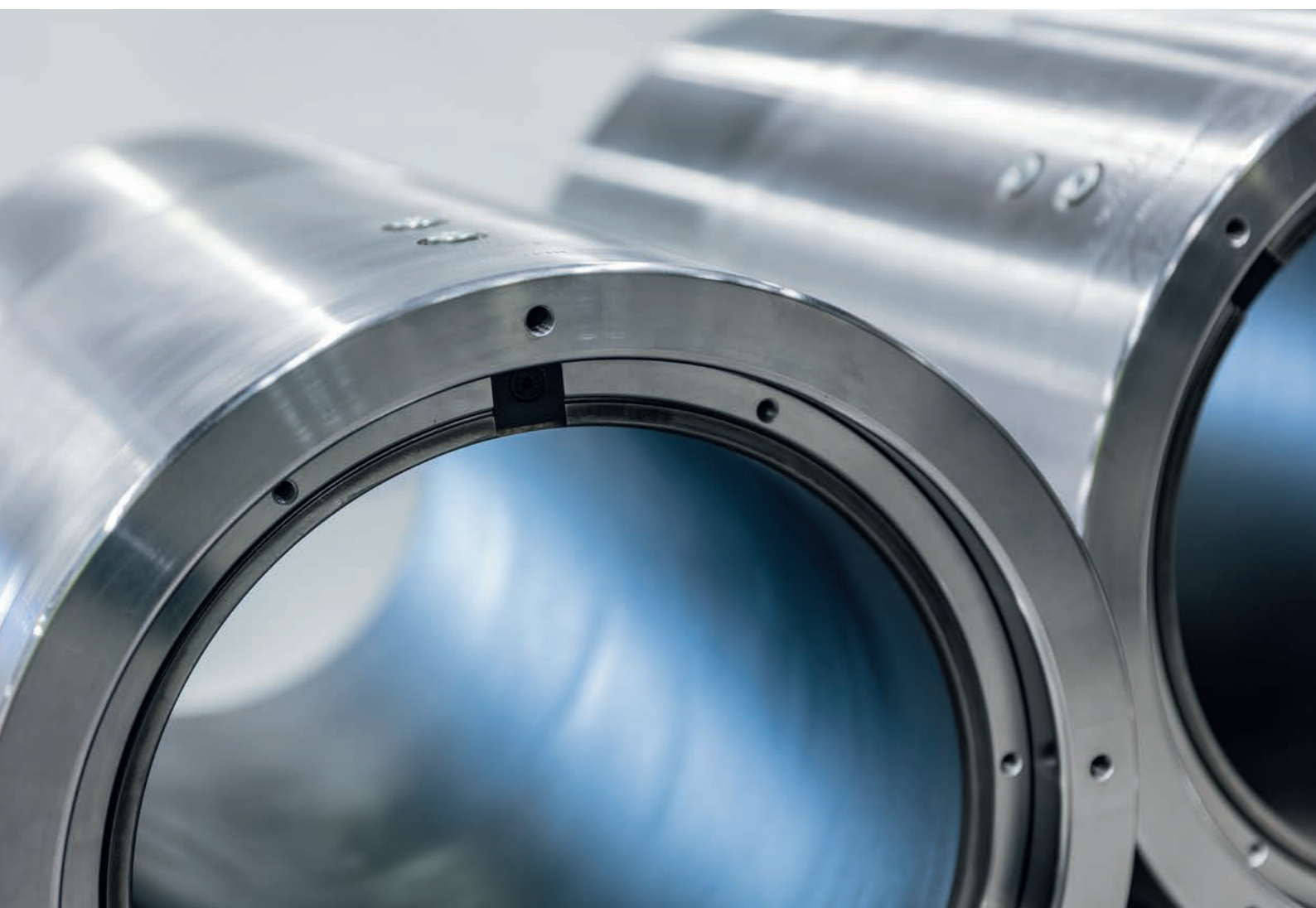


Perfectly connected Connection couplings





Torque capacity up to
26 000
kNm

Number of
countries with
Voith service
network **60**

2 500
Voith Torque limiting
and connection couplings
produced per year

Leading the way in connection technology

Reliable, competent, close at hand: Voith offers a diverse range of services and products for business and industry worldwide. Complete solutions are available for all kinds of fields, including paper machines, high-value rotating equipment, drivelines, and hydropower equipment and services for industrial facilities. As a global company we are able to draw on our knowledge and expertise from every continent to provide suitable results that allow your business to meet its full potential.

Our connection technology

Torque limiting, process improving and connection couplings from Voith help protect high-value rotating equipment components and increase productivity in a variety of industries. Our customer-adapted solutions optimize performance of drivelines in mining machinery, steel mills, turbines, compressors, ships, high speed trains and recycling plants all over the world. Cutting-edge research keeps our solutions matching the demands of today's rapidly advancing driveline technology.



**“We are always
looking for new
ways to improve
our products.”**

Erik Nordström

Senior technical adviser torque limiting
and connection couplings

Superior connection

HyCon | HyGrip | HyLoc

Providing a backlash-free, frictional, quick-setting/releasing shaft-hub connection, our Hycon connection couplings. The setting or releasing occurs hydraulically, depending on the application, with various operating principles available, all of which offers the advantage of a backlash-free pressure connection.

