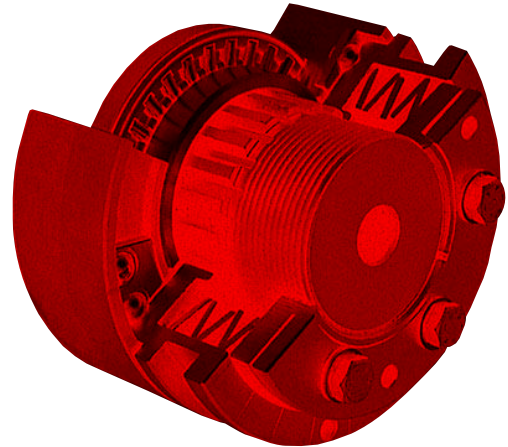


Cross Safeguard Overload Clutches



The Safeguard CS series Overload Clutches were developed to provide overload protection for the transmission of high torques within a compact unit. Directly interchangeable with other units in the market, this series offers low cost protection with a minimum of maintenance and long reliable service life. Safeguard CS series are offered in two basic types, the standard type, available in 6 sizes for bores up to 65mm, with torque range of 2.5 to 1800Nm, see pages 24/25, provide optimum speed and torque capabilities; and the Mini type, available in 4 sizes for bores up to 45mm, with torque range 2.5 to 400Nm, see pages 26/27, for a lower cost option for slower speed drives. Both types are available as basic clutch, and also as shaft couplings. The basic clutch is offered in three basic designs to enable alternate methods for connecting driven components. Four modes of drive operation are available, to suit the requirements of different applications, as outlined below, the principles of operation of each being detailed opposite.



The Safeguard CSF Clutch uses a large number of equally spaced balls to provide the drive, and the clutch ratchets from one drive position to the next in the event of an overload. The design allows for high operating speeds, and the possibility to recapture drive in the event of an inertia created overload during starting, but do not provide any synchronisation between input and output.

The Synchron CSY Clutch uses 7 rollers unequally spaced to provide the drive, ensuring that there is only one position of engagement of the drive, enabling full synchronisation between driver and driven shafts.

The Safe Lift CSL Clutch has a retaining ring to prevent disengagement of the drive, but allowing sufficient movement to actuate a limit switch. This clutch is ideal on applications where components cross one another's path, as synchronisation is maintained even when clutch has overloaded. The clutch also controls forward inertia drives.

The Contact-Free CSZ Clutch totally disengages in the event of an overload, and requires an outside force to be re-engaged. This enables the clutch to be operated at higher speeds, and also to be used on applications where it is undesirable to stop the motor quickly. The requirement of an external force to re-engage ensures the machine can be checked prior to a restart.

Safeguard Series Clutches offer the following operating advantages:

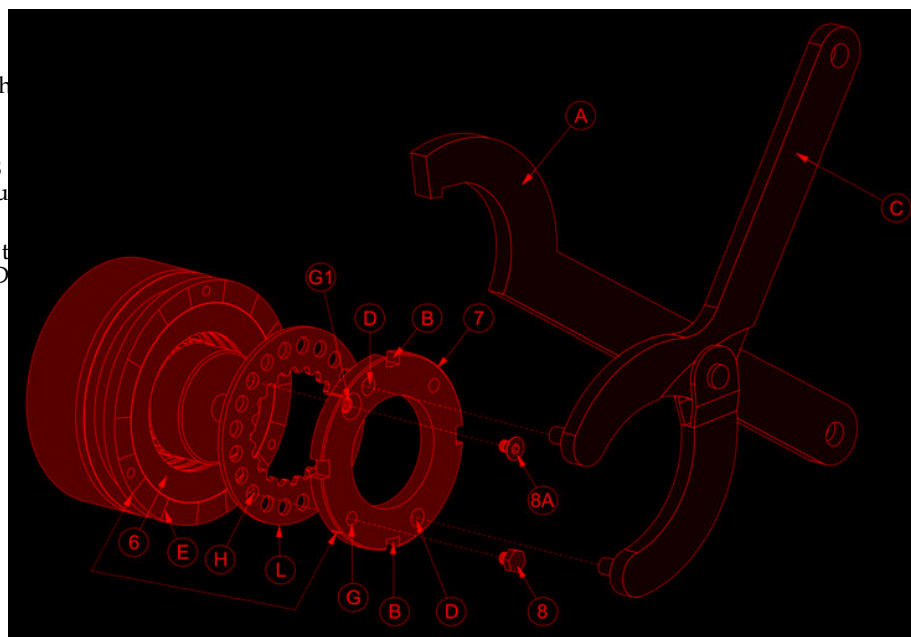
- Long Service Life
- Cater for Frequent Overloads
- No Maintenance required
- Standardised Sizes
- Continued Operating Reliability
- Maintained Torque Accuracy
- Rapid Drive Disengagement
- Very Fine Torque Adjustment

Method of Torque Adjustment

Torque Adjustment on Safeguard series Clutches is relatively simple process by the following procedure.

Refer to diagram below, to adjust the Torque on a Clutch first remove screws 8 or 8A to permit free rotation of adjusting nut 7.

If first adjustment manually tighten the adjusting nut 7 until it is in contact with the springs. Insert a C spanner 'A' into slots D or a face wrench 'C' into holes D and tighten the nut clockwise to achieve desired Torque as indicated by the number of indents E moved. Replace screw 8 or 8A in thread hole G or G1 with adjusting nut positioned so this lines up with one of the holes H in the locking washer L.



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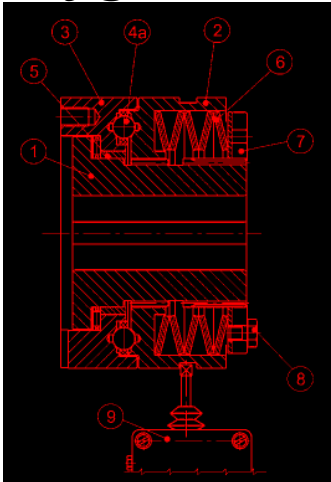
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Cross Safeguard CS Clutch Types



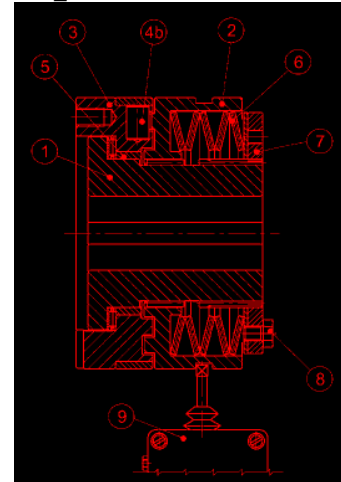
Safeguard CSF



During normal operation the drive is transmitted by the sliding hub 2, which is connected by a spline to the main hub 1, and via a ring of balls 4a to the output flange 3. Drive is maintained by the springs 6 exerting pressure on flange 2, so keeping the balls in their respective indents in flange 2 & 3.

When an overload occurs the balls ride up the indents pushing flange 2 back which will actuate limit switch 9. During overload conditions plain bearing 5 maintains concentricity and ensures free running. The balls will re-engage in the nearest indents when the overload is removed. Torque adjustment is by rotation of nut 7.

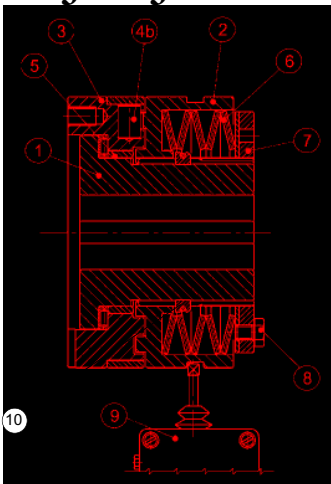
Synchron CSY



The Synchron clutch functions in much the same way as the Safeguard, and has similar construction in except the balls 4a are replaced by seven rollers 4b. The rollers are unequally spaced so the clutch will only engage drive in one angular position, providing full synchronisation of the drive.

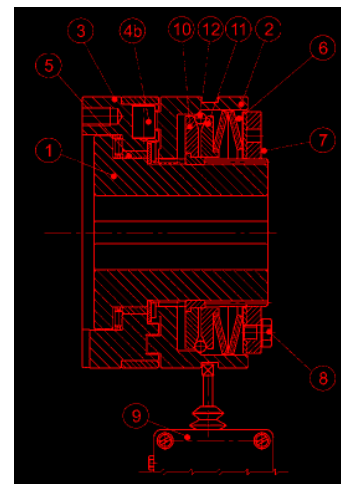
When an overload occurs the rollers ride up the indents pushing flange 2 back which will actuate limit switch 9. During overload conditions plain bearing 5 maintains concentricity and ensures free running. The rollers will re-engage in the nearest indents when the overload is removed. Torque adjustment is by rotation of nut 7.

Safe Lift CSL



The Safelift clutch is of identical design and operation to the Synchron clutch with the addition of a restricting ring 10 which prevents full dis-engagement of the clutch in the event of an overload; thus maintaining drive at all times. An overload still causes the rollers to ride up the detents sufficient to activate the limit switch 9, but they are prevented from totally disengaging. On these units it is essential that a limit switch is used to turn off the drive. These units are ideal when high inertia loads are involved to prevent on running of the driven equipment, also they can be electrically isolated during starting to ignore tripping at that time. Torque adjustment is by rotation of nut 7.

Contact Free CSZ



The Contact-free clutch is based on the Synchron clutch with modification to the outer flange 2, and the addition of locking assembly parts 10/11/12. In normal drive mode the pressure from the spring is conveyed to the flange 2 via the pressure plate 11 and locking ball race 12. In the event of an overload the flange 2 is still pushed back, but this action also forces the locking balls 12 apply no axial load to the outer flange 2 and thus the clutch will not re-engage, but instead runs totally free. To re-engage drive the outer flange 2 and output flange 3 must be correctly aligned, and then a light axial load applied to the outer flange to move it back into engagement.

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Cross Safeguard Overload Clutches



CS Standard Series Clutches

The standard series of clutches are available in 8 sizes offering three modes of operation, simple overload, synchronous overload, and safelift, and in 7 sizes of the total dis-engagement design. All are available with three methods of supporting drive sprockets, pulleys, or gears, to provide flexibility in application design.

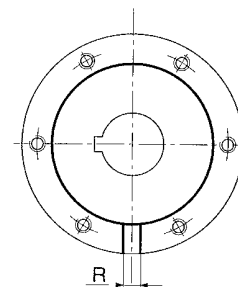
Type A - allows simple connection of a driven gear with its own bearing support.

Type B - has an integral needle roller bearing providing full support of driven gear.

