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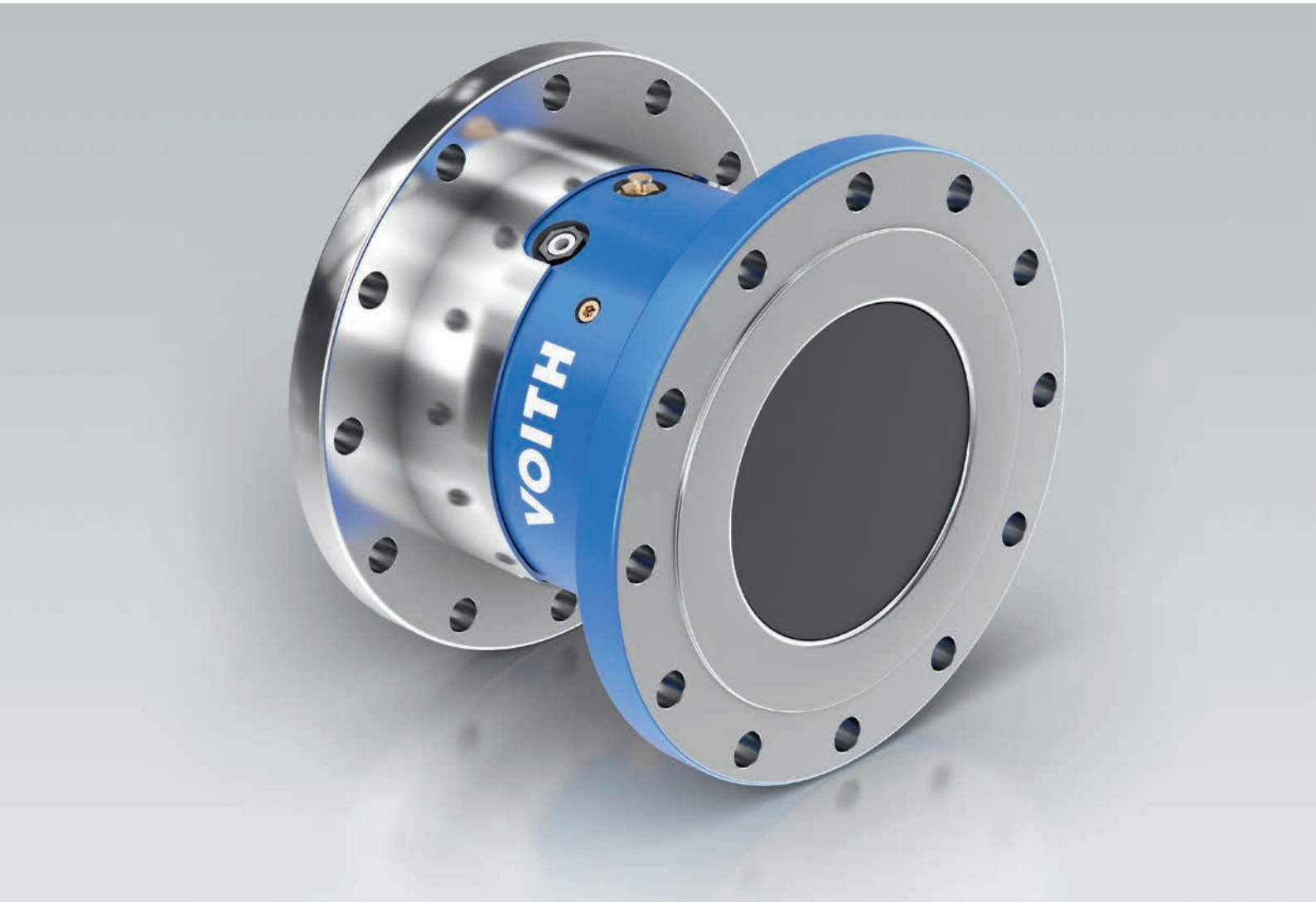
Maximize production with intelligent driveline protection

Torque limiting couplings



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Torque limiting couplings secure your driveline against torque overloads.

Protect your driveline and maximize production

The outstanding precision and reliability of Voith torque limiting couplings ensures smooth operation and less wear and tear – during the entire life span of your driveline.

Drivelines in rotating equipment are long term investments, worth protecting. Every minute of unplanned downtime caused by overload, is a loss in production. Voith torque limiting couplings secure your driveline against torque overloads. Your equipment can safely operate at a maximum level and with the Voith coupling monitoring system Dtect, you will get instant feedback of overload situations. This makes a difference to your overall economy.

1 **Gas turbine.**
2 **Tunnel boring machine.**
3 **Rolling mill.**
4 **Tugboat.**

Worldwide industries

Industry	Applications	Challenges	Solution with torque limiting couplings
Raw material	Crushers and grinders Conveyors and excavators Mixers and extruders	Harsh environments and heavy duty drivelines that can become blocked or suffer torque overloading.	Protects the machinery from damage by releasing or slipping at a precise set torque which minimizes operating downtime and increases production uptime.
Metals	Levellers Rolling and steckel mills Plate and strip mills Shredders	High and heavy loads put intense performance demands on the driveline, which can lead to torque overloading and slippage marks. Overloads, vibrations and torque shocks can occur when crushing and shredding large, strong materials.	Protects the machinery from damage by releasing or slipping at a precise set torque which minimizes operating downtime and increase production uptime.
Energy	Gas turbines Compressors Wind power	Unpredictability when generating energy can mean short circuiting, electrical faults, overloading, torsional vibrations, voltage drops or malsynchronization.	Limits torsional vibrations, protects the driveline and provides a reliable release torque.
Marine	Propulsion Thrusters Water jets Ship loaders Dredgers	Torque overloads brought by debris in the water can mean days in dry dock and cause damage to the propulsion driveline.	Protect drivelines and machinery from overload and ensure a smooth, reliable propulsion which minimizes operating downtime and increase production uptime.
Mobility	High-speed trains Test rigs	A broken cardan shaft due to excessive torque could fall down on the track and cause major danger to passengers on or outside the train. In case of an incident during test runs protects the test rig from damage.	Prevents excessive torque and protects the passengers in the event of failure. Minimizes downtimes and offers driveline safety in case of critical torque overloads.
Construction	Tunnel boring machines	Hard rock layers, or too high drilling speed cause torque peaks.	Voith torque limiting coupling will instantly slip and release for protection of the driveline under excessive torque levels.

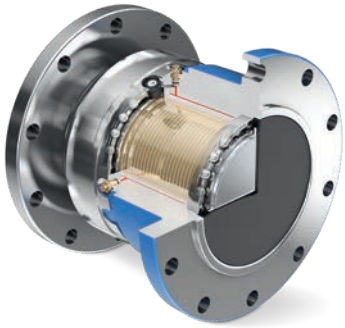
Product overview

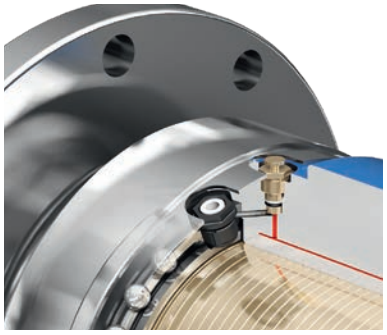
Voith torque limiting couplings are used in many applications in industries world-wide. SafeSet, SafeSet EZi, SmartSet, SlipSet and AutoSet ensure safe operation of the driveline, by releasing or slipping at a very precise torque level. This protects driveline equipment and smoothens production.

- **SafeSet**
  Coupling with instant release
- **SafeSet EZi**
  Coupling with peak shaving and release
- **SlipSet**
  Coupling with peak shaving
- **SmartSet**
  Coupling with peak ride through and controlled release
- **AutoSet**
  Coupling with controlled slip and automatic reset

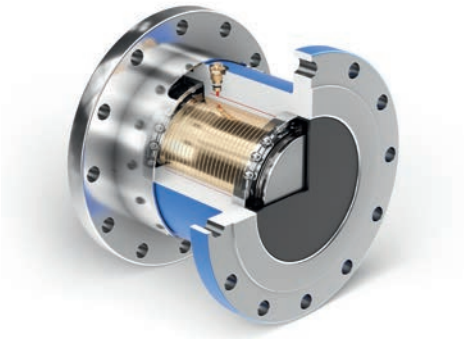
Features	Benefits	SafeSet	SafeSet EZi	SlipSet	SmartSet	AutoSet
Accurate release torque	**Increases production uptime** due to precise point of release that gives higher safety margins in the production level, higher out put of the driveline and less repair of drive equipment	●	●	●	●	●
Compact and Customized design	**High utilization of investment** due to optimized driveline design- no need of changes in your existing driveline and can be positioned anywhere to maximize the driveline	●	●	●	●	●
Instant torque limitation in overload situations	**Protects your driveline from expensive standstill costs** due to minimized risk of overload and minimized delay time in production	●	●	●	●	●
Adjustable release torque	**Minimizes additional cost in the event of a upgrade of the driveline** due to adaptability to the existing driveline design and specific application requirements	●	●	●	●	●
Back-lash free power transmission	**Minimizes cost of repair** due to protection against wear on other parts in the driveline	●	●	●	●	●
Set torque remains constant over time	**Continous production process** due to no unwanted releases and reduced repair time	●	●	●	●	●
Quick and easy setting	**Minimizes standstill and downtime**	●	●	●	●	●
Limitation of short peaks without release	**Improves production uptime** due to no resetting needed for short peak event		●	●	●	●
Automatic resetting of slip angle	**Lower maintenance cost** due to no manual resetting needed			●	●	●
Complete disengagement during a long peak event	**Less investment cost** due to no additional equipment needed				●	●
Automatically resets itself to the preset torque limit after a longer overload/ complete blockage	**Improves production uptime** due to continous operation even during an overload event					●

