

# Cardan Shaft CSL

## with Length Compensation



### Features

Nominal Torques	29 000 - 290 000 Nm 257 000 - 2 567 000 lb·ft
Flange Yoke Diameter	180 - 480 mm 7.09 - 18.90 in
Rotation Diameter	198 - 390 mm 7.80 - 15.35 in
Max. Operating Angle	15° - 24° (size-dependent)
Sliding Length	110 - 200 mm 4.33 - 7.87 in
Max. Compressed Length	4 500 mm / 177.17 in * 6 500 mm / 255.91 in ** * balanced; ** unbalanced

### Order Information

Cardan Shaft Design	e.g.
<ul style="list-style-type: none"> <li>• CSL with length compensation</li> <li>• CSS short with length compens.</li> <li>• CSF without length compens.</li> </ul>	CSL
Cardan Shaft Size	e.g.
<ul style="list-style-type: none"> <li>• 2065</li> <li>• 8050</li> <li>• 3070</li> <li>• 3052</li> <li>• 3062</li> <li>• 3075</li> <li>• 3053</li> <li>• 3065</li> <li>• 3078</li> </ul>	3053
Compressed Length	e.g.
<ul style="list-style-type: none"> <li>• 760 - 6 500 mm</li> <li>• 29.92 - 255.91 in</li> </ul>	2505
Flange Yoke Version, Left	e.g.
<u>Type</u> <ul style="list-style-type: none"> <li>• B with frictional connection</li> <li>• S with clamping sleeves</li> <li>• K with face key</li> <li>• T with jaw teeth</li> <li>• H with Hirth serration</li> </ul>	B
<u>Option</u> Implementation of optional joint-side bolt insertion: <ul style="list-style-type: none"> <li>• Yes = S</li> <li>• No = <i>leave blank</i></li> </ul>	S
Flange Yoke Diameter, Left	e.g.
<ul style="list-style-type: none"> <li>• 180 - 480 mm</li> <li>• 7.09 - 18.90 in</li> </ul>	250

Flange Yoke Version, Right	e.g.
<u>Type</u> <ul style="list-style-type: none"> <li>• B with frictional connection</li> <li>• S with clamping sleeves</li> <li>• K with face key</li> <li>• T with jaw teeth</li> <li>• H with Hirth serration</li> </ul>	K

<u>Option</u> Implementation of optional joint-side bolt insertion: <ul style="list-style-type: none"> <li>• Yes = S</li> <li>• No = <i>leave blank</i></li> </ul>	
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Flange Yoke Diameter, Right	e.g.
<ul style="list-style-type: none"> <li>• 180 - 480 mm</li> <li>• 7.09 - 18.90 in</li> </ul>	225

Unit of Length	e.g.
<ul style="list-style-type: none"> <li>• mm</li> <li>• in</li> </ul>	mm

Short Designation
CSL-3053-2505-BS250-K225-mm

### Further Order Information

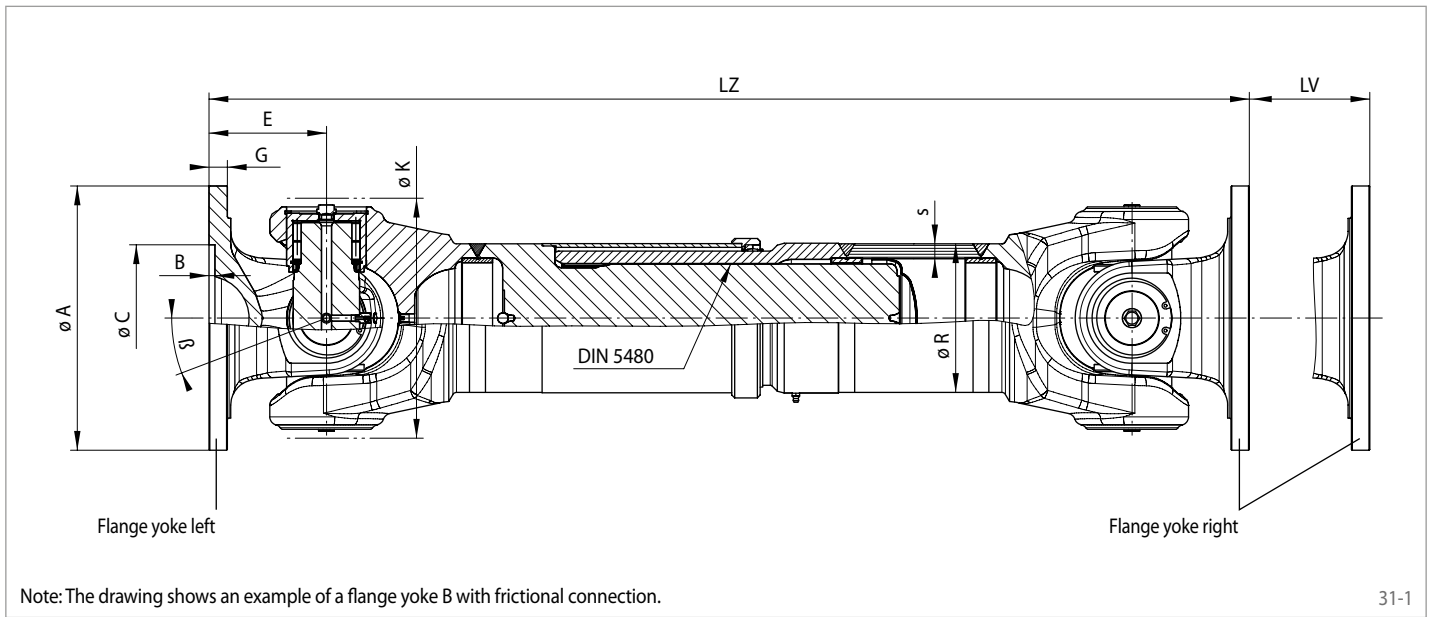
Balancing Quality	e.g.
<ul style="list-style-type: none"> <li>• Unbalanced</li> <li>• G25</li> <li>• G16 (standard)</li> <li>• G6.3</li> </ul>	G16
Max. Application Speed	e.g.
	900 min <sup>-1</sup>