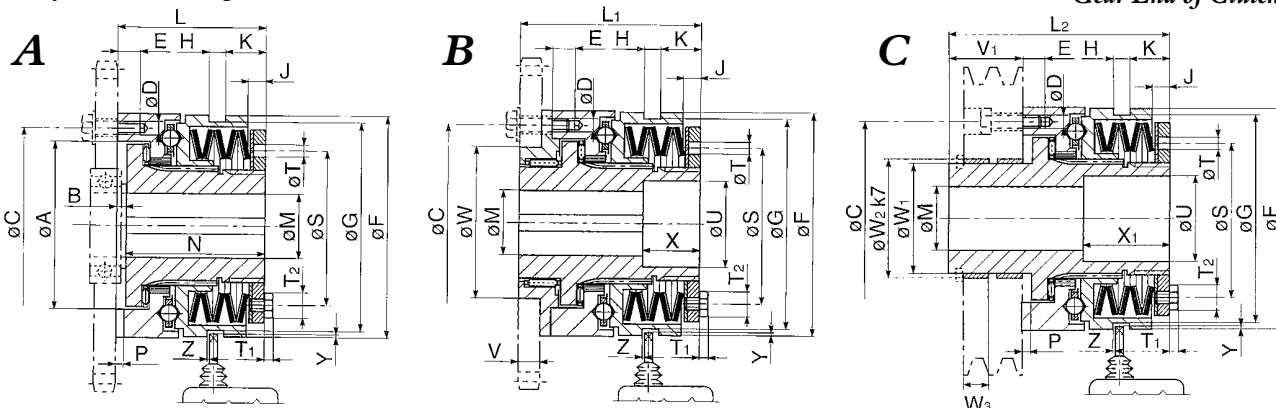
Type C - has an extended inner race to mount larger pulleys with plain bearings.

Up to Four torque ranges are available on each size of clutch, controlled by selection of the actuating spring set, providing a wide range of torque capacities to select from.

Inertias are provided for each half of the clutch in dis-engaged condition, the hub inertia incorporating all items that revolve free with the hub, and the flange inertia all those items that stay with the flange connection.



View from Driven Gear End of Clutches



CS Standard Series - Technical Capacities

Models* A, B & C	Torque Range according to Spring Selection					Max. Speed			Bore Size		Weight kg			Hub Inertia kgcm ²			Flange Inertia kgcm ²		
	S Nm	M Nm	L Nm	U Nm	R Nm	S/M rpm	L/U rpm	'R' rpm	min mm	max mm	Type A	Type B	Type C	Type A	Type B	Type C	Type A	Type B	Type C
CSF20 CSY20 CSL20	2.5-5.0 5-10 5-10	5-10 10-20 10-20	10-20 20-40 20-40	20-40		3300 1000 4000	1800 500 3000		7	20	0.5	0.7	0.6	1.0	1.1	1.1	0.9	1.2	0.9
CSF25 CSY25 CSL25 CSZ25	6-12 12-25 12-25 12-25	12.3 25-50 25-50 25-50	25-55 50-100 50-100 50-100	55-100		2900 950 3900 5000	1450 450 2900 5000		10	25	1.5	2.0	1.8	6.7	7.0	7.2	6.2	9.1	6.2
CSF35 CSY35 CSL35 CSZ35	12-25 25-50 25-50 25-50	25-50 50-100 50-100 50-100	50-120 100-200 100-200 100-200	120-200		2400 800 3300 4000	1200 400 2400 4000		14	35	2.9	3.2	3.0	19.0	20.5	21.4	14.9	18.2	14.9
CSF45 CSY45 CSL45 CSZ45	25-50 50-100 50-100 50-100	50-100 100-200 100-200 100-200	100-250 200-400 200-400 200-400	250-400		2000 650 2800 3500	1000 300 2000 3500		18	45	5.0	6.0	5.8	51.7	54.1	57.0	38.0	48.4	38.0
CSF55(R) CSY55(R) CSL55(R) CSZ55	50-100 100-200 100-200 100-200	100-200 200-400 200-400 200-400	200-500 400-800 400-800 400-800	500-800	800-2000 800-2000 800-2000	1600 550 2300 3000	850 250 1600 3000	90 90 700	24	55	9.8	11.8	11.5	163	171	177	100	143	100
CSF65(R) CSY65(R) CSL65(R) CSZ65	85-200 170-400 170-400 170-400	170-500 350-900 350-900 350-900	300-1000 700-1800 700-1800 700-1800	700-1800	1200-3400 1200-3400 1200-3400	1400 400 1800 2300	700 150 1400 2300	70 70 600	30	70*	16.0	20.0	19.0	416	428	439	235	310	235
CSF80(R) CSY80(R) CSL80(R) CSZ80	180-480 300-750 300-750 300-750	360-960 600-1500 600-1500 600-1500	720-1950 1200-3000 1200-3000 1200-3000	1600-3300	2900-5800 2900-5800 2900-5800	1200 150 1500 1600	600 80 1000 1600	40 40 400	40	80	21.0	26.0	25.5	769	789	825	396	547	396
CSF100(R) CSY100(R) CSL100(R) CSZ100	250-520 550-110 550-110 550-110	500-1050 1100-2200 1100-2200 1100-2200	1000-2100 2200-4400 2200-4400 2200-4400	2000-3600	3000-8200 3000-8200 3000-8200	950 100 1300 1400	480 50 800 1400	30 30 300	50	110*	37.0	44.0	45.0	1968	2030	2109	969	1238	969

*For clutch Part No. for ordering refer to page 27.

CS Standard Series Dimensions

Models CSF/CSY and CSL/CSZ	Dimensions mm																								
	A _{G7}	B	C	D	E	F	G	H	J	K	L	L ₁	L ₂	N	P	R	U	V	V ₁	W _{h6}	W ₁	X	X ₁	Y	Z
20	41.0	4.0	48	6xM5	6.5	55	50	9	3.0	7.5	38.5	51.5	66	35.0	3.1	6	21	8	27.5	38	28	15	25.5	2	0.1
25	60.0	4.0	70	6xM5	8.0	82	73	9	6.0	11.5	52.0	70.0	83	48.0	3.1	6	26	10	33.0	50	38	20	35.0	2	0.1
35	78.0	5.0	89	6xM6	10.0	100	91	9	6.0	12.0	61.0	78.0	100	56.0	3.6	8	36	12	39.0	60	52	25	45.0	2	0.1
45	90.5	5.0	105	6xM8	12.0	120	112	10	8.5	21.0	78.0	96.0	125	72.0	4.1	10	46	12	47.0	80	65	30	59.0	2	0.1
55	105.0	6.5	125	6xM10	15.0	146	140	9	11.0	27.0	100.0	124.5	153	93.5	4.1	12	56	16	52.5	100	78	30	60.0	2	0.1
65	120.5	6.5	155	6xM12	17.0	176	170	9	12.0	33.0	113.5	140.0	171	107.0	4.6	14	66	18	57.5	120	90	30	60.0	2	0.1
80(not CS-Z)	136.0	7.0	160	6xM12	20.0	200	190	9	14.0	39	119	150	183	112.0	5.3	16	82	20	64	130	108	25	55.0	2	0.1
CSZ 80	136.0	7.0	160	6xM12	20.0	200	190	9	29.0	53	134	165	198	127.0	5.3	16	82	20	64	130	108	40	70.0	2	0.1
100(not CS-Z)	168.0	8.0	200	6xM16	25.0	240	230	9	15.0	46	141	175	213	133.0	5.8	18	111	25	72	160	135	35	70.0	2	0.1
CSZ 100	168.0	8.0	200	6xM15	25.0	240	230	9	33.0	64	159	193	231	151.0	5.8	18	111	25	72	160	135	53	88.0	2	0.1

For Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

Cross CS Overload Shaft Couplings



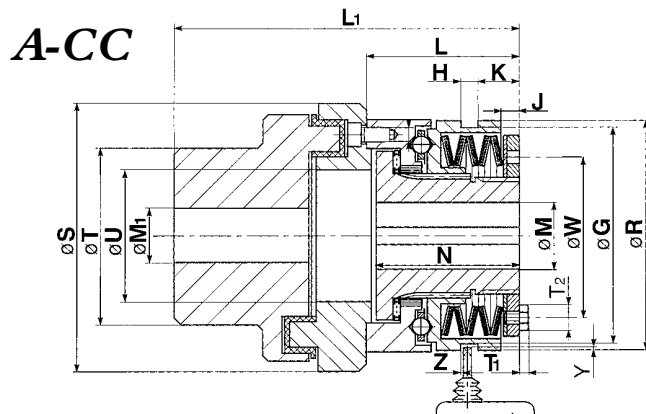
CS Standard Series Couplings

For shaft to shaft connection CS Standard series clutches are available with an elastomeric coupling for all the sizes and modes of operation, simple overload, synchronous overload, or safe lift and total dis-engagement.

The elastomeric Coupling permits up to 1/2 degree angular misalignment, with 0.3mm radial and a maximum of 0.5mm axial. The rubber element absorbs peak shocks, providing greater accuracy in overload protection.

Up to five torque ranges are available on each size of clutch, controlled by selection of the actuating spring set, providing a wide range of torque capacities to select from.

Inertias are provided for each half of the clutch in dis-engaged condition, the hub inertia incorporating all items that revolve free with the hub, and the coupling inertia all those items that stay with the flexible coupling.



CS Standard Series Couplings - Technical Capacities

Models*	Torque Range according to Spring Selection					Max. Speed			Bore Size mm			Weight kg	Inertia kgcm ²	
	S Nm	M Nm	L Nm	U Nm	R Nm	S/M rpm	L/U rpm	'R' rpm	Clutch M		Cplg. M ₁ max		Hub Side	Cplg Side
									min	max				
CSF20	2.5-5.0	5-10	10-20	20-40		3300	1800							
CSY20	5-10	10-20	20-40			1000	500		7	20	30	1.2	1.0	6.1
CSL20	5-10	10-20	20-40			4000	3000							
CSF25	6-12	12.3	25-55	55-100		2900	1450							
CSY25	12-25	25-30	50-100			950	450		10	25	50	5.0	6.7	71.8
CSL25	12-25	25-50	50-100			3900	2900							
CSZ25	12-25	25-50	50-100			5000	5000							
CSF35	12-25	25-50	50-120	120-200		2400	1200							
CSY35	25-50	50-100	100-200			800	400		14	35	50	6.4	19.0	81.0
CSL35	25-50	50-100	100-200			3300	2400							
CSZ35	25-50	50-100	100-200			4000	4000							
CSF45	25-50	50-100	100-250	250-400		2000	1000							
CSY45	50-100	100-200	200-400			650	300		18	45	60	10.6	51.7	148.5
CSL45	50-100	100-200	200-400			2800	2000							
CSZ45	50-100	100-200	200-400			3500	3500							
CSF55(R)	50-100	100-200	200-500	500-800	800-2000	1600	850	90						
CSY55(R)	100-200	200-400	400-800		800-2000	550	250	90	24	55	60	15	163	279
CSL55(R)	100-200	200-400	400-800		800-2000	2300	1600	700			90 (R type)	26		500
CSZ55	100-200	200-400	400-800			3000	3000							
CSF65(R)	85-200	170-500	300-1000	700-1800	1200-3400	1400	700	70						
CSY65(R)	170-400	350-900	700-1800		1200-3400	400	150	70	30	70*	70	416	27	734
CSL65(R)	170-400	350-900	700-1800		1200-3400	1800	1400	600			90 (over 1000Nm) 115 (R type)		36	980
CSZ65	170-400	350-900	700-1800			2300	2300						42	1350
CSF80(R)	180-480	360-960	720-1950	1600-3300	2900-5800	1200	600	40						
CSY80(R)	300-750	600-1500	1200-3000		2900-5800	150	80	40	40	80	115	48	769	1580
CSL80(R)	300-750	600-1500	1200-3000		2900-5800	1500	1000	400						
CSZ80	300-750	600-1500	1200-3000			1600	1600							
CSF100(R)	250-520	500-1050	1000-2100	2000-3600	3000-8200	950	480	30						
CSY100(R)	550-1100	1100-2200	2200-4400		3000-8200	100	50	30	50	110*	125	70	1968	2500
CSL100(R)	550-1100	1100-2200	2200-4400		3000-8200	1300	800	300						
CSZ100	550-1100	1100-2200	2200-4400			1400	1400							

