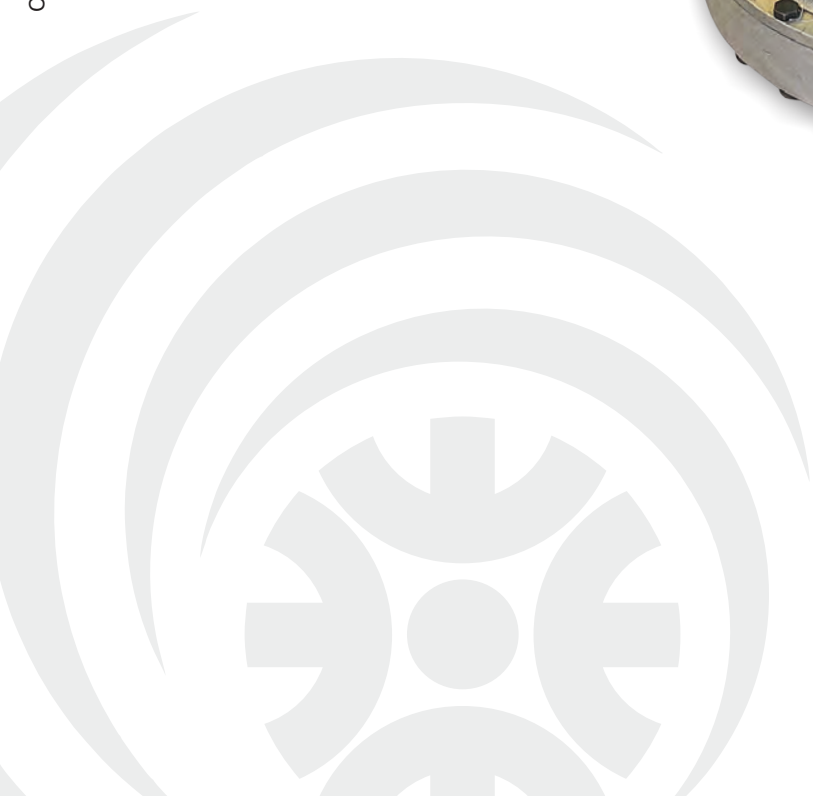


ELECON

TRACTION TYPE HYDROKINETIC FLUID COUPLING



Catalogue No.: 219/EECL/FLUID

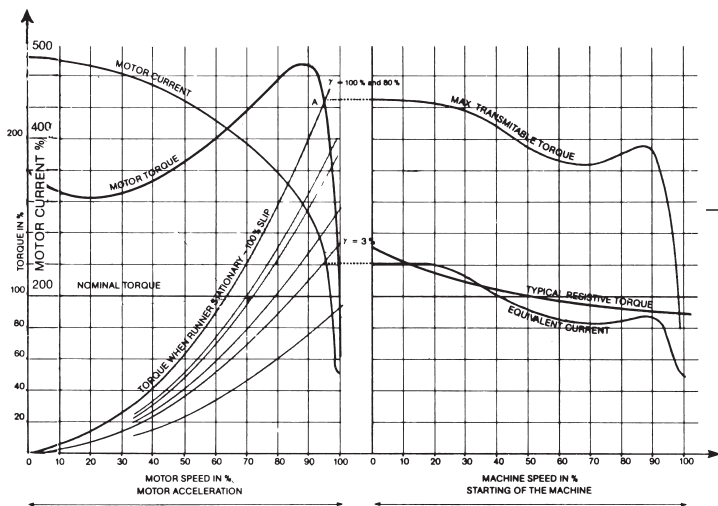
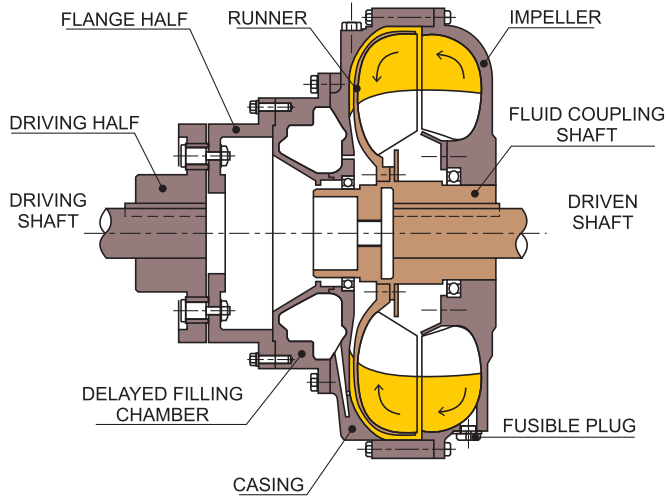


www.elecon.com



Hydrokinetic fluid couplings

SELECTION OF TRACTION TYPE FLUID COUPLINGS AS A FUNCTION OF POWER TRANSMITTED AND INPUT SPEED.



The graph shows how, with the use of fluid coupling demand during acceleration of the load is kept to an acceptable value: thus favouring the use of a squirrel cage motor. After switch-on, as the motor accelerates, the torque transmitted by the fluid coupling builds up according to curve OA in the lefthand graph while the output shaft is stationary. The motor thus has available a high surplus of torque and so accelerates to point a very rapidly.

The abrupt start usually associated with squirrel cage motor is cushioned by a fluid coupling. It assures a very smooth start and protects the machine in the event of jamming or overload: because the fluid coupling acts as a torque limiter the inertia of the motor rotor is not transmitted in a damaging way.

SELECTION TABLE							
POWER TRANSMITTED IN KW							
Motor speed (rpm)	750	960	1170	1450	1760	2950	
Fluid Coupling size							
185	0.20	0.45	0.75	1.5	3	5	
235	0.60	1.30	2.30	4.5	9	15	
270	1.10	2.50	4.50	9	17	28	
320	2.5	5.5	10	20	38	65	
370	5	12	22	42	85	130	
420	10	22	40	80	150	250	
480	20	40	75	155	250	500	
584	40	100	175	340	500	--	
660	80	180	310	600	700	--	
760	180	350	580	950	--	--	

When the fluid coupling is filled with oil to the appropriate level and the motor is switched on, oil in the passages between the vanes of the impeller is accelerated radially outwards gaining energy all the time until it reaches the maximum circuit diameter. The oil then passes from the impeller to the runner in which it is forced to move inwards between the vanes and as its radial velocity falls energy is transferred to the runner and output shaft. Because the oil passes directly from the impeller to the runner, (there is no reaction member, as in a torque converter), the efficiency is high, with full load slips of between 2 and 5 % being achieved in practice and depending on the application and size selection.

Windage and oil circulation losses are negligible therefore efficiency equals 100% slip %. Should an overload occur the fluid coupling will stall, i.e. slip 100 % at a torque value determined by the initial oil filling level. Thus motor and machine are both protected.

ELECON hydrokinetic constant filling fluid couplings have the following advantages :

PERFORMANCE

The level of performance achieved by Fluid Coupling is governed mainly by the design of its working circuit which includes the shape of the circuit, number of vanes in the circuit, the vanes placement etc.

The working circuit developed by Elecon is out of number of years of experience in the field and is vital in the performance of the fluid coupling. Elecon Fluid couplings are very rugged in construction, simple in design and reliable in operation.

REDUCED STARTING CURRENT

When Elecon fluid coupling is connected to the drive system it allows the motor to start practically at no load. This results in reduced starting current enabling quick start and acceleration of the drive motor.

SOFT START

It gives gradual start to driven equipment and thus provides smooth and shockless transmission.

LOW MAINTENANCE COST

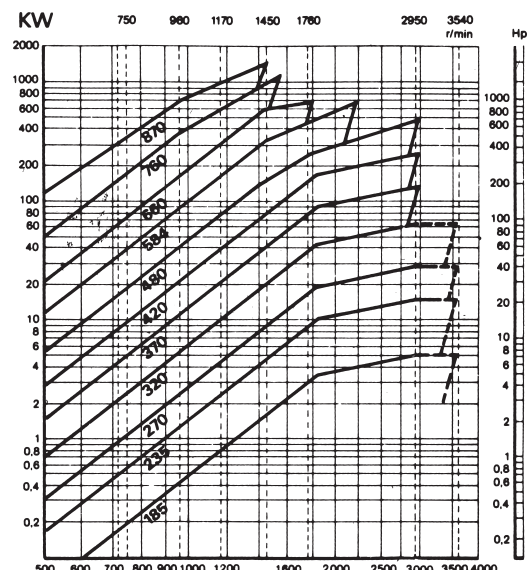
Driving and driven equipments suffer less wear and tear and thus there is reduction in electrical and mechanical maintenance cost.

PROTECTION TO MOTOR AND MACHINE

In case of overload, accidental jamming, the transmission torque is limited by the fluid coupling and thereby providing protection to the electric motor and the connected machine.

In case of extended jamming period, fusible plug blow off will empty the fluid coupling thereby disconnecting the output from the input, and protecting both driving and driven equipment.

To prevent the loss of oil and to have an additional safety device, thermal trig switch can be provided when demanded in addition to the fusible plug.



The table shows maximum power ratings for each size of fluid coupling at different motor speeds. The chart may be used for preliminary size selection when drive power and motor speeds are known. When electric motors are being used the selection chart allows twice motor full load torque for starting.



TRACTION TYPE FLUID COUPLINGS

Description

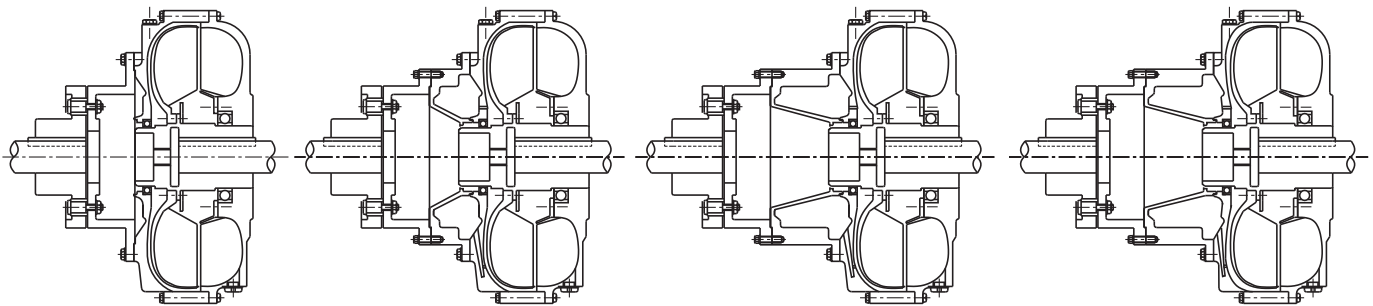
There are following types of ELECON traction couplings :

- CD : Coupling without delayed filling chamber
- CDR : Coupling with delayed filling chamber
- CDRP : Coupling with extended delayed filling chamber
- CDRS : Coupling with extended delayed filling chamber and controlled nozzles.

