

ELECON

# TRACTION TYPE HYDROKINETIC FLUID COUPLING



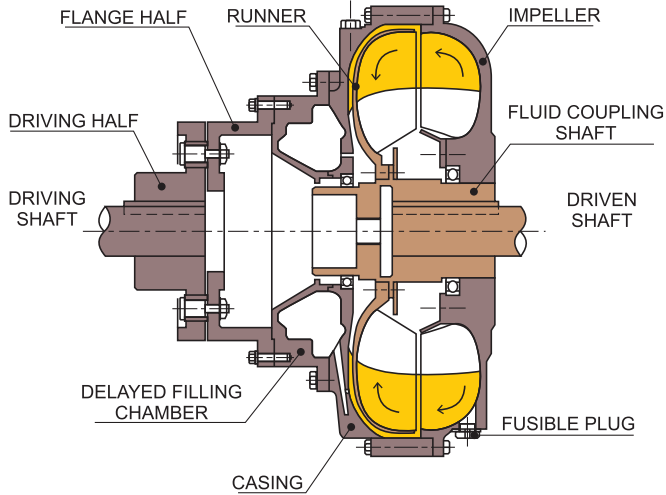
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Hydrokinetic fluid couplings

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



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**

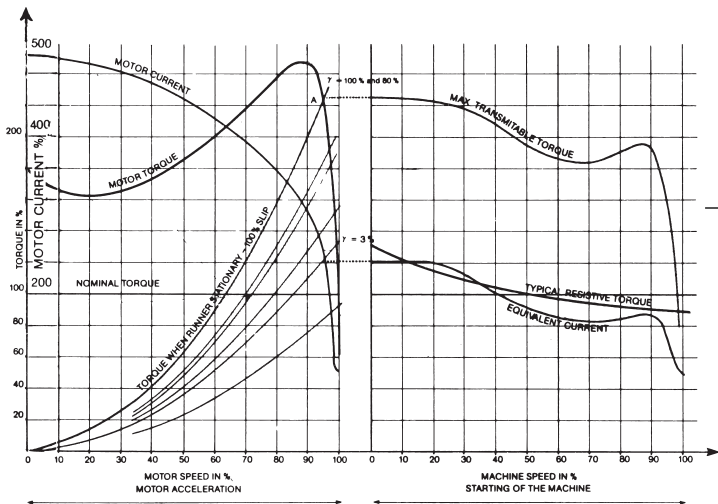
Driving and driven equipments suffer less wear and tear and thus there is reduction in electrical and mechanical maintenance cost.

**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.

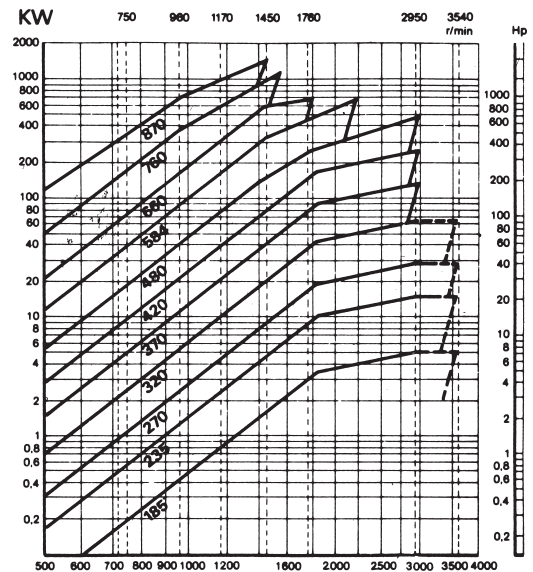
To prevent the loss of oil and to have an additional safety device, thermal trig switch can be provided when demanded in addition to the fusible plug.



The 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	--	--	



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

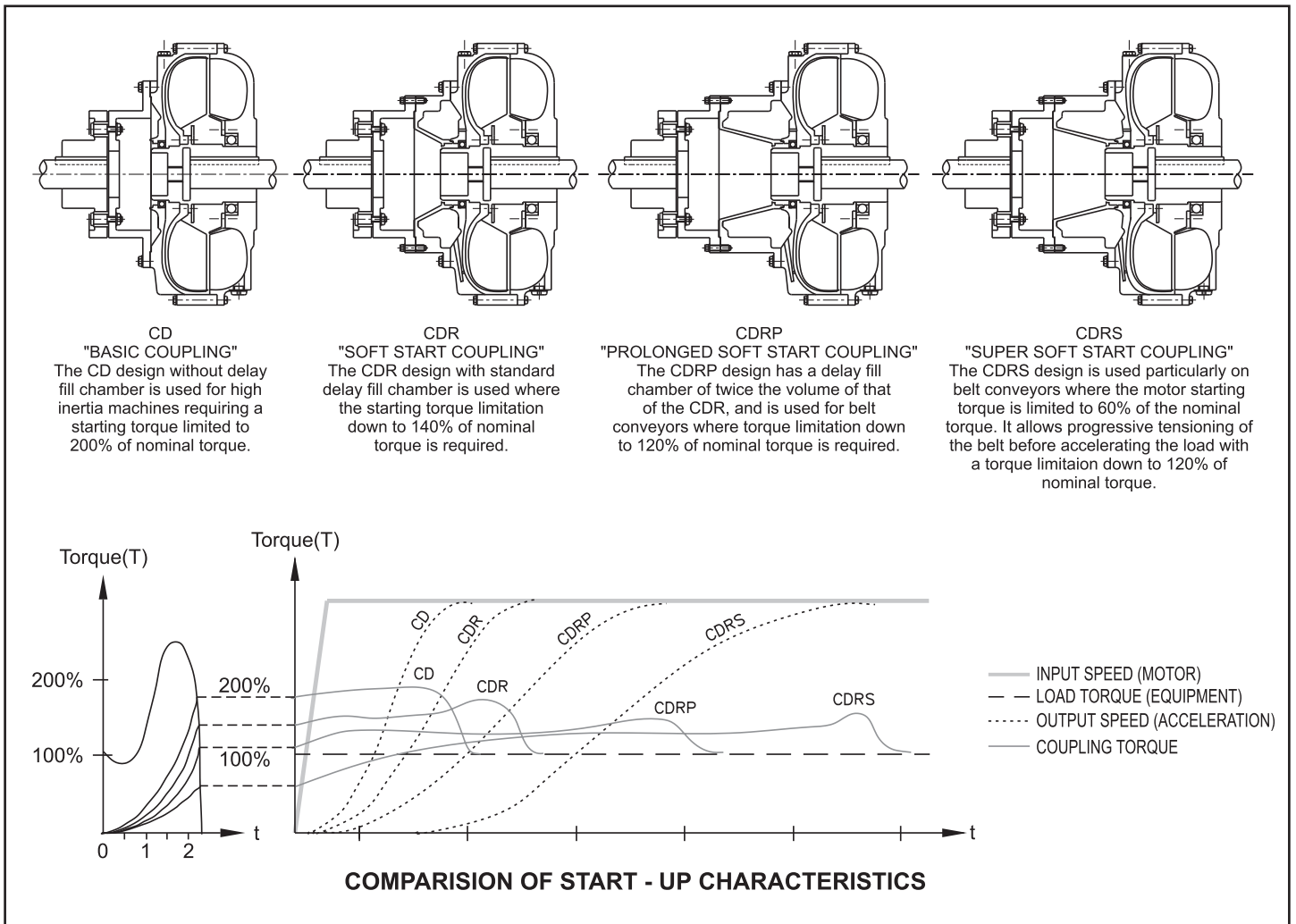
There are following types of ELECON traction couplings :