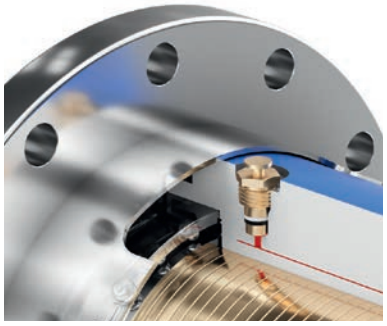
SafeSet



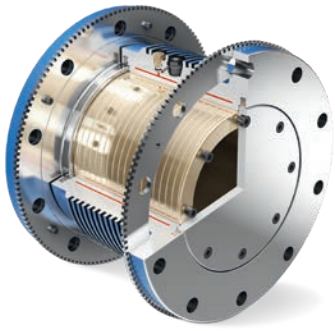


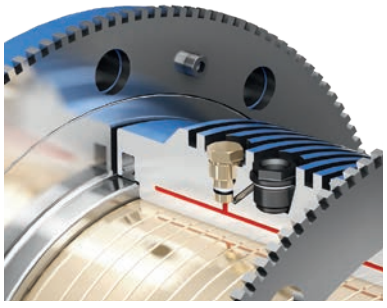
SafeSet EZi



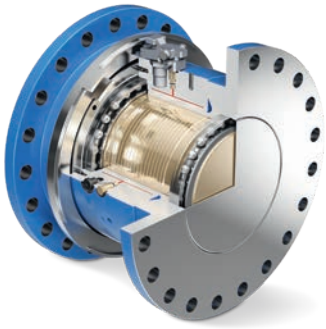


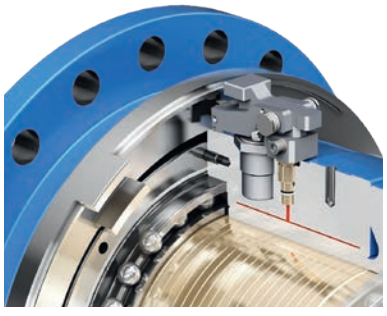
SlipSet





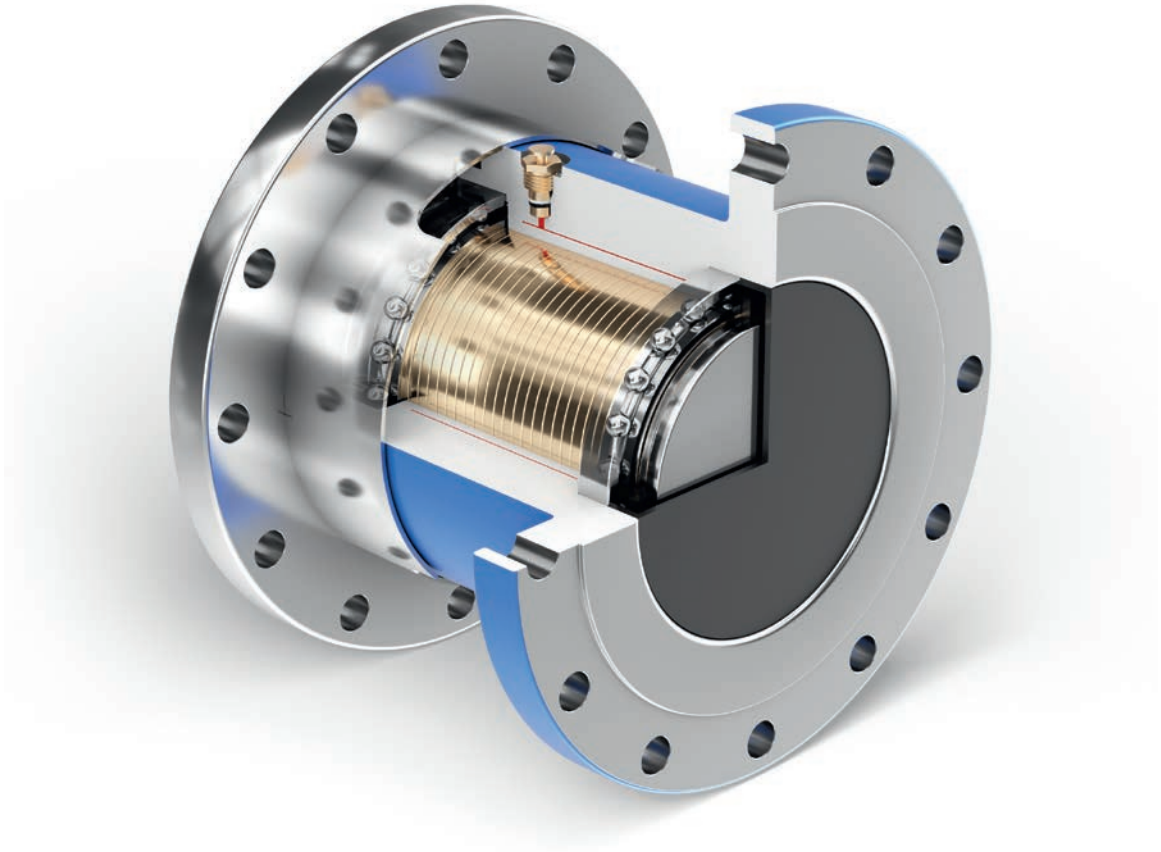
SmartSet



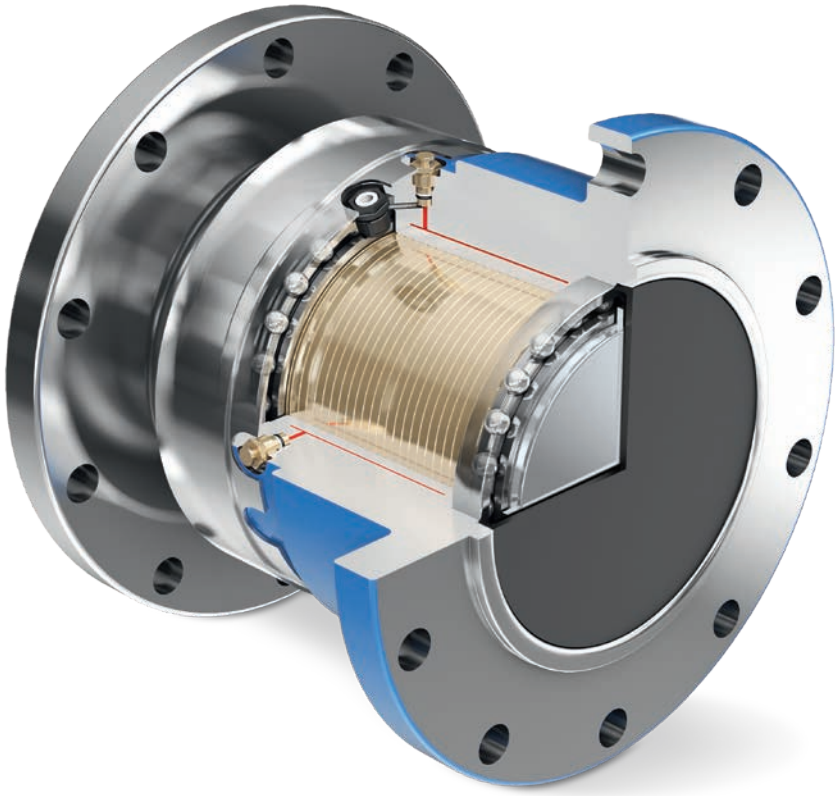


AutoSet

SafeSet EZi



SafeSet



SafeSet and SafeSet EZi for safe and easy driveline protection

A range of friction based coupings combining excellent reliability and proven accuracy. Choose between the classic version with instant release or go for the upgraded SafeSet EZi with a peak shaving function. Discover the advantages of the SafeSet couplings with improved functions, design and accessories – all optimized for easy operation and effective maintenance.

Operation

The SafeSet principle is simple: friction and adaptability. No material fatigue or wear ensures constant torque protection during operation. All SafeSet couplings include a twin-walled hollow sleeve where friction is generated by expansion using pressurized hydraulic oil. The integrated shear tube holds pressure to ensure a constant but easy adaptable torque transmission.

In case of an overload the classic SafeSet releases instantly if the torque exceeds the set level. The shear tube shears off, oil pressure drops and the frictional surfaces separate. Safeset EZi has an additional function, and can withstand short torque peaks without disengaging. This peak shaving function facilitates protection during short transient loads without releasing. In case of a longer overload the coupling releases exactly as the SafeSet Classic.

Coupling design within minutes

Design your own SafeSet EZi together with your Voith sales representative using our fast and easy virtual design tool, in which your customized drawings are provided within minutes. This design concept and an optimized manufacturing process provides for shorter lead time and faster delivery.

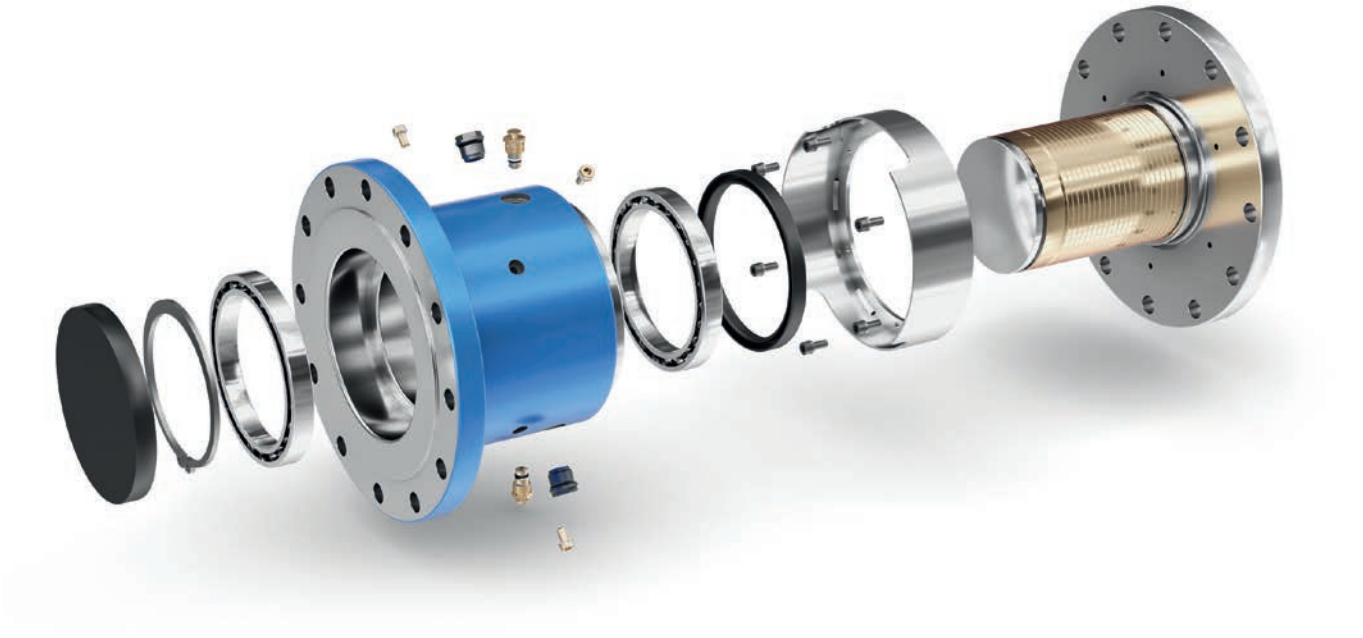
Adding digital intelligence

Additionally, monitoring the status of your coupling is simple with Voith Dtect. This fully compatible optional system provides:

- Peak load slippage measurement
- Speed
- Disconnection indication and event logging
- Service indicators

Explore the next generation torque limiter – SafeSet EZi

Enabling maximum performance and ensuring safety in tough environments

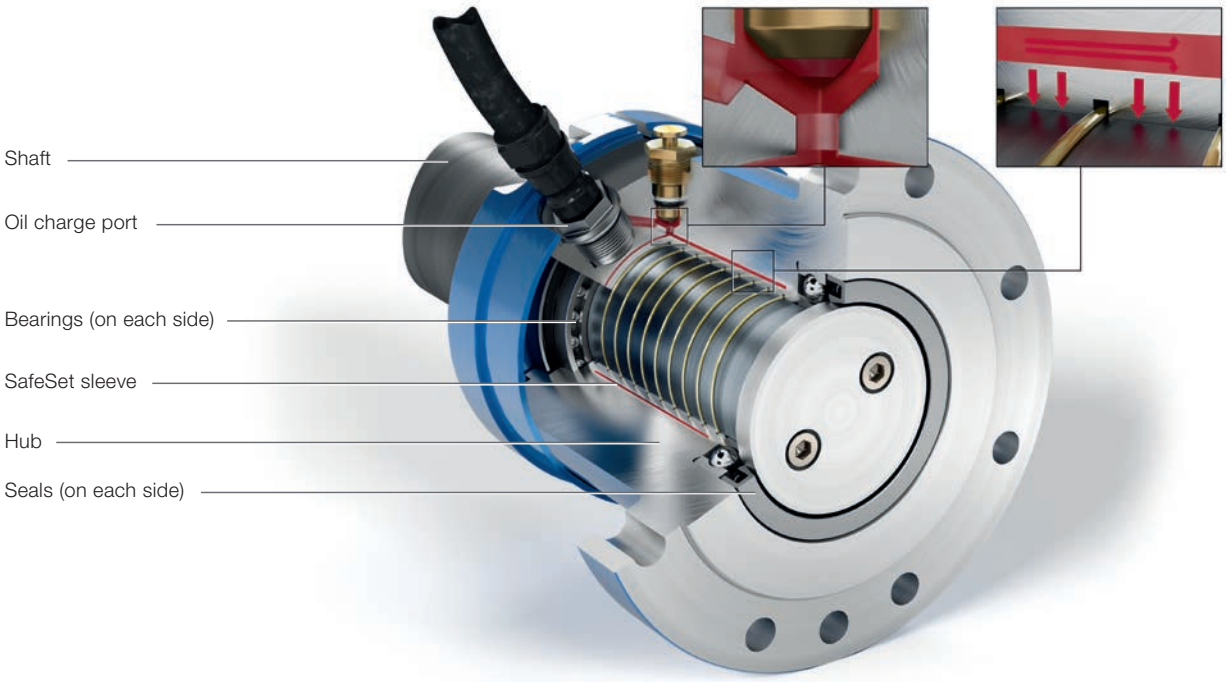


- Robust, reliable and proven technology perfected over 40 years
- Improved lead and delivery times
- Simplified resetting is facilitated by technical enhancements and a shear tube installation tool
- Release mechanism design enables peak shaving, without disengaging the coupling
- Add Dtect and monitor the status of your coupling