*The maximum bore on these clutches is only possible with keyways to DIN 6885 sheet 3

CS Standard Series Couplings - Dimensions

Models CSF/CSY and CSL/CSZ	Dimensions															
	G	H	J	K	L	L ₁	N	R	S	T	T ₁	T ₂	U	W	Y	Z
20A-CC	50.0	9	3.0	7.50	38.5	86.0	34.5	55	67	46	3.0	7	33	38.5	2	0.1
25A-CC	72.5	9	6.0	11.50	52.0	137.5	48.0	82	112	79	3.5	8	54	54	2	0.1
35A-CC	90.5	9	5.0	12.00	61.0	147.0	56.0	100	112	79	4.0	10	60	70	2	0.1
45A-CC	112.0	10	8.5	21.00	78.0	176.5	73.0	120	128	90	4.0	10	70	84	2	0.1
55A-CC	140.0	9	11.0	27.00	100.0	211.5	93.5	146	148	90	5.5	13	70	108	2	0.1
55A(R)-CC	140.0	9	11.0	27.00	100.0	257.0	93.5	146	198	140	5.5	13	90	108	2	0.1
65A-CC	170.0	9	12.0	33.00	113.5	242.5	107.0	176	177	107	5.5	13	90	129	2	0.1
65A-CC(1000Nm+)	170.0	9	12.0	33.00	113.5	272.0	107.0	176	198	140	5.5	13	90	129	2	0.1
65A(R)-CC	170.0	9	12.0	33.00	113.5	312.0	107.0	176	225	180	5.5	13	113	129	2	0.1
80(not CSZ)A-CC	190.0	9	14.0	39.00	119.0	299.5	183.0	112	225	180	15.0	24	113	150	2	0.1
CSZ 80A-CC	190.0	9	29.0	53.00	134.0	314.5	198.0	127	225	180	15.0	24	113	150	2	0.1
100(not CSZ)A-CC	230.0	9	15.0	46.00	141.0	339.0	213.0	133	255	200	21.0	30	127	186	2	0.1
CSZ 100A-CC	230.0	9	33.0	64.00	159.0	357.0	231.0	151	255	200	21.0	30	127	186	2	0.1

For details on Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

*For clutch Part No. for ordering refer to page 27.

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Cross Safeguard Overload Clutches



CS Mini Series Clutches

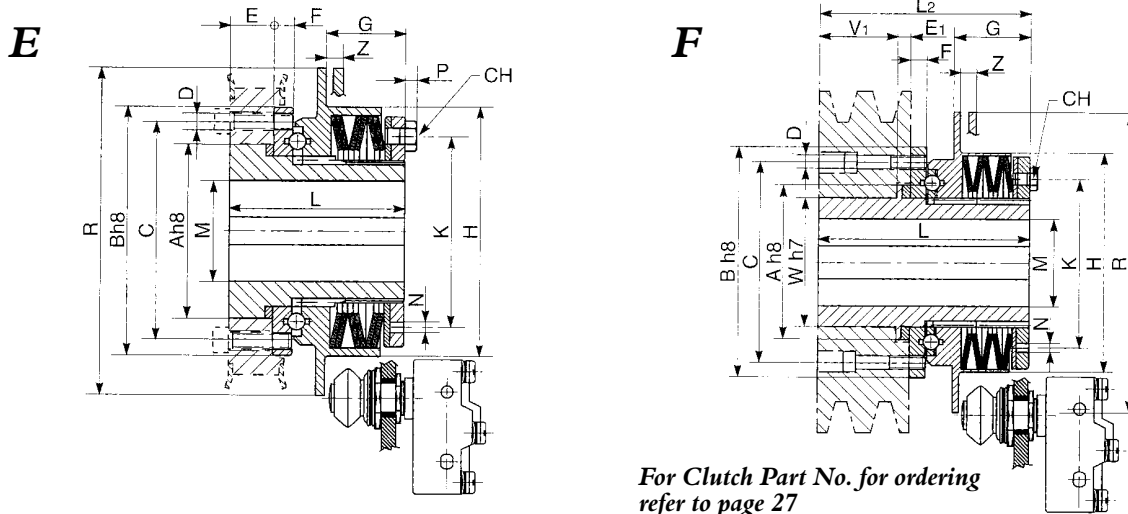
The CS Mini series of clutches is available in 4 basic sizes with simple overload, and synchronous overload facility. These lower cost units are offered with two methods to attach sprockets, gears, or pulleys.

Type E - allows connection of driven gear with its own external bearing support.

Type F - has extended inner race suitable to mount larger pulleys with a bronze or needle roller bearing.

Four torque ranges are available on standard units, and three on the synchronous version, providing a wide range of torque capacity to select from.

The series is suitable for moderate speed applications with low radial forces and infrequent tripping. The design is suited to inline stop switch, or proximity switch.



For Clutch Part No. for ordering refer to page 27

CS Mini Series - Technical Capacities

Models* E & F	Torque Range according to Spring Selection				Max. Speed		Bore size		Weight kg	Inertia kgcm ²
	S Nm	M Nm	L Nm	U Nm	S/M rpm	L/U rpm	min mm	max mm		
CSF20	2.5-5.0	5-10	10-20	20-40	800	800				
CSY20	5-10	10-20	20-40		700	500	7	20	0.5	2.7
CSF25	6-12	12-25	25-55	55-100	800	700	10	25	1.5	7.6
CSY25	12-25	25-50	50-100		700	450				
CSF35	12-25	25-50	50-120	120-200	800	600	14	35	2.5	25.0
CSY35	25-50	50-100	100-200		700	400				
CSF45	25-50	50-100	100-250	250-400	800	500	18	45	5.0	81.0
CSY45	50-100	100-200	200-400		650	300				

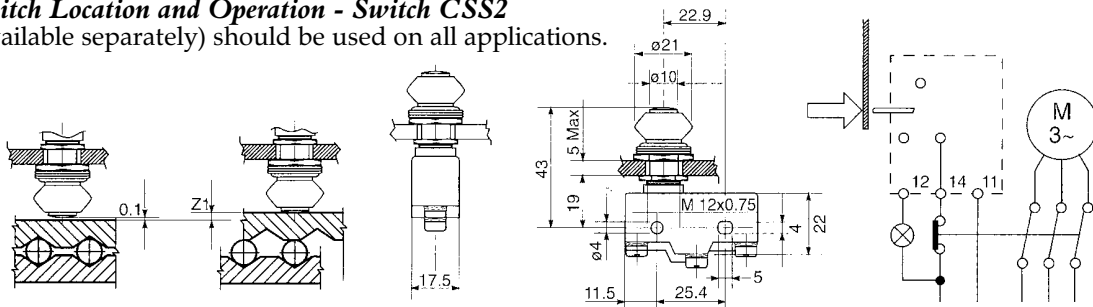
CS Mini Series Dimensions

Models CSF & CSY	Dimensions mm																		
	Ah8	Bh8	C	D	E	E ₁	F	G	H	K	L	L ₂	N	P	R	V	V ₁	Wh7	CH
20	36	55	46	6xM5	11.5	4.5	5.5	21.7	53	38	50	83.5	3	2.8	80	47.5	40.5	30	7
25	46	70	59	6xM5	16.5	5.5	7.0	23.2	74	54	57	94.0	4	3.5	100	59.0	48.0	35	8
35	64	90	80	6xM6	16.5	6.5	7.0	29.0	88	70	65	108.0	4	4.0	120	85.5	53.0	50	10
45	78	115	100	6xM6	22.0	8.0	8.0	34.5	114	86	81	127.0	5	4.0	150	98.5	60.0	65	10

Emergency Stop Switch Location and Operation - Switch CSS2

The Stop Switch (available separately) should be used on all applications.

Clutch Size	Z'	
	(1) mm	(2) mm
20	1.4	1.2
25	1.4	1.2
35	2.4	1.8
45	2.4	2.0



(1) Safeguard Mini - (2) Synchron Mini

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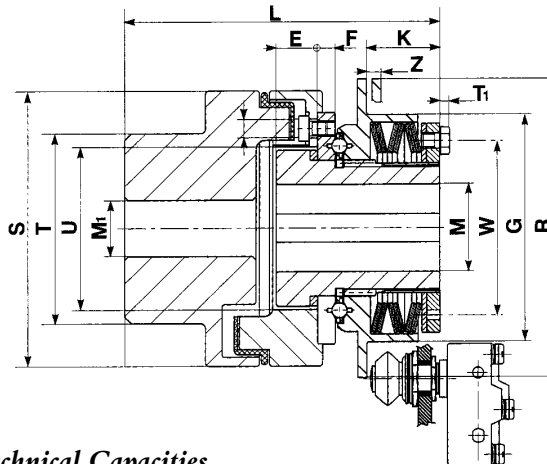
CS Mini Series Couplings



CS Mini Series Couplings

For shaft to shaft connection CS Mini series clutches are available with an elastomeric coupling for all the sizes and modes of operation, simple overload, synchronous overload. The elastomeric Coupling permits up to 1/2 degree of angular misalignment, with 0.3mm radial, and a maximum of 0.5mm axial. The rubber element absorbs peak shocks, providing greater accuracy in overload protection. Up to four torque ranges are available on each size of clutch, controlled by selection of the actuating spring set, providing a wide range of torque capacities to select from. The series is suitable for moderate speed applications with low radial forces and infrequent tripping. The design is suited to inline stop switch, or proximity switch, see page 26.

E-CC



CS Mini Series Couplings - Technical Capacities

Models*	Torque Range according to Spring Selection				Max. Speed		Bore Size mm			Weight kg	Inertia kgcm ²
	S Nm	M Nm	L Nm	U Nm	S/M rpm	L/U rpm	Clutch M		Cplg. M ₁ max		
							min	max			
CSF20E-CC CSY20E-CC	2.5-5.0 5-10	5-10 10-20	10-20 20-40	20-40	800 700	800 500	7	20	30	1.2	8
CSF25E-CC CSY25E-CC	6-12 12-25	12-25 25-50	25-55 50-100	55-100	800 700	700 450	10	25	35	2.5	21
CSF35E-CC CSY35E-CC	12-25 25-50	25-50 50-100	50-120 100-200	120-200	800 700	600 400	14	35	50	5.2	91
CSF45E-CC CSY45E-CC	25-50 50-100	50-100 100-200	100-250 200-400	250-400	800 650	500 300	18	45	60	10.0	205

*For clutch Part No. for ordering refer below

CS Mini Series Couplings - Dimensions

Models CSF/CSY	Dimensions												
	E	F	G	K	L ₁	N	R	S	T	T ₁	T ₂	U	W
20E-CC	11.5	5.5	53	21.7	84.5	50	80	67	46	2.8	7	37	38
25E-CC	16.5	7.0	74	23.2	98.0	57	100	82	53	3.5	8	48	54
35E-CC	16.5	7.0	88	29.0	132.0	65	120	112	79	4.0	10	66	70
45E-CC	22.0	8.0	114	34.5	155.0	81	150	128	90	4.0	10	81	86

Catalogue Part Numbers

To order Safeguard series clutches it is essential to identify clutch type, size (refers to max bore capacity), connection flange design, and spring ratings for correct torque, (see rating for each clutch).