- 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)

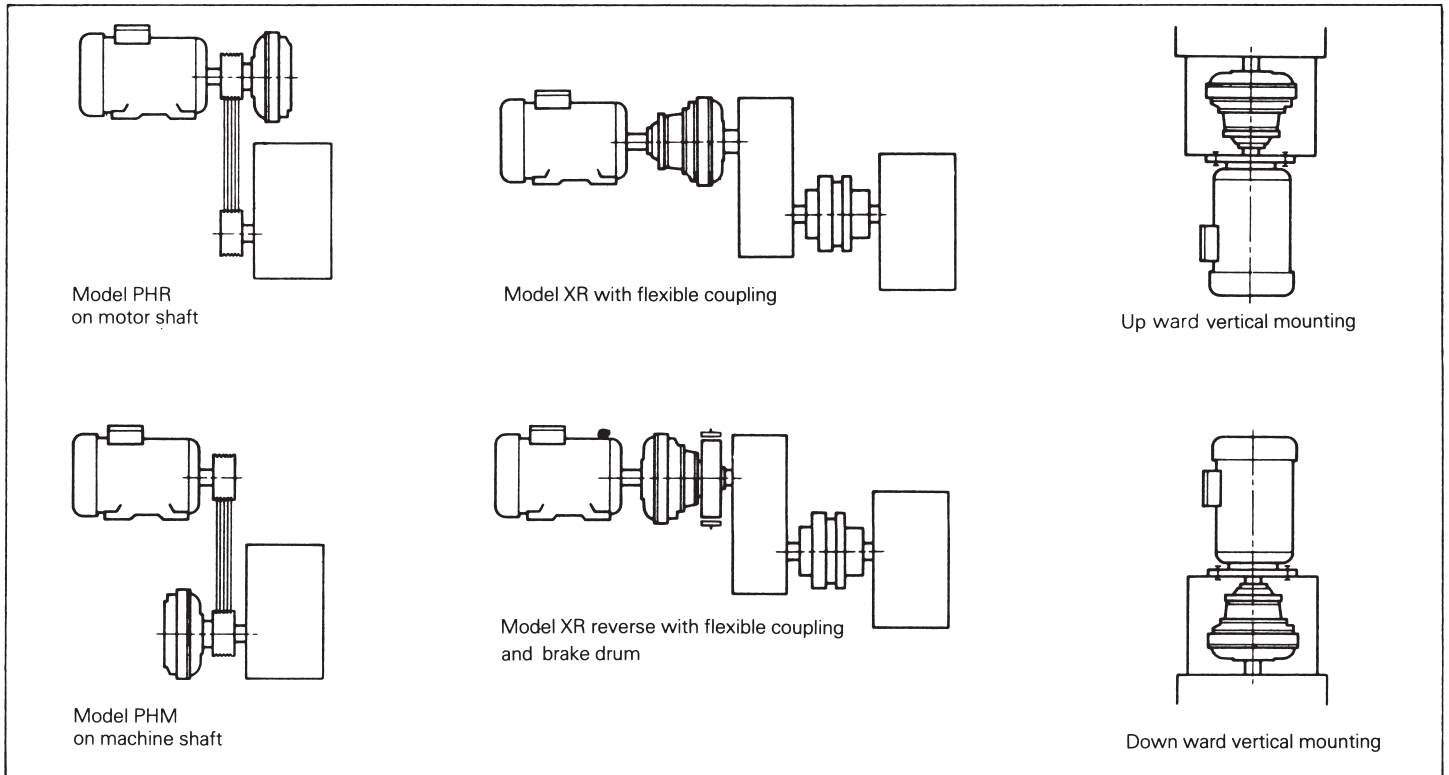
### Fluid coupling types and mountings.

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 CDR-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.**





## 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.

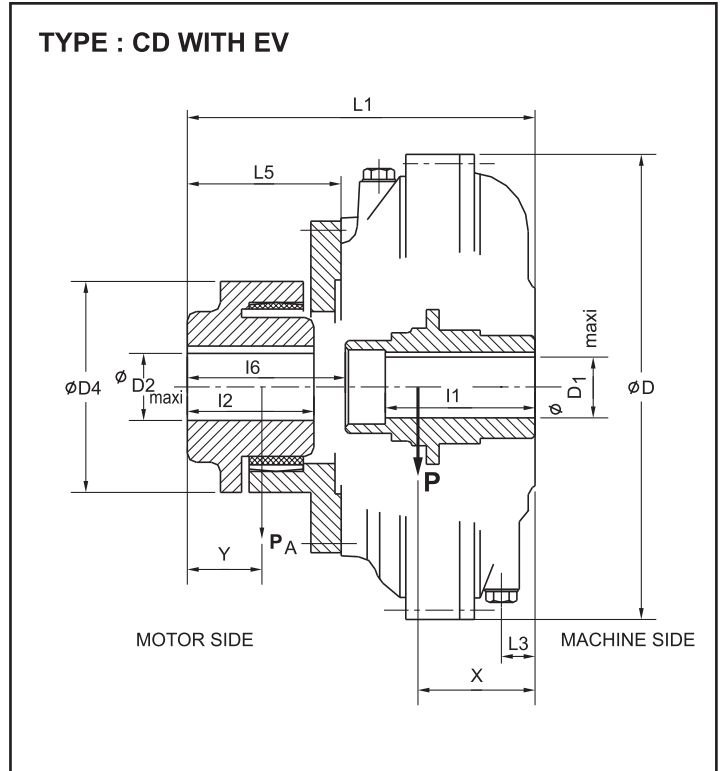
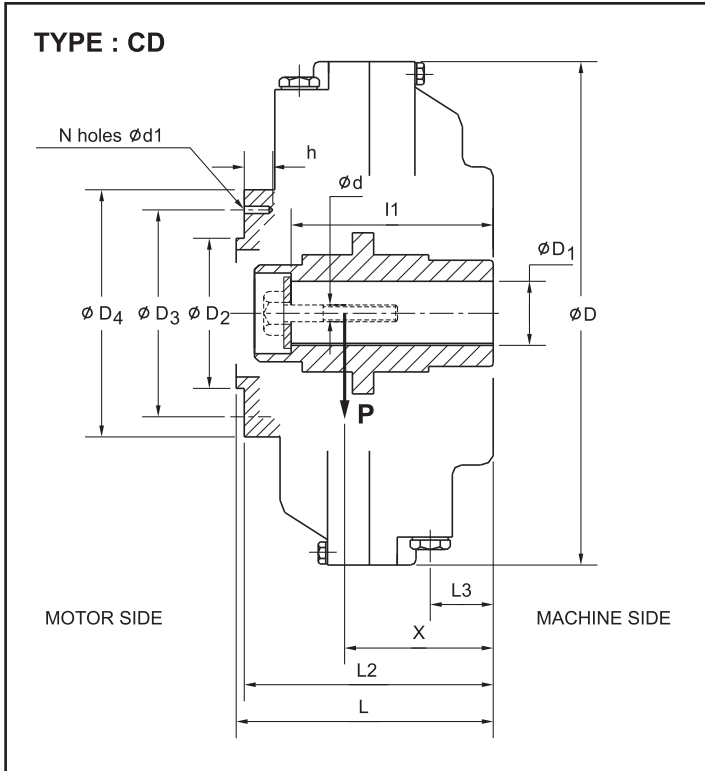