- Type CD consists of an impeller, driven by the motor and a runner, driving the output shaft, which together with a casing forms an oil tight unit. The working circuit includes a central "by pass" chamber which in conjunction with a baffle helps to limit the torque under conditions of high slip without sacrificing efficiency under normal running conditions.
- Type CDR includes in addition a delayed filling chamber attached to the casing and communicating with the working circuit by means of holes. This permits machines to start at reduced torque e.g. 1.4 times full load torque.
- Type CDRP has an extra large delayed filling chamber. This allows low starting torques (1.2 times full load torque) and low full load slip.
- Type CDRS has an extra large delayed filling chamber with controlled nozzles. This allows very low starting torques (0.6 times full load torque)

Fluid coupling types and mountings.

1. Model CDR-XR (hollow shaft):
An in-line arrangement with the hollow shaft of the fluid coupling generally fitted over the driven machine shaft. The connection to the motor is by means of a fully flexible coupling.
2. Model CDIR-XR (hollow shaft):
Reversed coupling with delayed filling chamber. It is possible in certain cases to mount the fluid coupling on the motor shaft with the flexible coupling on the output side, this is referred to as "reverse mounting" (model XR reversed).
3. Model PH (with "V-belt" pulleys):
This is a combination of fluid coupling and "V-belt" pulley.
PHR : fluid coupling mounted on motor shaft
PHM : fluid coupling mounted on machine shaft
4. Model CD/CDR - R:
Fluid coupling with solid shaft Also, an in-line arrangement which is mounted on the motor shaft and has a solid output shaft which facilitate the radial removal of fluid coupling without disturbing motor as well as machine. **There is a choice of flexible couplings & brake drum.**

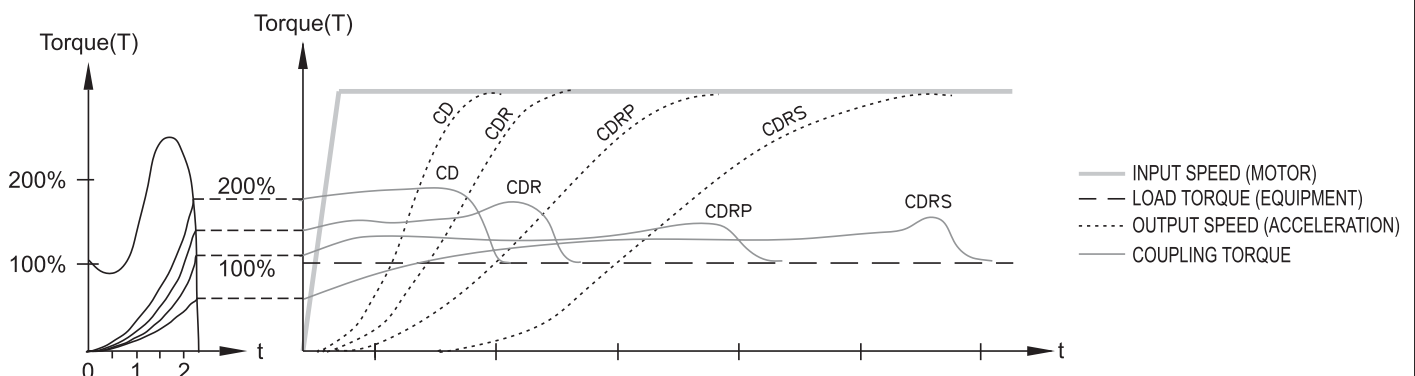


CD
"BASIC COUPLING"
The CD design without delay fill chamber is used for high inertia machines requiring a starting torque limited to 200% of nominal torque.

CDR
"SOFT START COUPLING"
The CDR design with standard delay fill chamber is used where the starting torque limitation down to 140% of nominal torque is required.

CDRP
"PROLONGED SOFT START COUPLING"
The CDRP design has a delay fill chamber of twice the volume of that of the CDR, and is used for belt conveyors where torque limitation down to 120% of nominal torque is required.

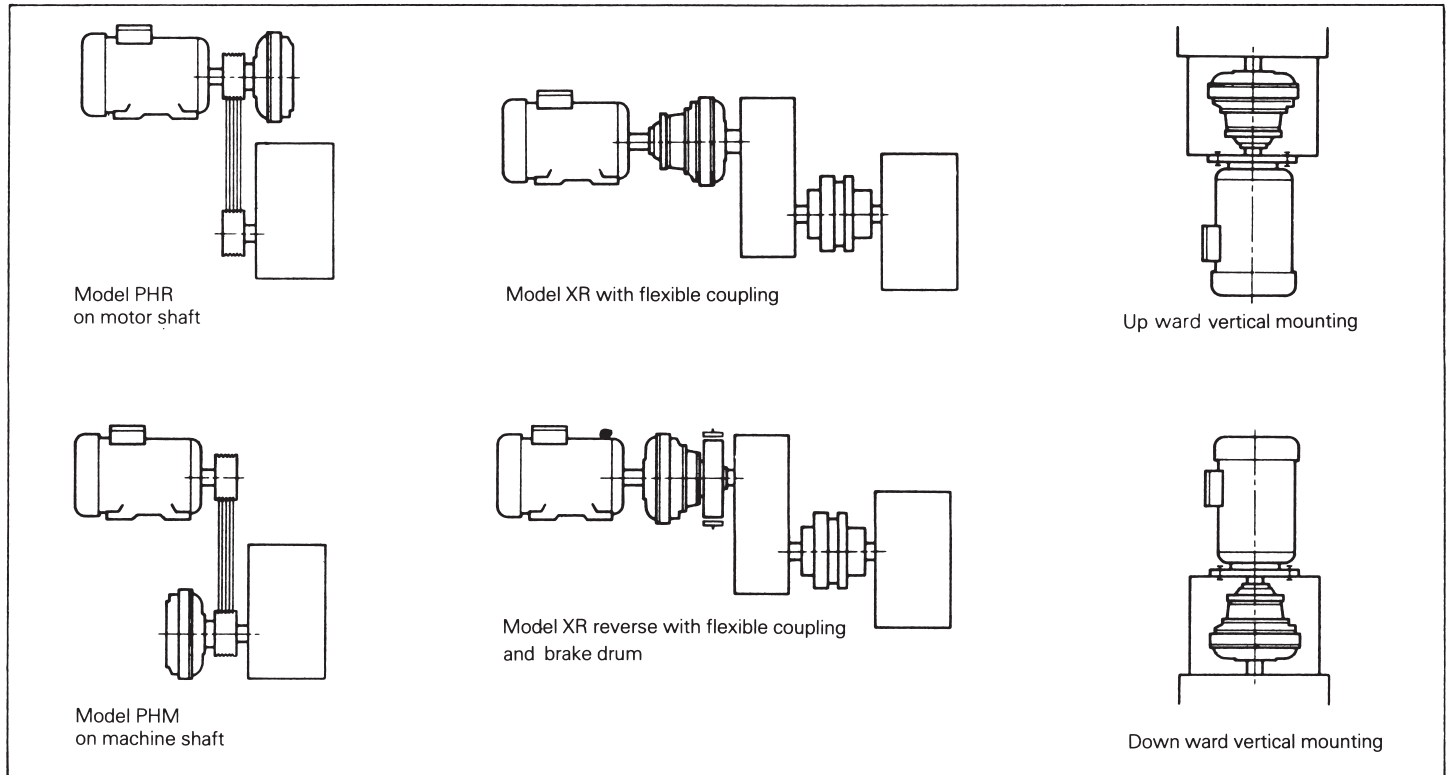
CDRS
"SUPER SOFT START COUPLING"
The CDRS design is used particularly on belt conveyors where the motor starting torque is limited to 60% of the nominal torque. It allows progressive tensioning of the belt before accelerating the load with a torque limitation down to 120% of nominal torque.



COMPARISON OF START - UP CHARACTERISTICS



Examples of mounting



ELECON

SOFT TOUCH GIVES YOU THE SOLUTION TO SIX MACHINE KILLING PROBLEMS

1. Soft starts

Start an empty conveyor with too much motor torque. You'll break belts. Damage idlers and wear the equipment out before its time. The soft start of the ELECON Fluid Coupling controls torque, allowing it to build up gradually without shock loads.

2. The right starting torque

A fully loaded crusher or mixer takes more torque to start than a standard squirrel cage motor can safely provide. An ELECON Fluid Coupling boosts the usable torque of the motor by as much as 200% and at the same time reduces current draw.

3. Protection of the motor

A motor slowly starting a big fan draws excessive current and is a source of electrical overload and failure. The ELECON Fluid Coupling allows the motor to quickly accelerate to full speed, reducing current draw to normal levels in seconds.

4. Shock absorption

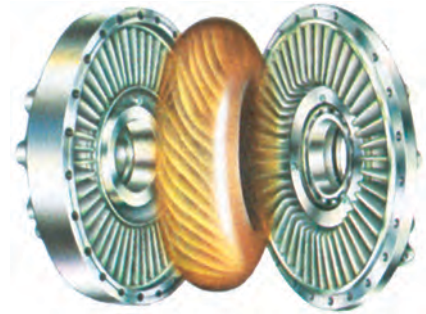
A jam in the system can create torque loads ten times the nominal. Equipment will break. The ELECON Fluid Coupling will absorb this machine killing shock.

5. Perfectly balanced motor loading

Two or more motors driving the same load are nearly impossible to balance. But, with ELECON Fluid Coupling, you can balance the load easily by adjusting the amount of fluid in the coupling.

