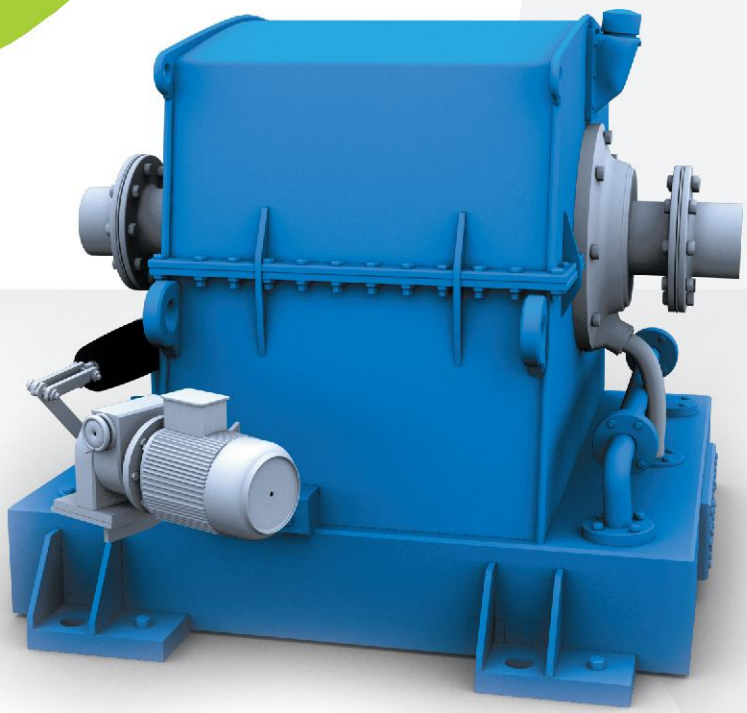
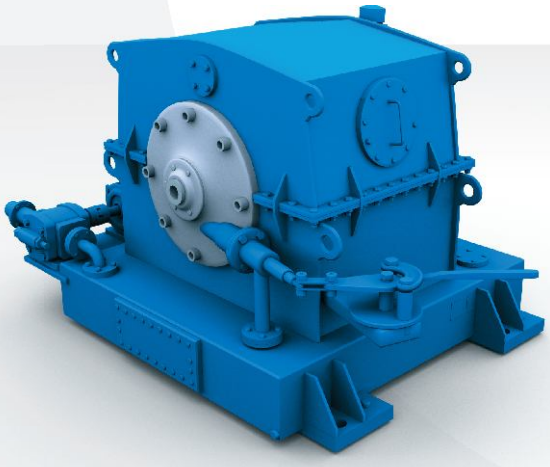
FLUIDOMAT Magneto
Tecnologia em Movimento