Hydrokinetic fluid couplings

**TRACTION TYPE MOUNTING : XR** (hollow shaft)

Sizes : 185-235

Types : CD and CD with flexible coupling EV



FLUID COUPLING		SIZE	185	235
FLUID COUPLING	J (kgm <sup>2</sup> )	INPUT	0.003	0.009
		OUTPUT	0.025	0.060
WEIGHT P (DRY)	x	kg	7	12
		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	J (kgm <sup>2</sup> )	FLUID COUP.		0.030	0.065	
		FLEXIBLE COUP.		0.003	0.009	
FLUID COUPLING + FLEXIBLE COUPLING	TOTAL WEIGHT (DRY)= P + PA	P	kg	7	12	
		X	mm	75	102	
		PA	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	
		l1		85	112	
		l2		45	45	
		L3		26	34	
			l6		55	58

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

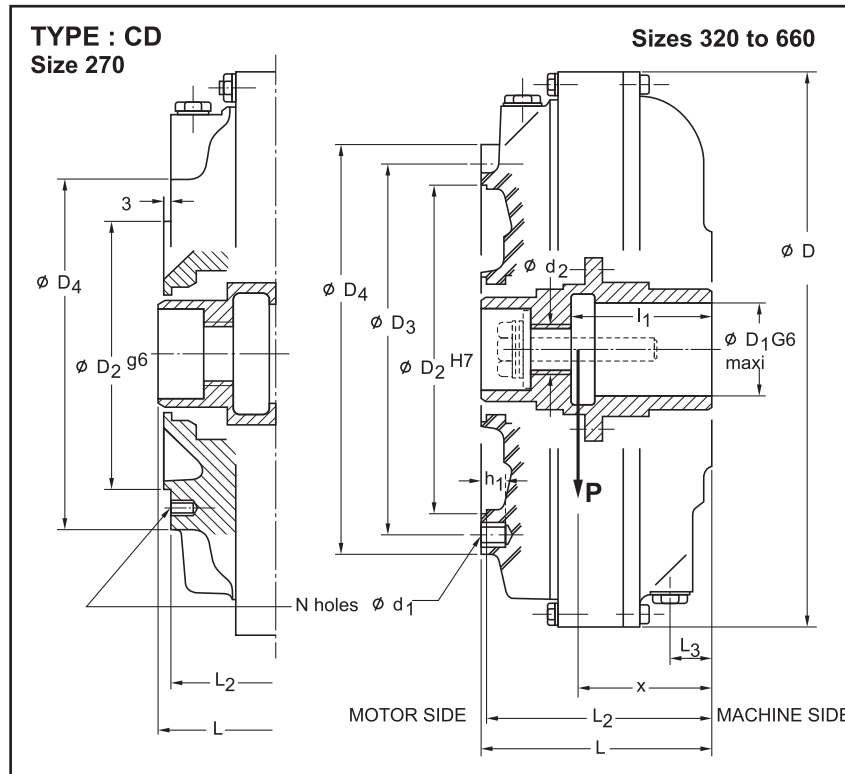


Hydrokinetic fluid couplings

**TRACTION TYPE MOUNTING : XR** (hollow shaft)

Sizes : 270-660

Type : CD



FLUID COUPLING		SIZE	270	320	370	420	480	584	660
TYPE CD	J	INPUT	0.12	0.24	0.47	0.72	1.33	2.90	5.30
	(kgm <sup>2</sup> )	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

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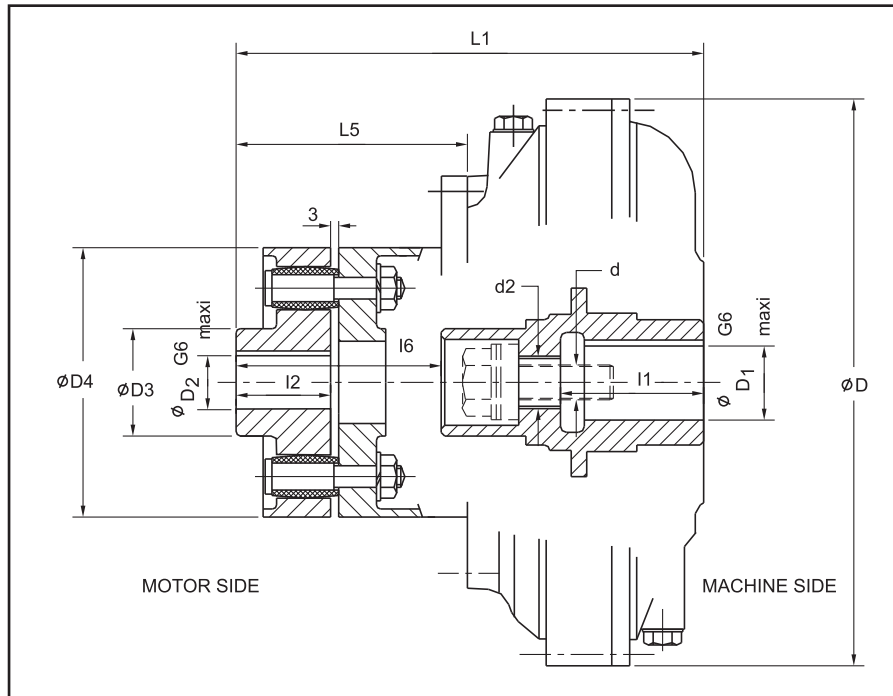


Hydrokinetic fluid couplings

**TRACTION TYPE MOUNTING : XR** (hollow shaft)

Sizes : 270-660

Type : CD with flexible coupling CDF



FLUID COUPLING			SIZE	270	320	370	420	480	584	660	
FLEXIBLE COUPLING			TYPE	CDF5 <sup>1</sup> / <sub>2</sub>	CDF6	CDF7	CDF9	CDF10	CDF13	CDF14	
FLUID COUPLING +	J (kgm <sup>2</sup> )	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	
FLEXIBLE COUPLING	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	315	365	425	475	550	670	760	
			D1	55	60	65	80	90	110	120	
			D2	40	48	60	80	90	110	120	
			D4	152.4	165.1	190.5	241.3	266.7	342.9	368.3	
			L1	245	285	337	371	412	481	576.6	
			L5	109	127	157	171	188	219	272	
			l1	100	110	110	120	155	170	200	
			l2	44.5	48	60	82.5	95	108	120	
			l6	100	105	137	151	167	192	241	
			TAPPED HOLE	D2	1"BSP	1"BSP	1"BSP	1 <sup>1</sup> / <sub>4</sub> "BSP	1 <sup>1</sup> / <sub>4</sub> "BSP	1 <sup>1</sup> / <sub>4</sub> "BSP	1 <sup>1</sup> / <sub>4</sub> "BSP
			D3	63.5	73	92	124	143	165	190	
			d	AS PER THREADED HOLE IN THE SHAFT							