6. Elimination of unwanted vibrations

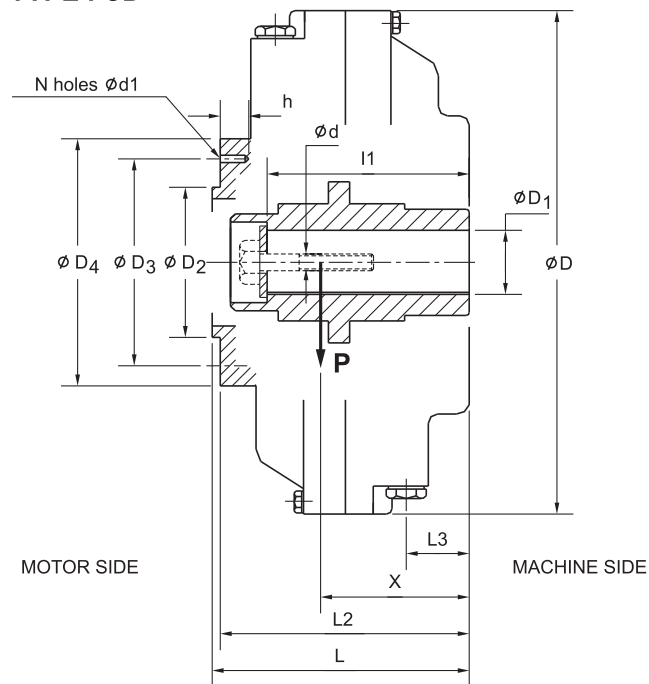
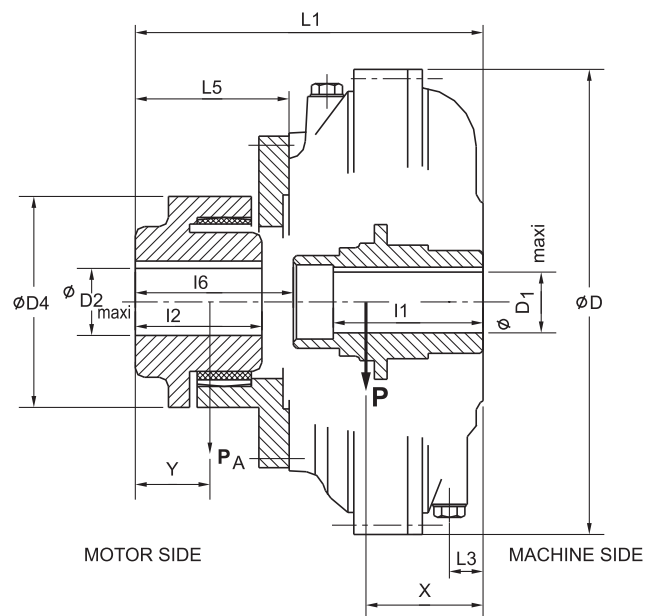
When the motor and driven machinery vibrate together, the resonance can cause severe damage. The ELECON Fluid Coupling dampens out the unwanted vibrations.



ELECON Fluid coupling



ELECON Fluid Coupling installed with Crusher drive at Gandhinagar T.P.S.


TYPE : CD

TYPE : CD WITH EV


FLUID COUPLING		SIZE	185	235
FLUID COUPLING	J (kgm ²)	INPUT	0.003	0.009
		OUTPUT	0.025	0.060
	WEIGHT P (DRY)	kg	7	12
	x	mm	75	102
		D	225	275
		D1	38	42
		D2	71	82
		D3	97	113
		D4	110	135
		L	116	140
		L2	114	136
		l1	85	112
		N	8	6
		d1	M5	M6
		L3	26	34
		h	14	18

FLUID COUPLING FLEXIBLE COUPLING			SIZE	185	235
			TYPE	EV-75	EV-85
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm ²)	FLUID COUP.		0.030	0.065
		FLEXIBLE COUP.		0.003	0.009
	TOTAL WEIGHT (DRY)= P + P _A	P	kg	7	12
		X	mm	75	102
		P _A	kg	2.5	3.0
		y	mm	23	25
			D	225	275
			D1	38	42
			D2	30	38
			D4	70	85
		L1	165	192	
		L5	51	56	
		I1	85	112	
		I2	45	45	
		L3	26	34	
		I6	55	58	

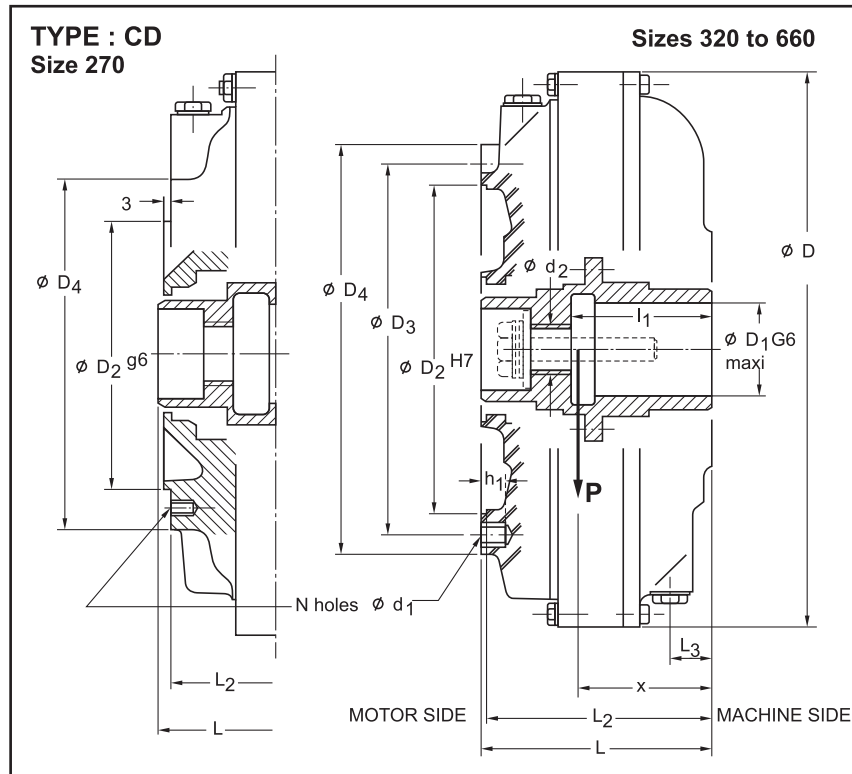


Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : XR (hollow shaft)

Sizes : 270-660

Type : CD



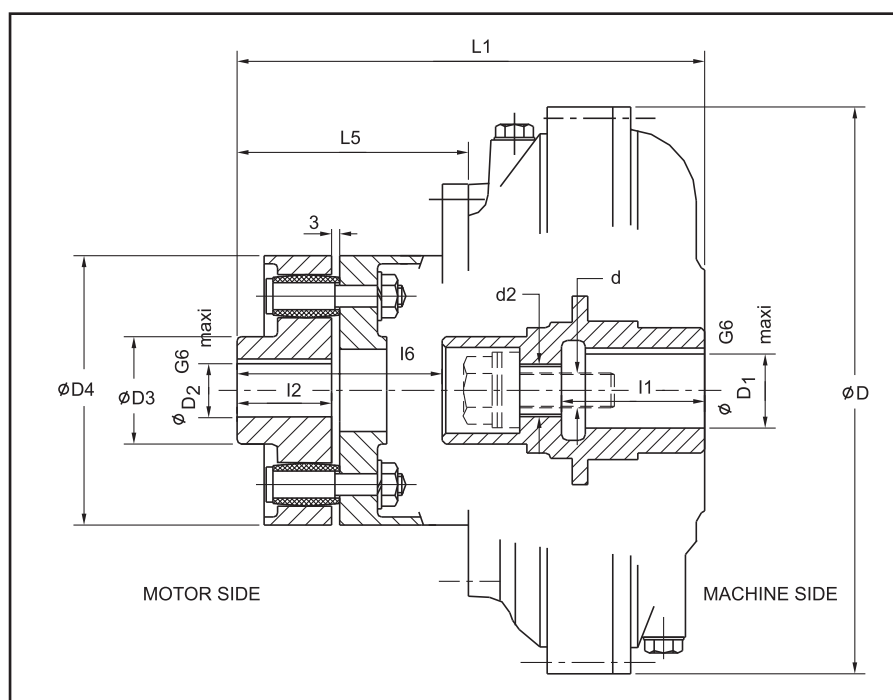
FLUID COUPLING		SIZE	270	320	370	420	480	584	660
TYPE CD	J INPUT	(kgm ²)	0.12	0.24	0.47	0.72	1.33	2.90	5.30
	OUTPUT		0.02	0.04	0.08	0.16	0.36	0.83	1.45
	WEIGHT P (DRY)	kg	15	24	33	47	68	120	170
	x	mm	75	90	95	103	115	136	155
	D2		150	215	245	280	320	385	445
	D3		172	250	280	320	366	432	500
	D4		194	274	306	348	392	468	540
	L		143	158	180	200	224	262	304
	L2		136	153	174	194	218	256	298
	N		6	12	12	12	12	12	12
	d1		M 8	M10	M12	M12	M12	M14	M14
	h1		12	18	18	18	18	21	21
	D		315	365	425	475	550	670	760
	D1		55	60	65	80	90	110	120
	L3		25	25	29	37	37	49	55
	I1		100	110	110	120	155	170	200
	TAPPED HOLE	d2	1"BSP	1"BSP	1"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

TRACTION TYPE MOUNTING : XR (hollow shaft)

Sizes : 270-660

Type : CD with flexible coupling CDF



FLUID COUPLING FLEXIBLE COUPLING			SIZE	270	320	370	420	480	584	660
			TYPE	CDF5 ¹ / ₂	CDF6	CDF7	CDF9	CDF10	CDF13	CDF14
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm2)	FLUID COUP.	0.14	0.28	0.55	0.88	1.69	3.73	6.75	
		FLEXIBLE COUP.	0.02	0.04	0.08	0.16	0.36	0.83	1.45	
	TOTAL Wt(DRY)	FLUID COUP. kg.	15	24	33	47	68	120	170	
		FLEXIBLE COUP. kg.	9.5	17	24	37	47	88	135	
D D1 D2 D4 L1 L5 I1 I2 I6 TAPPED HOLE D2 D3 d			315	365	425	475	550	670	760	
			55	60	65	80	90	110	120	
			40	48	60	80	90	110	120	
			152.4	165.1	190.5	241.3	266.7	342.9	368.3	
			245	285	337	371	412	481	576.6	
			109	127	157	171	188	219	272	
			100	110	110	120	155	170	200	
			44.5	48	60	82.5	95	108	120	
			100	105	137	151	167	192	241	
			1"BSP	1"BSP	1"BSP	1 ¹ / ₄ "BSP	1 ¹ / ₄ "BSP	1 ¹ / ₄ "BSP	1 ¹ / ₄ "BSP	
			63.5	73	92	124	143	165	190	
			AS PER THREADED HOLE IN THE SHAFT							