Examples Clutch Reference **CSF 35A/M** is a Safeguard (type CSF) size 35, design A with M rated springs (25-50 Nm).

CSY 25E/L is a Synchron (type CSY) size 25, design E (Mini Series) with L rated springs (50-100 Nm).

Couplings are identified by suffix - CC, e.g. **CSY 25E/L - CC** is coupling version of above clutch. Clutches come with pilot bores, but can be supplied finish bored if specified on order.

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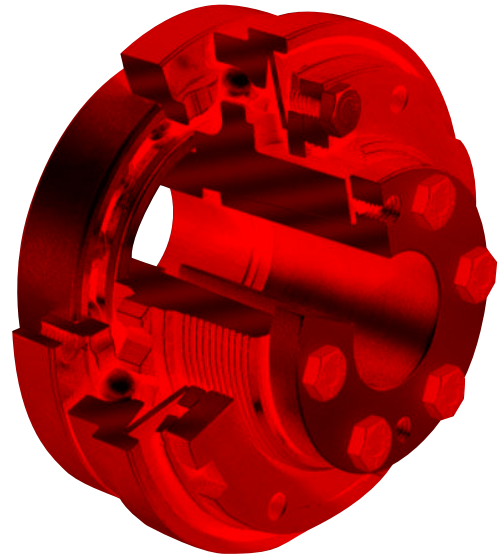
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Series CZ and CN Zero Backlash Safeguard Overload Clutch



Zero backlash Overload Clutches and Couplings, series CZ and CN, available in 8 different basic types, and 12 basic sizes, for shaft diameters from 8mm to 60mm; providing Overload Protection for Torque values from 5Nm to 740Nm.

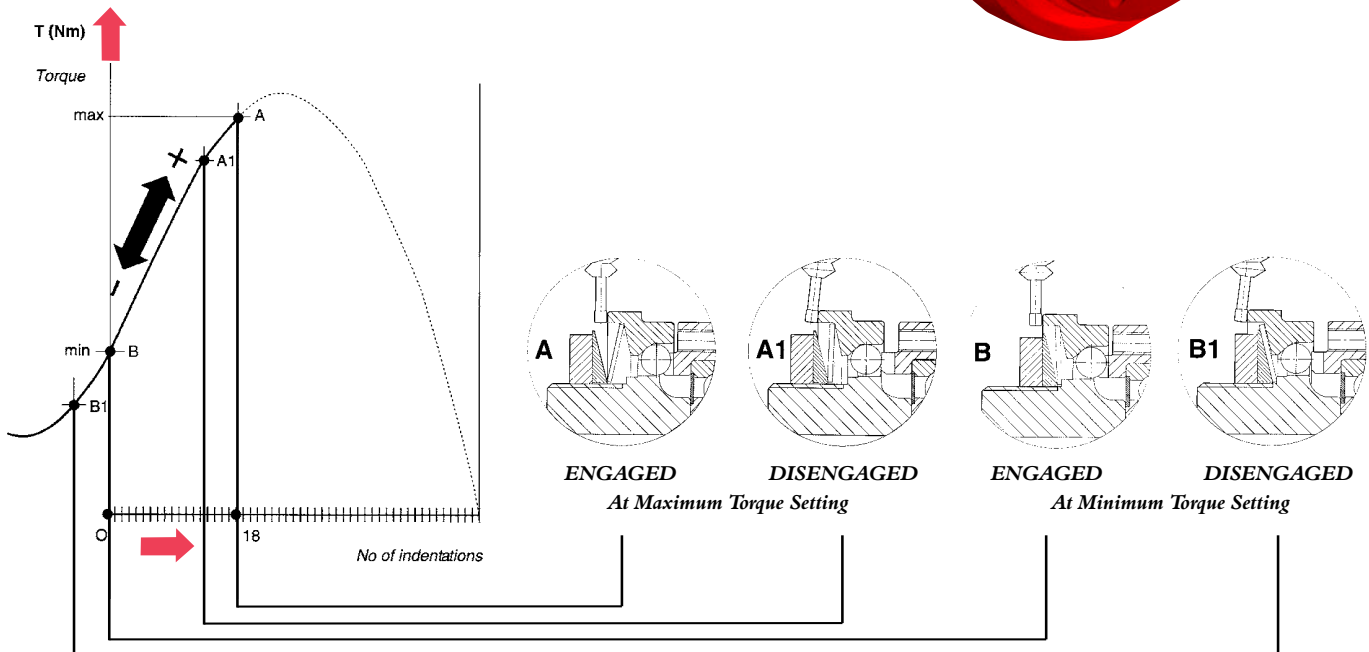
The CZ series Safeguard overload clutches were developed to provide a totally backlash free transmission of power with a very responsive overload protection. These compact units are directly interchangeable with existing designs in the market providing a cost advantage with long reliable service life. Two basic modes of operation are available, the basic CZF/CNF Safeguard ratchetting design with the driving balls equally spaced so that clutch can re-engage after a small angle of rotation, and the Synchron CZY/CNY design with the balls unequally spaced so that clutch can only re-engage after a full revolution so providing full synchronisation between driver and driven. Responsive overload reaction is obtained by the use of negative functioning Disc Springs to apply drive load. In the event of an overload the spring load actually decreases, allowing faster dis-engaging of the drive, and minimal pressure on the driving surface in the dis-engaged mode, reference diagrams below.



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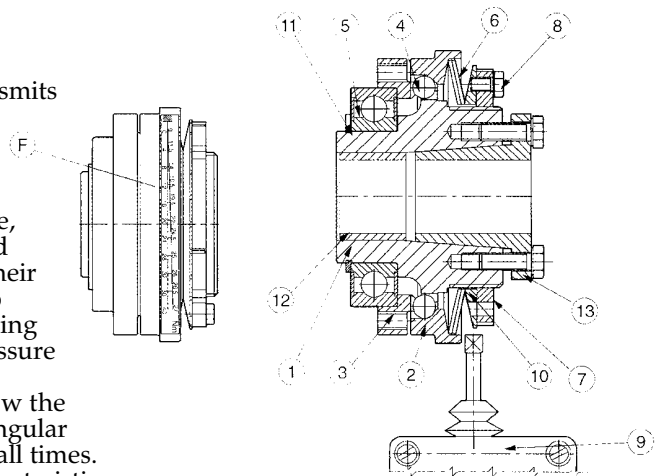
Method of Operation

During normal operation the CZ/CN Overload Clutches transmits the torque from the Hub (1) to the Flange (3) by a number of hardened steel balls (4) located in pockets in the Hub, and forced into matching seats in the Flange by the Disc Spring (6) applying load to the Pressure Flange (2).

In the event that the Driving Torque exceeds the pre-set value, the reaction forces on the Steel Balls exceeds the force applied by the Pressure Flange, and the Balls start to ride-up out of their seats in the Flange (3). This action reduces the spring load, so allowing the Balls to quickly come out of their seats, so releasing the drive. The action of the Balls dis-engaging moves the Pressure Flange to the right so activating the stop switch (9).

Re-engagement is automatic once the torque level drops below the pre-set value. The Synchron design re-engages only at one angular position to keep Hub and Flange accurately synchronised at all times.

The Disc Springs work only in the negative area of their characteristics so unscrewing the Adjusting Nut (7) increases the axial load of the Springs, so increasing dis-engaging torque. When desired Torque setting is achieved the Adjusting Nut is locked by the Bolt (8) being screwed into the locking Collar (10).

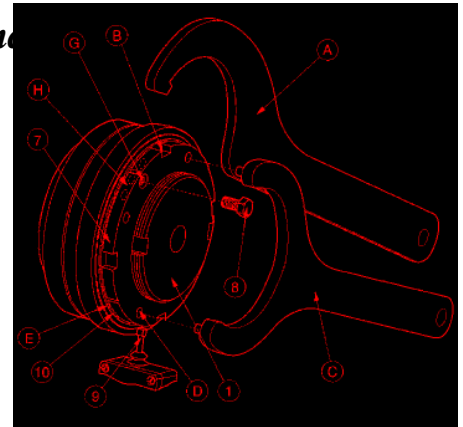


Series CZ and CN Safeguard Overload Clutch



CZ/CN Series Clutches and Couplings Torque Adjustment

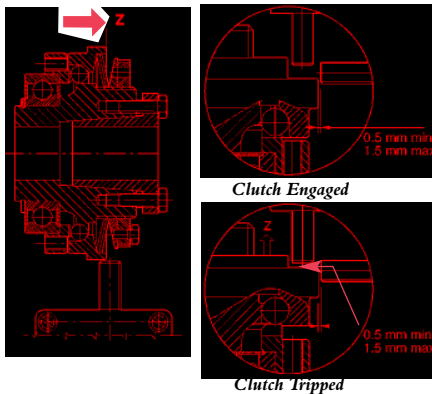
Referring to drawing alongside Torque setting of the Clutches can be made using either a suitable size 'C' Spanner (A), or a correct size Pin Wrench (C). First release Adjusting Nut (7) by removing the Locking Screw (8), then rotate the Nut clockwise until at end of stroke (do not apply excess force). Then rotate nut back anti-clockwise by one indent to reach the neutral position, corresponding to minimum torque. Then continue to turn Adjusting Nut anti-clockwise for the number of indents indicated on the label (F) on the outside of Clutch for required Torque. Put Threadlock on Locking Screw, and replace in one of the threaded holes (G) which aligns with a hole in the Locking Plate behind.



Overload Sensor Switches

It is strongly recommended that all installations should include a Limit Switch or Sensor to switch off the power in event of an overload. The following are standard units available with mounting instructions.

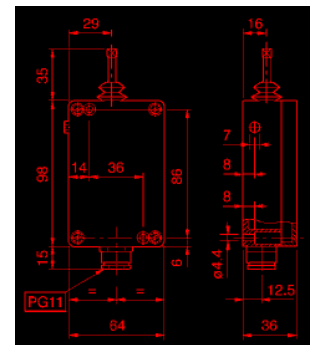
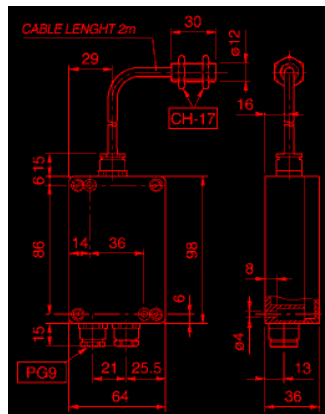
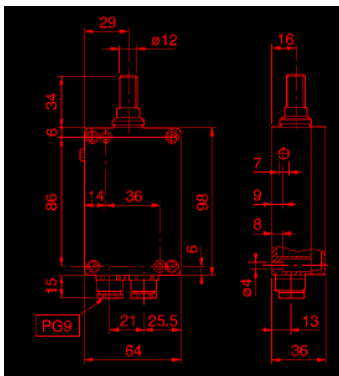
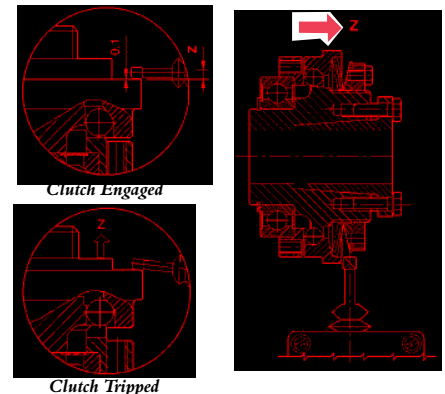
a) Proximity Sensor Switch for Radical mounting - CSS3



a) Proximity Sensor Switch for Axial movement - CSS4

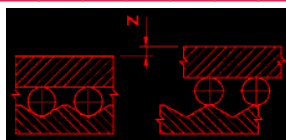


a) Mechanical Limit Switch for contact actuation - CSS1



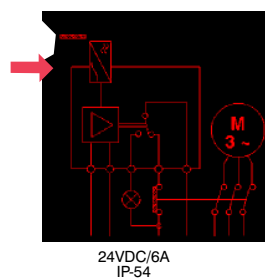
Outer Movement in Overload

CS CLUTCH	Z mm				R	CZ/ CN	z mm
	CFS	CSY	CSL	CSZ			
20	1.4	1.2	0.6	1.6	-	11	0.8
25	2.3	1.8	0.8	2.3	-	16	1.0
35	2.4	2.0	1.1	3.0	-	20	1.2
45	2.7	2.2	1.2	3.5	-	25	1.2
55	3.7	2.5	1.2	3.8	2.5	30	1.5
65	4.6	3.0	1.6	4.5	3	40	1.8
80	5.0	3.5	2.5	-	3.5	50	2.0
100	5.5	4.0	2.7	-	4	60	2.2

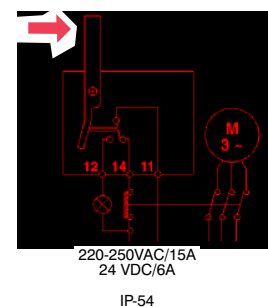


For other clutch types refer to respective dimension tables.