Scoop Controlled - Variable Speed Fluid Couplings

http://www.fluidomat.com

Applications

Various Sectors of Industries

Thermal and Nuclear Power Generation

Cement

Steel and Metal

Petrochemical

Textile and Sugar

Defense

Coal, Lignite and Ore Mining

Paper

Fertilizers and Chemicals

Washeries

Harbour Handling

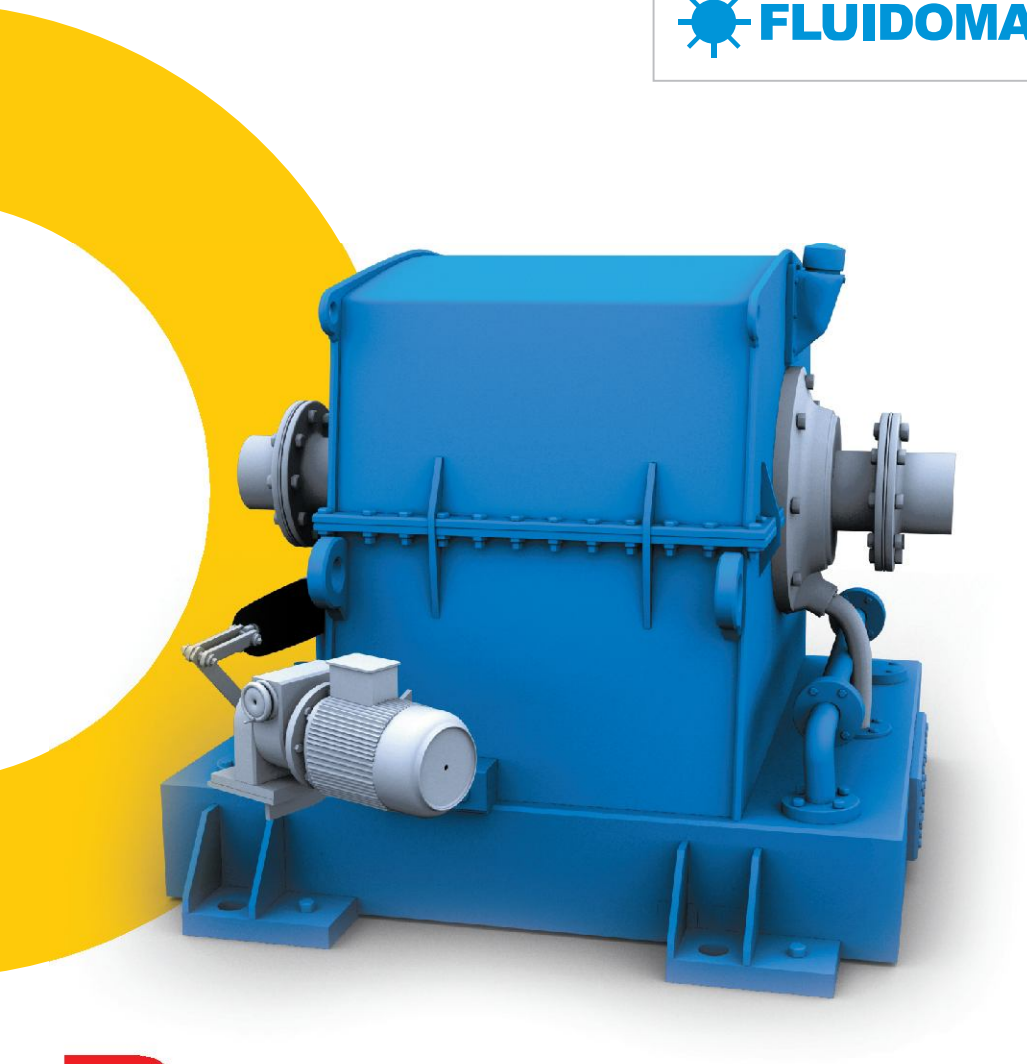
Automobile for Automotive Applications








FLUIDOMAT SC



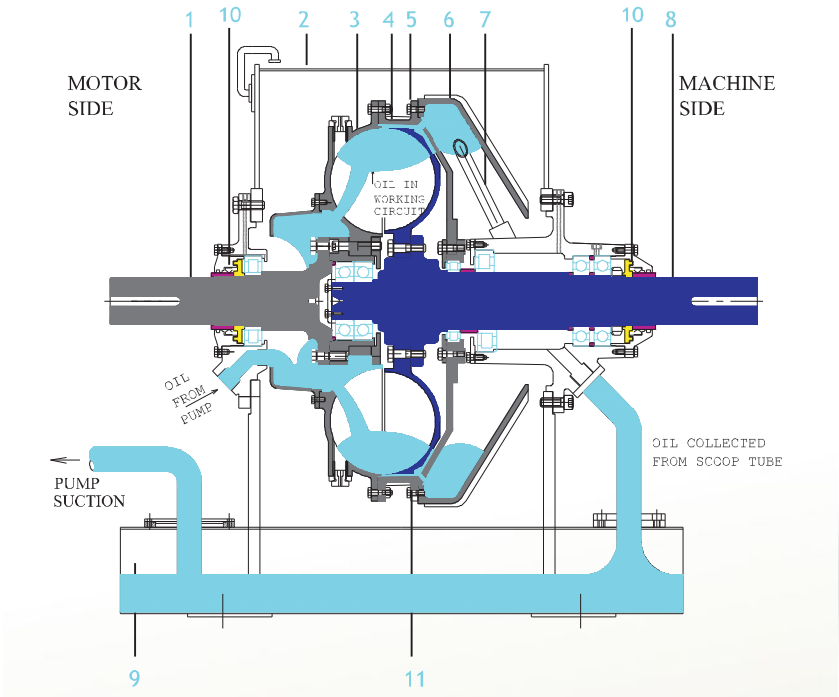
Scoop Controlled - Variable Speed Fluid Couplings

FLUIDOMAT -SC is a variable speed fluid coupling providing stepless speed variation in a wide range when connected to fixed speed electric motor. The speed variation is obtained by varying the oil filling in coupling through a sliding scoop tube when in operation.

Fluidomat SC offers advantages like no load starting of motor, controlled starting torque for machine acceleration, continuous declutching, stepless speed variation and synchronizing of motors in multidrive units, load limiting in a very wide range for safety of motors and machine.

It offers flexibility in controls as it can respond to various electric, pneumatic or hydraulic signals and it is compatible with all types of controllers like pneumatic, hydraulic, electronic, electrical or manual. Beside it offers all the advantages of constant speed fluid coupling like load limiting, absorption of shock loads, torsional loads and vibrations, smooth acceleration etc. Its built-in safety arrangements make it fool-proof during operation.