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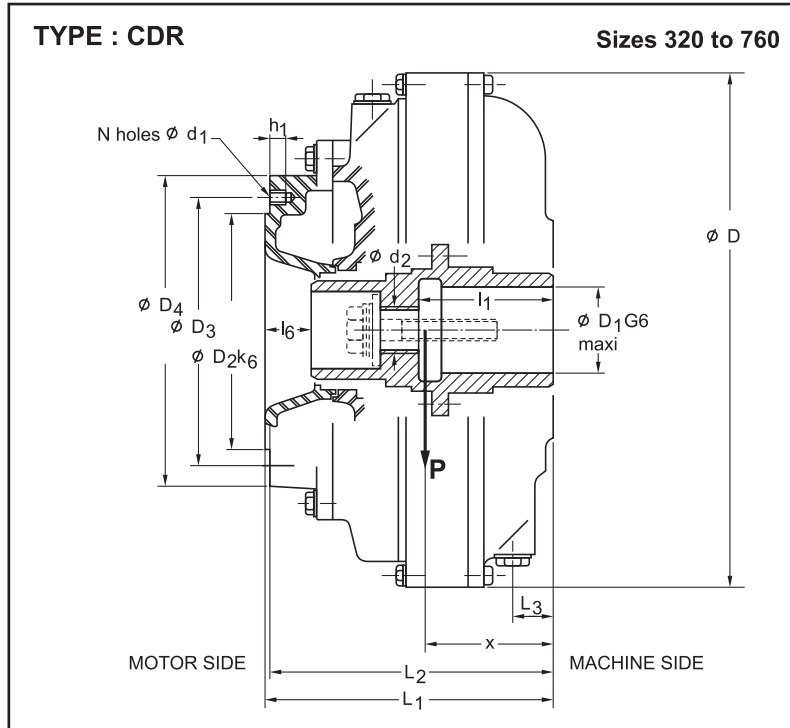


Hydrokinetic fluid couplings

**TRACTION TYPE MOUNTING : XR** (hollow shaft)

Sizes : 320-760

Type : CDR



FLUID COUPLING	SIZE	320	370	420	480	584	660	760
J (kg.m <sup>2</sup> )	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
TAPPED HOLE	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
	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

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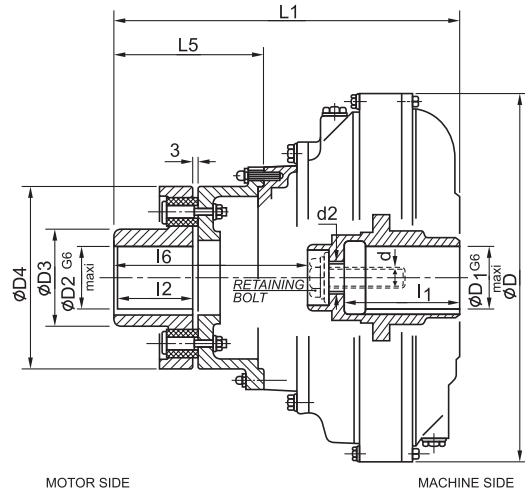
Hydrokinetic fluid couplings

**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 <sup>2</sup> )	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	FLEX. 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							



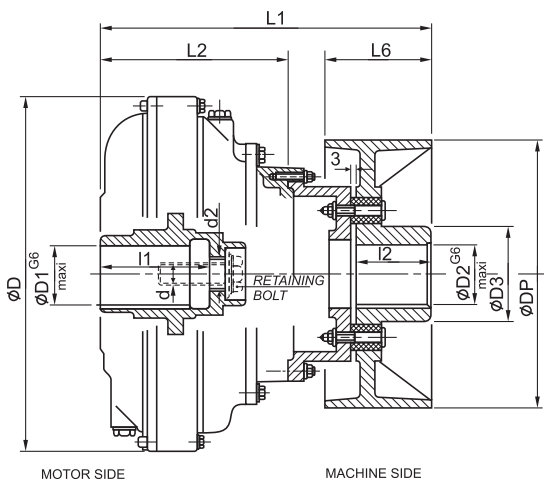
Hydrokinetic fluid couplings

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

Sizes : 320-760

Type : CDIR with flexible brake drum coupling FCFB

FLUID COUPLING		SIZE	320	370	420	480	584	660	760
BREAK DRUM		DIA	250 315	250 315 400	315 400 500	400 500	400 500 630	500 630	630 710
FLEXIBLE COUP.		TYPE	FCFB 6	FCFB 7	FCFB 9	FCFB 10	FCFB 13	FCFB 14	FCFB 16
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm <sup>2</sup> )	FLUID COUP.	0.28	0.55	0.88	1.70	3.75	6.50	12.10
		FLEX. COUP.	0.39 0.84	0.47 0.94 1.80	1.10 2.50 5.90	3.50 6.20	4.56 10.00 23.00	11.80 25.40 29.20	44.00
TOTAL Wt. (DRY)	FLUID COUP.kg	FLEX. COUP.kg	25 34	30 38 50	47 65 95	80 110	114 165 225	190 270	295 350
		FLEX. COUP.kg	25 34	30 38 50	47 65 95	80 110	114 165 225	190 270	295 350
D			365	425	475	550	670	760	870
D1			60	65	80	90	110	120	135
L1			380	392 392 448	437 437 520	544	562 603 625	656 716	804
L2			203	225	257	297	333	384	445
I1			110	110	120	155	170	200	240
BRAKE DRUM		DP	250 315	250 315 400	315 400 500	400 500	400 500 630	500 630	630 710
		D2	48 48	60 60 60	80 80 80	90 90	100 100 100	115 115 140	140 140
		L6	95 118	95 118 150	118 150 190	150 190	150 190 236	190 236	236 265
		I2	75 75	70 70 95	117 117 117	120 120	118 159 159	120 180	146 146
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							