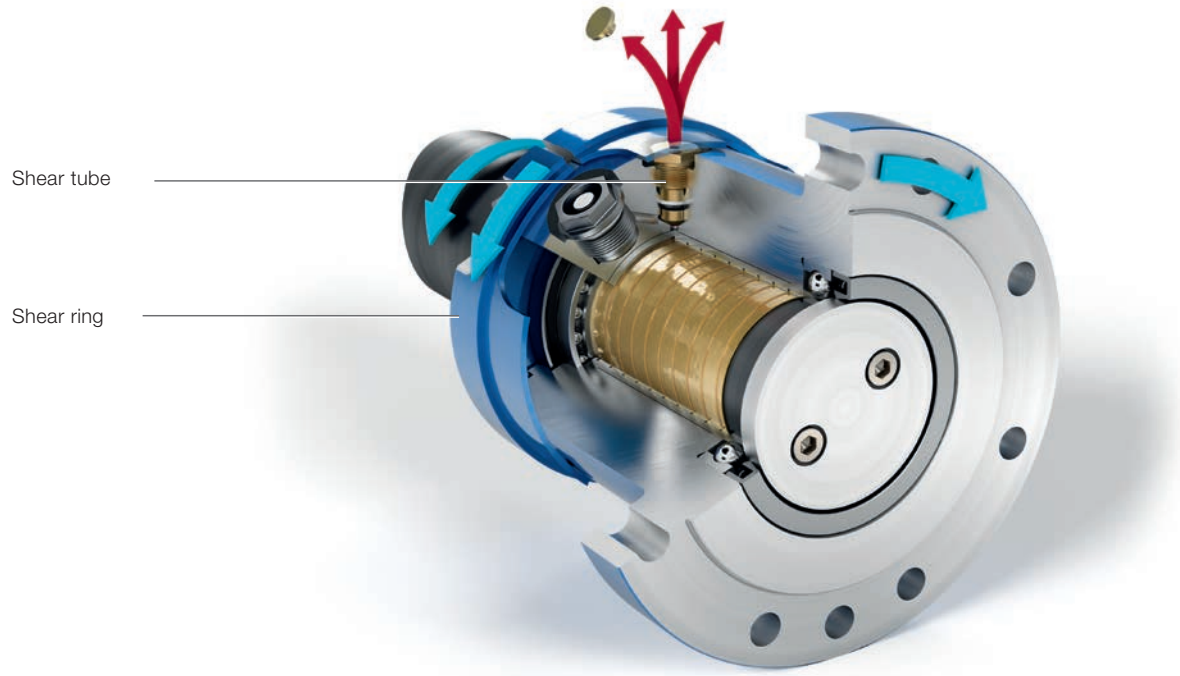
Coupling design within minutes

Design your own SafeSet EZi together with your Voith sales representative using our fast and easy virtual design tool. Based on the provided parameters, customized drawings are e-mailed to you within minutes. Our ambition is to help you keep your project up to speed by offering an ultra quick response, in combination with shorter lead time and faster delivery. Enjoy the digital design process!

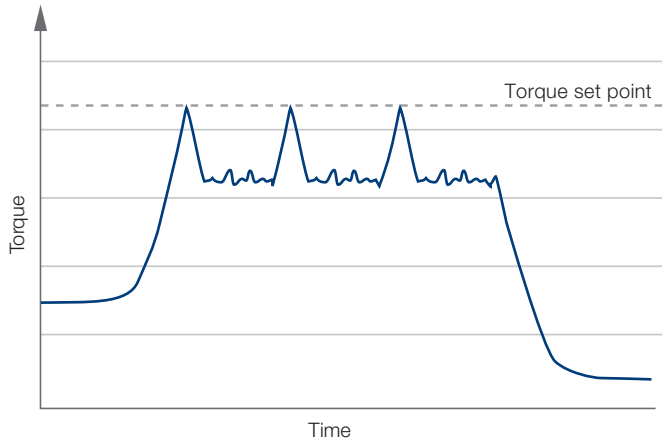
SafeSet being pressurized



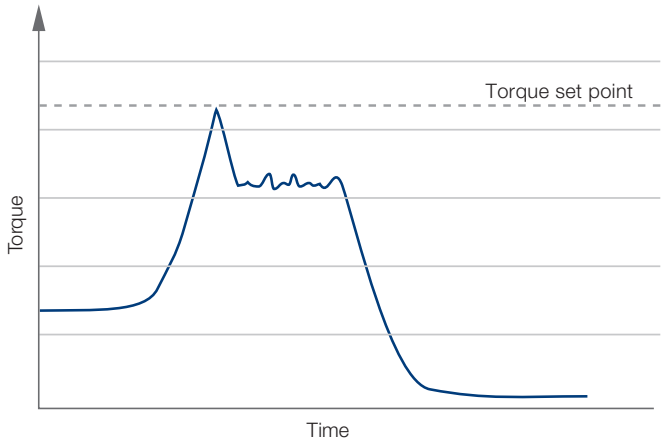
SafeSet following a release



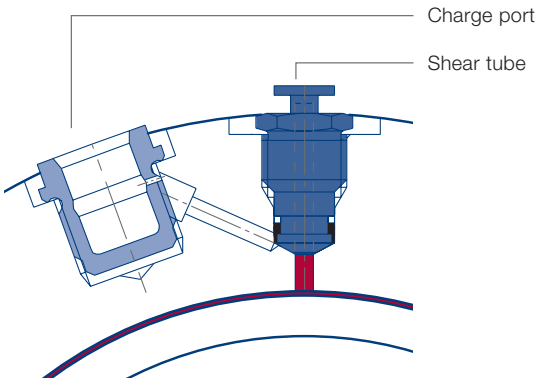
Typical release curve SafeSet EZi



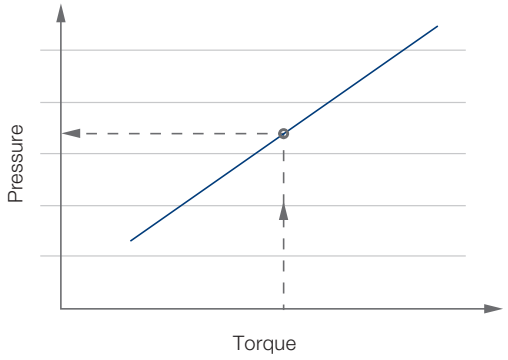
Typical release curve SafeSet



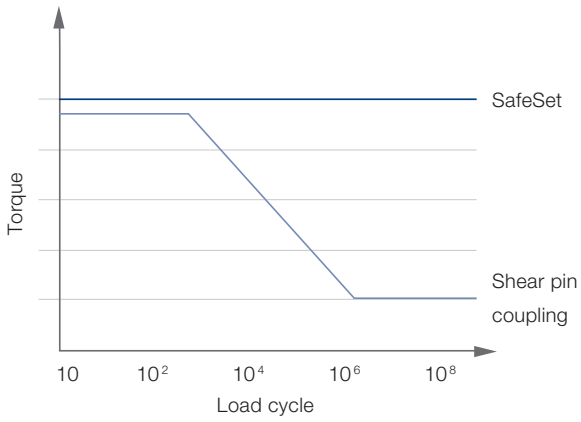
Pressure charge port (dual ports on SafeSet EZi)



Calibration curve (Calibration diagram)



Fatigue curve (S-N curve)



Easy adaptable interfaces
SafeSet EZi

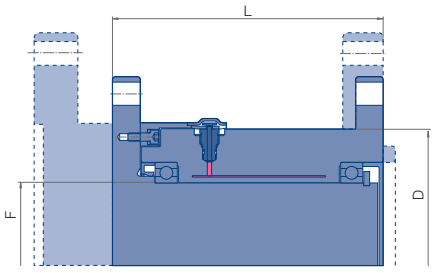
The SafeSet EZi is a highly configurable coupling type where only the core is fixed. With the virtual design tool, you can adapt the SafeSet EZi to fit your interface within minutes.

Below table is a overview of the EZi concept to give a indication of size and type for your specific coupling.

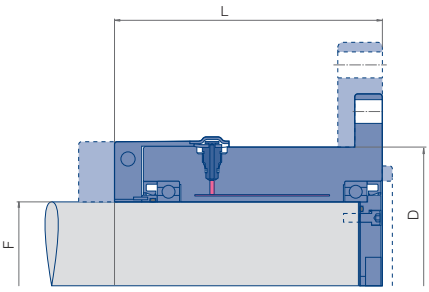
Size EZi						Minimum L by type*		
øF	Minimum torque [kNm]		Maximum torque [kNm]	Max speed [rpm]	Minimum øD*	EZi-P	EZi-N	EZi-K
60	0,7	-	3,3	7200	129	105	118	-
70	0,9	-	5,6	6400	139	115	126	-
80	1,3	-	8,4	5600	149	127	136	-
90	2,0	-	12	4700	159	147	158	-
100	2,7	-	16,3	4480	169	157	168	-
110	1,9	-	18	4000	179	137	148	136
120	2,7	-	23,5	3600	199	141	149	137
130	3,3	-	30	3440	209	154	164	152
140	4,0	-	37,6	3200	229	158	170	160
150	5,4	-	45,6	2880	239	170	180	170
160	7,0	-	47,2	2720	249	174	184	174
170	7,8	-	56,9	2560	265	195	202	192
180	9,9	-	67	2400	280	201	207	197
190	11,4	-	79,2	2240	296	211	217	207
200	13	-	92,8	2160	312	220	226	216
220	17,8	-	123	1920	342	232	-	226
240	23	-	161	1760	378	256	-	252
260	30	-	206	1600	408	271	-	262
280	36,1	-	254	1520	438	298	-	291
300	46,7	-	314	1360	466	321	-	313
320	55	-	383	1280	497	332	-	320
340	67,1	-	461	1200	528	354	-	341
360	79,4	-	550	1120	559	363	-	344
380	63,4	-	583	1040	590	352	-	343
400	71,5	-	680	1040	621	365	-	356
420	84,2	-	788	960	651	375	-	365

*Minimum L and D for Max torque can be slightly bigger, please verify your choice in the Voith coupling configurator

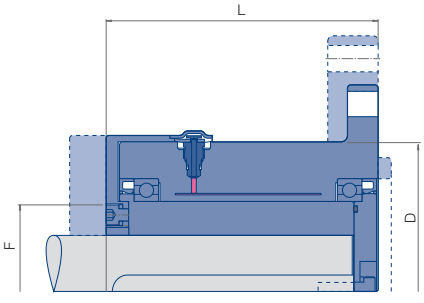
SafeSet EZi-P series, for flange to flange connections



SafeSet EZi-N series, for cylindrical shaft to flange connections

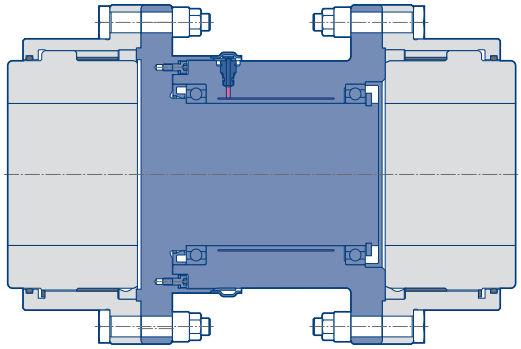


SafeSet EZi-K series, for keyway shaft to flange connections

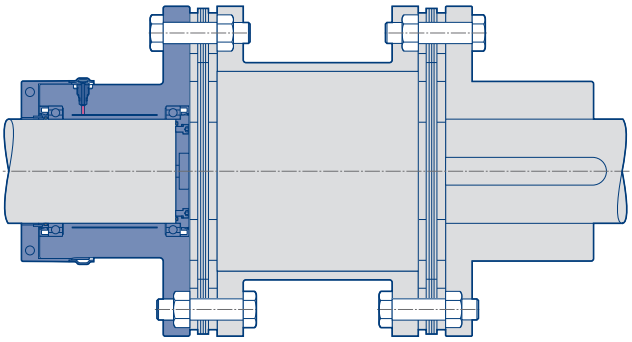


Examples of configurations

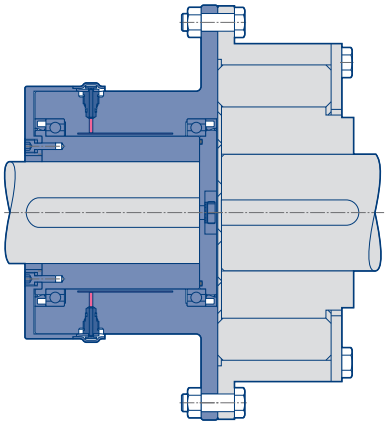
SafeSet EZi-P, used between two gear coupling halves



SafeSet EZi-N, with lamella coupling



SafeSet EZi-K, for keyway shaft with flexible coupling



For plain shafts
SafeSet ST-B Classic series

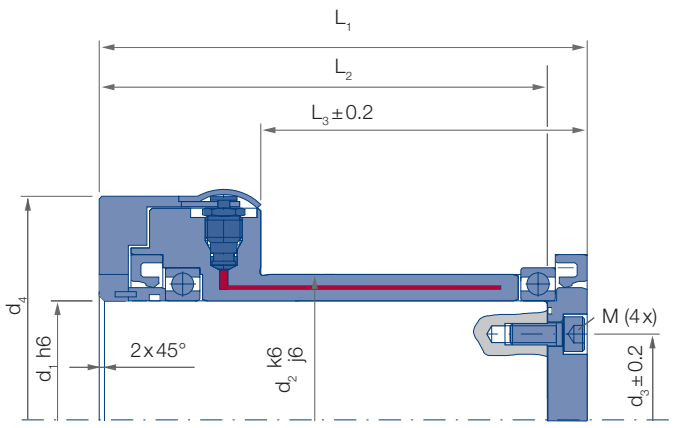
For installation between a plain shaft and a hub.