Paint Finish Variant	e.g.
<ul style="list-style-type: none"> <li>• Primer in deep black, matt (standard)</li> <li>• Standard paint finish</li> <li>• Reinforced paint finish</li> <li>• Unpainted</li> </ul>	Standard paint finish
RAL Color	e.g.
See page 27	RAL 1003

Lubrication Type	e.g.
<ul style="list-style-type: none"> <li>• Central lubrication (standard)</li> <li>• Bearing assembly lubrication (optional)</li> <li>• Lifetime lubrication (please consult us)</li> </ul>	Central lubrication
Grease Type	e.g.
<ul style="list-style-type: none"> <li>• Standard grease -40° to +120° C</li> <li>• Low-temperature grease &lt; -40° C (please consult us)</li> <li>• High-temperature grease &gt; +120° C (please consult us)</li> </ul>	Standard grease

# Cardan Shaft CSL

## with Length Compensation



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Cardan Shaft Size (old series)	Nominal Torque $M_N$		Pulsating Fatigue Torque $M_{PS}$		Reversing Fatigue Torque $M_{DW}$		Dynamic Load Rating CR	
	Nm	lb·ft	Nm	lb·ft	Nm	lb·ft	Nm	lb·ft
2065 (100)	29000	257000	24000	212000	16000	142000	6340	56110
3052 (104)	42000	372000	40500	358000	27000	239000	9240	81780
3053 (106)	42000	372000	40500	358000	27000	239000	9240	81780
8050 (109)	61000	540000	55500	491000	37000	327000	11310	100100
3062 (115)	62000	549000	58500	518000	39000	345000	13390	118510
3065 (124)	104000	920000	96000	850000	64000	566000	19700	174360
3070 (135)	120000	1062000	110000	982000	74000	655000	28640	253490
3075 (145)	140000	1239000	135000	1195000	90000	797000	39660	351020
3078 (160)	290000	2567000	277500	2456000	185000	1637000	55410	490420

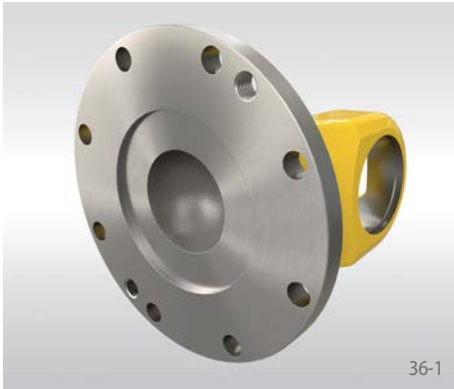
Cardan Shaft Size (old series)	Minimum Compressed Length LZ min.		Sliding Length LV		Bearing Center Distance E		Profile DIN 5480-1	Cardan Shaft Tube R x s		Max. Operating Angle $\beta$
	mm	in	mm	in	mm	in		mm	in	
2065 (100)	760	29.92	110	4.33	110	4.33	90 x 2,5	140 x 5	5.51 x 0.20	24°
3052 (104)	900	35.43	140	5.51	125	4.92	90 x 2,5	144 x 7	5.67 x 0.28	18°
3053 (106)	855	33.66	140	5.51	125	14.92	120 x 2,5	160 x 10	6.30 x 0.39	18°
8050 (109)	855	33.66	140	5.51	125	4.92	120 x 2,5	160 x 10	6.30 x 0.39	18°
3062 (115)	935	36.81	140	5.51	130	5.12	120 x 2,5	165 x 12,5	6.50 x 0.49	18°
3065 (124)	1140	44.88	140	5.51	140	5.51	130 x 3,0	177 x 17,5	6.97 x 0.69	22°
3070 (135)	1235	48.62	140	5.51	180	7.09	130 x 3,0	177 x 17,5	6.97 x 0.69	15°
3075 (145)	1720	67.72	170	6.69	290	11.42	150 x 3,0	220 x 15	8.66 x 0.59	20°
3078 (160)	1425	56.10	200	7.87	215	8.46	200 x 3,0	280 x 25	11.02 x 0.98	18°

Compressed lengths LZ are available in increments of 5 mm or 1/5 in. For unbalanced cardan shafts, LZ is theoretically unlimited upwards. For balanced cardan shafts, LZ is limited to a maximum of 4500 mm or 177.17 in. Larger values for LZ are available on request.