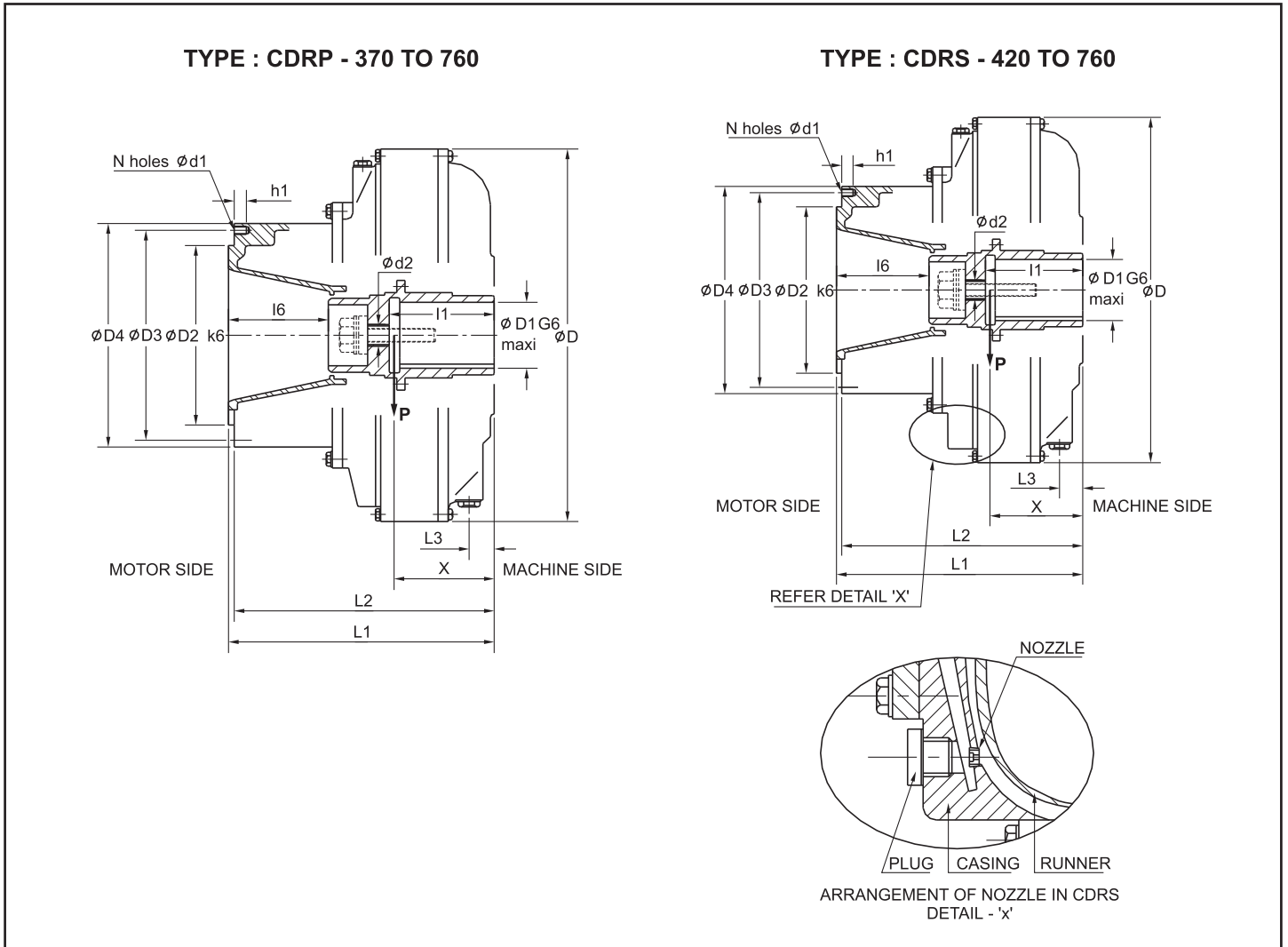
Owing to continuous development and improvement all dimensions and characteristics are subject to change without notice.



Hydrokinetic fluid couplings

**TRACTION TYPE MOUNTING : XR** (hollow shaft)

Types : CDRP - 370 TO 760 and  
CDRS - 420 TO 760



COUPLING	SIZE	370	420	480	584	660	760
J (kgm <sup>2</sup> )	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

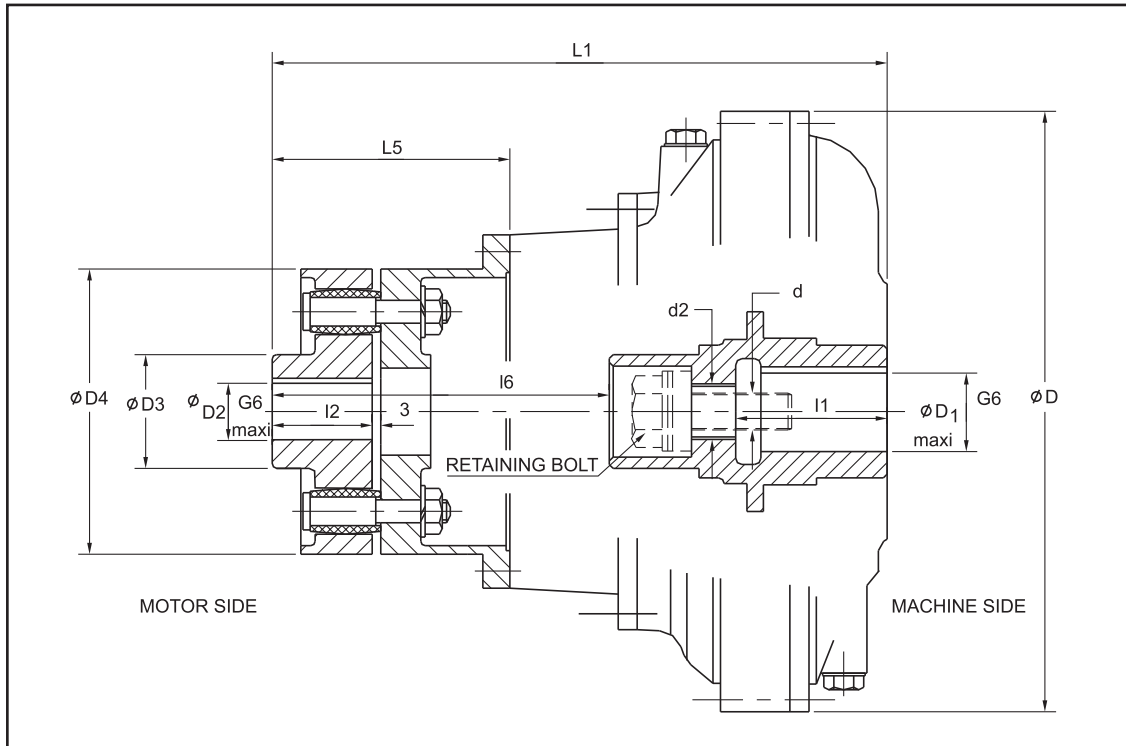
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Hydrokinetic fluid couplings

**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 <sup>2</sup> )	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 Wt. (DRY)		FLUID COUP.	kg	38	53	78	135	192	262
		FLEXIBLE COUP.	kg	21	32	40	78	120	150
			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
			l1	110	120	155	170	200	240
			l2	60	82.5	95	108	120	146
			l6	217	287	327	360	431	446
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
			D3	92	124	143	165	190	235
			d	AS PER THREADED HOLE IN THE SHAFT					