FLUIDOMAT SC

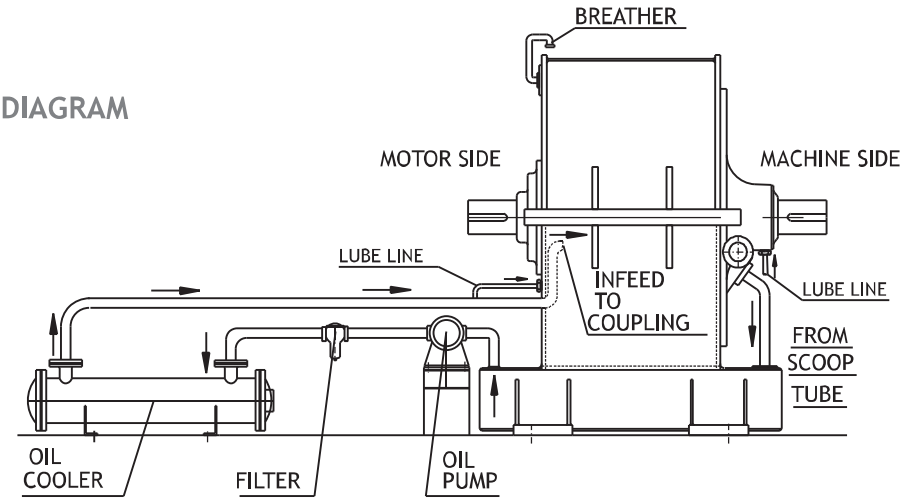


DESCRIPTION

1 INPUT SHAFT
2 UPPER HOUSING
3 IMPELLER
4 ROTOR
5 PRIMARY CASING
6 SECONDARY CASING
7 SCOOP TUBE
8 OUTPUT SHAFT
9 BOTTOM HOUSING
10 LABYRINTH SEAL WITH OIL SEAL
11 WORKING CIRCUIT

FLUIDOMAT - SC consists of a fluid coupling housed in a self-supported stationary housing having a built-in oil Sump. Oil is continuously introduced in the working circuit (11) of fluid coupling through an oil pump.
The oil circulates through the working circuit and finally passes to the secondary casing (6) and is collected by a sliding scoop tube (7). The position of scoop tube governs the oil level in the working circuit, thus controlling the speed. The position of sliding scoop tube can be governed through suitable actuator and can also be operated manually. On the input and output ends, suitable flexible couplings are provided for the shafts connections. Labyrinth Seals (10) provided on input and output shaft is an effective barrier and ensures no leakage from shaft ends.

OIL FLOW CIRCUIT DIAGRAM

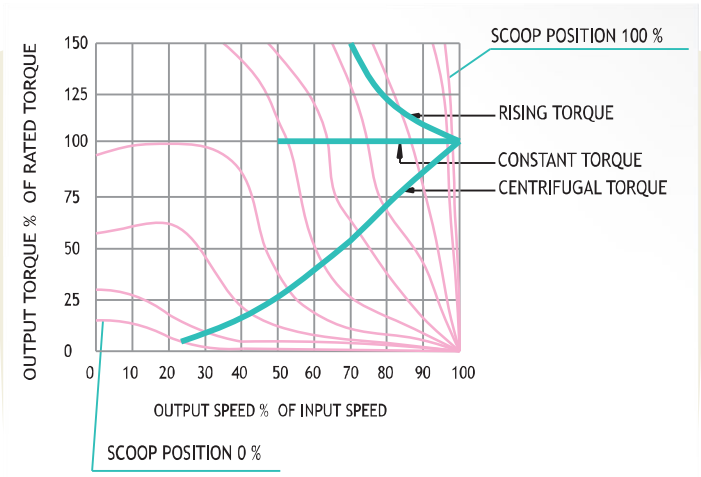


OPERATION:
The sliding scoop tube governs the oil level in the working circuits depending on its (scoop tube) position between 0% to 100%. By varying the oil level in the working circuit the torque transmission capacity of the coupling varies, thus changing the slip of the coupling and provides stepless speed variation in a wide range. The heat generated in the coupling is picked up by the circulating oil which is cooled by oil cooler provided in the oil circiut.

Fluidomat SC provides very useful stepless speed regulation in the range of 5:1 for centrifugal loads like fans and pumps, 2:1 for constant torque loads like conveyors and 1.4:1 for rising torque loads. It is also very useful for continuous declutching of machine with motor running.