Wiring Connections for Proximity Sensor - Models CSS3 & CSS4



Wiring for Limit Switch Model CSS1



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Series CZ Safeguard Overload Clutches Standard Plain Bore Units



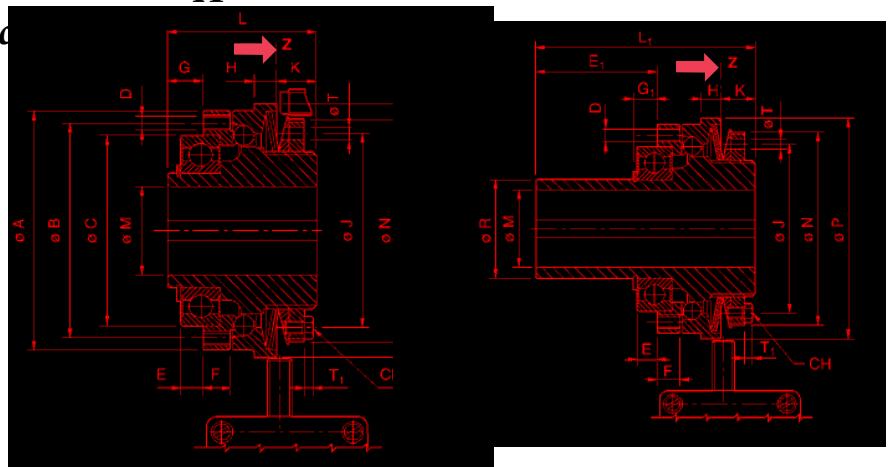
Type H

Type K

Standard Zero Backlash Clutch types H&K

These clutches are intended for keyway connection to shafts where pre-machined synchronisation is the preferred design. Type H is used to mount compact drive systems with minimal overhung load, the single deep groove ball bearing providing full radial support for the sprocket, pulley, or gear.

Type K has an extended inner race to support a second Bearing to allow fitment of wider transmission elements, and where high radial loads may be encountered.



CZ Series types H & K - Technical Capacities

Models H&K Clutch Size	Torque Range according to Spring selection			Max.Speed rpm	Bore Size 'M'		Weight kg		Hub Inertia kgcm2		Flange Inertia kg m2
	S Nm	M Nm	U Nm		min mm	max mm	Type H	Type K	Type H	Type K	
25	3-14	6-28	13-56	4000	8	20	0.74	0.83	2.15	2.22	0.95
30	9-35	18-70	40-140	3000	10	30*	1.37	1.41	5.30	5.58	2.35
40	19-65	38-130	78-260	2500	14	35*	2.28	2.56	13.68	14.58	6.45
50	35-110	80-220	160-440	2000	18	45*	3.29	3.74	27.62	29.88	13.07
60	80-185	160-370	320-740	1200	24	50	5.12	5.73	66.45	72.01	26.52

*For clutch Part No. for ordering refer bottom of page

*max bore achievable only with keyway according to DIN 6885 Sheet 3

CZ Series types H & K - Dimensions

Clutch Size	A	B	C h5	D	E	E1	F	G	G1	H	J	K	L	L1	M		N	P	R h6	T	T1	Z	CH A/F
															min	max							
25	65	56	47	8x M4	5	33	7.5	8	6.5	7	54.5	12	40	65	8	20	63	70	30	5	2.8	1.2	7
30	80	71	62	8x M5	7	43	8.0	11	8.8	8	69.0	14	48	80	10	30*	77	85	40	5	2.8	1.5	7
40	95	85	75	8x M6	9	55	10.5	14	11.5	9	77.0	16	59	100	14	35*	88	100	45	5	3.5	1.8	8
50	110	100	90	8x M6	10	67	12.0	16	13.0	10	87.5	17	64	115	18	45*	100	115	55	6	4.0	2.0	10
60	130	116	100	8x M8	10	73	12.0	18	14.0	12	106.0	21	75	130	24	50	122	135	65	7	4.0	2.2	10

For Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

Clutch Part Numbers for Ordering

To correctly order CZ series clutches it is essential to identify the clutch operating mode, size, type, spring ratings (torque range), and for clutches and couplings using Clamping Elements for shaft connection, the shaft diameters.

Operating Mode: CZ series clutches are available with two operating modes, ratchetting type CZF for applications where synchronisation of input to output is not required, and single position type CZY for full synchronisation.

Clutch Size: The clutch size generally indicates the max bore size, and is identified in the tables.

Clutch Type: A letter from H to T indicates the clutch/coupling design, as shown in the respective drawings.

For couplings type M and N it is required to indicate the coupling size also, e.g. for Coupling size 40-72 type M the reference is M72, and for couplings P,R & T it is necessary to indicate rubber shore value ie. P92 is with rubber 92 shore.

Spring Rating: following a "/" the letter S, M, or U indicates the Spring sizes selected, which controls the torque range.

Bore Sizes: Except for pilot bored types H, K and M it is essential that the finish bore sizes of the Clutch/Coupling are provided to enable supply of the unit. Types H, K and M can be supplied with finish bores also if specified.

Examples

CZF40H/M

is a Ratchetting size 40 clutch type 'H' with spring selection M.

CZY50L/S-40

is a Synchronous size 50, type L, with spring set S, fitted with 40mm clamping bush.

CSY40N89/U-35/40

is a Synchronous Coupling size 40, type N, with spring set U, with the clutch half fitted with a 35mm clamping bush, and the coupling half with a 40mm clamping bush.

CSY50M89/S-38/48

is a Synchronous Coupling size 50, type M, with spring set S, with the clutch half bored and keyed for a 38mm shaft, and the coupling half bored and keyed for 48mm.

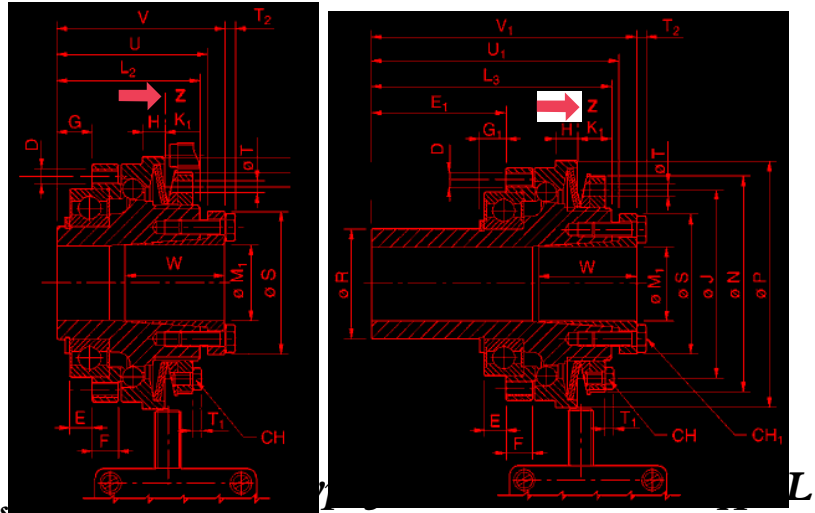
Series CZ Safeguard Overload Clutches



Standard Units With Expanding Bush Shaft Connection

Zero Backlash Clutch for keyless shaft connection types J & L. These clutches provide totally backlash free connection of drive gears and sprockets to shafts. A selection of clamping inserts provides a wide range of shaft diameters to be accommodated. Type J can be used to mount compact drive systems, with minimal overhung load, the single deep groove ball bearing providing full radial support.

Type L has extended inner race to support a second bearing to enable fitting of wider transmission elements.



CZ Series types J & L - Technical Capacities

Models* J & L Clutch Size	Torque Range according to Spring selection			Max.Speed rpm	Bore Size 'M1'		Weight kg		Hub Inertia kgcm2		Flange Inertia kgcm2
	S Nm	M Nm	U Nm		min mm	max mm	Type J	Type L	Type J	Type L	
25	3-14	6-28	13-56	4000	10	25	0.72	0.81	2.29	2.36	0.95
30	9-35	18-70	40-140	3000	15	30	1.26	1.50	5.90	6.17	2.35
40	19-65	38-130	78-260	2500	19	40	2.11	2.39	14.75	15.66	6.45
50	35-110	80-220	160-440	2000	32	50	2.98	3.43	30.34	32.60	13.07
60	80-185	160-370	320-740	1200	32	60	4.75	5.36	71.94	77.18	26.52

*For clutch Part No. for ordering refer to page 30.