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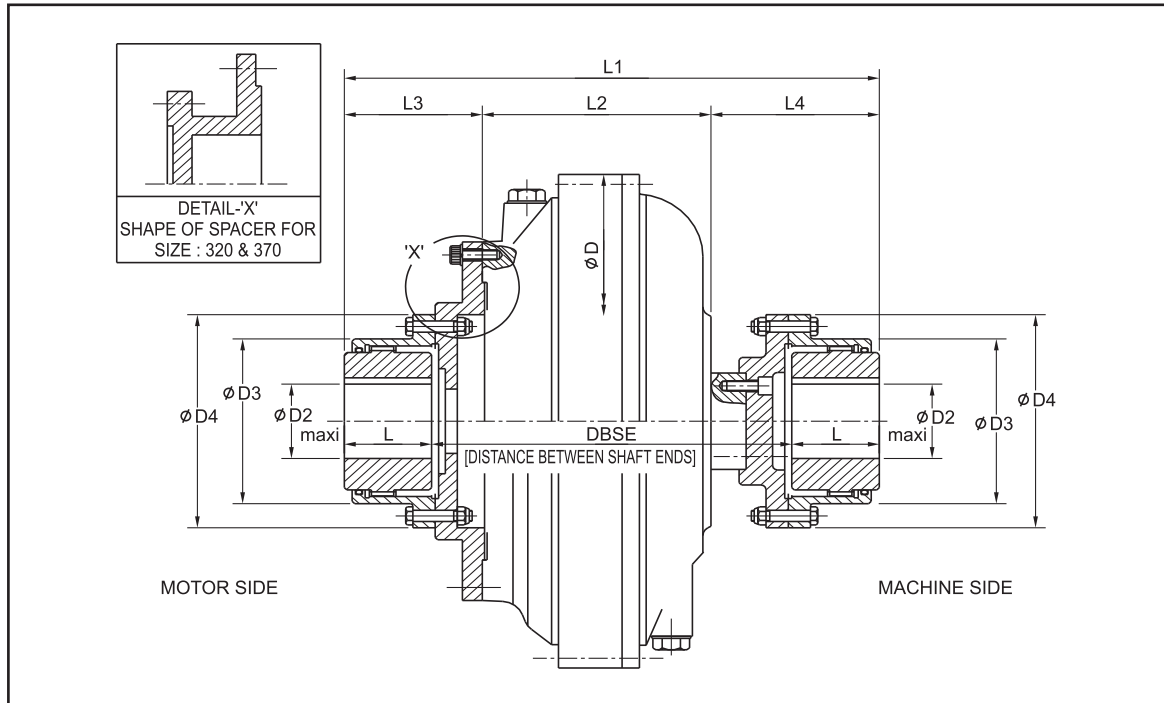


Hydrokinetic fluid couplings

**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 +	J (kgm <sup>2</sup> )	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	
GEAR COUPLING	TOTAL	FLUID COUPLING		27	36	52	75	132	187
	Wt (DRY) (kg)	GEAR COUPLING	INPUT	14	25.2	27	37	65	90
			OUTPUT	11	21	21	28	44	67
			D	365	425	475	550	670	760
			D2	75	95	95	110	130	155
			D3	129.5	156	156	181	209	247
			D4	171	210	210	234	274	312
			L	62	76	76	90	105	120
			DBSE	306	351	366	357	416	475
			L1	430	503	518	537	626	715
			L2	158	180	200	224	262	304
			L3	148	171	155	144	168	192
			L4	124	152	163	169	196	219

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

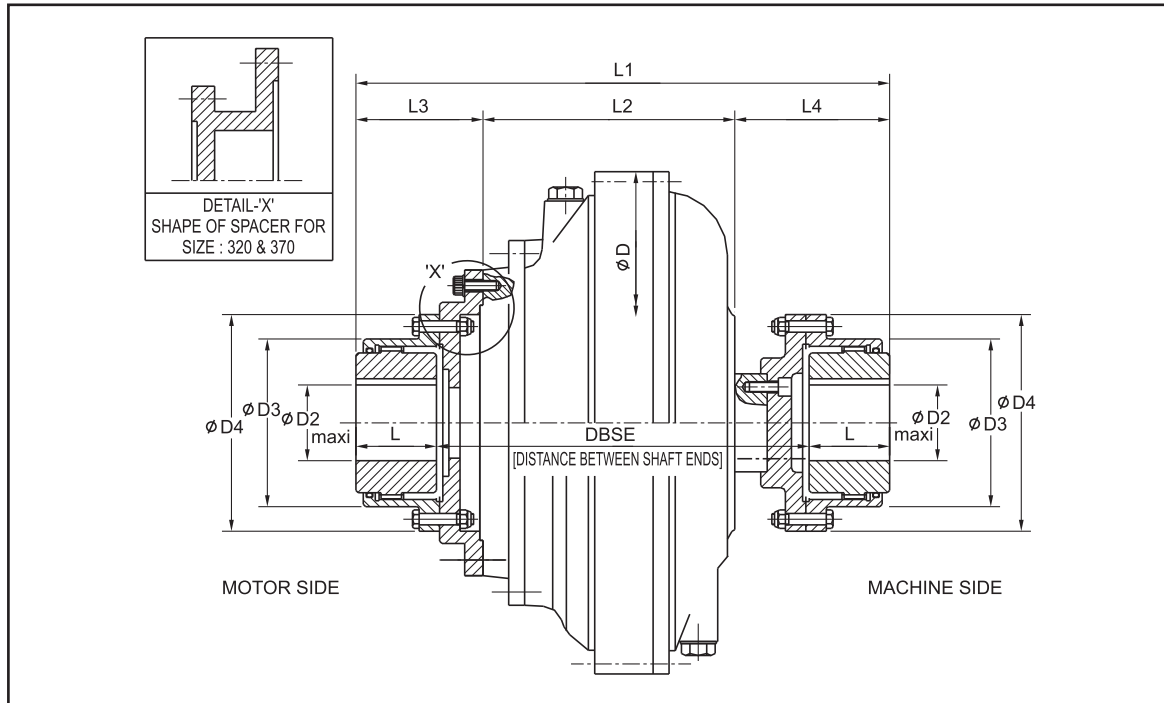


Hydrokinetic fluid couplings

**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 +	J (kgm <sup>2</sup> )	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
FLUID COUPLING	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.