Cardan Shaft Size (old series)	Rotational Diameter K		Flange Yoke Diameter * A		Centering Depth * B		Centering Diameter * C		Flange Thickness * G	
	mm	in	mm	in	mm	in	mm	in	mm	in
2065 (100)	198	7.80	225	8.86	5	0.20	140	5.51	16	0.63
3052 (104)	225	8.86	250	9.84	6	0.24	140	5.51	18	0.71
3053 (106)	225	8.86	250	9.84	6	0.24	140	5.51	18	0.71
8050 (109)	225	8.86	250	9.84	6	0.24	140	5.51	18	0.71
3062 (115)	250	9.84	285	11.22	7	0.28	175	6.89	20	0.79
3065 (124)	286	11.26	315	12.40	7	0.28	175	6.89	22	0.87
3070 (135)	315	12.40	350	13.78	8	0.31	220	8.66	25	0.98
3075 (145)	355	13.98	390	15.35	8	0.31	250	9.84	28	1.10
3078 (160)	390	15.35	435	17.13	10	0.39	280	11.02	40	1.57

\* Example dimensions for Flange Yoke B with frictional connection, while all available flange diameters and corresponding dimensions are listed on page 36. Dimensions for the positive-locking Flange Yokes S, K, T and H can be found on pages 37 to 40.

## Flange Yoke B with Frictional Connection



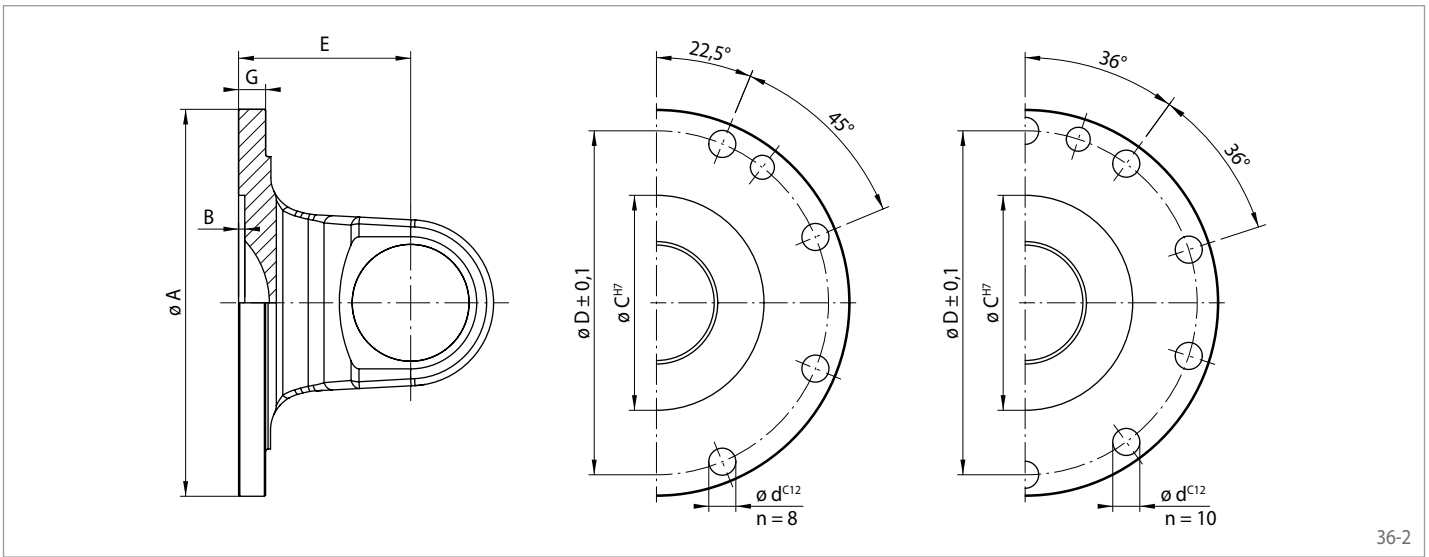
### Features

Flange Yokes B with frictional connection is the most commonly used flange yoke design for our cardan shafts. Their simple and robust design makes them the preferred choice for most applications.

### Order Example

Flange Yoke	B
Option 1)	S
Cardan Shaft Size	3053
Flange Yoke Diameter	250
Unit of Length	mm
Short Designation	BS-3053-250-mm

1) Implementation of optional joint-side bolt insertion:  
Yes = S or No = leave blank