Size ST-B

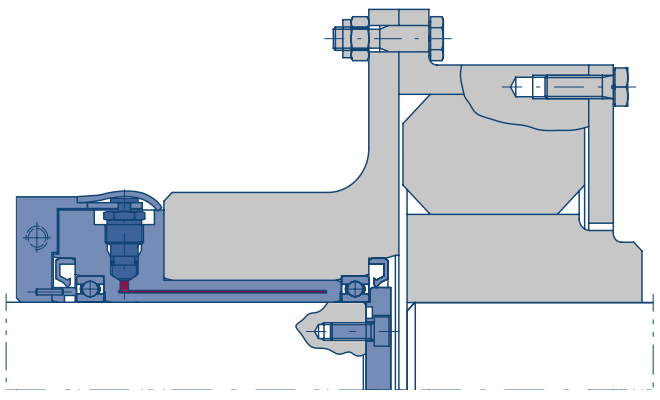
	M_A [kNm]	d_1	d_2	d_3	d_4	L_1	L_2	L_3	M	m [kg]	J [kgm²]
60	1.8–3.6	60	75	40	132	137	128	83	M6	5	0.01
70	2.7–5.4	70	90	50	144	150	140.5	92	M6	6.8	0.02
80	4–8	80	100	50	153	166	156.5	108	M6	7.8	0.03
90	5.5–11	90	110	65	164	184	170	123	M8	9.4	0.04
100	7.5–15	100	125	70	179	206	191	133	M8	13.5	0.06
110	9–18	110	140	80	197	208	193	137	M8	17	0.09
120	14–28	120	150	90	205	237	221	161	M8	20	0.12
130	18–36	130	160	100	214	250	234	174	M8	22	0.14
140	22–44	140	170	105	224	261	245	183	M10	24	0.18
150	27–54	150	180	115	234	275	259	195	M10	27	0.22
160	34–68	160	200	120	249	300	284	215	M10	37	0.34
170	39–78	170	210	130	254	300	282	213	M10	38	0.37
180	44–88	180	225	135	316	300	281	213	M10	45	0.49
190	58–116	190	240	145	316	350	332	260	M10	56	0.68
200	65–130	200	250	150	316	350	332	260	M10	61	0.81
220	82–164	220	270	175	316	350	332	260	M10	65	1

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
m: mass (weight)
J: mass moment of inertia
Dimensions in mm.

SafeSet ST-B



ST-B series, in combination with a flexible rubber coupling



For keywayed shafts
SafeSet ST-KB Classic series

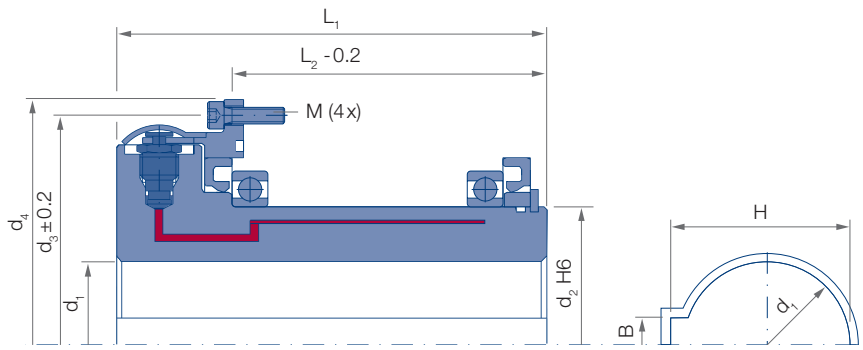
For installation between a keywayed shaft, and hub.
The friction surface is between the coupling and the hub.

SizeST-KB

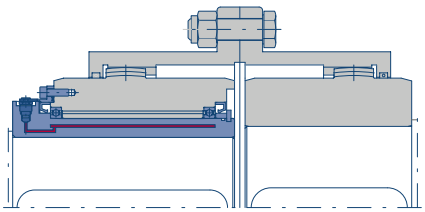
	M_A [kNm]	d_1[1]	d_1[2]	d_2	d_3	d_4	L_1	L_2	M	m [kg]	J [kgm²]
60	1–2	41	44	60	123	134	112	73	M6	4.2	0.01
70	1.5–3	48	52	70	133	143	119	80	M6	5.1	0.01
80	2.1–4.2	55	62	80	141	152	124	85	M6	6.1	0.01
90	3–6	65	69	90	148	159	136	93	M6	7.5	0.02
100	3.9–7.8	71	77	100	158	169	140	97	M6	8.4	0.02
108	5–10	76	85	107.95	166	177	146	103	M6	9.9	0.03
120	7–14	86	95	120.65	174	185	160	117	M6	12	0.04
127	9–17	92	99	127	181	192	172	128	M6	14	0.05
140	10–20	100	110	139.7	193	204	176	132	M6	17	0.07
152	13–26	110	120	152.4	206	221	175	134	M8	18	0.09
165	17–34	120	130	165.1	220	233	194	150	M8	23	0.13
178	23–46	130	141	177.8	229	243	219	175	M8	29	0.18
203	35–70	150	161	203.2	262	277	253	210	M8	42	0.32
228	50–100	168	181	228.6	295	310	281	235	M8	63	0.62
254	70–140	193	209	254	318	333	303	256	M8	80	1
280	90–180	208	228	280	390	410	311	259	M8	96	1.4

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
m: mass (weight)
J: mass moment of inertia
d_1[1]: Maximum shaft diameter with key according to DIN 6885;
d[2]: Maximum shaft diameter with lowest possible key
Dimensions in mm.

SafeSet ST-KB



ST-KB series, integrated into the gear hub of a gear coupling



For flange to flange connections
SafeSet SR-P Classic series

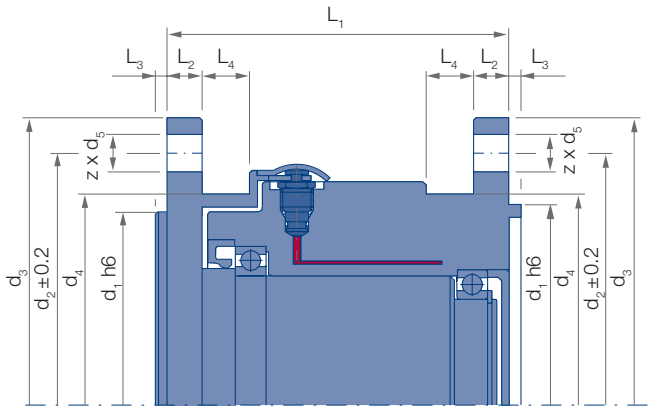
Compact design, with connection flanges at each end, often in combination with a flexible coupling, such as a gear coupling.

Size SR-P

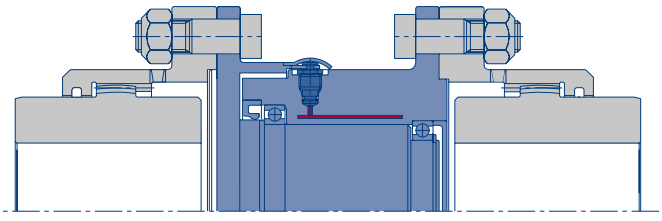
	M_A [kNm]	d_1	d_2	d_3	d_4	d_5	z	L_1	L_2	L_3	L_4	m [kg]	J [kgm²]
60	1.1 –2.8	94	122	152	96	11	8	115	19	2	15	11	0.02
80	2.0–5.8	115	150	178	122	13	6	113	19	2	18	15	0.05
100	4.0–10.0	140	184	213	150	17	6	135	22	2	22	25	0.11
110	6.0–13.9	163	208	240	174	17	8	161	22	2	–	36	0.19
130	9.5–23.0	188	242	280	200	21	8	173	28	2	–	53	0.38
160	14.0–36.0	222	280	318	234	21	8	193	28	2	–	76	0.72
190	21.0–51.0	245	305	347	262	21	10	199	28	3	–	99	1.1
203	27.0–67.0	273	345	390	306	21	10	206	38	3	–	138	2.1
228	42.0–94.0	310	368	425	332	21	14	240	38	3	–	185	3.2
254	70.0–200	331	406	457	355	25	14	330	26	4	–	280	5.1
300	100–250	371	460	527	404	25	16	309	28	6	–	400	11
356	170–425	451	530	591	472	32	14	385	33	6	–	670	24
406	290–580	483	580	640	522	32	18	387	38	6	–	800	34

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
m: mass (weight)
J: mass moment of inertia
Dimensions in mm.

SafeSet SR-P



SR-P in between two gear coupling halves



For shaft to flange connections
SafeSet SR-N Classic series

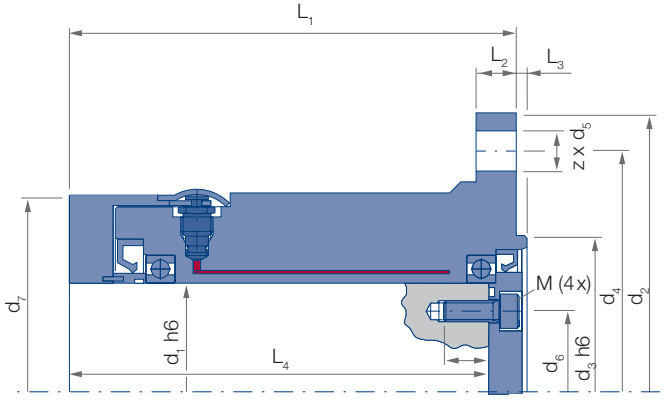
For installation between a plain shaft and a flange connection, such as universal joint shaft, elastic coupling, steel membrane coupling etc.

Size SR-N

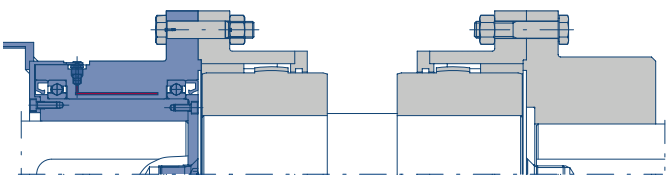
	M_A [kNm]	d_1	d_2	d_3	d_4	d_5	d_6	d_7	z	L_1	L_2	L_3	L_4	M	m [kg]	J [kgm²]
60	1.8–3.6	60	180	110	155.5	14	40	132	8	136	12	2.3	128	M6	12	0.03
70	3–6	70	180	110	155.5	14	50	144	8	150	12	2.3	140	M6	13	0.04
80	3.9–7.8	80	225	140	196	16	50	153	8	166	15	4	156.5	M6	20	0.09
90	5–10	90	225	140	196	16	65	164	8	184	15	4	171	M8	27	0.11
100	7.5–15	100	250	140	218	18	75	179	8	203	18	5	190	M10	30	0.17

The coupling is a tailor-made product. The table shows some examples.
Other sizes and features are available upon request. Above size 120 the type SR-F is recommended.
M_A: release torque – adjustment range
m: mass (weight)
J: mass moment of inertia
Dimensions in mm.

SafeSet SR-N



SR-N series, keyway sleeve connected to gear couplings with spacer shaft



For shaft to flange connections
SafeSet SR-F Classic series

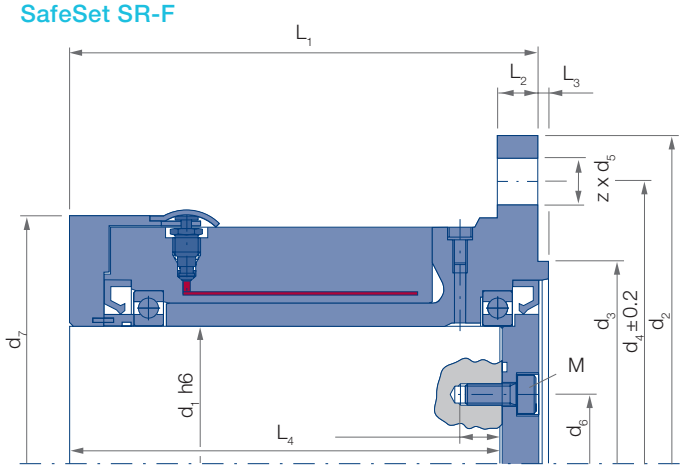
For installation between a plain shaft and a flange connection, such as universal joint shaft, elastic coupling, steel membrane coupling etc.