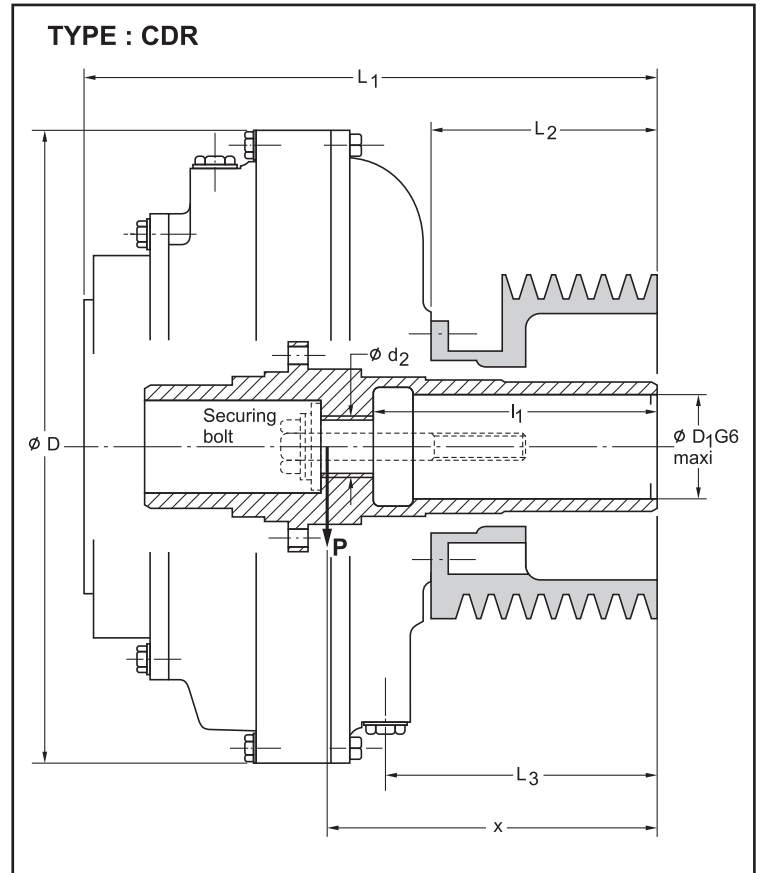
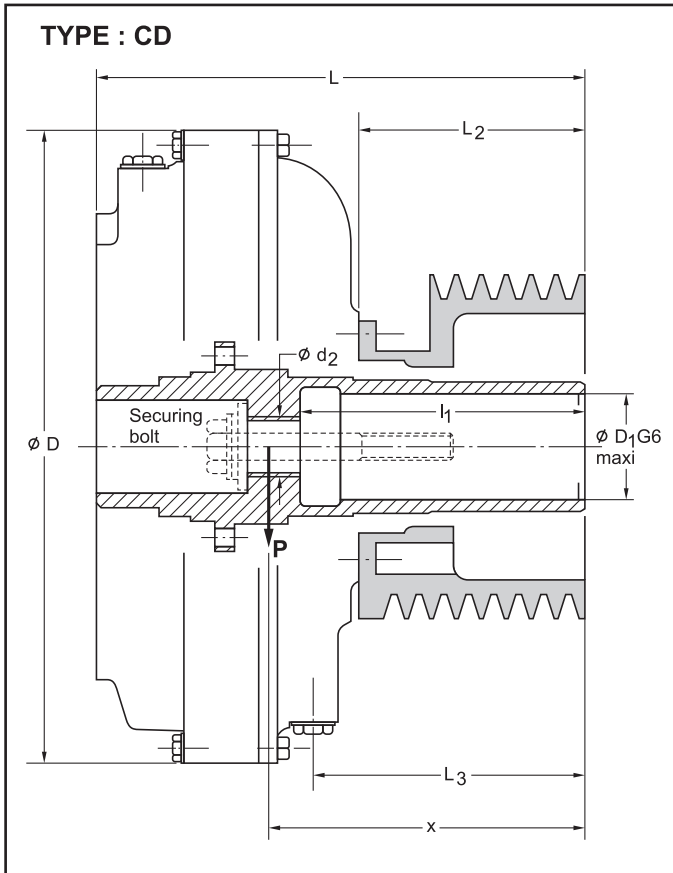
Hydrokinetic fluid couplings

### 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 <sup>2</sup> )	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 <sup>2</sup> )	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.





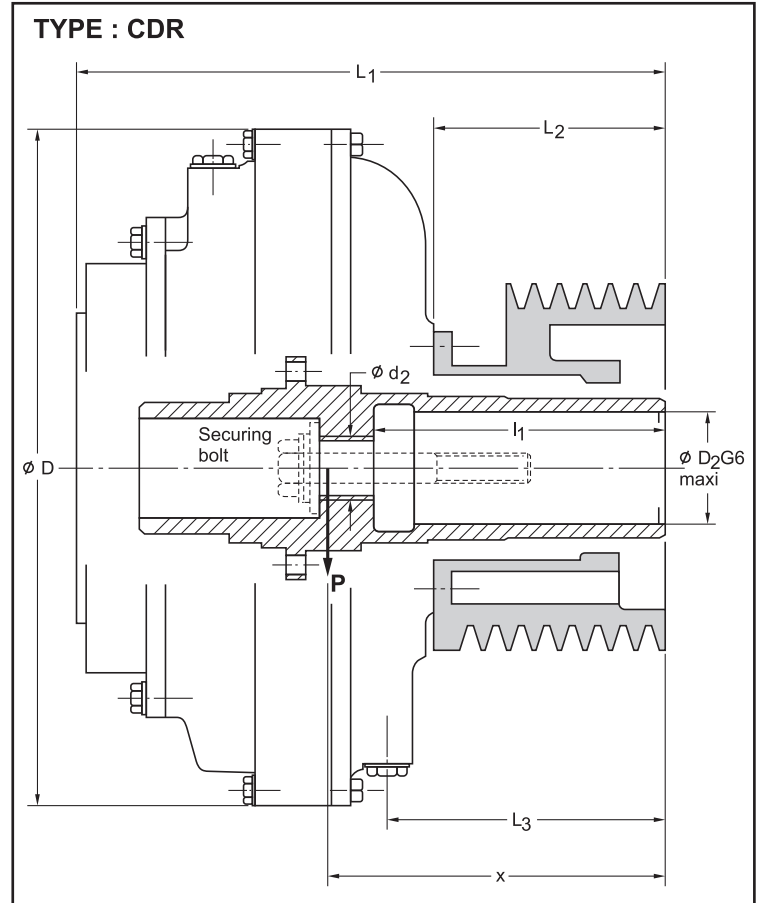
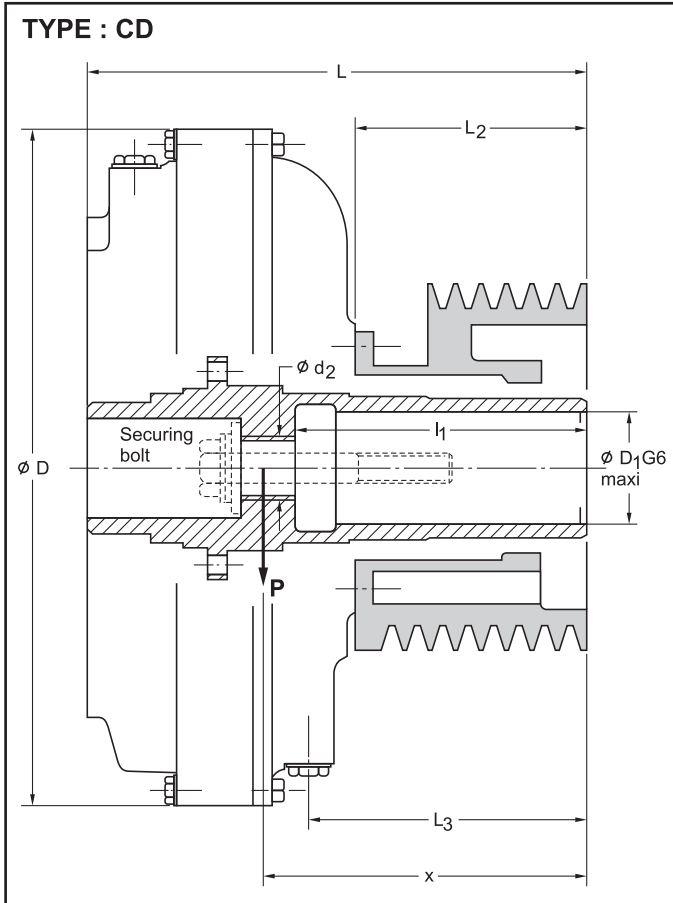
Hydrokinetic fluid couplings

### TRACTION TYPE MOUNTING : PH (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 <sup>2</sup> )		0.16	0.36	0.83
	J* OUTPUT (kgm <sup>2</sup> )		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 <sup>2</sup> )		0.16	0.36	0.83
	J* OUTPUT (kgm <sup>2</sup> )		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.