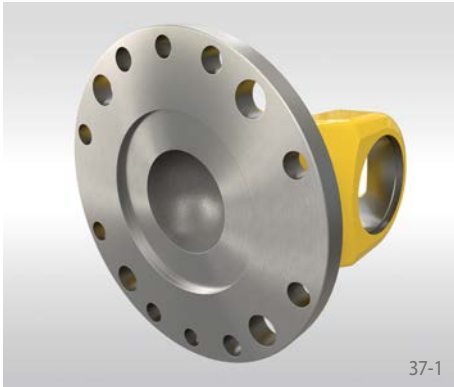


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Cardan Shaft Size	Rotation Diameter K		Flange Yoke Diameter A		Centering Depth B		Centering Diameter C		Bolt Circle Diameter D		Bearing Center Distance E		Flange Thickness G		Bore Diameter d		No. of Bores n	JBI*
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
2065	198	7.80	180	7.09	3,5	0.14	110	0.14	155.5	6.12	110	4.33	15	0.59	16	0.63	10	n
			225	8.86	5	0.20	140	0.20	196	7.72	110	4.33	16	0.63	16	0.63	8	o
			250	9.84	5	0.20	140	0.20	218	8.58	110	4.33	18	0.71	18	0.71	8	s
3052	225	8.86	225	8.86	5	0.20	140	0.20	196	7.72	125	4.92	16	0.63	16	0.63	8	o
			250	9.84	6	0.24	140	0.24	218	8.58	125	4.92	18	0.71	18	0.71	8	s
			285	11.22	7	0.28	175	0.28	245	9.65	125	4.92	20	0.79	20	0.79	8	o
3053	225	8.86	225	8.86	5	0.20	140	0.20	196	7.72	125	4.92	16	0.63	16	0.63	8	o
			250	9.84	6	0.24	140	0.24	218	8.58	125	4.92	18	0.71	18	0.71	8	s
			285	11.22	7	0.28	175	0.28	245	9.65	125	4.92	20	0.79	20	0.79	8	o
8050	225	8.86	225	8.86	5	0.20	140	0.20	196	7.72	125	4.92	16	0.63	16	0.63	8	o
			250	9.84	6	0.24	140	0.24	218	8.58	125	4.92	18	0.71	18	0.71	8	s
			285	11.22	7	0.28	175	0.28	245	9.65	125	4.92	20	0.79	20	0.79	8	o
3062	250	9.84	250	9.84	6	0.24	140	0.24	218	8.58	130	5.12	20	0.79	18	0.71	8	o
			285	11.22	7	0.28	175	0.28	245	9.65	130	5.12	20	0.79	20	0.79	8	o
			315	12.40	7	0.28	175	0.28	280	11.02	130	5.12	22	0.87	22	0.87	8	s
3065	286	11.26	285	11.22	7	0.28	175	0.28	245	9.65	140	5.51	22	0.87	20	0.79	8	o
			315	12.40	7	0.28	175	0.28	280	11.02	140	5.51	22	0.87	22	0.87	8	o
			350	13.78	8	0.31	220	0.31	310	12.20	150	5.91	25	0.98	22	0.87	10	s
3070	315	12.40	315	12.40	7	0.28	175	0.28	280	11.02	180	7.09	22	0.87	22	0.87	8	o
			350	13.78	8	0.31	220	0.31	310	12.20	180	7.09	25	0.98	22	0.87	10	o
			350	13.78	8	0.31	220	0.31	310	12.20	290	11.42	25	0.98	22	0.87	10	s
3075	355	13.98	390	15.35	8	0.31	250	0.31	345	13.58	290	11.42	28	1.10	24	0.94	10	s
			435	17.13	10	0.39	280	0.39	385	15.16	290	11.42	32	1.26	27	1.06	10	s
			390	15.35	8	0.31	250	0.31	345	13.58	215	8.46	32	1.26	24	0.94	10	o
3078	390	15.35	390	15.35	8	0.31	250	0.31	345	13.58	215	8.46	32	1.26	24	0.94	10	o
			435	17.13	10	0.39	280	0.39	385	15.16	215	8.46	40	1.57	27	1.06	10	o

\* JBI = Joint-side bolt insertion: s = available as standard, o = optionally available, n = not possible

## Flange Yoke S with Clamping Sleeves



37-1

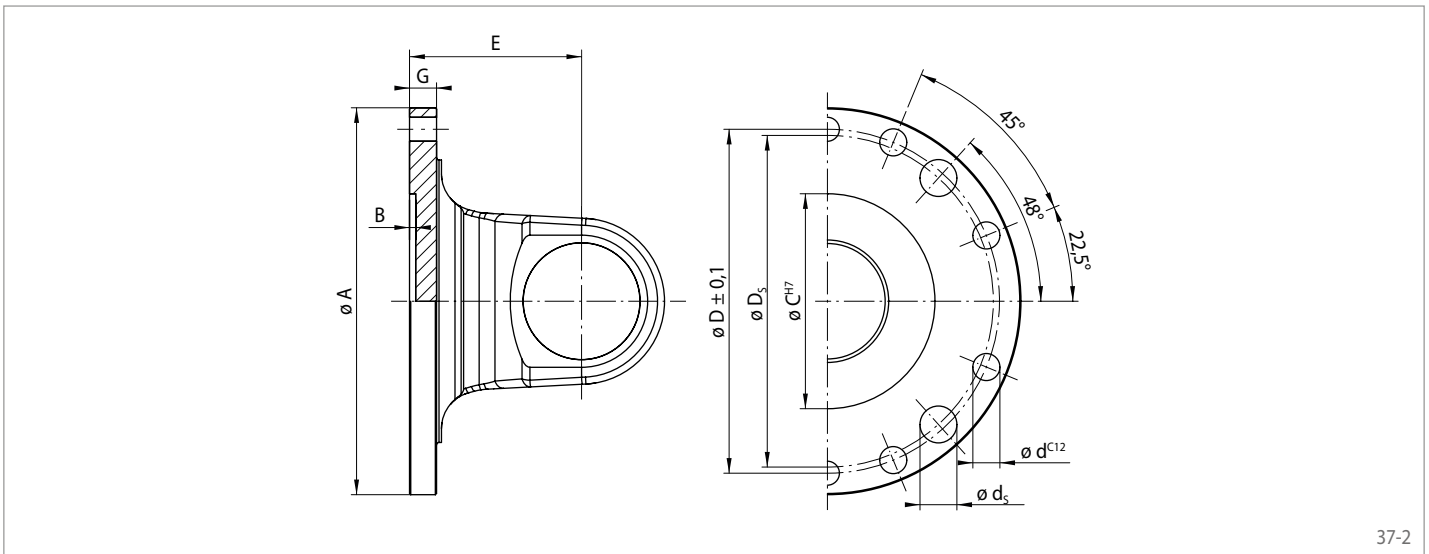
### Features

Flange Yokes S with clamping sleeves have the same design as Flange Yokes B with frictional connection, although the Flange Yokes S have four additional bores for clamping sleeves.