Size SR-F

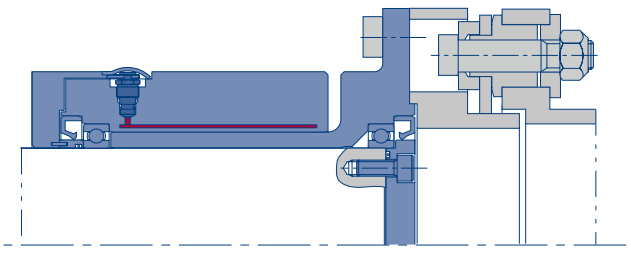
	M_A [kNm]	d_1	d_2	d_3	d_4	d_5	d_6	d_7	z	L_1	L_2	L_3	L_4	M	m [kg]	J [kgm²]
100	7.5–15	100	250	140	218	18	75	187	8	209	18	5	190	M8	34	0.22
110	10–20	110	285	175	245	20	80	197	8	208	20	6	198	M8	38	0.31
120	13–26	120	285	175	245	20	60	215	8	237	20	6	220	M10	47	0.38
130	13–33	130	315	175	280	22	100	230	8	250	22	6	234	M8	60	0.60
140	20–40	140	350	220	310	22	110	235	10	261	25	7	243	M10	64	0.78
150	25–50	150	350	220	310	22	115	247	10	305	25	7	270	M10	78	0.97
160	35–71	160	390	250	345	24	120	275	10	355	28	7	320	M10	130	1.5
180	49–98	180	435	280	385	27	135	320	10	300	40	8	282	M10	150	2.9

The coupling is a tailor-made product. The table shows some examples.
Other sizes and features are available upon request.
M_A: release torque – adjustment range
m: mass (weight)
J: mass moment of inertia
Dimensions in mm.

SafeSet SR-F



SR-F with membrane coupling



For heavy duty shaft to flange connections
SafeSet SR-F Classic series

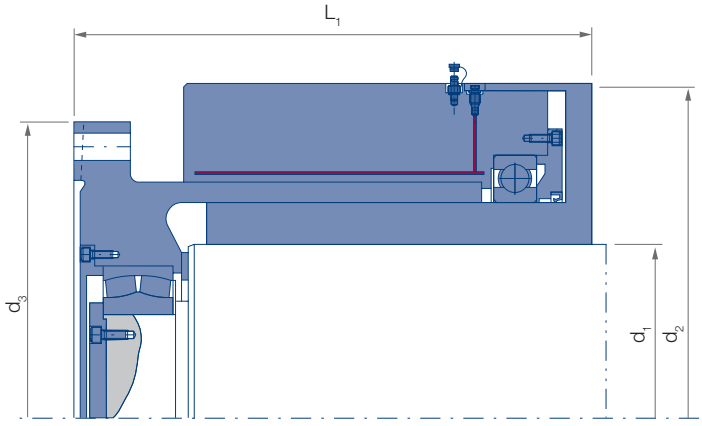
For installation between a plain shaft and a flange connection, such as universal joint shaft, elastic coupling, steel membrane coupling etc.

Size SR-F

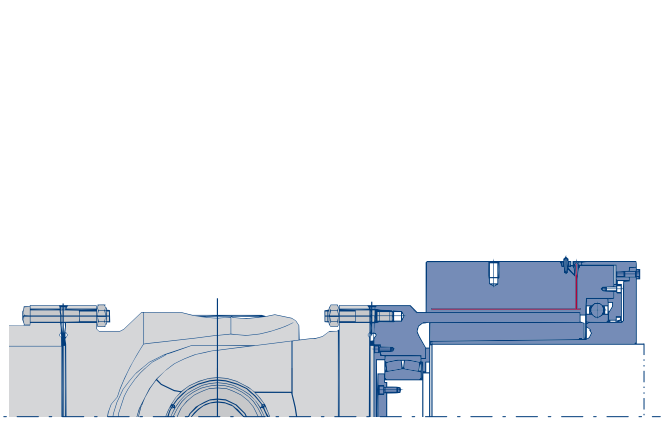
	M_A [kNm]	d_1	d_2	d_3	L_1	m [kg]
300	200–400	240	520	315	500	400
400	350–750	320	600	390	600	800
500	700–1400	400	750	550	750	1500
600	1000–2000	480	900	700	950	2200
710	1700–3500	570	1070	800	1150	3500
800	2500–5000	640	1200	880	1200	5000
900	3500–7000	720	1350	1020	1350	7000
1000	5000–10000	800	1500	1220	1500	10000

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
m: mass (weight)
Dimensions in mm.

SafeSet SR-F



SR-F 1000 with universal joint shaft



For heavy duty compact design
SafeSet SR-C compact series

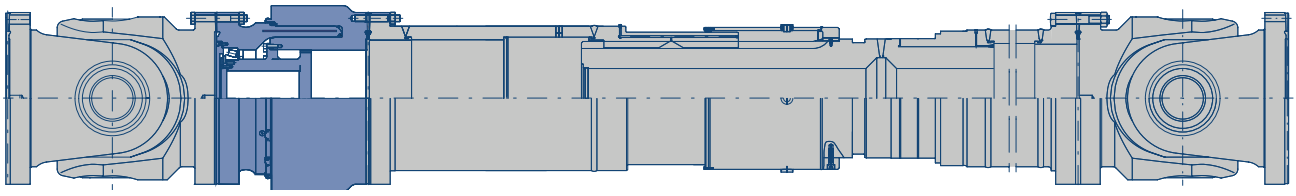
The SR-C series, has been specially designed for high torque applications, where the normal SR-F series coupling is simply too large for the available space. Can be designed as SR-NC – shaft to flange connection or SR-PC – flange to flange connection.

Size SR-PC

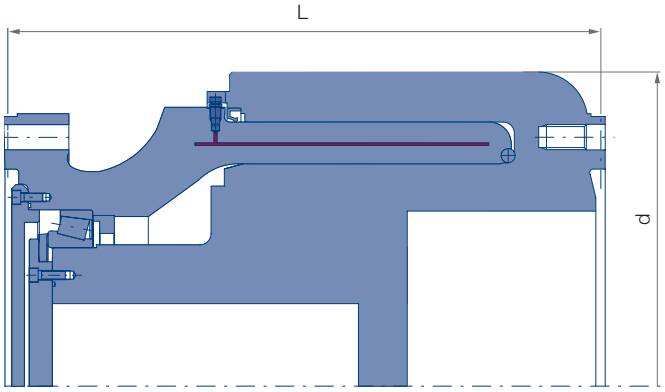
	M_A [kNm]	d	L
520	750 – 1500	730	640
575	1000 – 2000	805	700
690	1750 – 3500	970	870
780	2500 – 5000	1090	1000
870	3500 – 7000	1220	1100
950	4500 – 9000	1325	1120

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
Dimensions in mm.

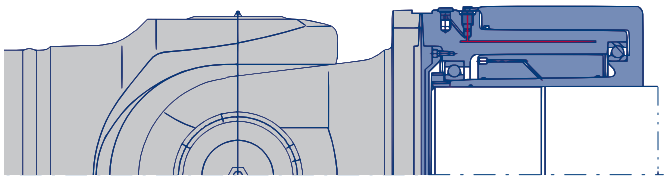
SR-PC series, integrated into a universal joint shaft



SafeSet SR-PC



SR-NC with universal joint shaft



For shaft to flange connections
SafeSet SR-F marine series

The couplings are designed and manufactured to fulfill present DNV GL rules for marine applications. Protects sensitive drivelines for thrusters, waterjets and conventional propulsion.

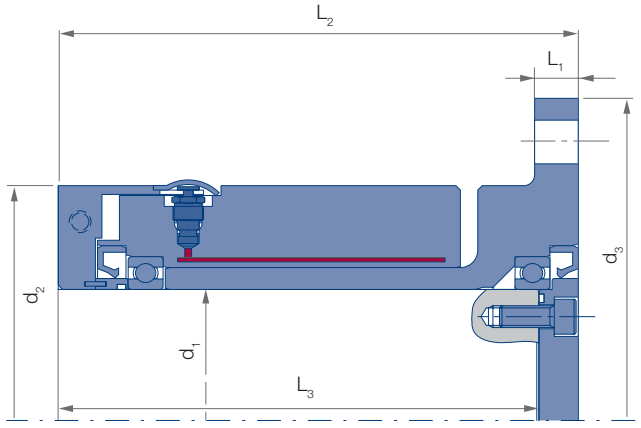
SIze SR-F

	M_A [kNm]	d_1	d_2	d_3	L_1	L_2	L_3	m [kg]	J [kgm²]
100	9–18	100	175	235	16	242	222	34	0.19
110	12–24	110	187	260	18	267	252	41.5	0.27
120	16–32	120	199	285	20	287	271	50	0.38
130	20–41	130	210	305	22	305	289	58	0.50
140	26–52	140	227	325	23	322	306	71.5	0.72
150	32–65	150	242	345	26	341	325	85.5	0.98
160	40–79	160	258	365	27	359	343	102	1.32
170	46–93	170	277	390	29	388	370	128	1.90
180	56–112	180	292	415	31	407	389	150	2.5
190	65–131	190	309	435	32	427	409	175	3.3
200	77–155	200	324	455	34	441	423	198	4.1
220	105–210	220	355	495	38	472	454	254	6.3
240	139–278	240	386	525	41	523	501	326	9.3
260	176–352	260	417	575	44	560	537	410	13.8
280	222–444	280	448	605	47	600	577	499	19.2
300	265 –530	300	486	635	51	646	622	634	28
320	323–646	320	516	695	54	685	660	763	38.6

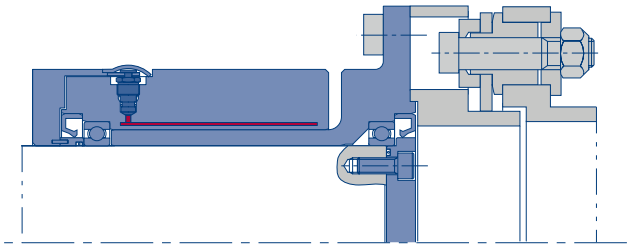
The coupling is a tailor-made product. The table shows some examples.
Other sizes and features are available upon request.
M_A: release torque – adjustment range

m: mass (weight)
J: mass moment of inertia
Dimensions in mm.

SafeSet SR-F



SR-F with membrane coupling



For flange to flange connections
SafeSet SR-PF marine series

The couplings are designed and manufactured to fulfill present DNV GL rules for marine applications. Protects sensitive drivelines for thrusters, waterjets and conventional propulsion.

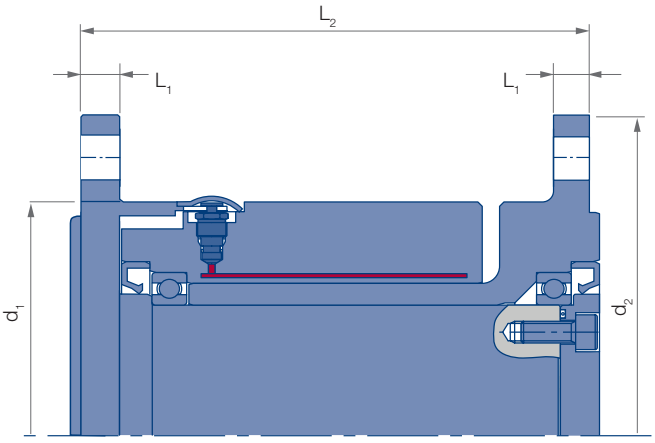
Size SR-PF

	M_A [kNm]	d_1	d_2	L_1	L_2	m [kg]	J [kgm²]
100	9–18	175	235	16	253	53	0.23
110	12–24	187	260	18	279	67	0.36
120	16–32	199	285	20	301	84	0.52
130	20–41	210	305	22	320	100	0.71
140	26–52	227	325	23	340	123	1.00
150	32–65	242	345	26	359	149	1.38
160	40–79	258	365	27	377	177	1.84
170	46–93	277	390	29	408	220	2.62
180	56–112	292	415	31	427	258	3.46
190	65–131	309	435	32	448	301	4.46
200	77–155	324	455	34	463	342	5.60
220	105–210	355	495	38	498	443	8.68
240	139–278	386	525	41	549	568	12.8
260	176–352	417	575	44	590	718	19.1
280	222–444	448	605	47	632	878	26.4
300	265–530	486	635	51	680	1095	37.6
320	323–646	516	695	54	721	1328	52.9

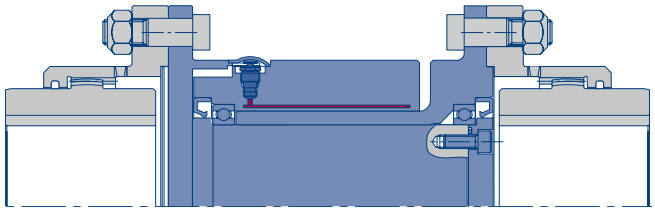
The coupling is a tailor-made product. The table shows some examples.
Other sizes and features are available upon request.
M_A: release torque – adjustment range
J: mass moment of inertia

m: mass (weight)
Dimensions in mm.