CZ Series types J & L - Dimensions

Clutch Size	A	B	C h5	D	E	E1	F	G	G1	K1	L2	L3	M1 min	M1 max	P	R h6	S	T2	U	U1	V	V1	W	Z	CH1 A/F
	25	65	56	47	8x M4	5	33	7.5	8	6.5	12	40	65	10 19	20 25	70	30	40.5 42	2.8	42	67	47	72	26.5 26	1.2
30	80	71	62	8x M5	7	43	8.0	11	8.8	12	46	78	15	30	85	40	57	4	49	81	56	88	31	1.5	10
40	95	85	75	8x M6	9	55	10.5	14	11.5	14	57	98	19 32	30 40	100	45	57 64	4 3.5	60	101	67	108	40 31	1.8	10 8
50	110	100	90	8x M6	10	67	12.0	16	13.0	16	63	114	32	50	115	55	73.5	4	66.5	118	73	124	29	2	10
60	130	116	100	8x M8	10	73	12.0	18	14.0	21	75	130	32 55	50 60	135	65	73.5 89	4	78.5 78	134 133	85 86	140 141	29 45.5	2.2	10

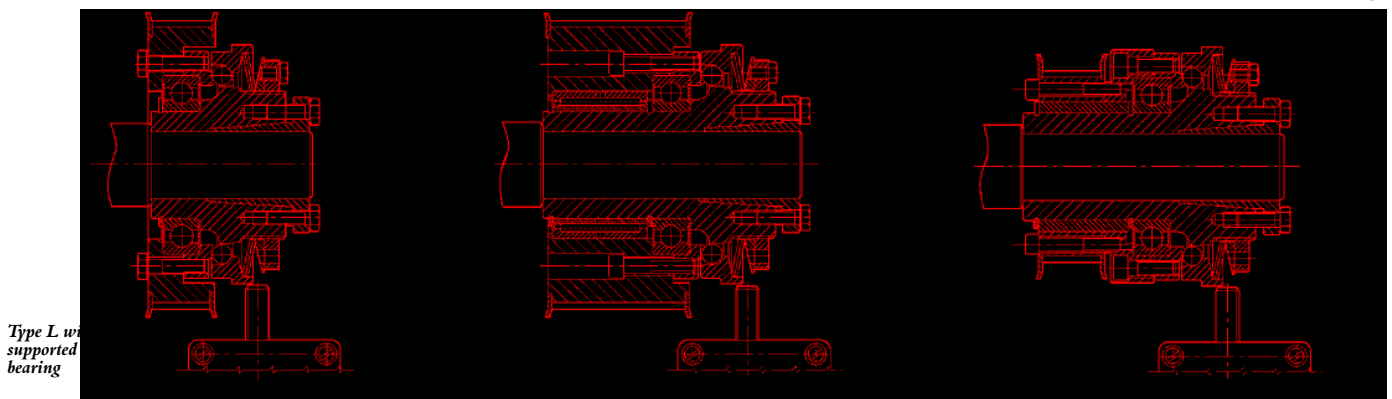
For Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

Standard Bore sizes available on J & L type clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																				Bolt Torque Nm					
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45		48	50	55	60	
25	65	70	75	90	95	100	115	120	130	140	150	160														3
30					120	130	150	160	180	190	210	220	240	260												10
40								240	260	290	310	320	360	390												10
50													440	480	520	550										5.9
60													620	680	730	770	810	870	930	970						10
													620	680	730	770	810	870	930	970	1070	1160				10

Shaft tolerance required for correct operation is h6 up to 40mm dia., h7 for over 40mm.

Typical Mounting Arrangements with Timing Pulleys



Type L with supported bearing

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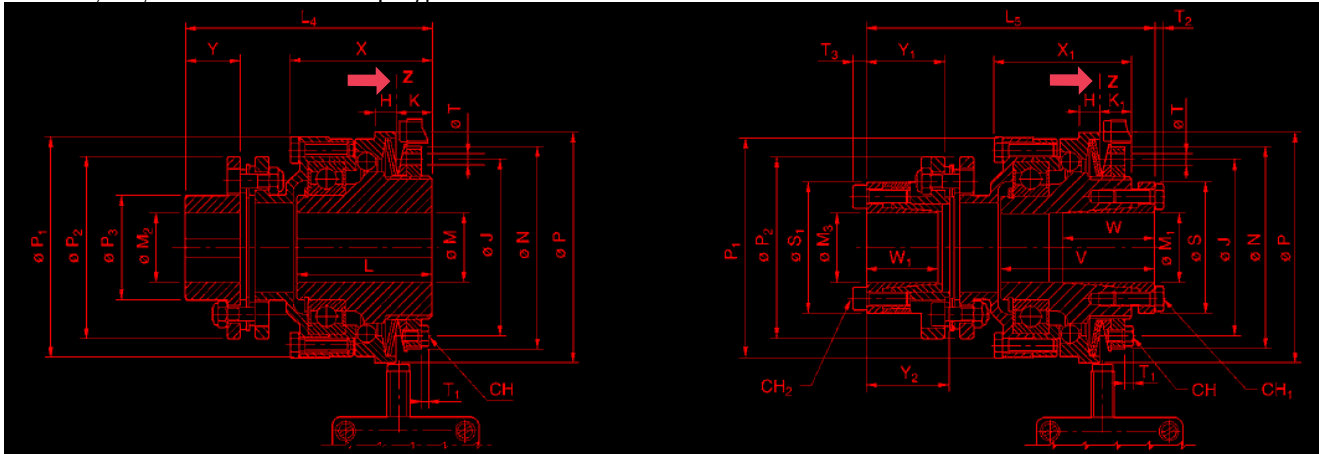
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Series CZ Safeguard Overload Couplings



Standard CZ series Zero Backlash Overload Clutches combined with a Torsionally stiff, Steel Disc Coupling for ultimate shaft to shaft positional accuracy, with full overload protection. Available with keyed shaft connection, or totally keyless with shaft clamping elements.



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CZ Series Couplings types M & N - Technical Capacities

Models M & N Coupling Size	Torque Range According to Spring Type			Speed Max. rpm	Coupling Type M Bore Sizes				Coupling Type N Bore Sizes				Weight		Hub Inertia		Flange Inertia		Max. Misalignment Coupling	
	S Nm	M Nm	U Nm		Clutch Hub		Coupling Hub		Clutch Hub		Coupling Hub		Type M kg	Type N kg	Type M kgcm ²	Type N kgcm ²	Type M kgcm ²	Type N kgcm ²	Angular degrees	Axial mm
	M min mm	M max mm	M2 min mm		M2 max mm	M1 min mm	M1 max mm	M3 min mm	M3 max mm	M kg	N kg	M kgcm ²	N kgcm ²	M kgcm ²	N kgcm ²	M kgcm ²	N kgcm ²	Angular degrees	Axial mm	
25-53	3-14	6-28	13-56	4000	8	20	6	25*	10	25	11	20	1.2	1.2	2.15	2.22	2.42	2.47	1	0.4
30-72	9-35	18-70	40-140	3000	10	28	10	35	15	30	19	30	2.4	2.0	5.30	5.58	6.92	7.06	1	0.5
40-72	19-65	38-130	78-260	2500	12	35*	10	35	19	40	19	30	3.5	3.4	13.68	14.58	16.55	16.88	1	0.5
40-89	19-65	38-130	78-260	2500	12	35*	14	50*	19	40	24	42	4.3	3.6	13.68	14.58	16.55	26.12	1	0.6
50-89	35-110	80-220	160-430	2000	16	45*	14	50*	32	50	24	42	5.5	4.8	27.62	29.88	34.03	34.71	1	0.6
60-118	80-185	160-370	320-740	1200	22	50	15	65	32	60	32	60	9.4	7.8	66.45	72.01	43.52	44.39	1	0.8

For clutch Part No. for ordering refer to page 30.
*max bore achievable only with keyway according to DIN 6885 Sheet 3

CZ Series Couplings types M & N - Dimensions

Models M & N Size	Dimensions																									
	K	K1	L	L4	L5	L8	N	P	P1	P2	P3	S MAX	S1 MAX	T1	T2	T3	V	W MIN	W1 MIN	X	Y MAX	Y1 MAX	Z	CH	CH1	CH2
25-53	12	12	40	87.5	95.5	28	63	70	65	53	32	42	42	2.8	2.8	4	47	26	26.5	41.5	24.5	25.5	1.2	7	7	3
30-72	14	12	48	113.0	114.5	34	77	85	80	72	47	57	58	2.8	4.0	6	56	31	31	50.0	39.5	33.0	1.5	7	10	5
40-72	16	14	59	126.5	128.0	43	88	100	97	72	47	57	58	3.5	4.0	6	67	40	31	62.0	39.5	33.0	1.8	8	10	5
40-89	16	14	59	142.5	150.0	43	88	100	97	89	62	64	72	3.5	3.5	6	67	31	45	62.0	45.0	44.5	1.8	8	8	5
50-89	17	16	64	145.0	153.5	47	100	115	111	89	62	74	72	4.0	4.0	6	73	29	45	66.5	45.0	44.5	2.0	10	10	5
60-118	21	21	75	172.5	162.5	54	122	135	131	118	82	89	92	4.0	4.0	6	86	29	29	76.5	55.0	35.0	2.2	10	10	5

Standard Bore sizes available on N type Clutch clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																				Bolt Torque Nm					
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45		48	50	55	60	
25	65	70	75	90	95	100	115	120	130	140	150	160													3	
30					120	130	150	160	180	190	210	220	240	260												10
40								240	260	290	310	320	360	390												10
40															440	480	520	550								5.9
50															620	680	730	770	810	870	930	970				10
60															620	680	730	770	810	870	930	970	1070	1160		10

Standard Bore sizes available on N type Coupling half clamping hubs, with respective maximum transmittable Torques

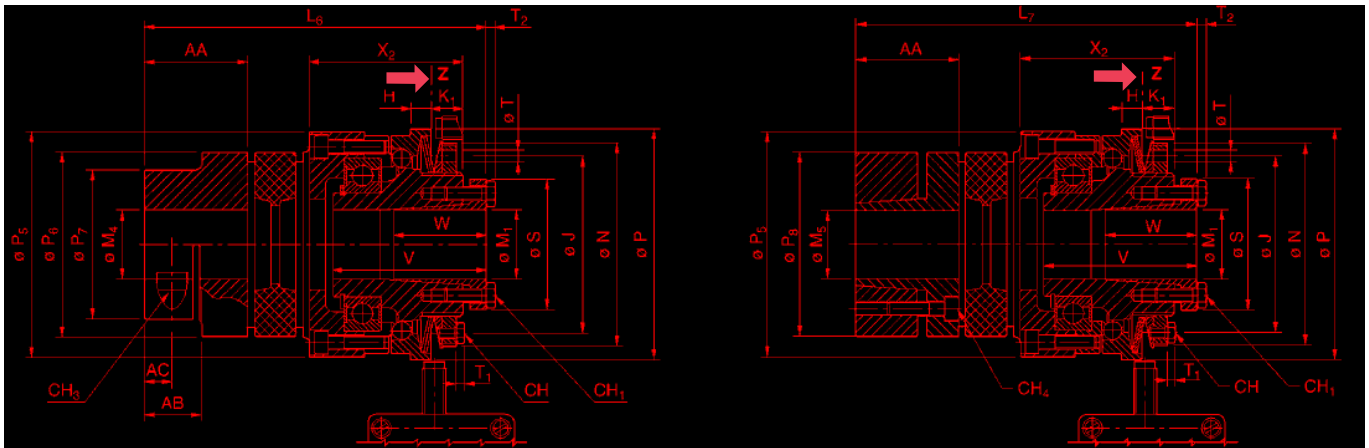
Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																	Element Bolt Torque Nm	Disc Bolt Torque Nm								
	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40			42	45	48	50				
25-53	80	87	102	108	116	130	138	145																	5	6	
30-72				146	155	175	210	220	242	265	276	309	331													17	8
40-72							210	220	242	265	276	309	331													17	8
40-89										529	552	618	662	706	772	839	883	926								17	15
50-89										529	552	618	662	706	772	839	883	926								17	15
60-118														730	798	866	912	958	1026	1094	1140					17	33

Shaft tolerances required for correct operation is h6 up to 40mm dia., h7 for over 40mm., for both Clutch and Coupling Disc Bolt Torque is for the bolts on the Flexible Disc Plate

Series CZ Safeguard Overload Couplings



Standard Keyless Connection Overload Clutches with Elastomeric Couplings



Couplings type T is identical to type P except coupling hub is not split, and hub suitable for standard reworking
Couplings are supplied standard with 92 Shore rubber inserts, but 98 shore can be supplied to order