### Order Example

Flange Yoke	S
Option 1)	
Cardan Shaft Size	3053
Flange Yoke Diameter	9.84
Unit of Length	in
Short Designation	S-3053-9.84-in

1) Implementation of optional joint-side bolt insertion:  
Yes = S or No = leave blank



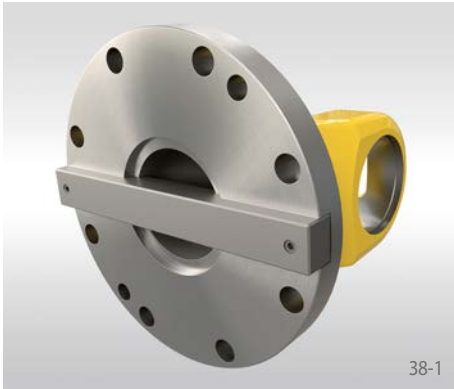
37-2

Cardan Shaft Size	Rotation Diameter K		Flange Yoke Diameter A		Centering Depth B		Centering Diameter C		Bolt Circle Diameter D		Bearing Center Distance E		Flange Thickness G		Bore Diameter d		No. of Bores n	Bolt Circle Diameter $D_s$		Bore Diameter $d_s$		No. of Bores $n_s$	JBI *
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch	mm	inch		
2065	198	7.80	225	8.86	5	0.20	140	5.51	196	7.72	110	4.33	16	0.63	16	0.63	8	192	7.56	21	0.83	4	o
			250	9.84	5	0.20	140	5.51	218	8.58	110	4.33	18	0.71	18	0.71	8	214	8.43	25	0.98	4	s
3052	225	8.86	250	9.84	6	0.24	140	5.51	218	8.58	125	4.92	18	0.71	18	0.71	8	214	8.43	25	0.98	4	s
3053	225	8.86	250	9.84	6	0.24	140	5.51	218	8.58	125	4.92	18	0.71	18	0.71	8	214	8.43	25	0.98	4	s
8050	225	8.86	250	9.84	6	0.24	140	5.51	218	8.58	125	4.92	18	0.71	18	0.71	8	214	8.43	25	0.98	4	s
3062	250	9.84	285	11.22	7	0.28	175	6.89	245	9.65	130	5.12	20	0.79	20	0.79	8	240	9.45	28	1.10	4	o
3065	286	11.26	315	12.40	7	0.28	175	6.89	280	11.02	140	5.51	22	0.87	22	0.87	8	270	10.63	30	1.18	4	o
3070	315	12.40	350	13.78	8	0.31	220	8.66	310	12.20	180	7.09	25	0.98	22	0.87	10	300	11.81	32	1.26	4	o
3075	355	13.98	390	15.35	8	0.31	250	9.84	345	13.58	290	11.42	28	1.10	24	0.94	10	340	13.39	32	1.26	4	s
3078	390	15.35	435	17.13	10	0.39	280	11.02	385	15.16	215	8.46	40	1.57	27	1.06	10	378	14.88	35	1.38	4	o

\* JBI = Joint-side bolt insertion: s = available as standard, o = optionally available, n = not possible