SafeSet SR-PF

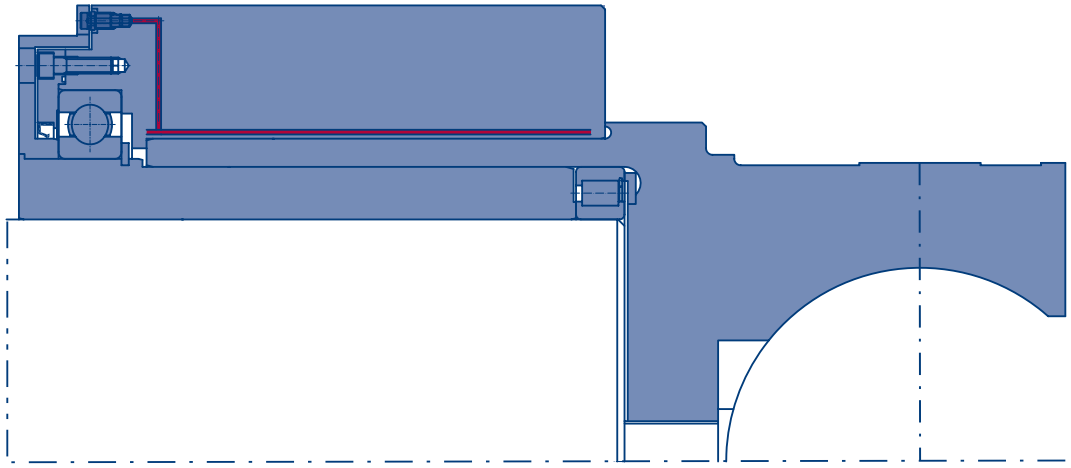


SR-PF with gear coupling and double flange design

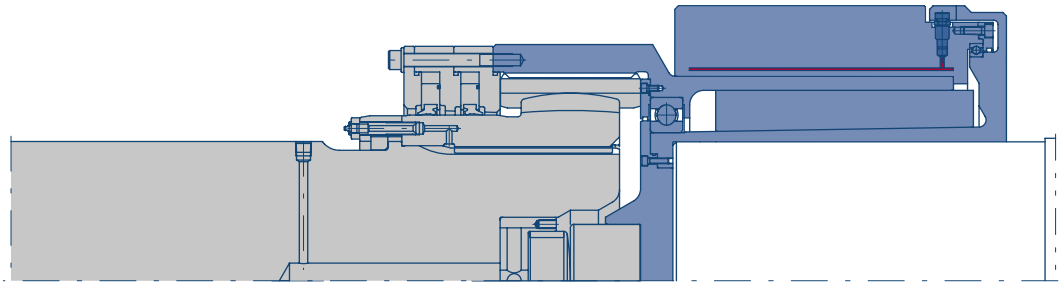


Special adaptions

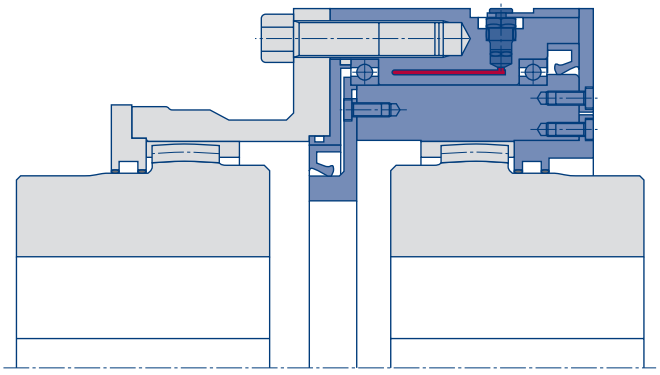
SR-F integrated with a slipper spindle



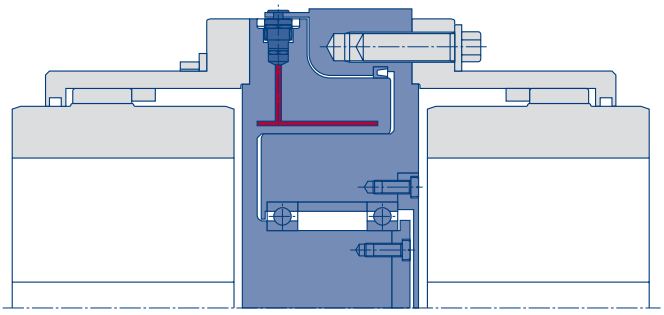
SR-F integrated with a gear spindle

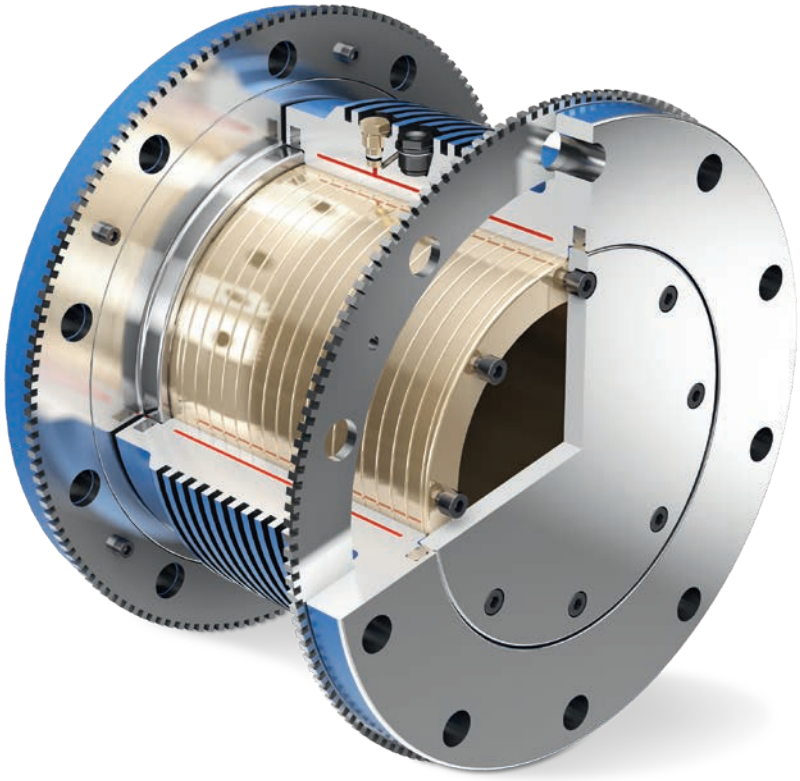


SR-N compact solution for limited space



SR-P compact solution for limited space
to replace shearpin coupling





SlipSet with peak shaving

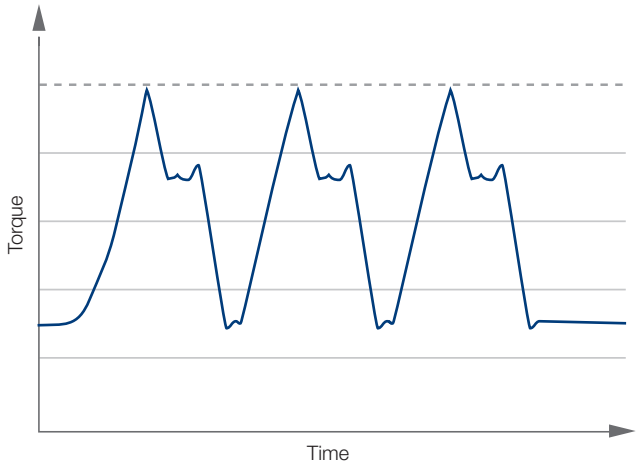
The SlipSet torque limiting coupling ensures continuous production and is designed to instantly slip instead of release in the event of an overload situation. By acting as a shock absorber in drives with frequent torque peaks, the SlipSet prevents time-consuming shutdowns for repair work. The SlipSet torque limiting coupling is perfectly suitable in applications where there is a need of handling short peak loads (smaller than 120 °). The SlipSet units are very compact and can be installed in areas with a minimum of space, to ensure the most optimal position in a drive line.

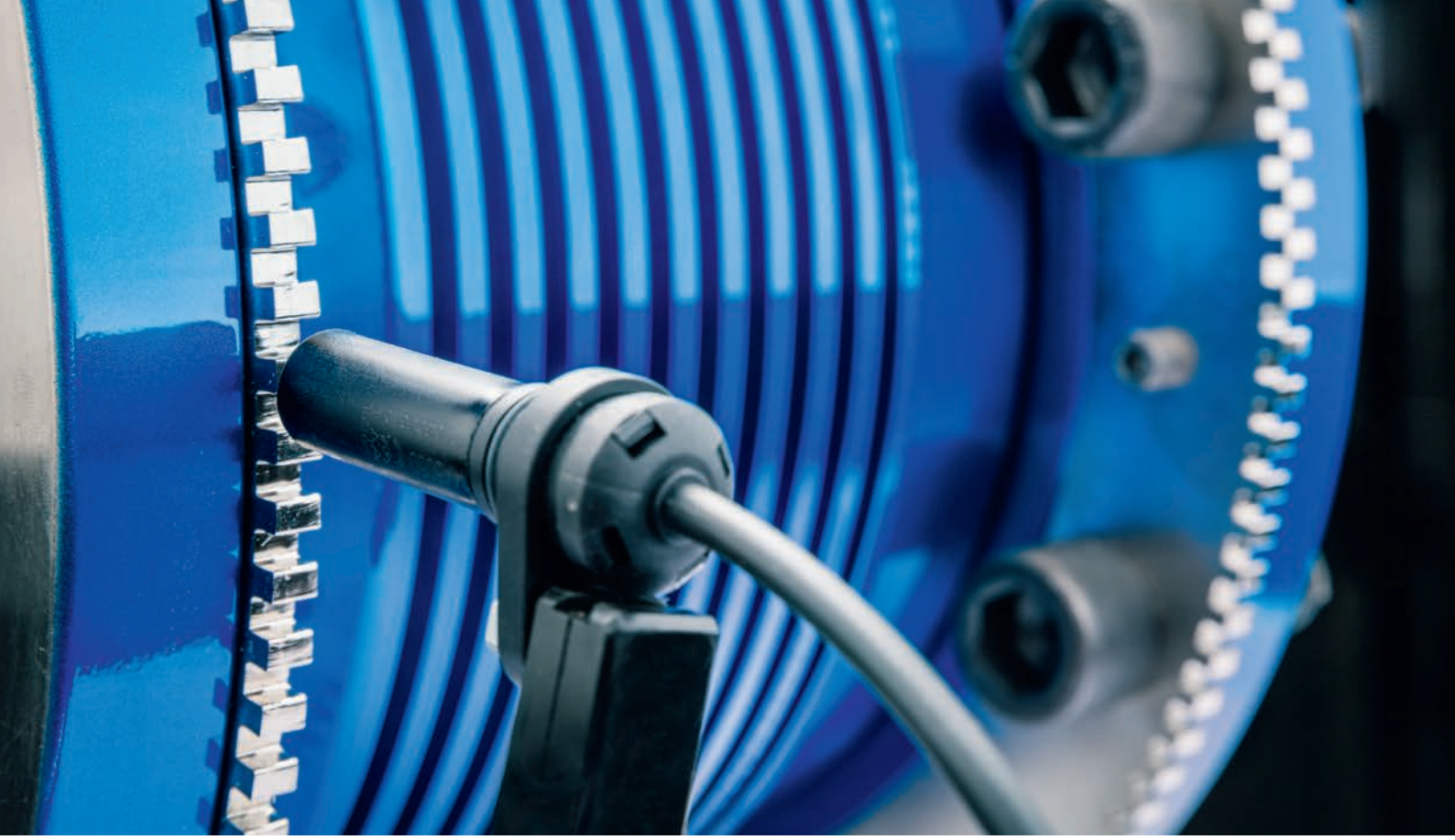
Operation

In the event of an torque overload, the SlipSet will instantly slip and limit the torque to the pre-set level, protecting the driveline. If the blockage is temporary, for example due to inertia effects, the SlipSet slips until the torque peak has passed and the driveline doesn't have to be stopped.

If the over load persists, the monitoring system named Dtect detects the slippage and informs the operator that the drive train power needs to be adjusted.