HyCon

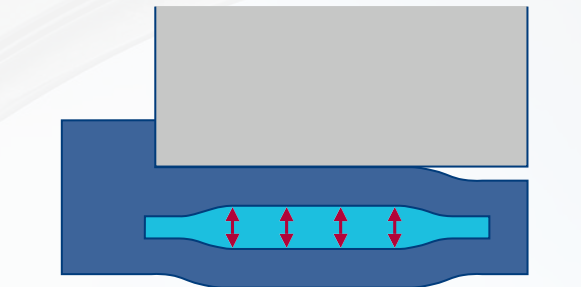


- Mechanical shaft-shaft/shaft-flange connection
- Hydraulically set and released
- No oil pressure is required for transmitting torque

The inner and outer tapered sleeves are hydraulically pushed toward each other to produce a radial force. Subsequently, a frictional connection is created between the shaft, coupling, and shaft/flange.

During setting and releasing, the shaft hub remains static; only the tapered outer sleeve moves.

HyGrip



- Hydraulic hollow sleeve-shaft-hub connection
- Pumped up hydraulically
- Oil pressure is required for transmitting torque

The hydraulic expansion of the coupling unit creates the frictional connection between the shaft, coupling, and hub. The hydraulic pressure creates a radial force within the coupling.

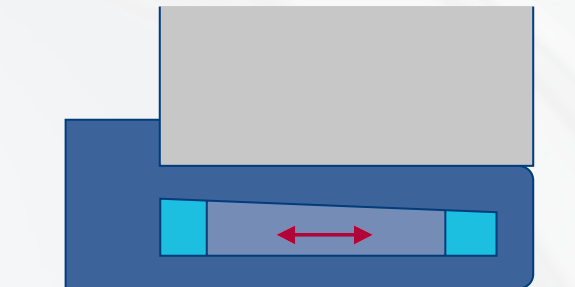
During setting and releasing, the shaft hub remains static.

High friction coating doubles the torque capacity

Providing the most compact and effective connection coupling, a thin coat of tungsten carbide can ensure improved fatigue and wear resistance.

When tungsten carbide is applied to the inner surface of the coupling, this high friction coating (HFC) strengthens the bond between the shaft and sleeve, doubling the torque capacity. HFC is standard on all HyCon and optional on HyGrip and HyLoc.

HyLoc

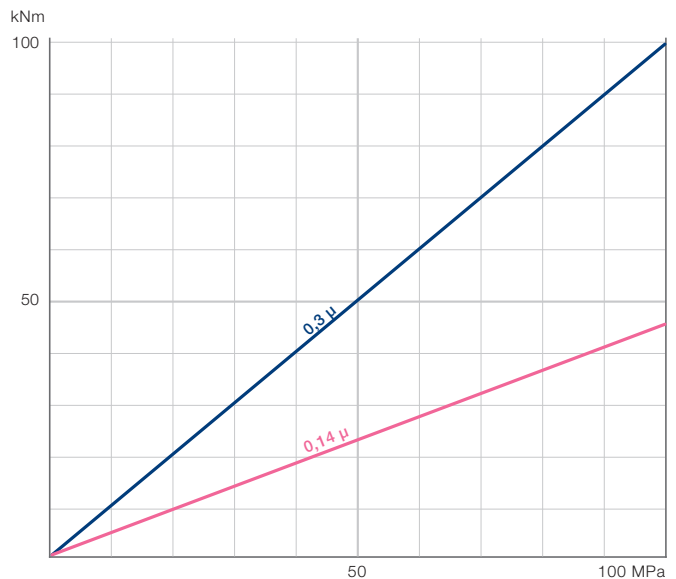


- Mechanical shaft-hub connection
- Hydraulically set and released
- Oil pressure is not required for transmitting torque

A radial force is created by hydraulically pushing a tapered sleeve inside a coupling unit. Subsequently, a frictional connection is made between the shaft, coupling, and hub.

During setting and releasing, the shaft hub remains static; only the tapered conical sleeve inside the coupling moves.

HFC doubles the friction coefficient



The coupling friction surfaces are treated, which doubles the friction factor providing the corresponding increase of the transmittable torque.



HyCon connection couplings can be used in:

- Tankers and carriers
- Offshore supply vessels
- Cargo ships
- Container ships
- Dredgers
- Car transport ships
- Cruise ships and ferries
- Mega yachts
- Pilot boats



HyCon connection technology for outstanding performance

DNV GL approved HyCon connection couplings ensure a reliable low-weight friction connection with outstanding performance and torque capacity. HyCon is easily installed without oil leakage and is safe both for people and environment. With an increased payload capacity due to at least 40% reduced system weight*, the installation, setting and releasing is fast, easy and secure.

Operation

The HyCon connection coupling consists mainly of a tapered parts sleeve and a tapered hub. To secure the shaft, the tapered hub is hydraulically pushed up onto the tapered sleeve. The pressure assembly creates a tight grip that holds the shaft. When the coupling is pressurized, the tapered surfaces are totally separated from each other. The seals on both sides of the coupling ensure that no oil leak can occur. This smart design minimizes the environmental impact.