# Types of Flange Yokes

## Flange Yoke K with Face Key



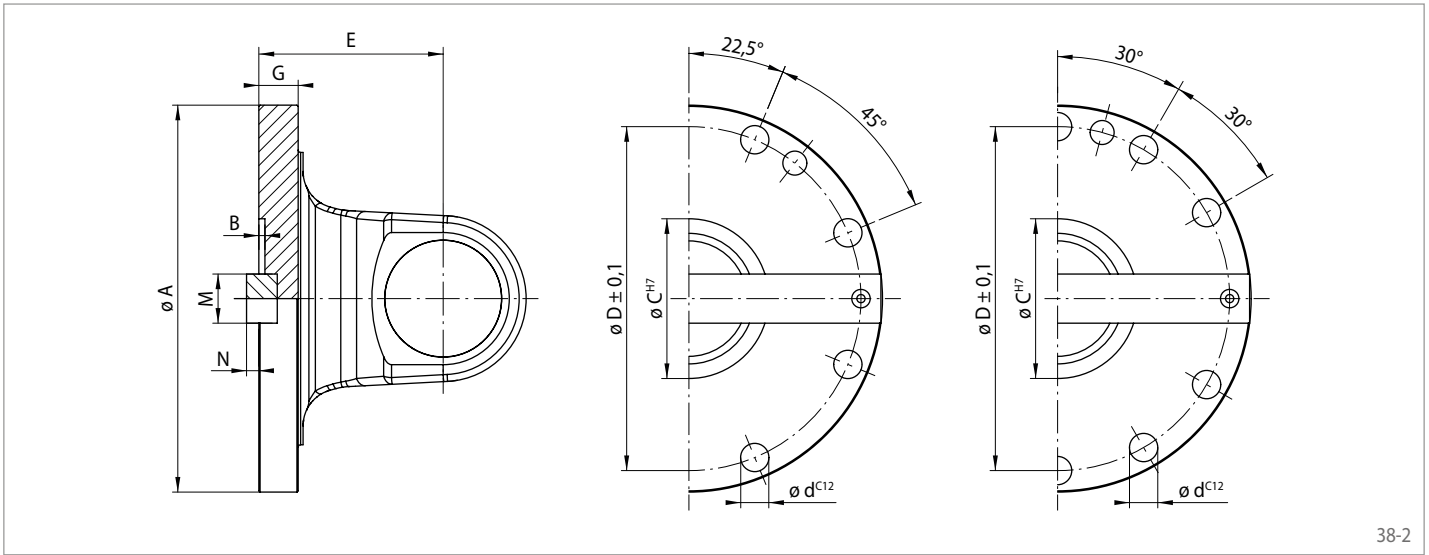
### Features

Flange Yokes K with face key are an enhanced version of Flange Yokes B with frictional connection. This design enables the reliable transfer of higher torques and peak loads.

### Order Example

Flange Yoke	K
Option 1)	S
Cardan Shaft Size	3053
Flange Yoke Diameter	250
Unit of Length	mm
Short Designation	KS-3053-250-mm

1) Implementation of optional joint-side bolt insertion:  
Yes = S or No = leave blank

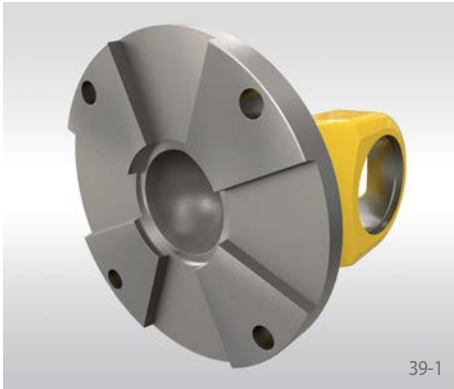


38-2

Cardan Shaft Size	Rotation Diameter K		Flange Yoke Diameter A		Centering Depth B		Centering Diameter C		Bolt Circle Diameter D		Bearing Center Distance E		Flange Thickness G		Bore Diameter d		No. of Bores	Face Key Width M		Face Key Overlap N		JBI *
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch	mm	inch	
2065	198	7.80	180	7.09	5	0.20	90	3.54	155,5	6.12	110	4.33	15	0.59	17	0.67	8	9	0.35	7,0	0.28	n
			225	8.86	5	0.20	140	5.51	196	7.72	110	4.33	18	0.71	17	0.67	10	12	0.47	9,0	0.35	o
3052	225	8.86	225	8.86	5	0.20	105	4.13	196	7.72	125	4.92	20	0.79	17	0.67	8	32	1.26	9,0	0.35	o
			285	11.22	7	0.28	125	4.92	245	9.65	125	4.92	22	0.87	21	0.83	8	40	1.57	15,0	0.59	o
3053	225	8.86	225	8.86	5	0.20	105	4.13	196	7.72	125	4.92	20	0.79	17	0.67	8	32	1.26	9,0	0.35	o
			285	11.22	7	0.28	125	4.92	245	9.65	125	4.92	22	0.87	21	0.83	8	40	1.57	15,0	0.59	o
8050	225	8.86	225	8.86	5	0.20	105	4.13	196	7.72	125	4.92	20	0.79	17	0.67	8	32	1.26	9,0	0.35	o
			250	9.84	6	0.24	140	5.51	218	8.58	125	4.92	20	0.79	19	0.75	8	40	1.57	12,0	0.47	s
3062	250	9.84	285	11.22	7	0.28	125	4.92	245	9.65	130	5.12	27	1.06	21	0.83	8	40	1.57	15,0	0.59	n
			285	11.22	7	0.28	175	6.89	245	9.65	130	5.12	27	1.06	21	0.83	8	40	1.57	15,0	0.59	n
			315	12.40	7	0.28	130	5.12	280	11.02	130	5.12	27	1.06	23	0.91	10	40	1.57	15,0	0.59	n
3065	286	11.26	285	11.22	7	0.28	125	4.92	245	9.65	150	5.91	32	1.26	21	0.83	8	40	1.57	15,0	0.59	n
			315	12.40	8	0.31	130	5.12	280	11.02	150	5.91	32	1.26	23	0.91	10	40	1.57	15,0	0.59	n
3070	315	12.40	350	13.78	8	0.31	155	6.10	310	12.20	150	5.91	32	1.26	23	0.91	10	50	1.97	16,0	0.63	n
			315	12.40	8	0.31	130	5.12	280	11.02	180	7.09	32	1.26	23	0.91	10	40	1.57	15,0	0.59	n
3075	355	13.98	350	13.78	8	0.31	155	6.10	310	12.20	290	11.42	35	1.38	23	0.91	10	50	1.97	16,0	0.63	o
			390	15.35	8	0.31	170	6.69	345	13.58	290	11.42	40	1.57	25	0.98	10	70	2.76	18,0	0.71	o
3078	390	15.35	435	17.13	10	0.39	190	7.48	385	15.16	290	11.42	42	1.65	28	1.10	10	80	3.15	20,0	0.79	o
			390	15.35	8	0.31	170	6.69	345	13.58	215	8.46	40	1.57	25	0.98	10	70	2.76	18,0	0.71	n
			435	17.13	10	0.39	190	7.48	385	15.16	215	8.46	42	1.65	28	1.10	16	80	3.15	20,0	0.79	o
			480	18.90	12	0.47	205	8.07	425	16.73	215	8.46	47	1.85	31	1.22	16	90	3.54	22,5	0.89	o