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

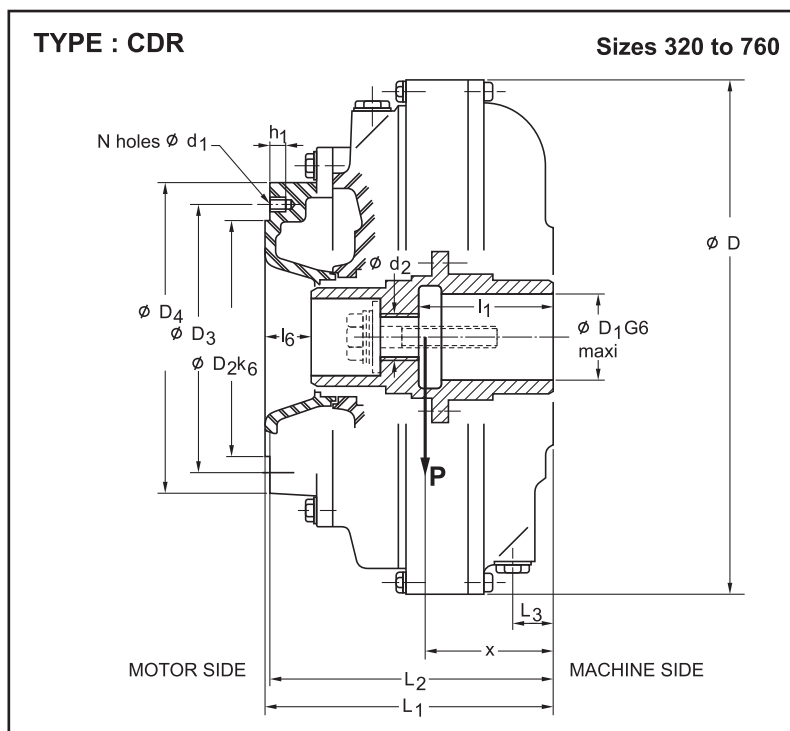


Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : XR (hollow shaft)

Sizes : 320-760

Type : CDR



FLUID COUPLING	SIZE	320	370	420	480	584	660	760
J (kg.m ²)	INPUT	0.25	0.48	0.74	1.35	2.95	5.40	9.5
	OUTPUT	0.04	0.08	0.16	0.36	0.83	1.45	2.6
WEIGHT P (DRY)	Kg	26	36	51	74	128	180	250
x	mm	110	116	135	155	172	200	222
	D2	170	195	220	265	315	360	420
	D3	195	228	265	310	360	420	480
	D4	220	252	290	330	392	468	530
	L1	206	228	260	300	336	389	449
	L2	203	225	257	297	333	385	445
	l6	26	28	40	55	47	54	54
	N	6	8	8	12	16	16	20
	d1	M12	M12	M12	M12	M12	M14	M16
	h1	18	18	18	18	18	21	36
	D	365	425	475	550	670	760	870
	D1	60	65	80	90	110	120	135
	L3	25	29	37	37	49	55	49
	l1	110	110	120	155	170	200	240
	TAPPED HOLE d2	1"BSP	1"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



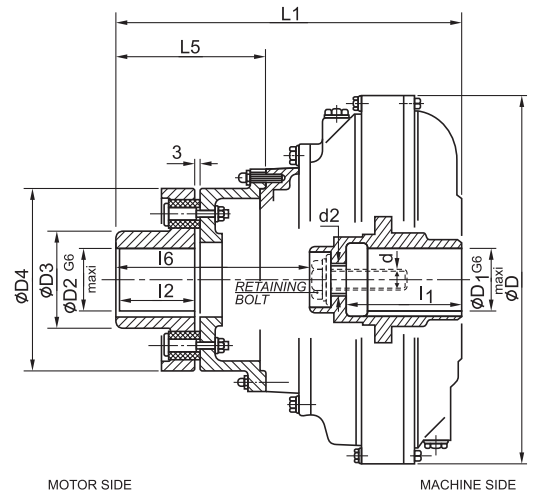
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : XR (hollow shaft)

Sizes : 320-760

Type : CDR with flexible coupling FCF

FLUID COUPLING		SIZE	320	370	420	480	584	660	760
FLEXIBLE COUP.		TYPE	FCF6	FCF7	FCF9	FCF10	FCF13	FCF14	FCF16
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm ²)	FLUID COUP.	0.28	0.55	0.88	1.70	3.75	6.50	12.10
		FLEX. COUP.	0.09	0.17	0.35	0.51	1.93	4.80	7.00
TOTAL Wt. (DRY)		FLUID COUP.kg	28	38	53	78	135	192	262
		FLEX. COUP.kg	14	21	32	40	78	120	150
		D	365	425	475	550	670	760	870
		D1	60	65	80	90	110	120	135
		D2	48	60	80	90	110	120	135
		D4	165.1	190.5	241.3	266.7	342.9	368.3	419.1
		L1	330	382	428	485	552	656	718
		L5	127	157	171	188	219	272	273
		I1	110	110	120	155	170	200	240
		I2	48	60	82.5	95	108	120	146
		I6	150	182	208	240	263	321	344
TAPPED HOLE		d2	1" BSP	1" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP
		D3	73	92	124	143	165	190	235
		d	AS PER THREADED HOLE IN THE SHAFT						

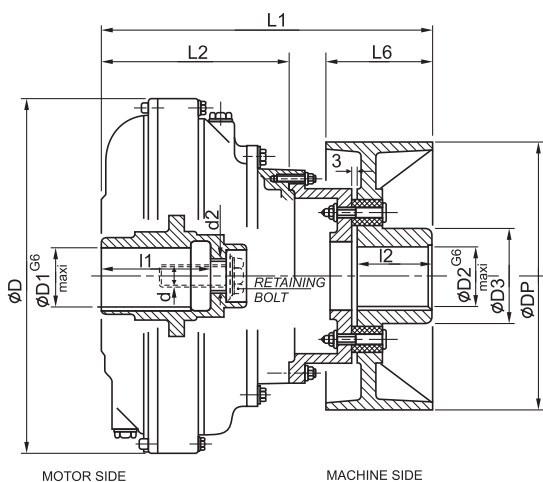


Hydrokinetic fluid couplings

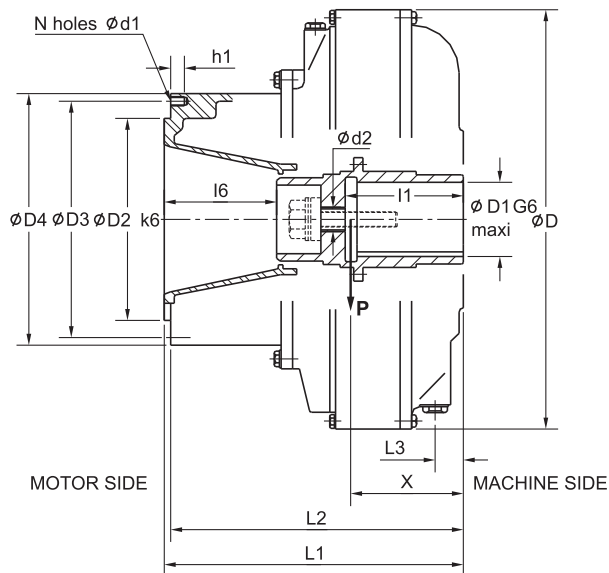
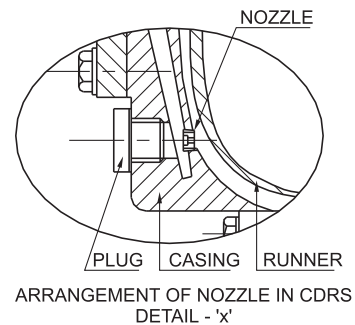
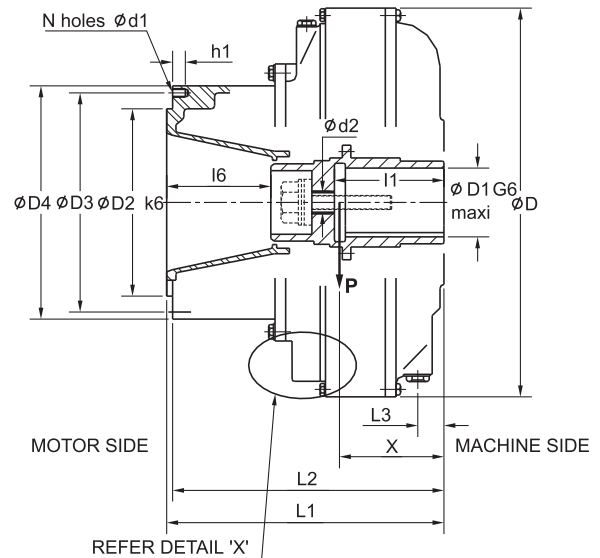
TRACTION TYPE MOUNTING : XR (hollow shaft - reverse mounting)

Sizes : 320-760

Type : CDR with flexible brake drum coupling FCFB



FLUID COUPLING		SIZE	320	370	420	480	584	660	760
BREAK DRUM		DIA	250	315	400	500	630	800	

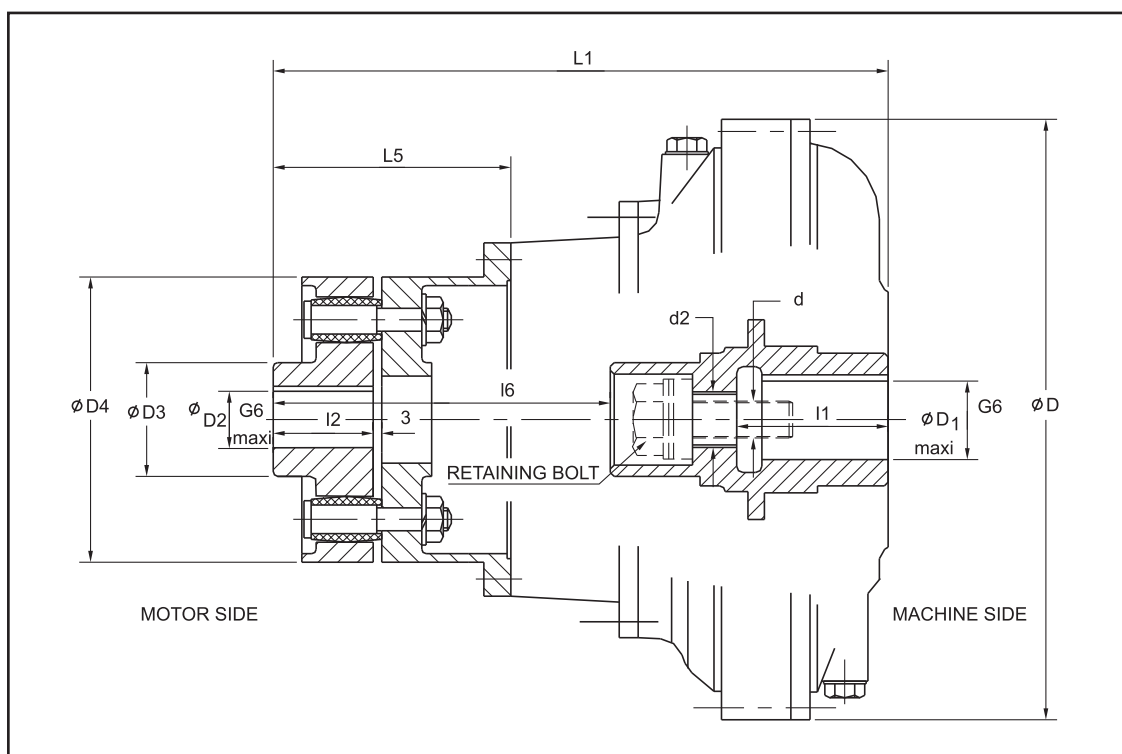

TYPE : CDRP - 370 TO 760

TYPE : CDRS - 420 TO 760


COUPLING	SIZE	370	420	480	584	660	760
J (kgm ²)	INPUT	0.51	0.8	1.46	3.2	5.85	10.3
	OUTPUT	0.08	0.16	0.36	0.83	1.45	2.6
WEIGHT P (DRY) x	kg	38	54	78	135	190	265
	mm	120	142	165	180	210	235
	D	425	475	550	670	760	870
	D1	65	80	90	110	120	135
	D2	195	220	265	315	360	420
	D3	228	265	310	360	420	480
	D4	252	290	330	392	468	530
	L1	263	339	387	433	499	572
	L2	260	336	384	430	495	568
	L3	29	37	37	49	55	49
	l1	110	120	155	170	200	240
	l6	63	119	142	144	164	177
	N	8	8	12	16	16	20
	d1	M12	M12	M12	M12	M14	M16
	h1	18	18	18	18	21	36
	TAPPED HOLE d2	1"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