*compared to conventional connection couplings without HFC.

Customer benefits

- + Increased payload capacity due to at least 40% reduced system weight
- + Minimized installation time
- + Only one pump for setting and releasing
- + Easy to position axially and radially
- + Shock load resistant
- + Simple clamping process optimal for applications that require frequent changes
- + Safe work environment
- + Low maintenance need

Design features

- Minimized hydrodynamic turbulence if located outboard
- Tailor-made design for solid or hollow shafts
- Torque capacity available from 1 to 20 000 kNm
- Shaft-shaft and shaft-flange connections
- Backlash-free connection
- Flange bolts can be tightened before drive up
- Sealed tapered surfaces ensure protection against seawater and oil leakage





HyCon connection couplings are built for maximum performance and safety in the toughest of environments.

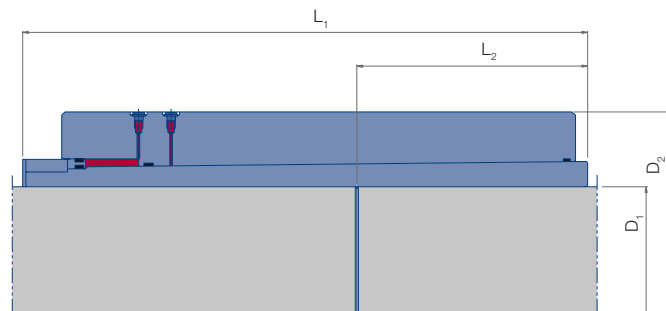
HyCon S series

HyCon basic dimensions and specifications.

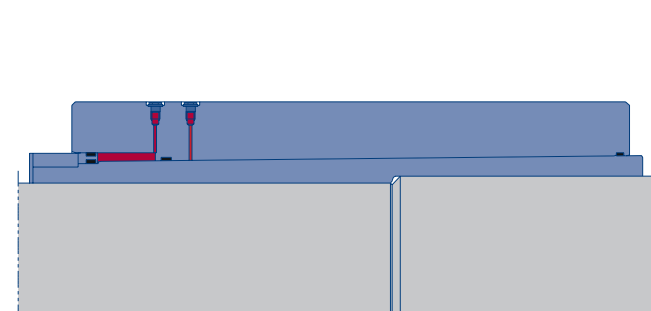
Size HyCon S	T [kNm]	D1 [mm]	D2 [mm]	DD1 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
80 mm	15.6	80	125	0.06	142	51	8	0.022
90 mm	22.6	90	140	0.06	157	58	11	0.039
100 mm	31.3	100	152	0.06	173	64	14	0.058
110 mm	40.6	110	166	0.08	189	70	18	0.089
120 mm	53.5	120	181	0.08	206	76	23	0.138
130 mm	68.9	130	196	0.08	222	83	29	0.204
140 mm	86.5	140	212	0.08	244	89	38	0.308
150 mm	107	150	227	0.08	257	95	46	0.426
160 mm	131	160	240	0.08	272	101	54	0.558
170 mm	157	170	256	0.085	285	107	64	0.760
180 mm	187	180	272	0.09	298	113	76	1.016
190 mm	220	190	286	0.095	314	119	89	1.304
200 mm	256	200	300	0.10	327	125	101	1.638
220 mm	341	220	331	0.11	354	137	134	2.636
240 mm	443	240	360	0.12	382	149	170	3.968
260 mm	563	260	391	0.13	409	162	215	5.927
280 mm	704	280	420	0.14	437	174	264	8.410
300 mm	865	300	450	0.15	465	186	323	11.792
320 mm	1050	320	479	0.16	491	198	385	15.952
340 mm	1260	340	510	0.17	519	211	462	21.714
360 mm	1490	360	540	0.18	545	223	544	28.660
380 mm	1760	380	570	0.19	571	235	635	37.276
400 mm	2050	400	600	0.20	597	247	736	47.850
500 mm	3450	500	720	0.25	766	325	1204	118
600 mm	5978	600	865	0.30	909	390	2061	289
700 mm	9490	700	1009	0.35	1041	450	3238	623
800 mm	14219	800	1153	0.40	1104	500	4770	1174

T: Torque m: Mass J: Mass moment of inertia DD1: Nominal assembly clearance shaft-bore

HyCon S/SX standard dimensions



HyCon S/SX for different shaft diameters



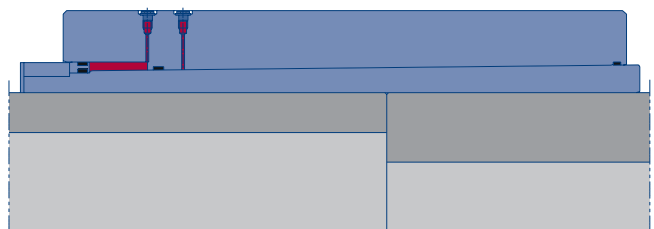
HyCon SX series

HyCon basic dimensions and specifications.