\* JBI = Joint-side bolt insertion: s = available as standard, o = optionally available, n = not possible

## Flange Yoke T with Jaw Teeth



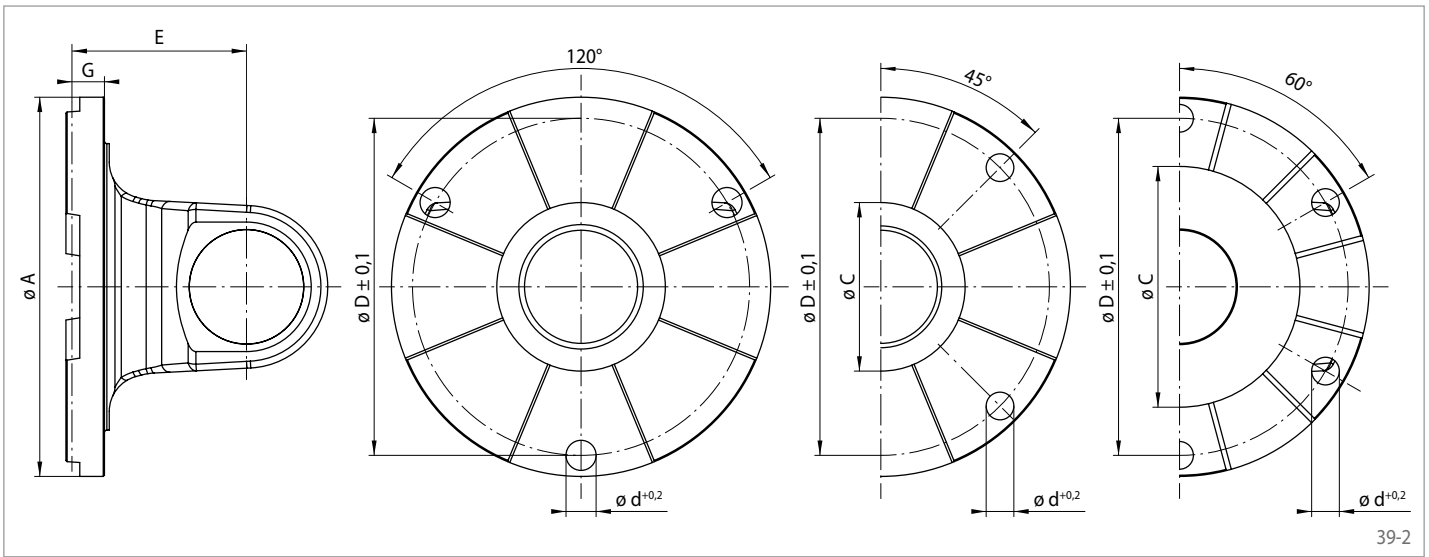
39-1

### Features

Flange Yokes T with jaw teeth provide a positive-locking, self-centering connection with high torque transmission capability. The interlocking jaws ensure a reliable and connection that is easy to assemble.

### Order Example

Flange Yoke	T
Cardan Shaft Size	3053
Flange Yoke Diameter	9.84
Unit of Length	in
Short Designation	T-3053-9.84-in



39-2

Cardan Shaft Size	Rotation Diameter K		Flange Yoke Diameter A		Centering Diameter C		Bolt Circle Diameter D		Bearing Center Distance E		Flange Thickness G		Bore Diameter d		No. of Bores n	No. of Segments z	JBI *
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch			
3052	225	8.86	225	8.86	140	5.51	196	7.72	110	4.33	18	0.71	17	0.67	3	4	n
			250	9.84	140	5.51	218	8.58	110	4.33	18	0.71	19	0.75	3	4	n
3053	225	8.86	225	8.86	140	5.51	196	7.72	125	4.92	18	0.71	17	0.67	3	4	n
			250	9.84	140	5.51	218	8.58	125	4.92	18	0.71	19	0.75	3	4	n
8050	225	8.86	225	8.86	140	5.51	196	7.72	125	4.92	18	0.71	17	0.67	3	4	n
			250	9.84	140	5.51	218	8.58	125	4.92	18	0.71	19	0.75	3	4	n
3062	250	9.84	250	9.84	140	5.51	218	8.58	130	5.12	22	0.87	21	0.83	3	4	n
			285	11.22	182	7.17	245	9.65	130	5.12	19	0.75	21	0.83	3	4	n
			285	11.22	182	7.17	245	9.65	150	5.91	27	1.06	21	0.83	4	4	n
3065	286	11.26	315	12.40	140	5.51	280	11.02	150	5.91	32	1.26	23	0.91	4	4	n
			350	13.78	220	8.66	310	12.20	150	5.91	33	1.30	23	0.91	6	6	n
3070	315	12.40	315	12.40	140	5.51	280	11.02	180	7.09	30	1.18	23	0.91	4	4	n
			350	13.78	220	8.66	310	12.20	180	7.09	28	1.10	23	0.91	6	6	n
3075	355	13.98	390	15.35	190	7.48	345	13.58	290	11.42	40	1.57	25	0.98	6	6	n

\* JBI = Joint-side bolt insertion: s = available as standard, o = optionally available, n = not possible