SlipSet

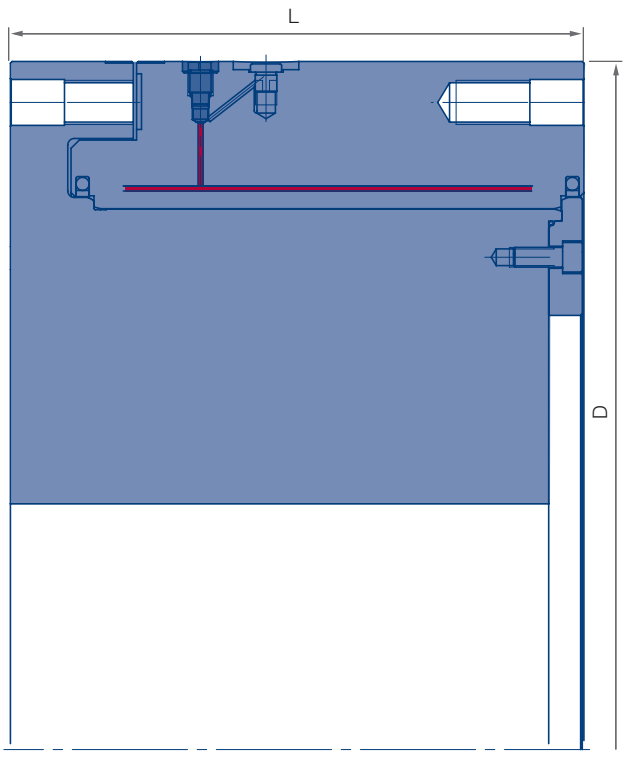




By adding Voith Dtect,
you get real-time monitoring
of your driveline status.

SlipSet SL-P series

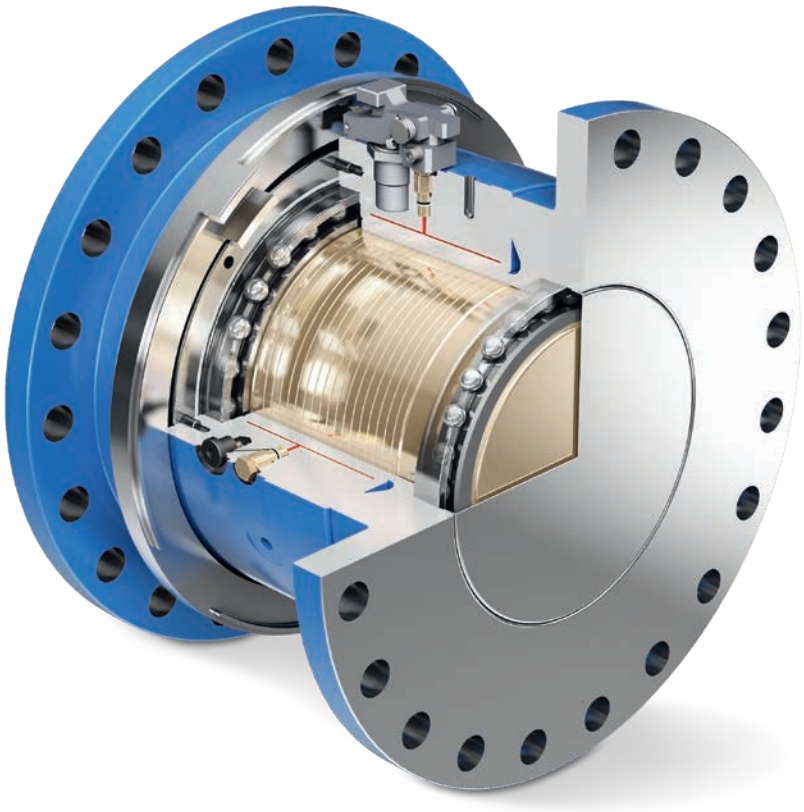
SL-P



Size SL-P

	Torque range (kNm)	D	L	Weight (kg)
385	175–350	525	290	426
440	355–620	650	290	649
555	625–750	700	290	585
660	600–1200	840	350	1270

The coupling is a tailor-made product.
The table shows some examples.
Dimensions in mm.



SmartSet with peak ride through and controlled release

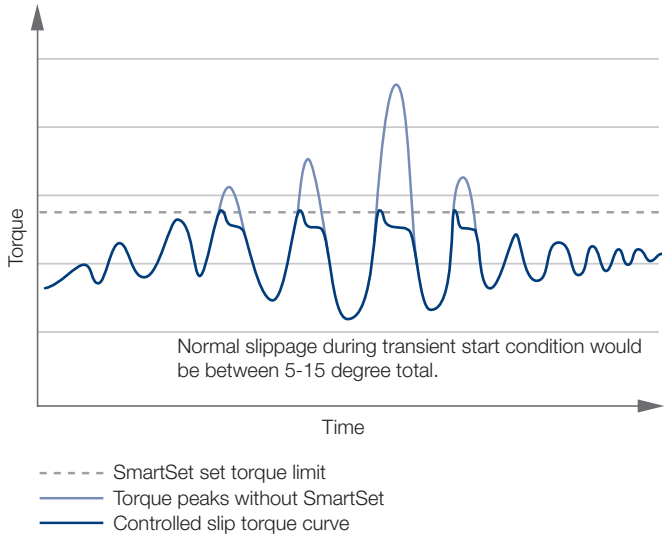
Operation

SmartSet is based on the same technolgy as the SafeSet coupling, but it is equipped with a SmartSet device that will give the coupling an additional slip feature. This centrifugal device is activated by the rotational speed of the intended application. This enables the coupling to slip without release during high transient torques, that are an inherent part of many applications with synchronous motors.

If the torque peak is of long duration in an overload situation, the SmartSet coupling can fully release as a normal SafeSet coupling and subsequently save the drive train from catastrophic failure.

Torque capacity available from 1 kNm to 15 000 kNm.

SmartSet



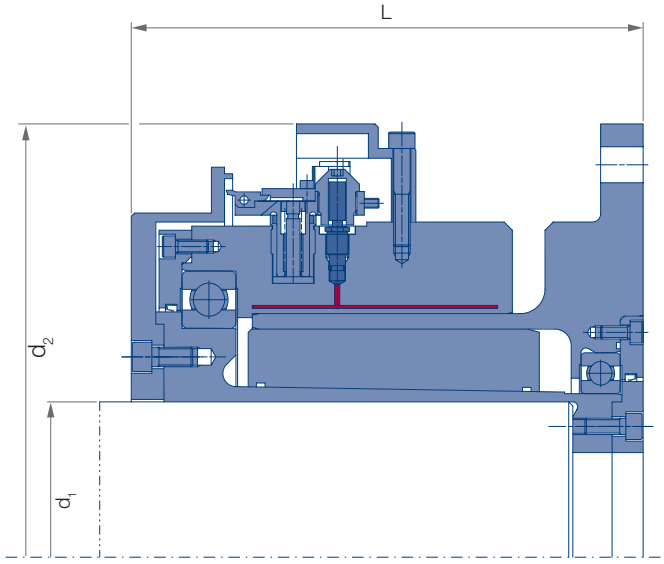
For shaft to flange connections
SmartSet SM-F series

Size SM-F

	M_A [kNm]	d_1	L	d_2
280	68-135	190	313	530
300	100-200	220	363	560
320	150-300	250	414	585
360	200-400	280	452	640
400	265-530	300	463	695
460	355-710	310	491	770
500	475-950	350	544	840
560	630-1260	380	564	920
600	725-1450	390	690	995
650	913-1825	410	745	1060

The coupling is a tailor-made product. The table shows some examples.
In order for the SmartSet function to be activated, the rotation speed needs to be >500rpm for all models in the table
M_A: release torque – adjustment range
Dimensions in mm.

SM-F



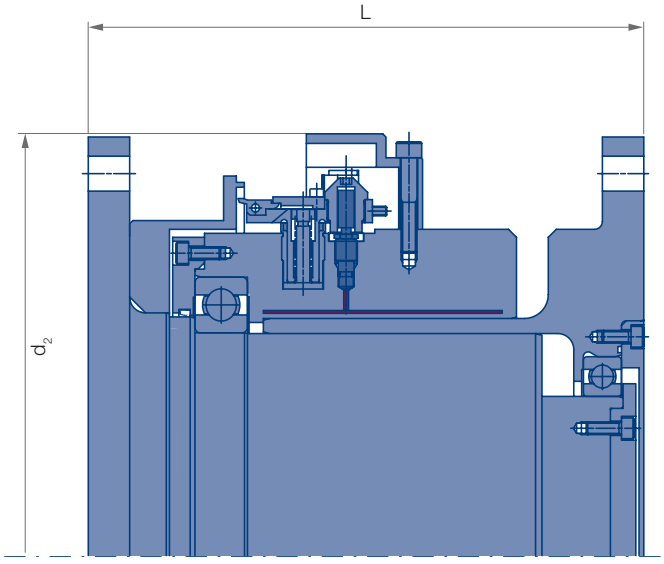
For flange to flange connections
SmartSet SM-PF series

Size SM-PF

	M_A [kNm]	d_1	L	d_2
280	68-135	-	349	530
300	100-200	-	410	560
320	150-300	-	464	585
360	200-400	-	508	640
400	265-530	-	519	695
460	355-710	-	545	770
500	475-950	-	605	840
560	630-1260	-	625	920

The coupling is a tailor-made product. The table shows some examples.
In order for the SmartSet function to be activated, the rotation speed needs to be >500rpm for all models in the table
M_A: release torque – adjustment range
Dimensions in mm.

SM-PF



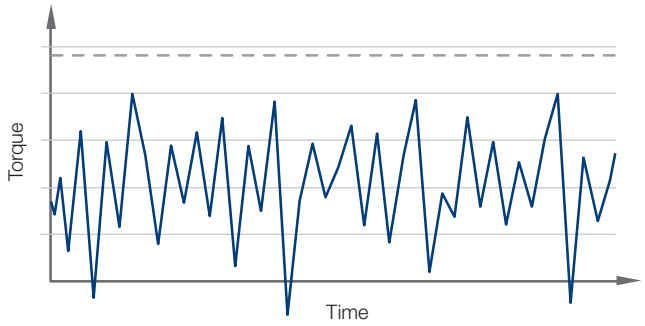
AutoSet with controlled slip and automatic reset

The AutoSet is a torque limiting coupling with a slip function and automatic reset to enhance performance. The primary function of the AutoSet is to distribute torque smoothly by small controlled slippage. As a secondary function the AutoSet will release entirely at torque peaks of long duration and protect drive line equipment from catastrophic failure. This mode will occure successively at slip angles between 30-180 degrees. It is completely automatic and the self-reset function maximizes production uptime.

The AutoSet friction grip is created by a hydraulically adjustable tapered sleeve that generates the pre-set torque level. If the set torque is exceeded, the coupling slips and limits the torque with an accuracy of +-10% during standard performance. After release the coupling automatically resets itself to the full pre-set torque level and no manual handling is needed. This avoids lengthy stoppages in production.

Torque capacity available between 0.41 to 275 kNm.

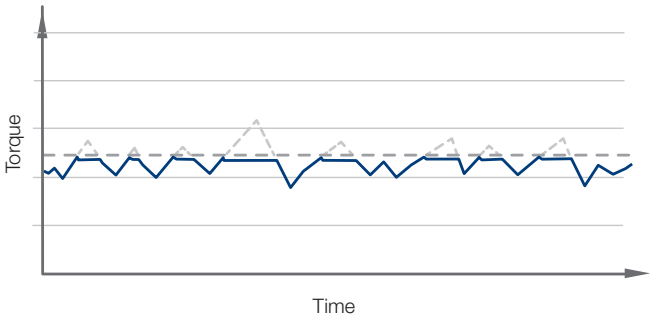
Without AutoSet



– – Release torque with a shear pin coupling

— Torque peaks during production

With AutoSet



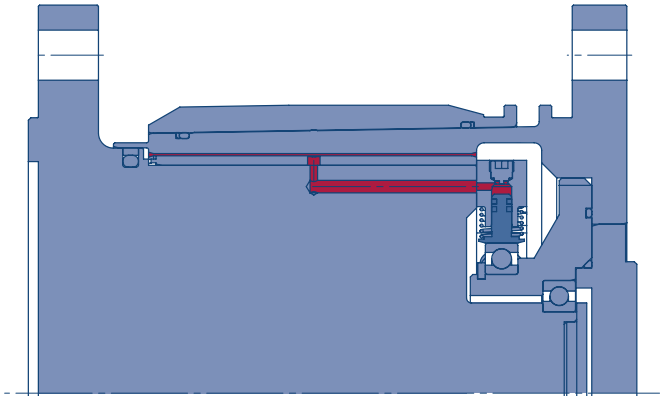
– – Release torque slip

— Torque with AutoSet

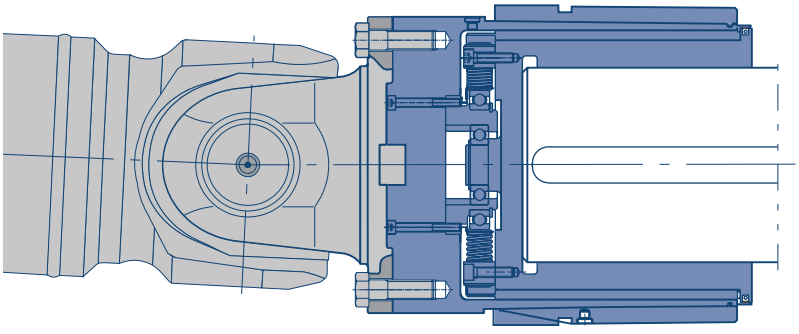
For shaft to flange and flange to flange connection
Customized AutoSet

For larger outer diameter than 280 mm universal joints are normally used. In such cases AutoSet would be installed on the output shaft of the gearbox.