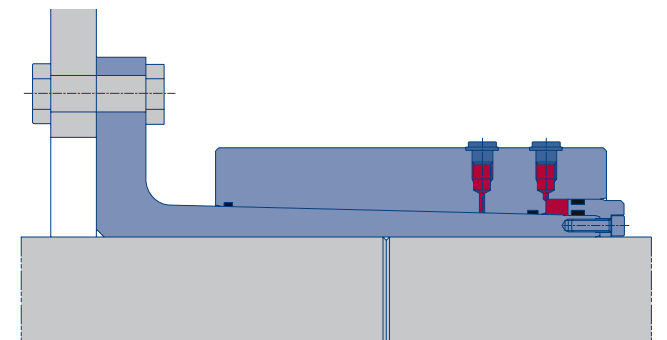
Size HyCon SX	T [kNm]	D1 [mm]	D2 [mm]	DD1 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
80 mm	28.7	80	136	0.06	253	102	19	0.059
90 mm	41.8	90	154	0.06	282	116	27	0.108
100 mm	58.7	100	165	0.06	311	128	33	0.154
110 mm	75.5	110	180	0.08	342	140	43	0.238
120 mm	99.5	120	197	0.08	371	152	56	0.371
130 mm	129	130	214	0.08	400	165	71	0.559
140 mm	163	140	231	0.08	435	177	91	0.826
150 mm	203	150	247	0.08	461	189	110	1.143
160 mm	248	160	264	0.08	489	201	133	1.584
170 mm	298	170	280	0.085	515	213	157	2.108
180 mm	354	180	296	0.09	541	225	184	2.763
190 mm	415	190	314	0.095	570	238	220	3.698
200 mm	485	200	330	0.10	596	250	253	4.712
220 mm	645	220	363	0.11	649	274	334	7.513
240 mm	838	240	394	0.12	703	298	423	11.259
260 mm	1060	260	427	0.13	757	323	536	16.728
280 mm	1330	280	460	0.14	811	348	666	24.143
300 mm	1630	300	492	0.15	864	372	810	33.623
340 mm	1980	320	525	0.16	916	396	978	46.227
340 mm	2380	340	558	0.17	971	421	1172	62.548
360 mm	2830	360	590	0.18	1022	445	1377	82.211
380 mm	3320	380	625	0.19	1074	469	1630	109
400 mm	3870	400	655	0.20	1126	493	1868	137
500 mm	6362	500	778	0.25	1406	625	2953	316
600 mm	11054	600	934	0.30	1679	750	5030	779
700 mm	17580	700	1090	0.35	1938	870	7950	1675
800 mm	26381	800	1245	0.40	2211	995	11727	3263

T: Torque m: Mass J: Mass moment of inertia DD1: Nominal assembly clearance shaft-bore

HyCon S/SX for different bore diameters



HyCon S/SX for brake disc application



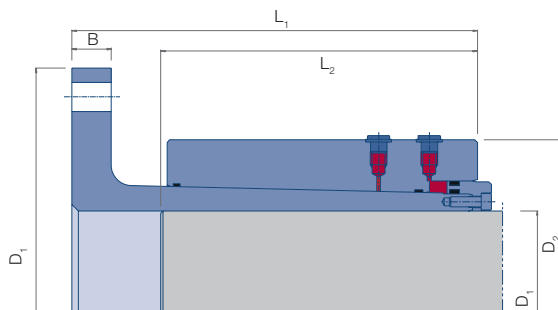
HyCon F series

HyCon basic dimensions and specifications.

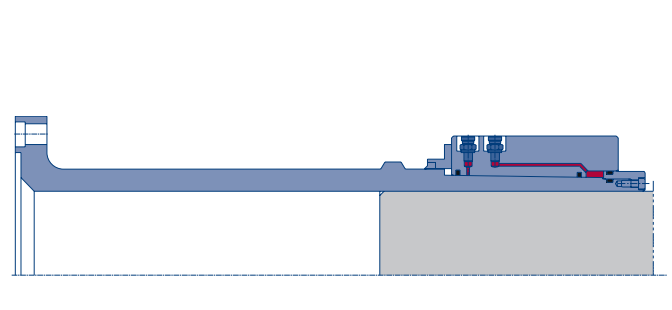
Size HyCon F	T [kNm]	D1 [mm]	D2 [mm]	Df [mm]	B [mm]	DD1 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
80 mm	14.7	80	130	185	13	0.06	113	87	8	0.027
90 mm	21.4	90	147	210	15	0.06	125	95	11	0.050
100 mm	29.1	100	158	235	16	0.06	135	103	14	0.077
110 mm	38.4	110	174	260	18	0.08	149	114	19	0.126
120 mm	50.5	120	191	285	20	0.08	166	125	25	0.205
130 mm	65.3	130	207	305	22	0.08	176	132	31	0.294
140 mm	82.6	140	223	325	23	0.08	194	147	40	0.425
150 mm	102	150	240	345	26	0.08	205	154	49	0.597
160 mm	126	160	256	365	27	0.08	216	161	58	0.801
170 mm	151	170	272	390	29	0.085	226	168	69	1.084
180 mm	179	180	288	415	31	0.09	236	175	81	1.441
190 mm	211	190	303	435	32	0.095	247	183	93	1.836
200 mm	246	200	320	455	24	0.10	257	190	108	2.342
220 mm	327	220	351	495	37	0.11	278	204	139	3.612
240 mm	424	240	383	525	41	0.12	302	220	176	5.306
260 mm	540	260	416	575	44	0.13	322	234	224	8.028
280 mm	674	280	448	605	47	0.14	344	249	272	11.056
300 mm	830	300	480	635	51	0.15	365	264	327	14.942
320 mm	1000	320	511	695	54	0.16	385	277	398	21.247
340 mm	1200	340	544	730	58	0.17	407	291	473	28.282
360 mm	1430	360	576	760	61	0.18	427	305	550	36.259
380 mm	1680	380	607	820	64	0.19	447	319	651	48.860
400 mm	1960	400	639	855	68	0.20	469	332	751	61.957
500 mm	3578	500	765	1115	69	0.25	558	445	1337	173
600 mm	6182	600	915	1340	83	0.30	663	528	2261	422
700 mm	9815	700	1067	1560	96	0.35	758	600	3531	898
800 mm	14650	800	1219	1780	110	0.40	863	682	5224	1735