## Flange Yoke H with Hirth Serration

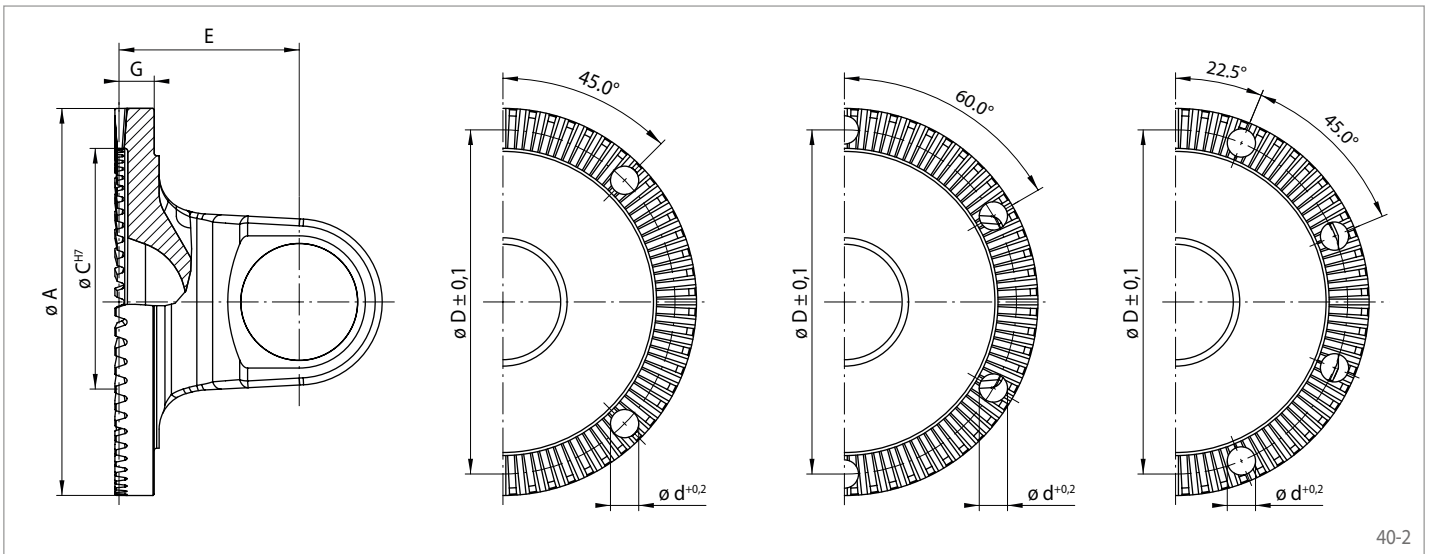


### Features

Flange Yokes H with Hirth serration are particularly suitable for applications with the highest torque requirements. In addition to their high load-carrying capacity, these connections offer easy assembly and disassembly.

### Order Example

Flange Yoke	H
Cardan Shaft Size	3053
Flange Yoke Diameter	250
Unit of Length	mm
Short Designation	HS-3053-250-mm



Cardan Shaft Size	Rotation Diameter K		Flange Yoke Diameter A		Centering Diameter C		Bolt Circle Diameter D		Bearing Center Distance E		Flange Thickness G		Bore Diameter d		No. of Bores n	No. of Teeth z	JBI *
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch			
3052	225	8.86	225	8.86	180	7.09	196	7.72	110	4.33	17,5	0.69	17	0.67	4	48	n
			250	9.84	194	7.64	218	8.58	110	4.33	17,0	0.67	19	0.75	4	48	n
3053	225	8.86	225	8.86	180	7.09	196	7.72	125	4.92	17,5	0.69	17	0.67	4	48	n
			250	9.84	194	7.64	218	8.58	125	4.92	17,0	0.67	19	0.75	4	48	n
8050	225	8.86	225	8.86	180	7.09	196	7.72	125	4.92	17,5	0.69	17	0.67	4	48	n
			250	9.84	194	7.64	218	8.58	125	4.92	17,0	0.67	19	0.75	4	48	n
3062	250	9.84	250	9.84	194	7.64	218	8.58	130	5.12	21,0	0.83	19	0.75	4	48	n
			285	11.22	225	8.86	245	9.65	130	5.12	23,6	0.93	21	0.83	4	60	n
			315	12.40	250	9.84	280	11.02	130	5.12	23,6	0.93	23	0.91	4	60	n
3065	286	11.26	285	11.22	215	8.46	245	9.65	150	5.91	29,8	1.17	21	0.83	4	60	n
			315	12.40	250	9.84	280	11.02	150	5.91	28,6	1.13	23	0.91	4	60	n
3070	315	12.40	350	13.78	280	11.02	310	12.20	150	5.91	30,0	1.18	23	0.91	6	72	n
			315	12.40	250	9.84	280	11.02	180	7.09	26,6	1.05	23	0.91	4	60	n
3075	355	13.98	350	13.78	280	11.02	310	12.20	180	7.09	26,6	1.05	25	0.98	6	72	n
			390	15.35	315	12.40	345	13.58	290	11.42	37,0	1.46	23	0.91	6	72	n
3078	390	15.35	390	15.35	315	12.40	345	13.58	215	8.46	37,0	1.46	25	0.98	6	72	n

\* JBI = Joint-side bolt insertion: s = available as standard, o = optionally available, n = not possible