CZ Series Couplings types P, R & T - Technical Capacities

Models P, R & T Clutch Size	Torque Range According to Spring Type			Nominal Torque Flexible Coupling		Speed Max. rpm	Clutch Hub Bore Sizes*			Coupling Hub Bore Sizes*				Weight		Hub Inertia kgcm ²	Flange Inertia kgcm ²	Max. Misalignment of Coupling				
	S Nm	M Nm	U Nm	92 Sh.A Nm	98 Sh.A Nm		Cplg Types P & T			Cplg Type R		Type P & T kg	Type R kg	92 Shore A				98 Shore A				
							M4 min mm	M4 (P) max mm	M4 (T) max mm	M5 min mm	M5 max mm			Axial mm	Radial mm			Ang. deg.	Radial mm	Ang. deg.		
25	3-14	6-28	13-56	70	120	4000	10	25	10	28	28	15	28	1.38	1.53	2.2	4.00	1.4	0.14	1	0.10	0.9
30	9-35	18-70	40-140	190	320	3000	15	30	14	38	38	19	38	3.47	3.67	5.6	10.00	1.5	0.15	1	0.11	0.9
40	19-65	38-130	78-260	380	650	2500	19	40	15	45	45	20	45	4.48	4.48	14.6	20.00	1.8	0.17	1	0.12	0.9
50	35-110	80-220	160-440	530	900	2000	32	50	20	48	55	28	50	6.59	6.59	29.9	50.00	2.0	0.19	1	0.14	0.9
60	80-185	160-370	320-740	620	1050	1200	32	60	25	55	60	30	55	10.71	10.71	72.0	114.00	2.1	0.23	1	0.16	0.9

For Clutch Part No. for ordering refer to page 30.
*max bore achievable only with keyway according to DIN 6885 Sheet 3

CZ Series Couplings types P, R & T - Dimensions

Models P & R Size	Dimensions																									
	AA	AB	AC	H	J	K1	L6 MAX	L7 MAX	N	P	P5	P6	P7	P8	S MAX	T	T1	T2	V MIN	W MAX	X2	Z	CH	CH1	CH3	CH4
25	30	-	10.5	7	54.5	12	102	102	63	70	70	55	-	55	42.0	5	2.8	2.8	47	26.5	47.0	1.2	7	7	5	4
30	35	-	11.5	8	69.0	12	120	120	77	85	85	65	-	65	57.0	5	2.8	4.0	56	31.0	54.5	1.5	7	10	6	4
40	45	-	15.5	9	77.0	14	146	146	88	100	100	80	-	80	64.0	5	3.5	4.0	67	40.0	67.0	1.8	8	8/10	6	5
50	50	28	18.0	10	87.5	16	159	159	100	115	115	95	85	95	73.5	6	4.0	4.0	73	29.0	73.0	2	10	10	8	6
60	56	32	21.0	12	106	21	213	213	122	135	135	105	95	105	89.0	7	4.0	4.0	85	45.5	87.0	2.2	10	10	10	8

Standard Bore sizes available on P, R & T type Clutch clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																				Bolt Torque Nm					
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45		48	50	55	60	
25	65	70	75	90	95	100	115	120	130	140	150	160	240	260												3
30					120	130	150	160	180	190	210	220	240	260												10
40								240	260	290	310	320	360	390												10
40															440	480	520	550								5.9
50															620	680	730	770	810	870	930	970				10
60															620	680	730	770	810	870	930	970	1070	1160		10

Standard Bore sizes available on P type Coupling clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																	Bolt Torque Nm								
	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45		48	50	55					
25	34	35	36	38	39	39	41	43	45	46																10.5
30			80	81	81	85	87	91	92	97	99	102	105	109												25
40				92	94	98	99	104	105	109	112	113	118	122	123	126	130									25
50							232	244	246	255	260	266	274	283	288	294	301	309								69
60								393	405	413	421	434	445	454	462	473	486	494	514							120

Standard Bore sizes available on R type Coupling clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																	Bolt Torque Nm								
	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	48		50	55						
25	48	67	74	72	90	97	112	120	143																	6
30			142	154	188	189	237	250	280	307	310	353	389													6
40						269	337	356	398	436	442	501	533	572	585	644										10
50								399	445	470	506	566	581	630	647	728	836	858								35
60										775	819	955	999	1090	1091	1230	1334	1381	1540							69

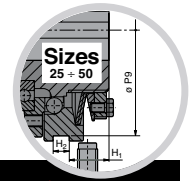
Shaft tolerance required for correct operation is h6 up to 40mm dia., h7 for over 40mm.

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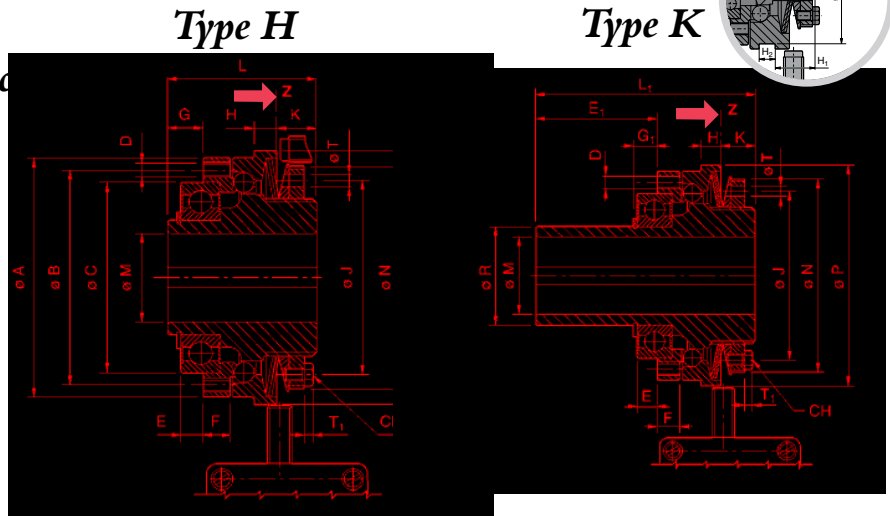
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Series CN Safeguard Overload Clutches Standard Plain Bore Units



Standard Zero Backlash Clutch types H&K

These clutches are intended for keyway connection to shafts where pre-machined synchronisation is the preferred design. Type H is used to mount compact drive systems with minimal overhung load, the single deep groove ball bearing providing full radial support for the sprocket, pulley, or gear. Type K has an extended inner race to support a second Bearing to allow fitment of wider transmission elements, and where high radial loads may be encountered.



CN Series types H & K - Technical Capacities

Models H&K Clutch Size	Torque Range according to Spring selection				Max. Speed rpm	Bore Size 'M'		Weight kg		Hub Inertia kgcm ²		Flange Inertia kg m ²
	S Nm	M Nm	L Nm	U Nm		min mm	max mm	Type H	Type K	Type H	Type K	
11	0.65 - 3.0	1.3 - 6	2 - 9	2.6 - 12	4000	6	11	0.17	0.19	0.27	0.26	0.08
16	2 - 5	4 - 10	6 - 15	8 - 20	4000	8	16*	0.26	0.30	0.54	0.55	0.2
20	4 - 10	8 - 20	12 - 30	16 - 40	4000	9	20	0.51	0.59	1.8	1.8	0.6
25	4 - 14	8 - 28	12 - 42	16 - 56	4000	12	20	0.89	1.06	4.6	4.8	1.8
30	9 - 35	18 - 70	27 - 105	40 - 140	3000	15	25	1.62	1.77	11.8	12.1	3.9
40	19 - 65	38 - 130	57 - 195	78 - 260	2500	22	35*	2.86	3.28	27.0	27.6	7.7
50	35 - 110	80 - 220	120 - 330	160 - 440	2000	32	45	3.72	4.80	61.5	65.3	17.3

*For clutch Part No. for ordering refer bottom of page
 *max bore achievable only with keyway according to DIN 6885 Sheet 3

CN Series types H & K - Dimensions

Clutch Size	A	B	C h ⁵	D	E	E'	F	G	G'	H	J	K	L	L'	H ¹	H ²	P ¹	N	P	R h ⁶	T	T'	Z	CH A/F
11	40	35	30	6xM3	2	20.5	5	4.5	3.0	6	32	7.0	24	40	-	-	-	39.5	45	17	4	2.1	0.8	5.5
16	47	42	37	6xM3	2	25	6	5.0	5.0	8	36.5	9.5	29	49	-	-	-	43	50	25	4	2.1	1.0	5.5
20	60	53	47	6xM4	3	31	7	5.0	5.0	9	36.5	9.5	33	58	-	-	-	43	65	30	4	2.1	1.2	5.5
25	77	69	62	6xM5	4	35	7.5	5.5	5.5	-	54.5	10.2	41	68	14.9	7.5	75	63	80	35	5	2.8	1.2	7.0
30	90	80	68	6xM6	5	40	8	6.5	6.5	-	69	11.0	47	77	17.4	7.5	90	77	95	40	5	4.0	1.5	7.0
40	106	90	80	6xM6	5	48	9	7.0	7.0	-	77	12.6	52	90	20.0	8.0	105	88	110	50	5	4.0	1.8	8.0
50	125	112	100	6xM8	5	60	11	7.5	7.5	-	87.5	14.7	59	109	23.5	9.0	125	100	130	65	6	4.0	2.0	10

For Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

Clutch Part Numbers for Ordering

To correctly order CN series clutches it is essential to identify the clutch operating mode, size, type, spring ratings (torque range), and for clutches and couplings using Clamping Elements for shaft connection, the shaft diameters. **Operating Mode:** CN series clutches are available with two operating modes, ratchetting type CNF for applications where synchronisation of input to output is not required, and single position type CNY for full synchronisation.

Clutch Size: The clutch size generally indicates the max bore size, and is identified in the tables.

Clutch Type: A letter from H to L indicates the clutch design, as shown in the respective drawings.

Spring Rating: following a / the letter S, M, L or U indicates the Spring sizes selected, which controls the torque range.

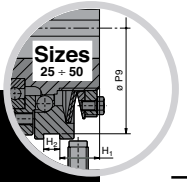
Bore Sizes: Except for pilot bored types H and K it is essential that the finish bore sizes of the Clutch/Coupling are provided to enable supply of the unit. Types H, K and M can be supplied with finish bores also if specified.

Examples

CNF40H/M
CNY50L/S-40

is a Ratchetting size 40 clutch type 'H' with spring selection M.
 is a Synchronous size 50, type L, with spring set S, fitted with 40mm clamping bush.

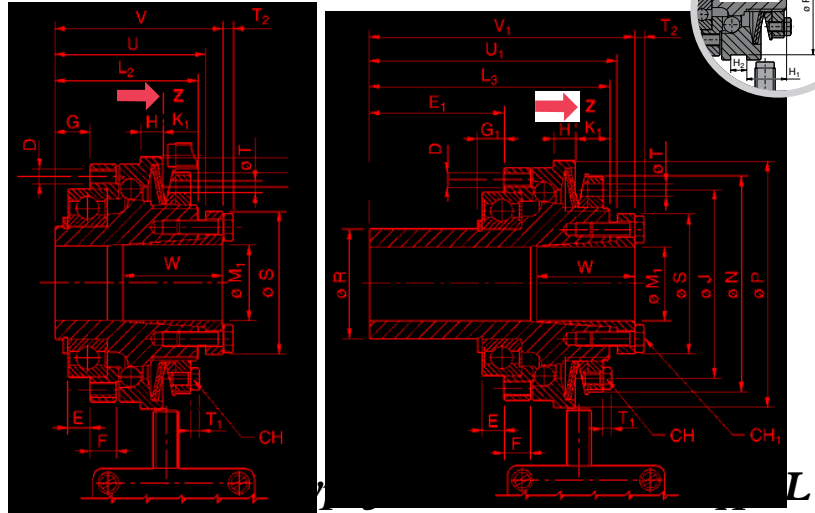
Series CN Safeguard Overload Clutches



Standard Units With Expanding Bush Shaft Connection

Zero Backlash Clutch for keyless shaft connection types J & L. These clutches provide totally backlash free connection of drive gears and sprockets to shafts. A selection of clamping inserts provides a wide range of shaft diameters to be accommodated. Type J can be used to mount compact drive systems, with minimal overhung load, the single deep groove ball bearing providing full radial support.