T: Torque m: Mass J: Mass moment of inertia DD1: Nominal assembly clearance shaft-bore

HyCon F/FX standard



HyCon F/FX long sleeve



HyCon FX series

HyCon basic dimensions and specifications.

Size HyCon F	T [kNm]	D1 [mm]	D2 [mm]	Df [mm]	B [mm]	DD1 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
80 mm	26.6	80	145	235	21	0.06	182	139	19	0.092
90 mm	39.1	90	164	285	25	0.06	202	153	29	0.201
100 mm	53	100	177	305	27	0.06	222	168	37	0.293
110 mm	69.7	110	194	325	29	0.08	243	185	47	0.432
120 mm	92.3	120	214	345	33	0.08	269	202	62	0.657
130 mm	120	130	233	390	37	0.08	289	216	82	1.093
140 mm	153	140	252	415	40	0.08	317	237	104	1.573
150 mm	191	150	270	455	43	0.08	336	250	130	2.344
160 mm	235	160	289	475	46	0.08	358	265	156	3.101
170 mm	282	170	307	495	50	0.085	377	278	183	4.008
180 mm	335	180	324	525	52	0.09	395	291	214	5.269
190 mm	393	190	343	555	55	0.095	416	305	253	6.973
200 mm	458	200	362	575	59	0.10	435	318	291	8.723
220 mm	610	220	400	620	64	0.11	473	344	380	13.439
240 mm	793	240	436	675	70	0.12	512	372	489	20.531
260 mm	1000	260	470	730	76	0.13	549	398	610	30.024
280 mm	1260	280	506	810	81	0.14	588	426	777	46.345
300 mm	1540	300	542	840	87	0.15	626	452	924	60.444
320 mm	1880	320	578	890	93	0.16	663	478	1108	81.825
340 mm	2250	340	614	955	98	0.17	701	504	1333	112
360 mm	2680	360	650	1000	104	0.18	738	530	1560	145
380 mm	3150	380	685	1040	110	0.19	775	556	1799	183
400 mm	3670	400	721	1115	116	0.20	812	581	2121	246
500 mm	6662	500	850	1350	118	0.25	978	767	3502	578
600 mm	11507	600	1020	1620	142	0.30	1168	914	5989	1428
700 mm	18266	700	1190	1890	166	0.35	1348	1051	9452	3074
800 mm	27276	800	1360	2160	189	0.40	1536	1198	13991	5950

T: Torque m: Mass J: Mass moment of inertia DD1: Nominal assembly clearance shaft-bore

HyGrip connection coupling for rapid installation

The HyGrip connection coupling consists of a twin-walled pressure sleeve. It is pressurized with oil up to 1000 bar and sealed with a brass valve. This results in a completely backlash-free frictional connection. HyGrip connection couplings can be specifically designed to meet the exact requirements of the application. The torque transmission capacity and the axial forces are proportional to the oil pressure. The connection can be set and released very quickly if a suitable hydraulic pump is used. HyGrip couplings have limited radial force capacity.

Customer benefits

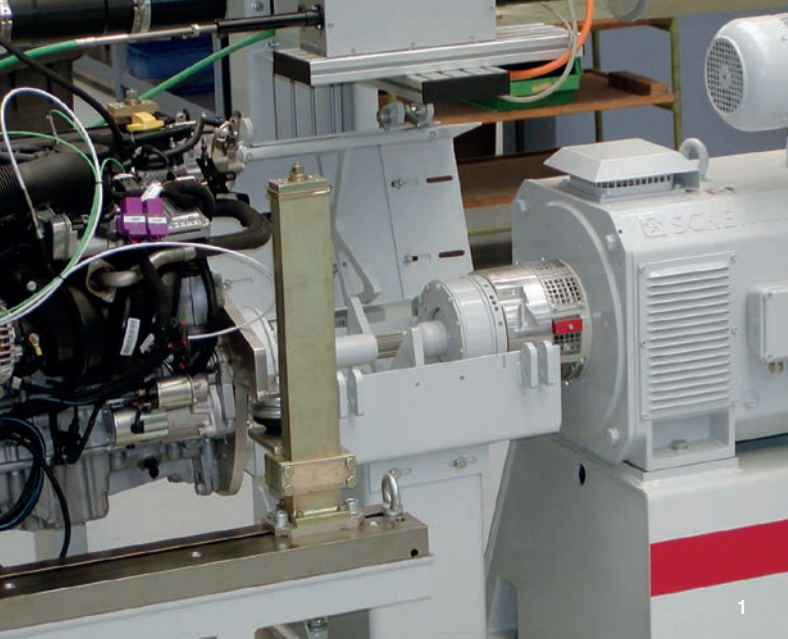
- + Improved control of processes
 - + Increased service life of all driveline components
 - + No notch effects as the keyways are eliminated
 - + Rapid and accurate installation
 - + Improved control of actual process
 - + Able to withstand dirty and difficult environments
 - + Extremely high torque capacity
-