SA-P, flange to flange connection



SA-F, shaft to flange connection, installed on the output shaft of the pinion gearbox



For integrated custom solutions
AutoSet SA-I series

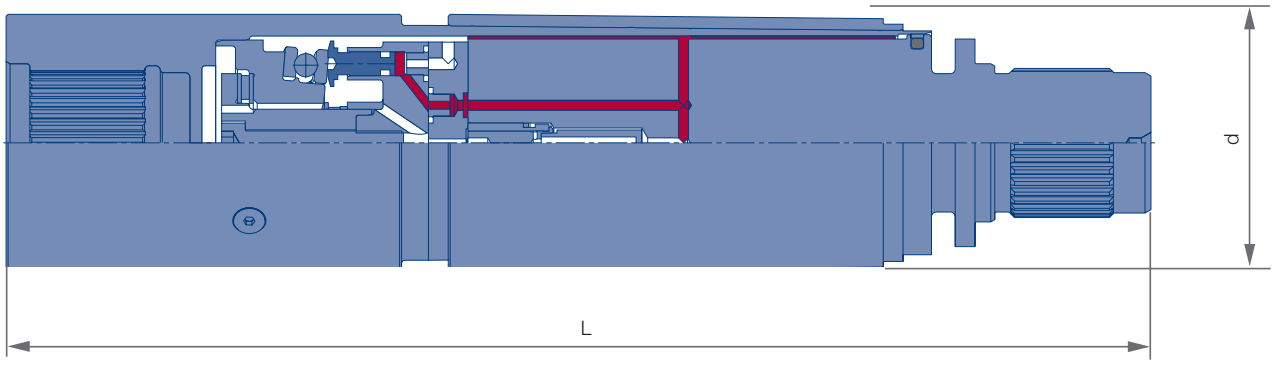
The SA-I series integrates the AutoSet principle into the drive spindle itself, which is typically performed on gear spindles. The table below shows examples of the typical dimensions.

Size SA-I

	M_A [kNm]	d	L	Max speed[rpm]
38	0.3–0.72	48	250	x 1000
45	0.8–1.6	60	260	x 850
57	1.2–2.5	76	270	x 670
73	3–7.4	98	310	x 520
95	6–12	119	350	x 400
120	12–24	155	450	x 320
130	16–33	175	470	x 290
150	22–45	200	530	x 250

The coupling is a tailor-made product. The table shows some examples.
M_A: release torque – adjustment range
Dimensions in mm.

SA-I with gear spindle



Adding digital intelligence to couplings
Dtect

Voith Dtect adds digital intelligence to your torque limiting couplings to get real-time monitoring of the driveline performance, productivity and status. The system is designed to communicate coupling status and support better decision-making to predict potential problems, protect the driveline and prevent costly downtime. This will increase the productivity and reduce maintenance.

Voith Dtect makes it easy to supervise and monitor your torque limiting couplings. The system is built on a PLC-based platform using industrial communication standards for easy integration in your existing process monitoring systems.

Dtect detects coupling slippage and/or release that is caused by high torque peaks in a driveline. By monitoring slippage, it is possible to adjust the load of the driveline or to perform a controlled shutdown instead of releasing a coupling. This saves production time, maintenance time and spare parts cost. When non-slip couplings are in operation, the release detection instantly informs the operator that the drive has been disconnected. This information can be used to maximize production efficiency.

Data collected from Dtect can also tell if your driveline is running at its best. By monitoring the current status of the driveline, you can increase the productivity if possible. Driveline optimization is possible! Productivity improvements are possible by analyzing data collected from the installation of Dtect.

Multi-monitoring

The new Dtect system allows monitoring of one or more couplings within one system. This makes it possible to monitor all connected drivelines and get real-time status information by using one central system. The Dtect monitors each coupling individually and communicates the different parameters through one common interface.

Integrated HMI touch panel

The new Dtect system can be fitted with an integrated touch panel. The HMI touch panel gives you the current status information on-site for even better control and overview.

System integration

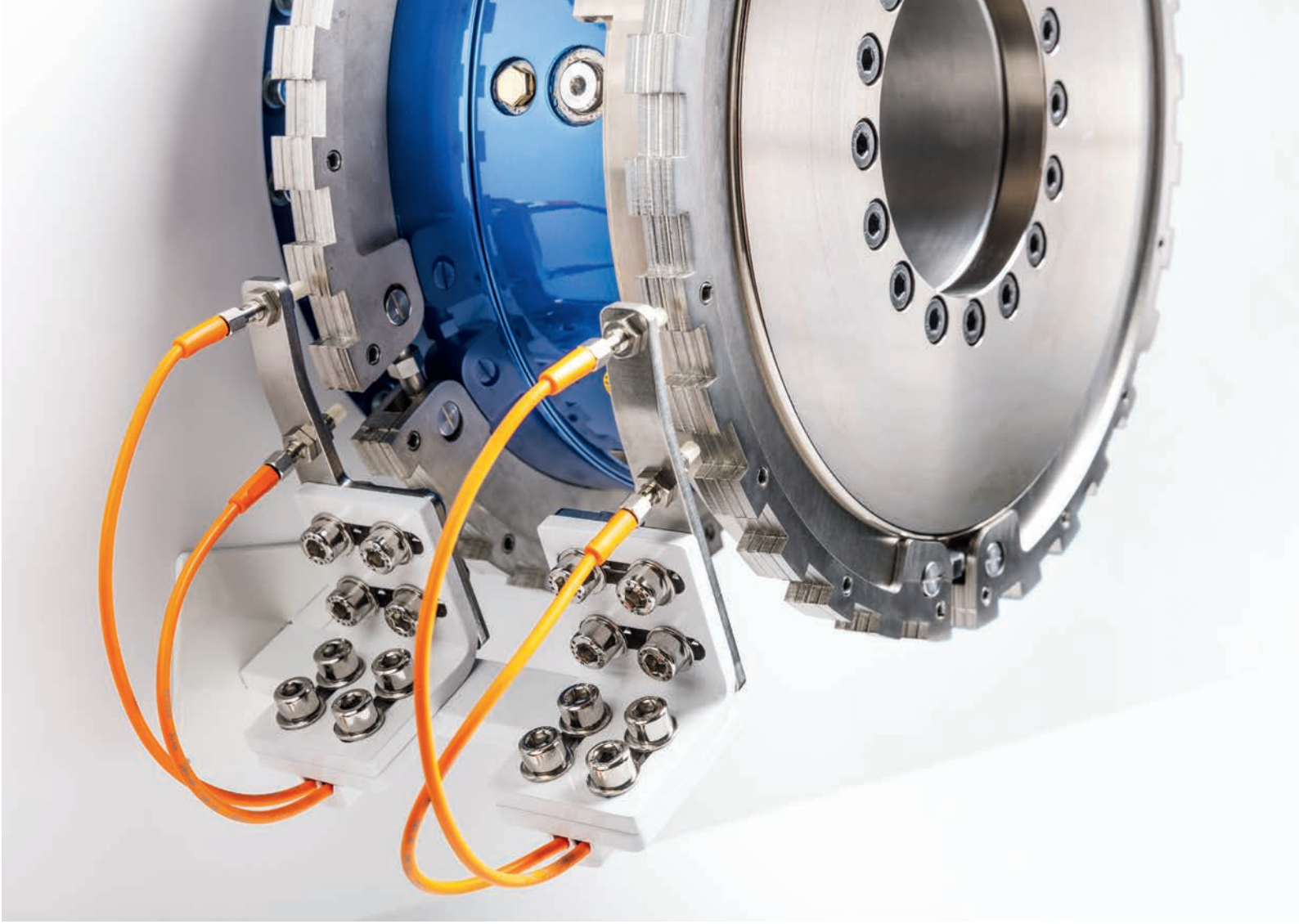
Dtect is supplied with Modbus TCP/IP for easy integration to the existing process information network. Thanks to its flexibility, it can be adopted for other communication standards depending on your needs.

Benefits

+ **Real-time monitoring of the driveline status**
+ **Possibility to optimize driveline performance**
+ **Integration with existing process monitoring systems enables platform independent supervision of data**
+ **Prevent costly downtime with proactive maintenance of a coupling**
+ **Visual warning indicators can be used for making decisions and actions**
+ **Increase productivity of the driveline**

Technical data

Power supply	24VDC, 1,5A minimum
Working temperature range	-30° to +45°C
Relay output, max	30 VDC, 2A, 30W
Enclosure material	Steel cabinet, IP66
Enclosure dimensions	380 x 300 x 170 mm
Sensor cable length, max	25 m



System overview	Features							
Slip monitoring system	**Release detection**	**Speed detection**	**Slip monitoring**	**Condition monitoring**	**History log**	**Extended sensor range**	**Dual couplings**	**User defined limits**
Type								
Dtect.Slip 320.2	●	●	●	●	●		●	●
Dtect.Slip 320.1	●	●	●	●	●			●
Release detection system								
Type								
Dtect.Release 221.1	●	●		●	●	●		●
Dtect.Release 220.2	●	●		●	●		●	●
Dtect.Release 220.1	●	●		●	●			●

Tools and equipment

Pump P500 and EZi 115

Service box

Pumps

For pressurizing your coupling, Voith offer a complete range of hydraulic pumps; from manual versions to powered variants. The size of the pump will be dependent on the size of the coupling to be pressurized.

Recommended pump sizes

Pump	Operation	Coupling size
EZI115	Manual	30-250
P240	Manual	150-350
P500	Pneumatic	300-600
P1000	Pneumatic	over 500

For special applications, electrically driven pumps or customized solutions are available upon request.
Dimensions in mm.

Service boxes

Adapted to your necessary tools and equipment needed to operate the couplings. Each service box is adapted for the specific type of coupling. Just a few of the equipment needed are, for example, torque wrenches, allen wrenches and plug pullers.

For demanding applications digital manometers are available. They ensure a more exact pressure setting and therefore provide a more precise release point.

Shear tube

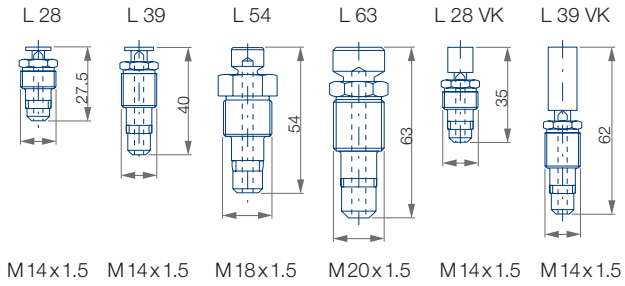
EZi mount and EZi fill

Shear tubes

Depending on the size of the coupling and its application, the coupling could have between 1 to 12 shear tubes of a suitable size installed.

Shear tubes with extended heads are also available (VK model) for couplings where external release capability is required such as engine test benches.

Shear tubes



User friendly tools

The EZi mount tool is designed to facilitate entering of the shear tube into the thread and to secures the shear tube during installation. With this easy to use tool, gloves can be worn during assembly. The tool also makes it easier to fit a shear tube that is located in a hard to reach position, e.g. back side of coupling. EZi mount is compatible for couplings with L28 shear tubes.

After mounting the shear tube, lubrication oil is easily refilled with the EZi fill pump. The filling pump fits perfectly to the 0,5 liter lubrication oil bottle..

Protecting the driveline and enabling a higher production level, our R&D team perform an advanced driveline analysis to find the optimal torque limiting solution.

Voith service

Ensuring maximum production our high quality torque limiting couplings are built to last. Still, all mechanical drive components need correct service and maintenance to ensure reliable performance.

Making sure your equipment meets its full design potential, we provide installation services, training of your maintenance personnel and service support. Our Voith service personnel are present during installation, initial startup and final commissioning and instruct your personnel on how to operate the couplings and optimize their settings. Whenever you need support our service technicians provide it instantly.

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