineral oils. The suitability of the required oil must be checked in detail by Liebherr.

All graphical representations are examples and do not necessarily correspond to the configured product.

Configure series- production ranges



Configure
your hydraulic
cylinder now



380 bar

Highly dynamic and mobile applications of earth movement

The hydraulic cylinders of the series-production range 380 bar come in handy mainly in mobile applications. This also means that they can be used wherever durable and robust products are required in highly dynamic situations. The “eye-eye mounting” was specially designed for connection to construction machinery and thus ensures optimal operation. The hybrid cylinder option is an added bonus. The use of carbon-fibre reinforced plastic saves on weight and increases machine efficiency.

260 bar

Mobile and stationary applications

The hydraulic cylinders of the 260 bar series-production range can be used under demanding conditions of static and dynamic loads. A wide range of mounting types are available, including alternative oil connections and piston rod designs. The hydraulic cylinder adapts to fit your application.

ISO 6022

Mechanical and plant engineering

The hydraulic cylinders according to ISO 6022 come in handy in stationary applications, in which they can withstand equally with static and dynamic loads. The hydraulic cylinders can be equipped with a large portfolio of additional intelligent options (e.g. position transducer, end position cushioning or proximity switch) as required.

Ready, set, configure

For the first time, Liebherr has made it possible to individually and easily configure all hydraulic cylinder series-production ranges via an online-based configurator on the company's website. Depending on the application and requirements, the configurator offers all kinds of variations: from the 380 bar series for mobile applications, the ISO 6022 series for industrial use all the way to the 260 bar series as a link between mobile and stationary applications.

"When it comes to selecting and assembling the right product, the configurator offers assistance through stored logic and targeted user guidance." explains Jan Winter, product manager at Liebherr-Components Kirchdorf GmbH.



Available at any time
on all devices,
location-independent



CRP-hybrid cylinders
configurable for
380 bar



Offer received
within one
business day



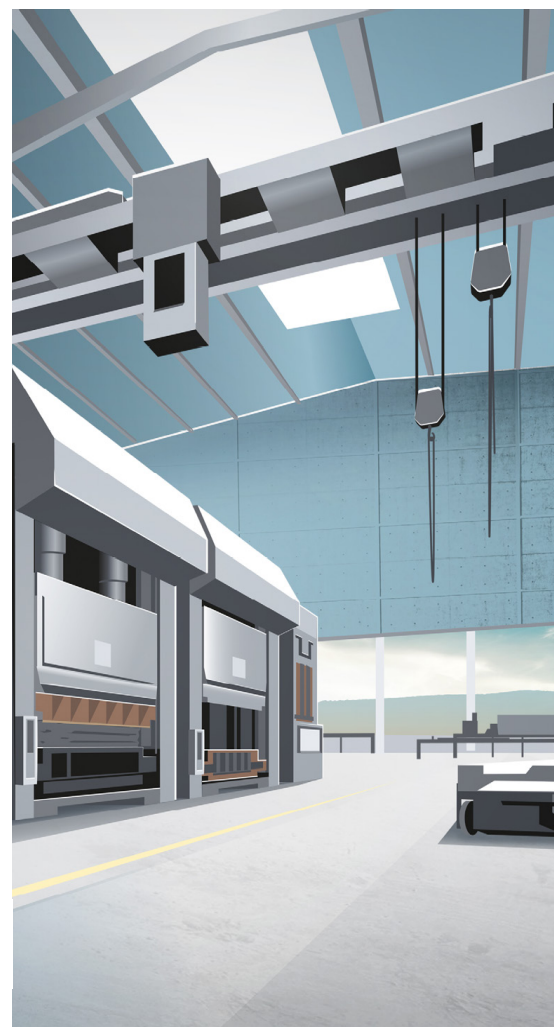
Wide range
wavailable for
many applications



Product key:
Recall and saving is
possible at any time



3D models and
technical data
for download



Request your individually suitable offer now.

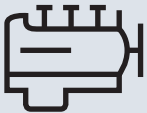
Components

From A to Z – the components division of the Liebherr Group offers a broad range of solutions in the area of mechanical, hydraulic, electric and electronic drive system and control technology. The efficient components and systems are produced at a total of ten production sites around the world to the highest standards of quality. Central contact persons for all product lines are available to our customers at

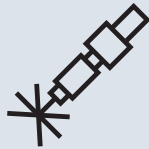
Liebherr-Components AG and the regional sales and distribution branches.

Liebherr is your partner for joint success: from the product idea to development, manufacture and commissioning right through to customer service solutions like remanufacturing.

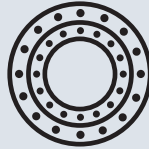
components.liebherr.com



Engines



Fuel injection systems



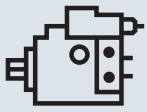
Slewing bearings



Gearboxes



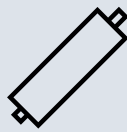
Winches



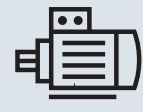
Hydraulic pumps and motors



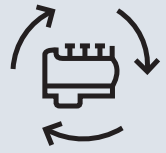
Hydraulic cylinders



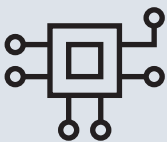
Piston accumulators



Electric machines



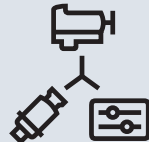
Remanufacturing



Industrial electronics



Electrical drive and control technology



Drive systems



Aerospace electronics



Fibre composite

LIEBHERR

Liebherr-Components AG · Post box 222 · 5415 Nussbaumen, Switzerland
+41 56 296 43 00 · components@liebherr.com · www.liebherr.com