Design features

- Backlash-free connection
 - Design optimized for simple assembly and disassembly
 - Minimized radial and axial run out
 - Robust design
 - High friction coating (HFC) optional
-





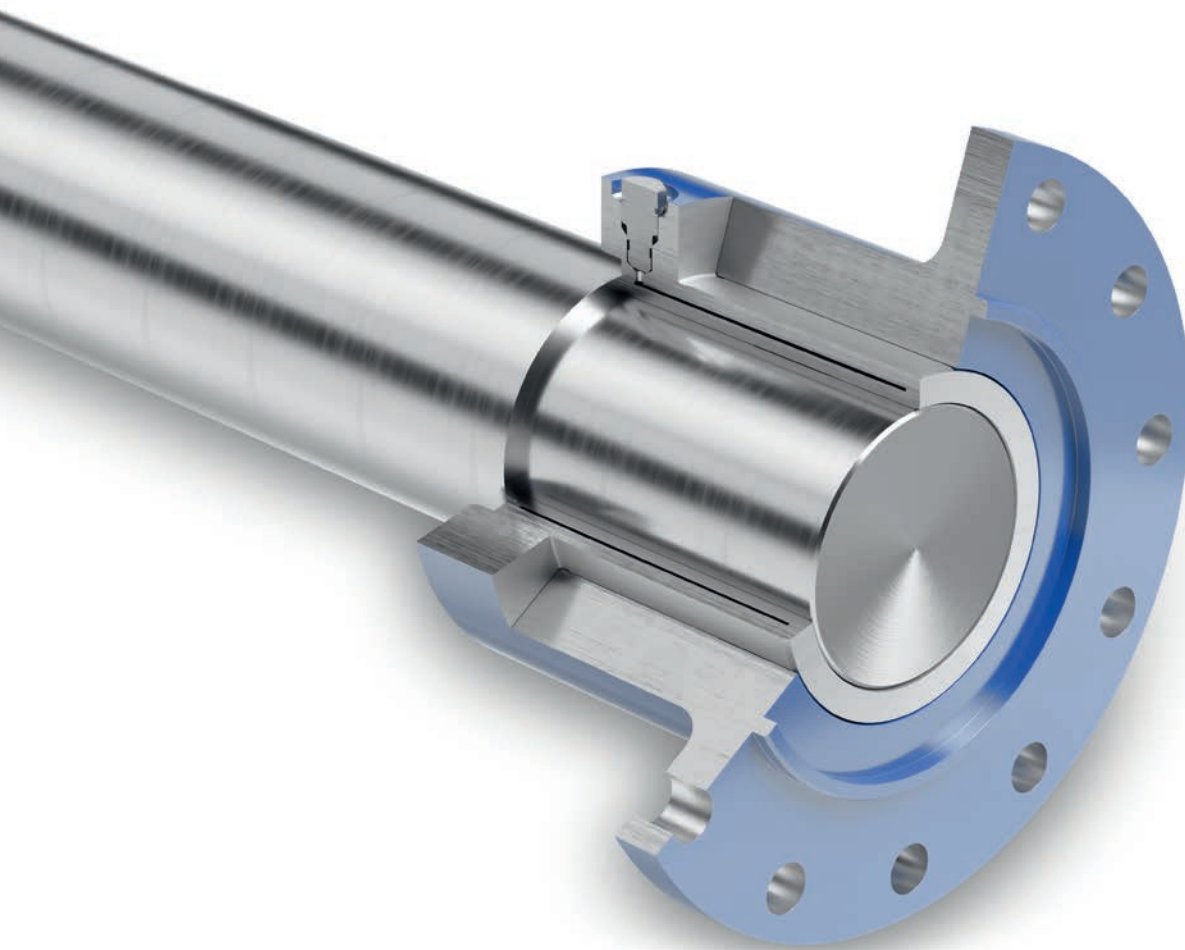


1 TestRig

2 SEC Compressor hall

HyGrip connection couplings can be used for:

- Fixing of straightening rolls and cutting rolls where the radial forces are low
- Fixing of flexible drive shafts and couplings for easy assembly and disassembly
- Knife/blade holders for rotating slitters to cut sheet metal or paper



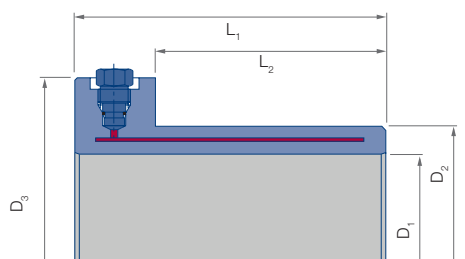
HyGrip HG-B series

HyGrip basic dimensions and specifications.