TRACTION TYPE MOUNTING : XR (hollow shaft)

Types : CDRP - 370 TO 760 with flexible coupling FCF and
CDRS - 420 TO 760 with flexible coupling FCF



FLUID COUPLING (CDRP / CDRS)			SIZE	370	420	480	584	660	760
FLEXIBLE COUPLING			TYPE	FCF7	FCF9	FCF10	FCF13	FCF14	FCF16
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm ²)	FLUID COUP.		0.59	0.96	1.82	4.03	7.3	12.9
		FLEXIBLE COUP.		0.17	0.35	0.51	1.93	4.80	7.00
	TOTAL	FLUID COUP. kg	38	53	78	135	192	262	
	Wt. (DRY)	FLEXIBLE COUP. kg	21	32	40	78	120	150	
TAPPED HOLE			D	425	475	550	670	760	870
			D1	65	80	90	110	120	135
			D2	60	80	90	110	120	135
			D4	190.5	241.3	266.7	342.9	368.3	419.1
			L1	417	507	572	649	766	841
			L5	157	171	188	219	272	273
			I1	110	120	155	170	200	240
			I2	60	82.5	95	108	120	146
			I6	217	287	327	360	431	446
			d2	1" BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP
			D3	92	124	143	165	190	235
			d	AS PER THREADED HOLE IN THE SHAFT					

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

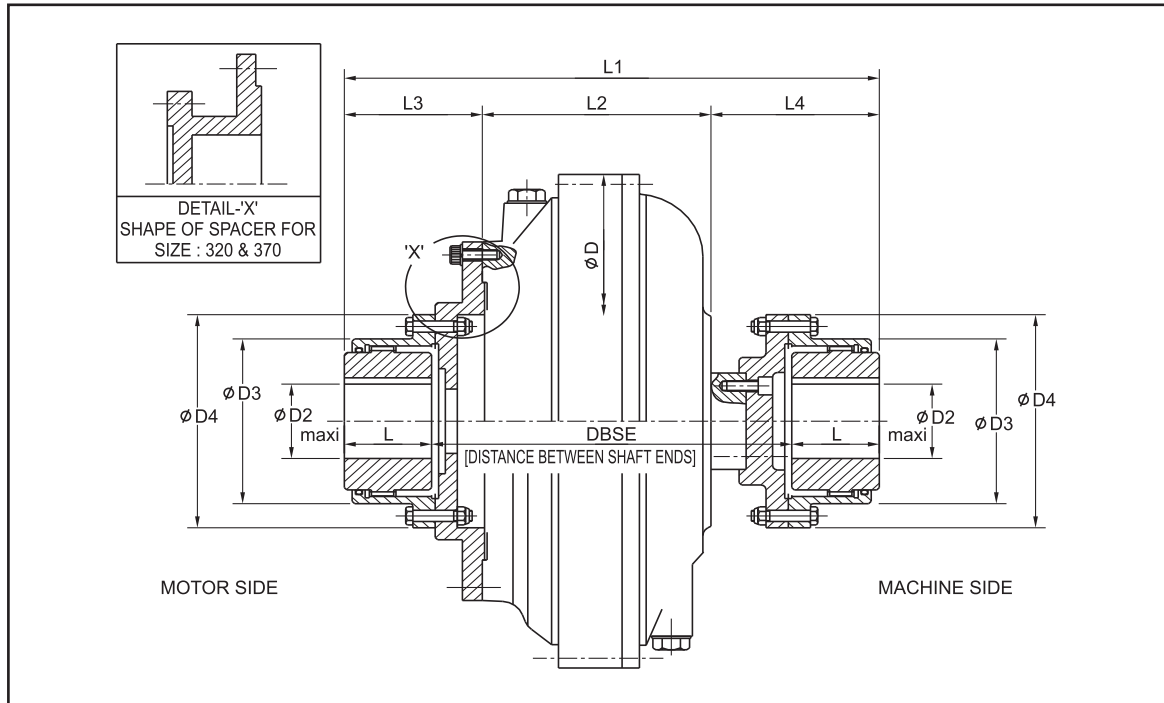


Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : R (solid shaft - radially removable)

Sizes : 320-660

Type : CD-R with elign gear coupling ED



TYPE & SIZE	FLUID COUPLING		CD-R	320	370	420	480	584	660	
	ELIGN GEAR COUPLING		ED	500	1000	1000	1600	2200	3200	
FLUID COUPLING + GEAR COUPLING	J (kgm ²)	FLUID COUPLING		0.3	0.6	0.96	1.85	4.1	7.43	
		GEAR COUPLING	INPUT	0.08	0.14	0.27	0.48	1.22	2.25	
			OUTPUT	0.02	0.09	0.09	0.16	0.36	0.66	
	TOTAL Wt (DRY) (kg)	FLUID COUPLING		27	36	52	75	132	187	
		GEAR COUPLING	INPUT	14	25.2	27	37	65	90	
			OUTPUT	11	21	21	28	44	67	
	D D2 D3 D4 L DBSE L1 L2 L3 L4				365	425	475	550	670	760
					75	95	95	110	130	155
				129.5	156	156	181	209	247	
				171	210	210	234	274	312	
				62	76	76	90	105	120	
				306	351	366	357	416	475	
				430	503	518	537	626	715	
				158	180	200	224	262	304	
				148	171	155	144	168	192	
				124	152	163	169	196	219	

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

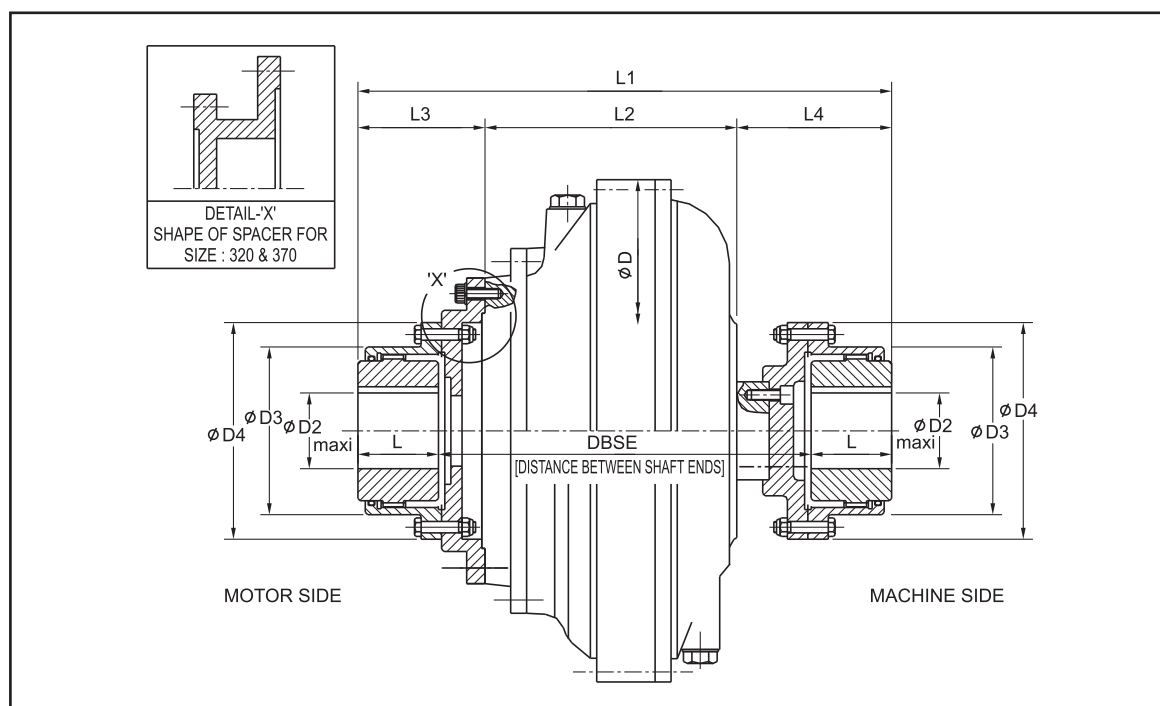


Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : R (solid shaft - radially removable)

Sizes : 320-760

Type : CDR-R with elign gear coupling ED



TYPE & SIZE	FLUID COUPLING		CDR-R	320	370	420	480	584	660	760
	ELIGN GEAR COUPLING		ED	500	1000	1000	1600	2200	3200	4500
FLUID COUPLING + FLUID COUPLING	J (kgm ²)	FLUID COUPLING		0.32	0.62	0.99	1.88	4.15	7.54	13.30
		GEAR COUPLING	INPUT	0.05	0.13	0.19	0.34	0.70	1.52	2.53
			OUTPUT	0.02	0.09	0.09	0.16	0.36	0.66	1.01
	TOTAL Wt(DRY) (kg)	FLUID COUPLING		29	40	56	81	141	198	275
		GEAR COUPLING	INPUT	13	23	24	33	47	78	104
			OUTPUT	11	21	21	28	44	67	86
D				365	425	475	550	670	760	870
D2				75	95	95	110	130	155	175
D3				129.5	156	156	181	209	247	273
D4				171	210	210	234	274	312	337
L				62	76	76	90	105	120	135
DBSE				351	396	423	430	487	555	635
L1				475	548	575	610	697	795	905
L2				203	225	257	297	333	384	445
L3				148	171	155	144	168	192	210
L4				124	152	163	169	196	219	250