Type L has extended inner race to support a second bearing to enable fitting of wider transmission elements.



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CN Series types J & L - Technical Capacities

Models J&L Clutch Size	Torque Range according to Spring selection				Max. Speed rpm	Bore Size 'M'		Weight kg		Hub Inertia kgcm ²		Flange Inertia kgcm ²
	S Nm	M Nm	L Nm	U Nm		min mm	max mm	Type J	Type L	Type J	Type L	
11	0.65 - 3.0	1.3 - 6	2 - 9	2.6 - 12	4000	6	11	0.18	0.2	0.25	0.28	0.08
16	2 - 5	4 - 10	6 - 15	8 - 20	4000	8	16*	0.28	0.32	0.51	0.58	0.2
20	4 - 10	8 - 20	12 - 30	16 - 40	4000	9	20	0.55	0.63	1.7	1.8	0.6
25	4 - 14	8 - 28	12 - 42	16 - 56	4000	12	20	0.94	1.11	4.6	4.9	1.8
30	9 - 35	18 - 70	27 - 105	40 - 140	3000	15	25	1.63	1.78	11.5	12.5	3.9
40	19 - 65	38 - 130	57 - 195	78 - 260	2500	22	35*	3.03	3.45	26.3	28.4	7.7
50	35 - 110	80 - 220	120 - 330	160 - 440	2000	32	45	3.95	5.03	59.5	67.1	17.3

*For clutch Part No. for ordering refer bottom of page 34

*max bore achievable only with keyway according to DIN 6885 Sheet 3

CN Series types J & L - Dimensions

Clutch Size	A	B	C h ⁶	D	E	E'	F	G	G'	K'	L ²	L ³	P	R h ⁶	H'	H ²	P ³	M' min	M' max	S	T ²	V	V'	W	Z	CH' A/F
11	40	35	30	6xM3	2	21	5	4.5	3.0	7	24	40	45	17	-	-	-	6	12	25	2.1	29	45	13	0.8	5.5
16	47	42	37	6xM3	2	25	6	5.0	5.0	9.5	29	49	50	25	-	-	-	8	16	30	2.1	34	54	19	1.0	5.5
20	60	53	47	6xM4	3	31	7	5.0	5.0	9.5	33	58	65	30	-	-	-	9	16	30	2.1	38	63	19	1.2	5.5
25	77	69	62	6xM5	4	35	7.5	5.5	5.5	10	41	68	80	35	14.9	7.5	75	10	20	41	2.8	46	75	26	1.2	7.0
30	90	80	68	6xM6	5	40	8	6.5	6.5	11	47	77	95	40	17.4	7.5	90	15	30	57	4.0	57	87	31	1.5	10
40	106	90	80	6xM6	5	48	9	7.0	7.0	13	52	90	110	50	20.0	8.0	105	19	30	57	4.0	62	100	40	1.8	10
50	125	112	100	6xM8	5	60	11	7.5	7.5	15	59	109	130	65	23.5	9.0	125	32	50	74	4.0	69	119	29	2.0	10

For Limit Switch location and operation refer to page 29. Always use limit switch for long service life.

Standard Bore sizes available on J & L type clamping hubs, with respective maximum transmittable Torques

Clutch Size	Available Bore sizes in mm (Figures indicate max. transmittable Torque Nm)																				Bolt Torque Nm						
	6	8	9	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38		40	42	45	48	50	
11	13	18	20	23	25	28																				2.2	
16		28	30	34	37	41	48	51	54																		1.7
20		28	30	34	37	41	48	51	54																		1.7
25				65	70	75	90	95	100	115	120	130	140	150	160												3
30								95	100	115	160	180	190	210	220	240	260										10
40											240	260	290	310	320	360	390										10
40																		440	480	520	550					5.9	
50																		620	680	730	770	810	870	930	970	10	

Shaft tolerance required for correct operation is h⁶ up to 40mm dia., h⁷ for over 40mm.

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Series CP Safeguard Pneumatically operated Overload Clutch



CP Pneumatic Overload Clutches operating features

CP Clutches are zero backlash units which provide remote accurate adjustment of the overload torque by air pressure adjustment. The torque can be constantly adjusted throughout a production cycle providing optimum machine protection.

CP Overload Clutches can be integrated into complex control systems with substantial advantage in automatic machinery with continuous changes of operating conditions. A stop switch is integrated in the torque limiter detecting the axial movement of the unit in event of an overload, providing a signal to cut off the air feed, to disconnect the drive. When overloaded, the CP Clutch has no connection between drive and driven sides providing a long maintenance free service life. After the cause of the overload has been removed the clutch can be automatically re-engaged by resuming the air pressure. Standard finish on the clutches is black phosphate exterior, but can supply in Nickel plated.

Method of Operation

During normal operations, (fig. 1+2), the PC clutch transmits a backlash-free torque, proportional to the air pressure, from the input hub(1) to the output flange(18), through balls(16), forced by the air pressure on the moving flange(11) into the seats on the parts(1) and (18). A torque arm(5B) is required to avoid the rotation of the stator(5). When overload occurs(fig. 3), the input hub(1) and the output flange(18) disengage, and axial movement of the flange(11) against the air pressure activates the stop switch(14), which gives a signal to cut off the air; input and output of the clutch are then disconnected. CP units can be used as a clutch. The air pressure can be switched on or off, transmitting torque when on and remotely disconnecting the drive when not. CP clutches must be engaged under no load condition at slow speed or when stationary. Disengagement torque is proportional to air pressure, according to the torque/pressure diagram on the label on the clutch outer diameter. Filtered, oiled air kept at a constant pressure during normal operations will ensure the accuracy of the overload torque.

Fig.1

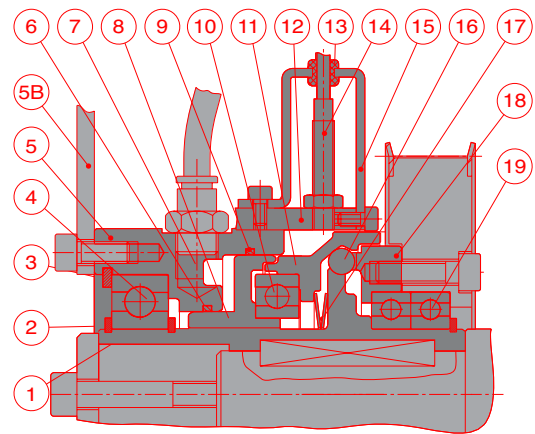
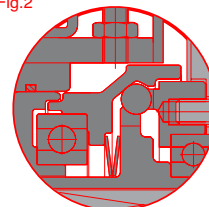
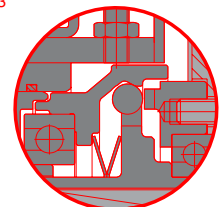


Fig.2



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Fig.3



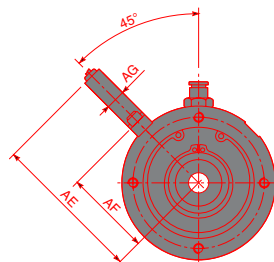
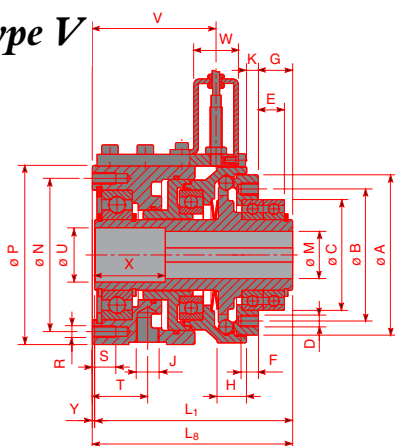
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Series CP Pneumatic Clutches and Couplings Technical Features

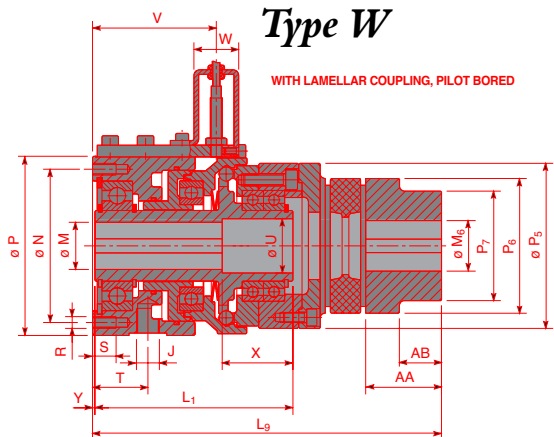
Clutch Size	Clutch Torque		Coupling Torque		Max Speed	Misalignment			Clutch Bore M		Coupling Bore M ⁶		Inertias kgcm ²		
	Min Nm	Max Nm	Nominal Nm	Max Nm		Axial mm	Radial mm	Angular deg	Min mm	Max mm	Min mm	Max mm	Hub Side	Type V Flange	Type W Coupling
V/W 20	3.8	47	35	70	5000	1.4	0.14	1	10	22*	8	28	0.28	0.17	3.07
V/W 25	15	80	95	190	4000	1.5	0.15	1	12	25	10	38	0.56	0.34	7.68
V/W 35	25	180	265	530	2500	2.0	0.19	1	15	35	14	55	2.12	0.90	37.01
V/W 45	50	250	310	620	2000	2.1	0.23	1	20	45	15	60	4.88	2.11	87.68
V/W 50	90	550	310	620	2000	2.1	0.23	1	20	55*	15	60	10.37	5.02	87.97

*d max with keyway according to DIN6885/3

Type V



Type W



Clutch Size	A	B	C	D	E	F	G	H	J	K	L ¹	L ²	L ³	N	P	P ⁵	P ⁶	P ⁷	R	S	T	U	V	W	X	Y	AA	AB	AE	AF	AG
20	68	56	47	6xM5	11	7	15	13	1/8"	5	85	85	148	65	76	70	55	-	4xM5	10	24	23	53	19	30	-	30	-	75	45	10
25	82	72	62	6xM5	24	6	28	13	1/8"	4	104	105	169	82	90	85	65	-	4xM4	8	29	26	60	22	40	1.0	35	-	85	51	15
35	102	92	80	6xM5	28	7	34	19	1/8"	4	125	126	194	102	115	115	95	85	4xM5	10	34	36	69	22	50	1.5	41	19	96	63	15
45	123	110	95	6xM6	30	8	36	23	1/8"	5	133	135	219	122	130	135	105	95	4xM5	10	37	46	71	22	55	2.0	53	29	104	71	15
50	151	139	110	6xM8	33	9	40	23	1/4"	6	151	153	247	140	160	157	105	95	4xM6	12	40	51	84	22	60	2.5	53	29	119	86	15