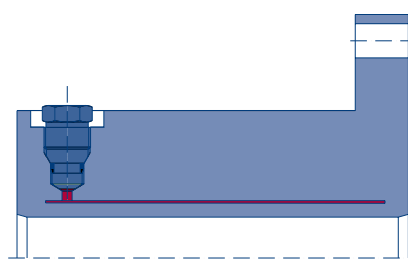
Size HyGrip HG-B	T [kNm]	D1 [mm]	D2 [mm]	D3 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
60 mm	3,6	60	75	120	95	65	2,8	0.005
70 mm	6	70	90	135	104	74	3,9	0.010
80 mm	7,8	80	100	144	120	90	4,7	0.013
90 mm	10	90	110	155	132	102	5,5	0.018
100 mm	15	100	125	170	146	108	8,2	0.034
110 mm	20	110	140	188	144	109	10	0.050
120 mm	25	120	150	196	171	133	12,2	0.068
130 mm	33	130	160	205	182	144	13,6	0.084
140 mm	40	140	170	215	190	152	15	0.104
150 mm	46	150	180	225	200	162	16,5	0.128
160 mm	71	160	200	233	225	180	24	0.211
170 mm	78	170	210	243	221	176	24,9	0.243
180 mm	85	180	225	261	221	176	29,7	0.330
190 mm	120	190	240	273	270	222	40	0.491
200 mm	130	200	250	283	270	222	42	0.56
220 mm	160	220	270	301	270	222	45	0.71
240 mm	201	240	296	363	260	205	56	1.12
260 mm	256	260	326	386	284	247	77	1.77
280 mm	336	280	351	409	320	280	99	2.62
300 mm	410	300	380	434	342	302	126	3.87
320 mm	530	320	408	459	392	346	167	5.80
340 mm	651	340	438	484	428	379	214	8.40
360 mm	789	360	465	508	464	412	260	11.5
380 mm	931	380	494	533	495	440	317	15.6
400 mm	1085	400	520	557	523	465	369	20.1
450 mm	1544	450	585	615	590	526	521	35.8
500 mm	2116	500	648	673	655	586	698	58.8

T: Torque m: Mass J: Mass moment of inertia Recommended hub diameter D2 x 1.4 (material with yield point minimum 400 N/mm²)

HyGrip HG-B standard



HyGrip HG-N with integrated flange



HyLoc connection coupling for extreme radial forces

The HyLoc connection coupling consists of a hollow sleeve, where the internal chamber is a conical ring piston that is moved hydraulically. The ensuring radial expansion produces a backlash-free connection between a shaft and a hub. The pressure required for assembly is normally 1000 bar. A maximum of 1200 bar is usually required for disassembly. After assembly, the oil is drained so that there is no residual oil pressure in the coupling during operation. The same applies for disassembly. The ring piston is provided with specially arranged lubrication grooves, hence a lubricating film is created when the ring piston moves between the working surfaces.

Customer benefits

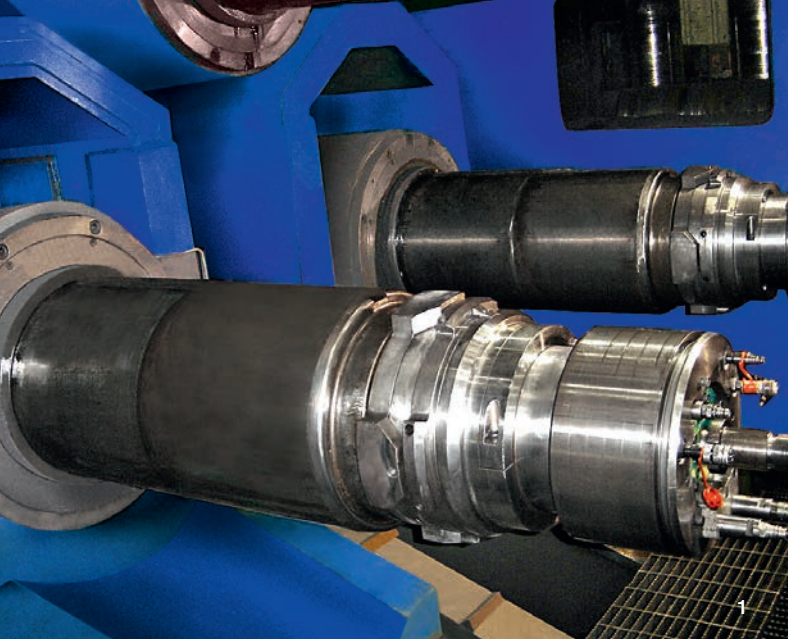
- + Improved control of processes
- + Increased service life of all driveline components
- + No notch effects as the keyways are eliminated
- + Rapid and accurate installation
- + Improved control of actual process
- + Ideally suited for roll connections
- + Able to withstand dirty and difficult environments
- + Extremely high torque capacity
- + High radial force capacity