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



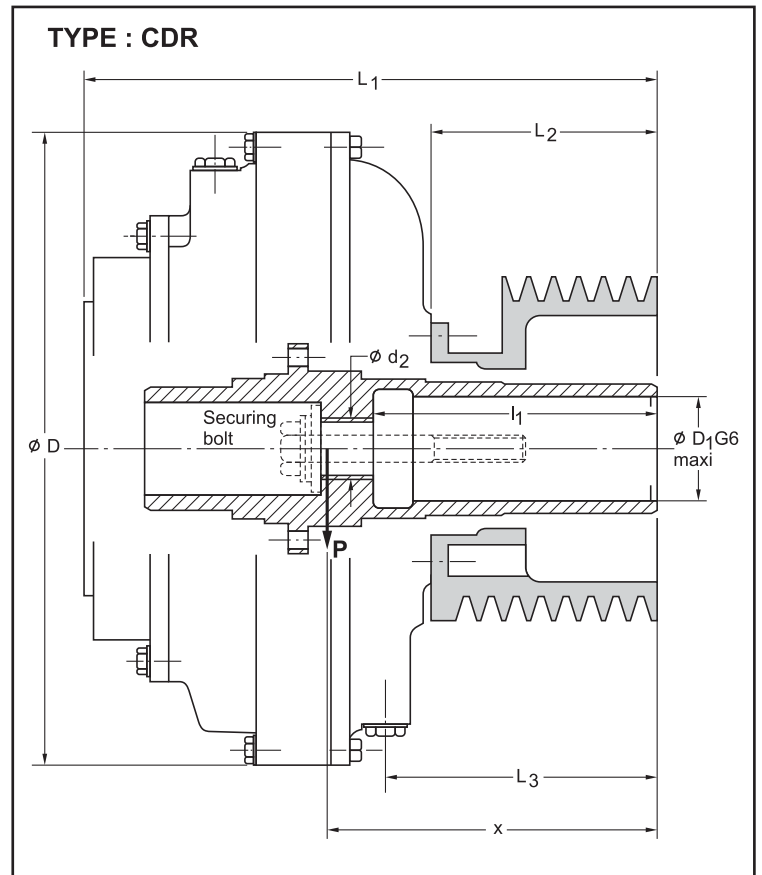
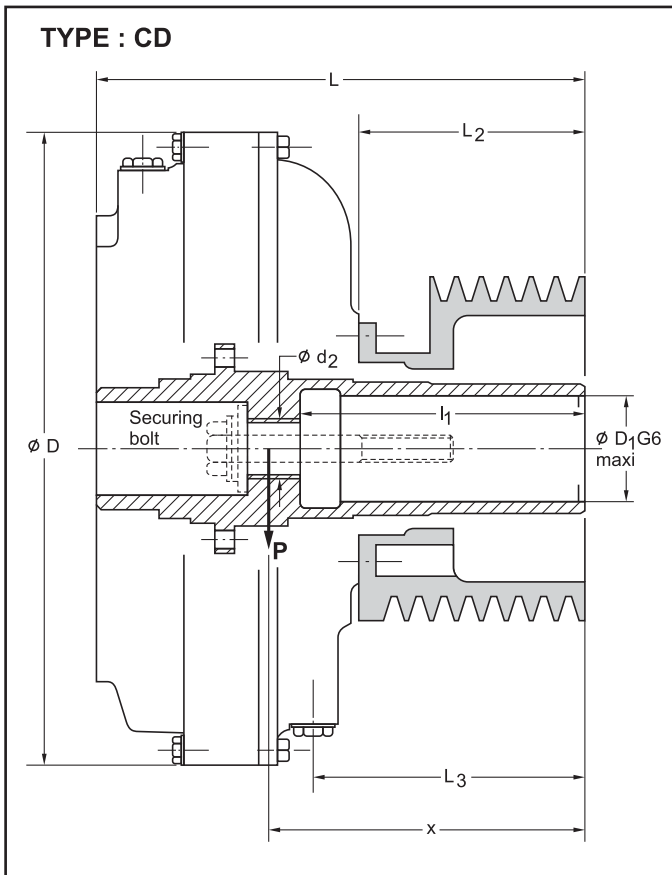
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : PH (V-BELT PULLEY)

Sizes : 270 to 370

Types : CD and CDR

Mounting : • On motor shaft - (PHR)
• On machine shaft - (PHM)



FLUID COUPLING		SIZE	270	320	370
TYPE CD	J* (kgm ²)	INPUT	0.02	0.04	0.07
		OUTPUT	0.12	0.24	0.47
	WEIGHT P (dry and without pulley)	kg	17	26	36
	x	mm	140	168	200
	L	mm	251	273	322
TYPE CDR	J* (kgm ²)	INPUT	-	0.04	0.07
		OUTPUT	-	0.25	0.48
	WEIGHT P (dry and without pulley)	kg	-	29	40
	x	mm	-	180	210
	L1	mm	-	320	370
		D	315	365	425
		D1	50	55	60
		L2	110	115	140
		L3	135	142	167
		l1	164	165	190
		d2	1"BSP	1"BSP	1"BSP

J* values of inertia for PHR

For PHM the values of inertia are reversed for primary and secondary parts.

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.

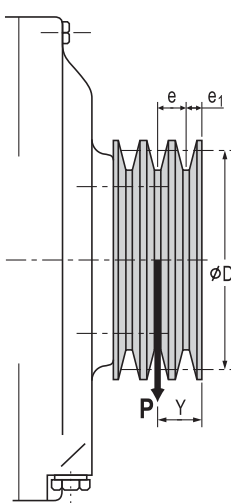


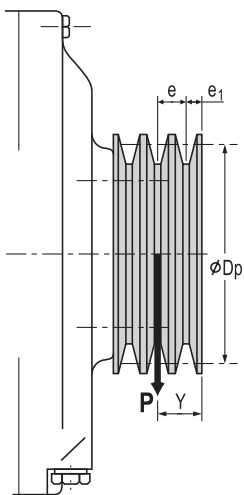
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : PH

Sizes : 270 to 370

Profile of grooves : SPA-SPB-SPC

Size Coupling (mm)	Profile groove	N° grooves	*Sym-bols	PITCH CIRCLE DIAMETER Dp																												
				140	150	160	170	180	190	200	212	224	236	250	265	280	300	315	335	355												
270	SPA	3	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45	<table><tr><td>Profile type</td><td>SPA 13x8</td><td>SPB 17x11</td><td>SPC 22x14</td></tr><tr><td>e</td><td>15</td><td>19</td><td>25</td></tr><tr><td>e1</td><td>9</td><td>11</td><td>15</td></tr></table>						Profile type	SPA 13x8	SPB 17x11	SPC 22x14	e	15	19	25	e1	9	11	15	
		Profile type	SPA 13x8	SPB 17x11	SPC 22x14																											
		e	15	19	25																											
	e1	9	11	15																												
	4	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																				
	5	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																				
	SPB	2	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45	<table><tr><td colspan="4">For other profiles refer to ELECON</td></tr><tr><td colspan="4">*J = kgm² P = kg Y = mm</td></tr></table>						For other profiles refer to ELECON				*J = kgm ² P = kg Y = mm								
		For other profiles refer to ELECON																														
		*J = kgm ² P = kg Y = mm																														
3	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																					
4	J P Y	0.021 5.8 45	0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																					
SPC	2	J P Y		0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																				
	3	J P Y		0.029 7.4 45	0.04 9.1 45	0.052 11 45	0.067 13 45	0.084 15 45	0.10 17 45	0.14 20 45	0.17 23 45	0.21 26 45																				
320	SPA	3	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63	<table><tr><td>Profile type</td><td>SPA 13x8</td><td>SPB 17x11</td><td>SPC 22x14</td></tr><tr><td>e</td><td>15</td><td>19</td><td>25</td></tr><tr><td>e1</td><td>9</td><td>11</td><td>15</td></tr></table>		Profile type	SPA 13x8	SPB 17x11	SPC 22x14	e	15	19	25	e1	9	11	15
		Profile type	SPA 13x8	SPB 17x11	SPC 22x14																											
		e	15	19	25																											
	e1	9	11	15																												
	4	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63															
	5	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63															
	SPB	2	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63														
		3	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63														
		4	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63														
SPC	2	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63															
	3	J P Y			0.039 8.8 56	0.052 11 56	0.067 13 56	0.085 15 56	0.11 17 56	0.14 20 63	0.17 23 63	0.22 26 63	0.27 30 63	0.34 34 63	0.42 39 63	0.55 46 63	0.67 52 63															
370	SPA	4	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		5	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		6	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
	SPB	3	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		4	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		5	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
	SPC	6	J P Y										0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		3	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
		4	J P Y					0.081 15 60	0.10 17 60	0.13 20 60	0.17 24 60	0.21 27 60	0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73												
SPC	5	J P Y										0.31 31 73	0.40 37 73	0.51 43 73	0.64 50 73	0.85 60 73	1.0 67 73	1.3 78 73	1.7 90 73													



Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



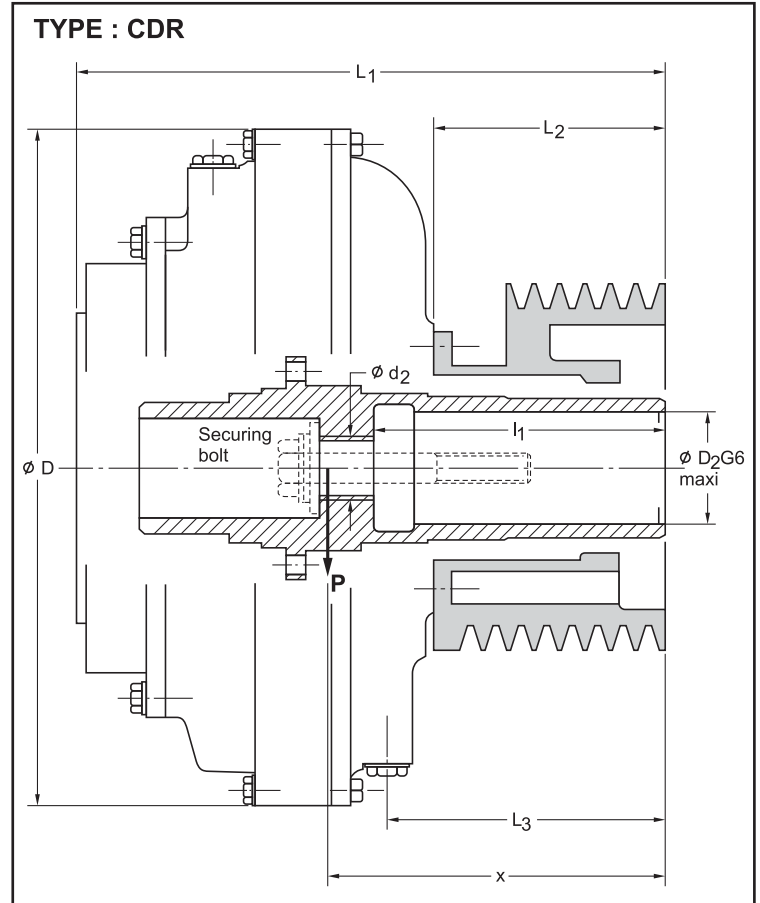
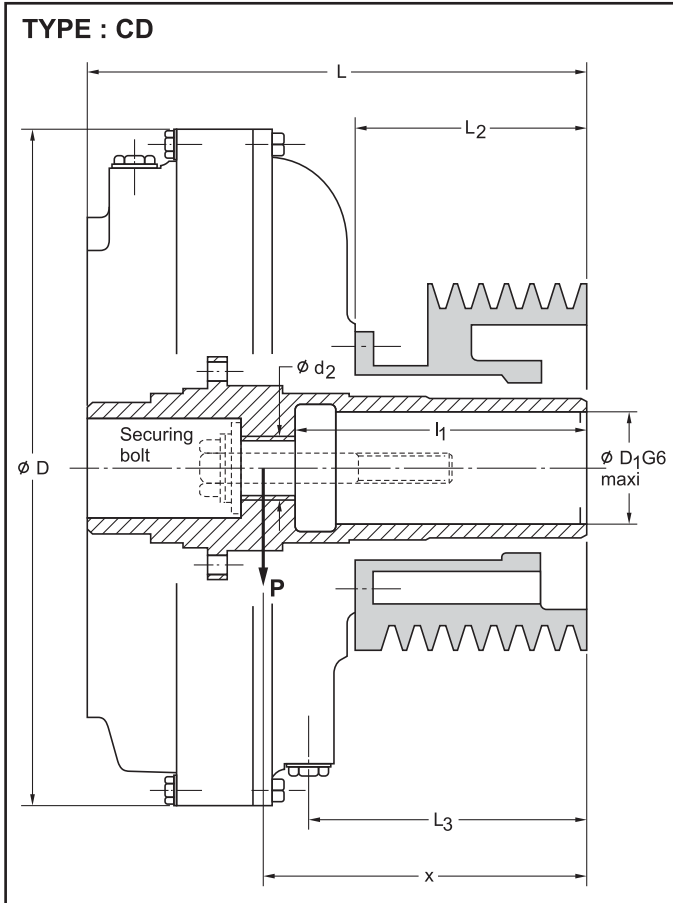
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : PH (V-BELT PULLEY)

Sizes : 420 to 584

Types : CD and CDR

Mounting : • on motor shaft (PHR)
• on machine shaft (PHM)



FLUID COUPLING		SIZE	420	480	584
TYPE CD	J* INPUT	(kgm ²)	0.16	0.36	0.83
	OUTPUT		0.70	1.30	2.90
	WEIGHT P (dry and without pulley)	kg	51	72	125
	x	mm	236	280	290
	L	mm	368	427	467
TYPE CDR	J* INPUT	(kgm ²)	0.16	0.36	0.83
	OUTPUT		0.74	1.35	2.95
	WEIGHT P (dry and without pulley)	kg	56	75	134
	x	mm	250	305	320
	L1	mm	428	503	541
		D	475	550	670
		D1	75	80	100
		L2	170	205	205
		L3	205	240	254
		l1	215	252	290
TAPPED HOLE		d2	1-1/4"BSP	1-1/4"BSP	1-1/4"BSP

J* values of inertia for PHR
For PHM the values of inertia are reversed for primary and secondary parts.

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



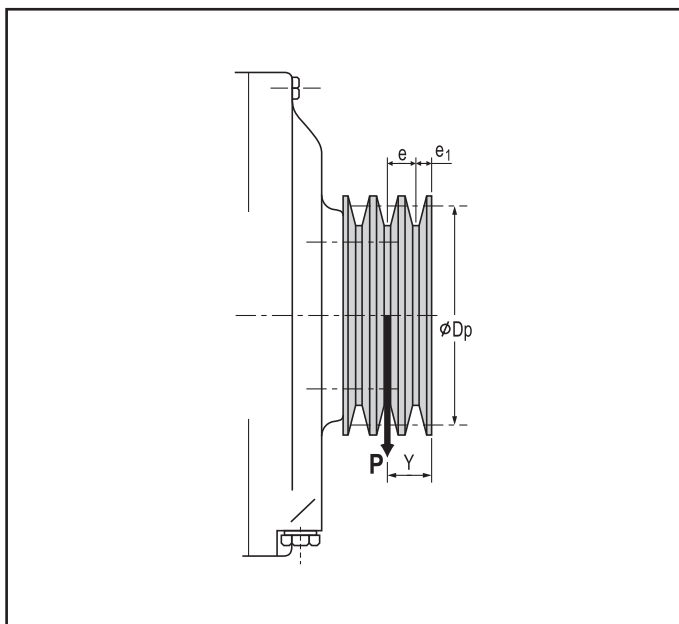
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : PH

Sizes : 420 to 584

Profile of grooves : SPB-SPC

Size coupling (mm)	Profile groove	N° grooves	*Sym-bols	PITCH CIRCLE DIAMETER D _p													
				200	212	224	236	250	265	280	300	315	335	355	400	450	
420	SPB	4	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
		5	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
		6	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
	SPC	3	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
		4	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
		5	J P Y	0.15 21 70	0.19 25 70	0.25 30 70	0.31 35 70	0.40 41 70	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
		6	J P Y					0.47 45 90	0.59 54 90	0.74 62 90	0.99 74 90	1.20 83 90	1.55 97 90	1.95 112 90			
	SPB	6	J P Y					0.47 46 82	0.60 53 82	0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110		
		8	J P Y					0.47 46 82	0.60 53 82	0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110		
		10	J P Y						0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110			
480	SPC	5	J P Y	0.47 46 82	0.60 53 82	0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110						
		6	J P Y	0.47 46 82	0.60 53 82	0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110						
		8	J P Y			0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110						
	SPB	6	J P Y					0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110				
		8	J P Y					0.76 53 105	1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110				
		10	J P Y						1.07 68 105	1.34 79 105	1.36 62 110	1.88 80 110	3.40 122 110				
584	SPC	6	J P Y	0.51 52 110	0.63 55 110	0.76 52 110	1.07 65 110	1.34 70 110	1.36 60 110	1.88 75 110	3.40 120 110	5.20 175 110					
		8	J P Y						1.34 70 110	1.36 60 110	1.88 75 110	3.40 120 110	5.20 175 110				



Profile type	SPB 17 x 11	SPC 22 x 14	
e	19	25	
e1	11	15	

For other profiles refer to
ELECON

* J = kgm²
P = kg
Y = mm

Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



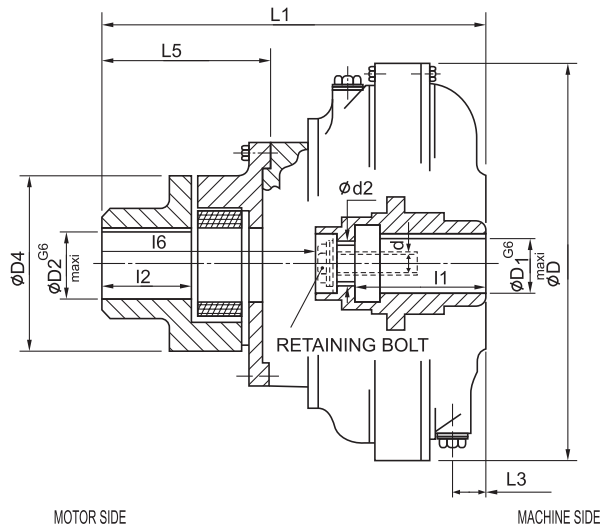
Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : XR (hollow shaft)

Sizes : 320 to 760

Type : CDR with flexible coupling EX

FLUID COUPLING			SIZE	320	370	420	480	584	660	760		
FLEXIBLE COUPLING			TYPE	EX65	EX75	EX95	EX110	EX125	EX140	EX140		
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm ²)	FLUID COUP.		0.28	0.55	0.88	1.70	3.75	6.50	12.1		
		FLEX. COUP.		0.07	0.13	0.26	0.53	1.11	2.70	3.47		
	TOTAL WEIGHT (DRY)	FLUID COUP.kg.		28	38	53	78	135	192	262		
		FLEX. COUP.kg.		14	22	33	50	78	128	141		
TAPPED HOLE			D	365	425	475	550	670	760	870		
			D1	60	65	80	90	110	120	135		
			D2	65	75	95	100	120	140	140		
			D4	170	200	230	260	300	360	360		
			L1	329.5	382	428	485	552	656	718		
			L3	25	29	37	37	49	55	49		
			L5	126.5	157	171	188	219	272	273		
			I1	110	110	120	155	170	200	240		
			I2	74.5	98.5	110	112.5	131.5	172	172		
			I6	149.5	181	200	237	261	300	322		
			d2	1" BSP	1" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP		
			d	AS PER THREADED HOLE IN THE SHAFT								

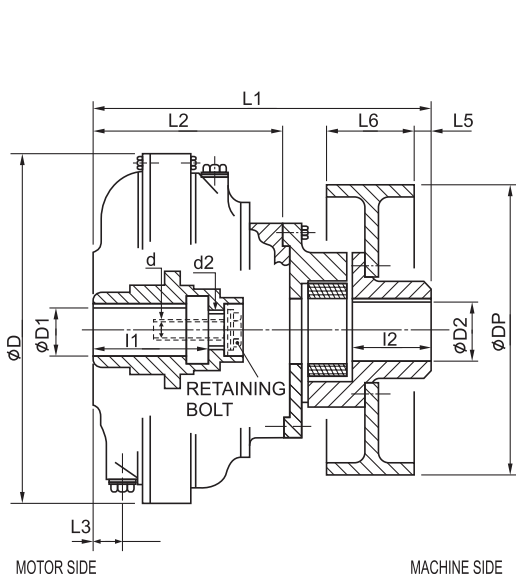


Hydrokinetic fluid couplings

TRACTION TYPE MOUNTING : XR (hollow shaft - reverse mounting)

Sizes : 320 to 760

Type : CDIR with flexible coupling EB



FLUID COUPLING			SIZE	320	370	420	480	584	660
----------------	--	--	------	-----	-----	-----	-----	-----	-----



DETERMINATION OF THE INITIAL OIL FILLING

Oil filling

The size of fluid coupling will have been chosen to suit the speed of rotation and the power to be transmitted the oil filling required will be dependent on :

- the power absorbed by the driven machine and
 - the required starting (or, stalling) torque.
- N.B.: The oil filling should never be allowed to exceed 80% of the total capacity of the fluid coupling when cold, because overfilling may cause excessive internal pressure and damage the seals.