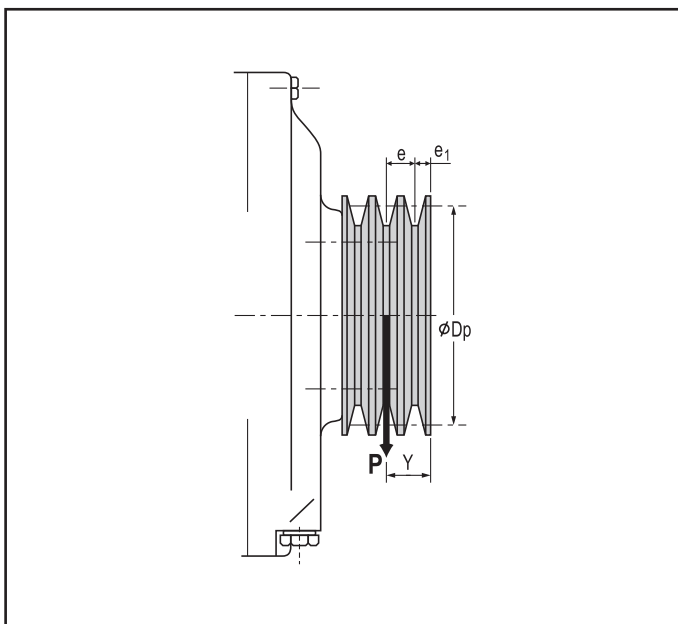
Hydrokinetic fluid couplings

**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 Dp															
				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				
480	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			
	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			
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 = kgm<sup>2</sup>  
P = kg  
Y = mm

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



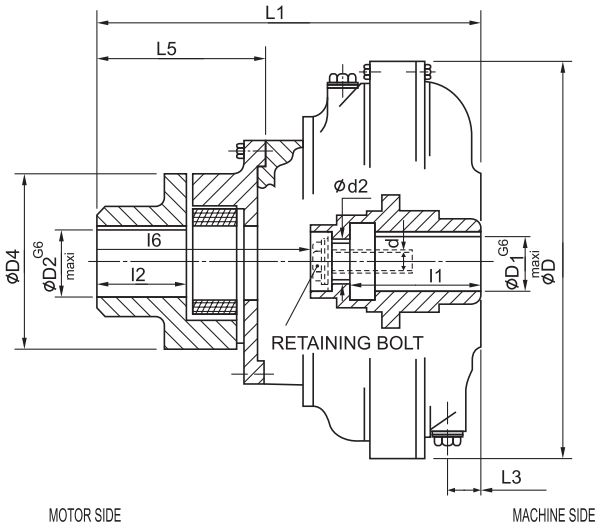
Hydrokinetic fluid couplings

**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 <sup>2</sup> )	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						

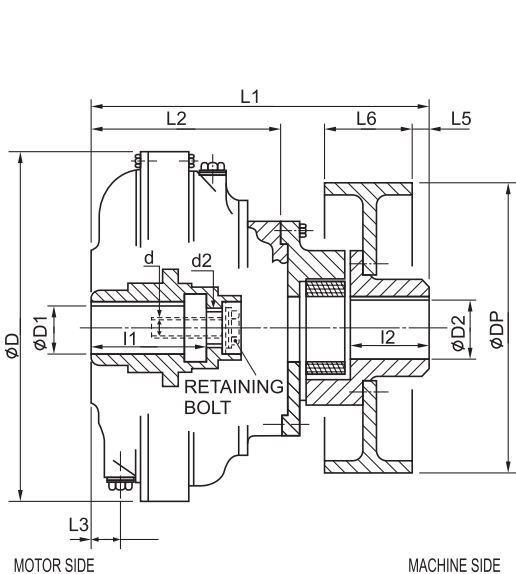


Hydrokinetic fluid couplings

**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	760									
BRAKE DRUM DIA			250 315	250 315 400	315 400 500	400 500	400 500 630	500 630	630 710									
FLEXIBLE COUPLING TYPE			EB 65	EB 75	EB 95	EB 110	EB 125	EB 140	EB 140									
FLUID COUPLING + FLEXIBLE COUPLING	J (kgm <sup>2</sup> )	FLUID COUP.	0.28	0.55	0.88	1.7	3.75	6.50	12.1									
		FLEX. COUP.	0.20	0.44	0.26	0.53	1.40	0.60	1.58	4.20	2.00	4.45	2.26	4.86	11.4	6.45	12.9	13.7
	TOTAL Wt (DRY)	FLUID COUP. kg.	28	38	53	78	135	192	262									
		FLEX. COUP. kg.	24	33	32	41	62	53	75	113	97	130	112	150	209	203	310	270
TAPPED HOLE		D	365	425	450	550	670	760	870									
		D1	60	65	80	90	110	120	135									
		L1	329.5	382	428	485	552	656	718									
		L2	203	225	257	297	333	384	445									
		L3	25	29	37	37	49	55	49									
		I1	110	119	120	155	170	200	240									
BRAKE DRUM		Dp	250 315	250 315 400	315 400 500	400 500	400 500 630	500 630	630 710									
		D2	65 65	75 75 75	95 95 95	110 110	125 125 125	125 125 125	125 125 125									
		L5	25 10	35 35 25	20 35 25	35 25	25 20	20 30	50 50 30									
		L6	95 118	95 118 150	118 150 190	150 190	150 190 236	190 236	236 265									
TAPPED HOLE		I2	74.5	98.5	110	112.5	131.5	172	172									
		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															

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



## 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°	FILLING ANGLE α°							
	Coupling Type	Table 2.a		Table 2.b		Table 2.c		
		Co-efficient	Km	Kn	Km	Kn	Km	Kn
		CD		CDR		CDRP/CDRS		
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**

Coupling	Table 3.a									
	Type	CD (Without delayed filling chamber)								
	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	

Coupling	Table 3.b						
	CDR (With delayed filling chamber)						
	320	370	420	480	584	660	760
FILLING ANGLE α°	5.20	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	

Coupling	Table 3.c					
	CDRP/CDRS (With extended delay filling chamber)					
	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, Kn, 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 Kn corresponds to the nominal full load torque.

Calculate the co-efficient Km 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 Km by 0.9  
i.e. Km = 3.63/0.9 = 4.03

From Table-2.b for Km = 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.

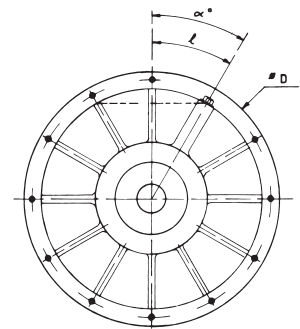
Referring to Table -2, to obtain a full load slip not exceeding 3%, the value of Kn should be less than indicated for the chosen filling.

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.



$$l = \frac{\pi \times D \times \alpha}{360^\circ}$$