Design features

- Backlash-free connection
- Design optimized for simple assembly and disassembly
- Minimized radial and axial run out
- Design optimized for withstanding high radial forces
- Robust design
- High friction coating (HFC) optional







1 HyLoc in leveling machine

2 HyLoc in roll connection

HyLoc connection couplings can be used for:

- Fixing of straightening and cutting rolls in the steel industry
- Fixing of different hubs and runners as flywheels, turbines, coils, plates, etc.
- Knife/blade holders for rotating slitters to cut sheet metal or paper



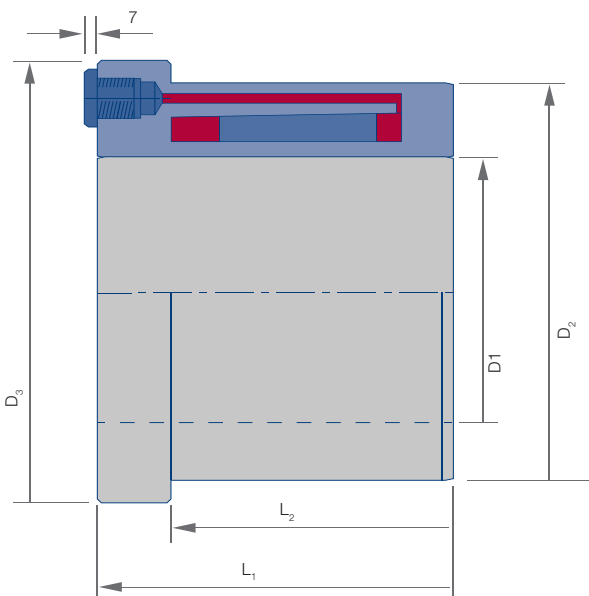
HyLoc HC-B series

Hyloc basic dimensions and specifications.

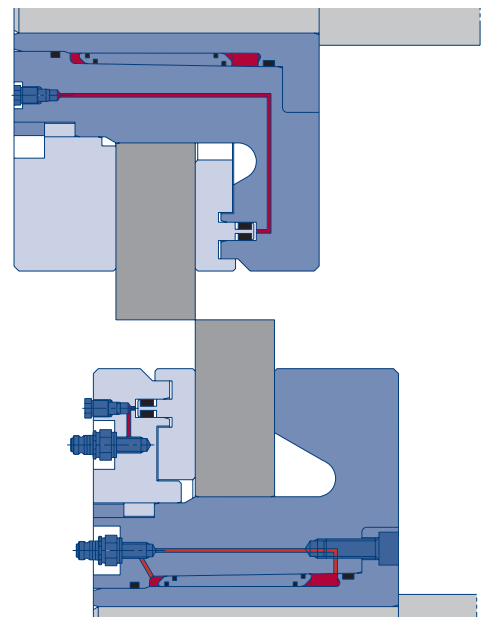
Size Hyloc standard	T [kNm]	D1 [mm]	D2 [mm]	D3 [mm]	L1 [mm]	L2 [mm]	m [kg]	J [kgm ²]
150 mm	89	150	204	220	220	195	26	0,22
160 mm	108	160	217	234	235	210	32	0,3
170 mm	129	170	223	245	252	227	35	0,34
180 mm	150	180	236	256	267	242	40	0,44
190 mm	176	190	256	267	283	258	52	0,67
200 mm	202	200	268	278	298	273	59	0,84
220 mm	269	220	291	299	326	301	74	1,23
240 mm	349	240	317	327	354	329	94	1,88
260 mm	444	260	341	351	397	372	120	2,76
280 mm	555	280	360	370	446	421	141	3,69
300 mm	683	300	384	394	474	449	168	5,02
320 mm	829	320	408	418	502	477	199	6,7
340 mm	994	340	432	442	534	509	234	8,87
360 mm	1180	360	457	467	561	536	274	11,7
380 mm	1388	380	482	492	588	563	319	15,1
400 mm	1619	400	507	517	616	591	369	19,3
450 mm	2305	450	570	580	685	660	517	34,1
500 mm	3162	500	633	643	752	727	698	56,9

T: Torque m: Mass J: Mass moment of inertia Recommended hub diameter D2 x 1.4 (material with yield point minimum 400 N/mm²)

HyLoc HC-B



HyLoc HC-B disc knife holder





**Our Service –
Part of Your
Business.**



Service and maintenance

The quality of our products is exceptionally high and the life span is long. Nevertheless, all mechanical drive components need correct service and maintenance to ensure reliable performance. Our service – part of your business

The most important task is to help our customers prevent unplanned stoppages and production downtime. By providing correct installation, training of your maintenance personnel and frequent service, we make sure your equipment meets its full design potential.

Voith service personnel are present during installation, initial startup and final commissioning. We instruct your personnel on how to operate the couplings and optimize their settings.

Whenever our customers need support, we provide it instantly. Voith service personnel use the latest technology and all their knowledge and experience to provide the service needed. Scheduled servicing and repairs of couplings are carried out in order to reduce life cycle costs and to guarantee continuous operating performance. Furthermore, we propose possible improvements and upgrades.

Voith has regional service centers worldwide, offering different types of service solutions tailored to your specific needs.

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