To determine the amount of oil required :

Use

Table 3.a for CD (without delayed filling chamber)

Table 3.b for CDR (with delayed filling chamber)

Table 3.c for CDRP/CDRS (with extended delayed filling chamber)

Table 1

VALUE of X

(For Type CD, CDR, CDRP, CDRS)

Fluid coupling	Size	185	235	270	320	370	420	480	584	660	760
	Outside Diameter Dmm	225	275	315	365	425	475	550	670	760	870
SPEED IN R.P.M.	750	0.06	0.20	0.38	0.9	1.90	3.57	6.85	18.7	34.4	70
	900	0.10	0.34	0.66	1.56	3.27	6.17	11.9	32.3	59.4	120
	1000	0.14	0.47	0.91	2.15	4.48	8.45	16.3	44.2	81.5	165
	1200	0.25	0.82	1.60	3.75	7.50	14.70	28.5	77.3	142	280
	1500	0.49	1.62	3.14	7.40	15.50	29	56.2	153	280	(565)
	1800	0.85	2.80	5.43	12.8	26.80	50.1	97.1	264	(484)	-
	3000	3.91	12.9	25.20	59.3	123	-	-	-	-	-

Table 2

FILLING ANGLE α°		Table 2.a		Table 2.b		Table 2.c	
FILLING ANGLE α°	Coupling Type	CD		CDR		CDRP/CDRS	
	Co-efficient	Km	Kn	Km	Kn	Km	Kn
	50	5.6	2.4	5.7	2.7	-	-
	55	5.1	2.1	5.2	2.5	-	-
	60	4.5	1.9	4.7	2.2	4.7	2.8
	65	3.65	1.7	4.1	2.1	4.1	2.7
	70	2.66	1.6	3.2	2	3.2	2.5
	75	2	1.3	2.8	1.8	2.8	2.2
	80	1.5	0.8	2.4	1.7	2.4	2.1
	85	1.3	0.6	2.1	1.4	2.1	2
	90	1	0.4	1.6	1.2	1.6	1.8
	95	0.8	0.3	1.2	0.9	1.2	1.5
	100	0.7	0.2	0.96	0.7	0.95	1.3

Table 3 : Approximate equivalent oil volume in litres at 20° C

Table 3.a		CD (Without delayed filling chamber)									
Coupling	Type	SIZE	185	235	270	320	370	420	480	584	660
FILLING ANGLE α°	50	1	1.90	2.60	4.20	7.10	10.05	15	26.55	44.50	
	55	0.97	1.86	2.45	4	6.90	9.50	14.30	26.60	42.60	
	60	0.93	1.80	2.30	3.80	6.50	8.90	13.60	24.60	40.60	
	65	0.88	1.70	2.20	3.60	6	8.40	12.80	23	38.20	
	70	0.82	1.58	2.00	3.30	5.70	7.80	12	21.40	35.80	
	75	0.76	1.50	1.90	3.10	5.20	7.20	11.20	20	33.40	
	80	0.70	1.39	1.80	2.90	4.80	6.70	10.20	18.40	31	
	85	0.64	1.27	1.70	2.65	4.40	6.30	9.30	16.80	28.60	
	90	0.57	1.14	1.55	2.40	4	5.70	8.50	15.30	26.30	
	95	0.52	1.02	1.40	2.25	3.70	5	7.80	14	24	
	100	0.46	0.90	1.30	2.10	3.40	4.60	7.20	13	22	

Table 3.b		CDR (With delayed filling chamber)									
Coupling	Type	SIZE	320	370	420	480	584	660	760		
FILLING ANGLE α°	50	9	12.50	20	34.10	52	75				
	5	8.60	12.10	18.90	32.70	50.20	71				
	4.70	8.20	11.30	17.90	31.20	47.80	67				
	4.40	7.60	11	16.60	29.20	45	62				
	4	7	10	15.30	27.20	42	57				
	3.70	6.50	9.40	14.30	25	39	53				
	3.30	5.90	8.60	13.30	22.80	36	49				
	3.10	5.60	8.10	12.10	20.90	33	46				
	2.90	5	7.25	10.90	19	30.20	42				
	2.70	4.80	6.50	9.60	17.50	27.60	38				
	2.50	4.20	5.90	8.40	15.90	25.30	34				

Table 3.c		CDRP/CDRS (With extended delay filling chamber)									
Coupling	Type	SIZE	370	420	480	584	660	760			
FILLING ANGLE α°	10.90	15.20	22	36.50	59.50	90					
	10.30	14.80	21.10	35.10	57.80	85					
	10	14.20	20.20	33.60	55.10	80					
	9.20	13.65	19.10	31.80	51.80	75					
	8.30	13	18.10	30	48.20	68					
	7.80	11.90	16.90	28.20	44.20	63					
	7	10.80	15.70	26.20	41	58					
	6.60	9.70	14.50	24.20	37.40	54					
	6	8.60	13.20	22.20	34.10	49					
	5.90	7.30	12	20	31.20	44					
	6	6.50	10.70	17.80	28.60	40					

- Calculate the nominal torque co-efficient, K_n , using the following formula :

$$K_n = \frac{P}{X}$$

Where P = motor power or transmitted power in kW

X = value taken from table 1, appropriate to the coupling size and motor speed.

The Co-efficient K_n corresponds to the nominal full load torque.

Calculate the co-efficient K_m corresponding to the starting (or stalling) torque as shown in the following example :

Example :

P = Motor power or Transmitted power = 75 kw at 1450 rpm.

Ts/Tn = Ratio of starting torque to full load torque (nominal torque) = 1.4

For a coupling with a delayed filling chamber CDR - 420 at 1450 rpm, Value of 'X' from Table-01 = 29.

$$K_n = P/X = 75/29 = 2.59$$

$$K_m = K_n \times (T_s/T_n) = 2.59 \times 1.4 = 3.63$$

To allow for the fact that starting torque is delivered at a speed less than for nominal torque,

Divide the value of K_m by 0.9
i.e. $K_m = 3.63/0.9 = 4.03$

From Table-2.b for $K_m = 4.03$, Oil filling angle is about 65 degree and

From Table-3.b for Angle = 65 degree, Quantity of fluid is 11.0 liters approximately.

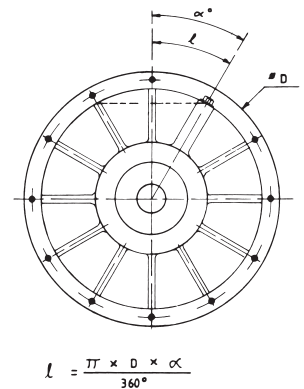
Referring to Table -2, to obtain a full load slip not exceeding 3%, the value of K_n should be less than indicated for the chosen filling.

Oil change

Recommended every 8000 hours of working or every two years.

Checking the oilfill

- 1) Place filling plug in vertical position and remove.
- 2) Rotate the coupling slowly until the oil just comes up to the filling hole. This position must match the angle top dead centre calculated by the method given above.
- 3) If necessary, remove or add some oil.
- 4) Replace filling plug and tighten.



National Branches :

Ahmedabad

Tel: +91 79 26406683/26406684/26406685
 Fax: +91 79 2640 1363
 Email : salesahd@elecon.com

Bangalore

Tel: +91 80-25290082, 25250219, 25252925
 Fax: +91 80-25251834
 Email : salesbgl@elecon.com

Bilaspur

Tel: +91 7752 247723 / 247625
 Fax: +91 7752 247720
 Email : salesbil@elecon.com

Chennai

Tel: +91 44 24349237/24349497/24322455
 Fax: +91 44 2434 9643
 Email : saleschn@elecon.com

Indore

Tele Fax: + 91 731 257 6100
 Email : salesindr@elecon.com

Kolkata

Tel: +91 33 2476 1861 / 2476 0876
 Fax: +91 33 2476 1831
 Email : saleskol@elecon.com

Madurai

Tel: +91 4549 293488
 Email : salesmadu@elecon.com

Nagpur

Tel: +91 712 6642600 / 6642 601
 Fax: +91 712 6642 622
 Email : salesnag@elecon.com

Mumbai

Tel: +91 22 22821315/22820725/22821365
 Fax: +91 22 2287 0791
 Email : salesbom@elecon.com

New Delhi

Tel: +91 11 2341 4340 / 2341 4341
 Fax: +91 11 2370 9046
 Email : salesdel@elecon.com

Pune

Tel: +91 20 4019 1400
 Fax: +91 20 4019 1411
 Email : salespune@elecon.com

Raipur

Tele Fax: +91 771 2259 321 /23/24/30
 Email : salesrai@elecon.com

Hyderabad

Tele Fax: +91 40 64561199
 Email : salessec@elecon.com

Vadodara

Tel: +91 265 2313 670
 Tele Fax: 91 265 2312 972 / 2312 980
 Email : salesvad@elecon.com

Vallabh Vidyanagar

Tel. +91 02692-231125 / 227559/227549/ 227560
 E mail : salesvvn@elecon.com

International Network :

MIDDLE EAST :

ELECON MIDDLE EAST FZCO, Dubai
 Phone : +97 146 091 424, +97 146 091 425
 Fax : +97 146 091 426
 E-mail : salesme@elecon.com

FAR EAST :

ELECON SINGAPORE PTE. LTD.
 Phone : +65 622 782 58
 Fax : +65 622 789 42
 E-mail : salesap@elecon.com

GERMANY

Benzler Antriebstechnik
 Gmbh
 Tel: +49 0800 350 4000
 Fax: +49 0800 350 4001
 mail@benzlers.com
 www.benzlers.com

NETHERLANDS

Benzler-TBA BV
 Tel : +31 077 324 5900
 Fax: +31 077 324 5901
 mail@benzlers.com
 www.benzlers.com

SWEDEN

AB Benzlers
 Tel: + 46 42 18 68 00
 Fax: + 46 42 21 88 03
 info@benzlers.com
 www.benzlers.com

DENMARK

Benzler Transmission A/S
 Tel: +45 36 34 0300
 info@benzlers.com
 www.benzlers.com

FINLAND

O.Y. Benzler AB
 Tel: +358 9 340 1716
 Fax: +358 10 296 2072
 info@benzlers.com
 www.benzlers.com

benzlers 