CHARACTERISTIC CURVE

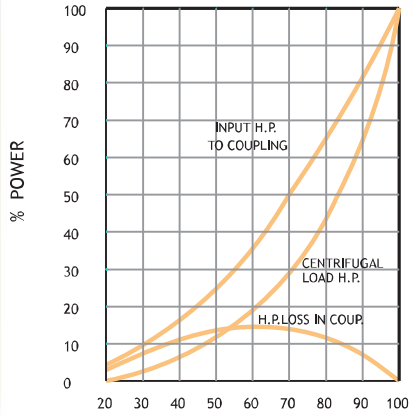
(AT VARIOUS SCOOP TUBE POSITIONS BETWEEN 100 % & 0%)



ENERGY SAVING THROUGH FLUIDOMAT SC COUPLINGS :

Fluidomat SC provides large energy saving in various drives. In centrifugal machines the discharge of fluid is proportional to the machine speed. The discharge can be varied either by throttle control or by speed control. In throttle control, because additional pressure is exerted therefore the machine requires high energy consumption and also causes high rate wear of pump/fan. On the other hand, if speed of pump/fan is reduced to control the discharge then power demand reduces by cube of speed and therefore large amount of energy is saved. Fluidomat SC offers stepless speed variation in range of 5:1 for centrifugal loads and saves high amount of energy. It thus earns money through energy savings.

FAN AND FLUIDOMAT-SC TYPICAL POWER SPEED CHARACTERISTICS

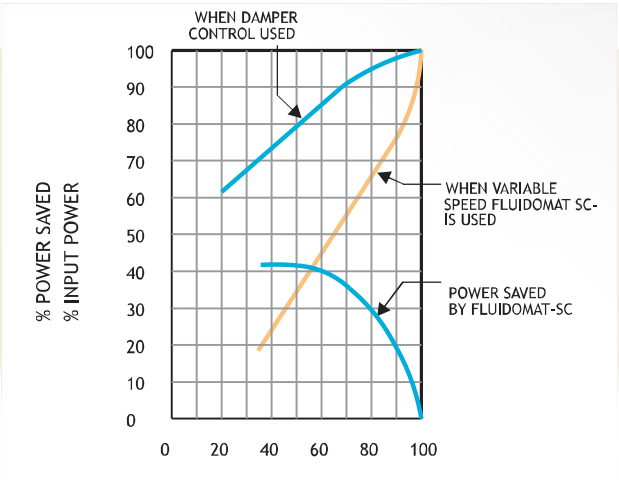


% Fan speed	Fan H.P.	Coupling Input H.P.	Diff. Loss
100	1000	1030	30
90	729	810	81
80	512	640	128
70	343	490	147
66.6	296.3	444.4	148.1
60	216	360	144
50	125	250	125
40	64	160	96
30	27	90	63
20	08	40	32

CURVE-1 % SPEED

The curve 1 Shows the power required by a centrifugal machine at different speeds. In the same figure the power required by the system is shown if Fluidomat SC is used for speed variations. Fluidomat SC is an ideal equipment for speed variations of centrifugal machines & thus discharge control. Slip power losses in the coupling are also shown in the characteristic curve.

POWER REQUIRED FOR CENTRIFUGAL FAN & POWER SAVING BY FLUIDOMAT-SC



CURVE-2

Curve 2 shows the typical example of power saved at different discharge values when Fluidomat SC is used. The power saving can be in the range of 10-40% depending on operation and flow requirements.
Since Fluidomat SC starts motor on NO LOAD therefore motor can be rated for consumed power and not for starting duty. By reducing the power rating of the motor, energy is further saved due to improved efficiency and power factor of the motor. At the same time, high cost slipring motors can be replaced by rugged squirrel cage motors which are low in cost and require very low maintenance.

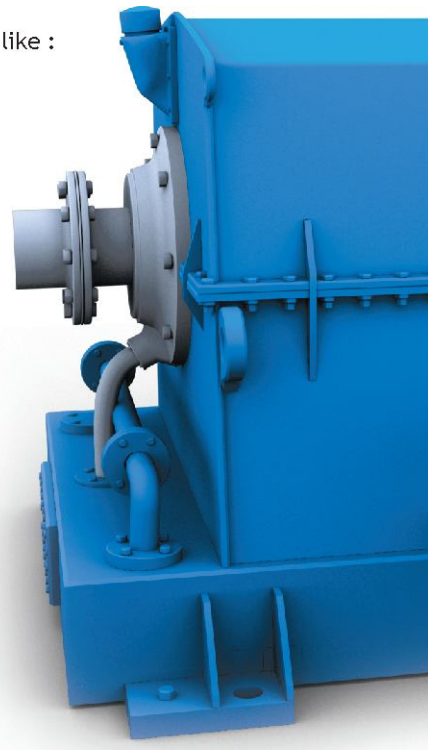
RATING OF SC & SC-HT COUPLING IN KW

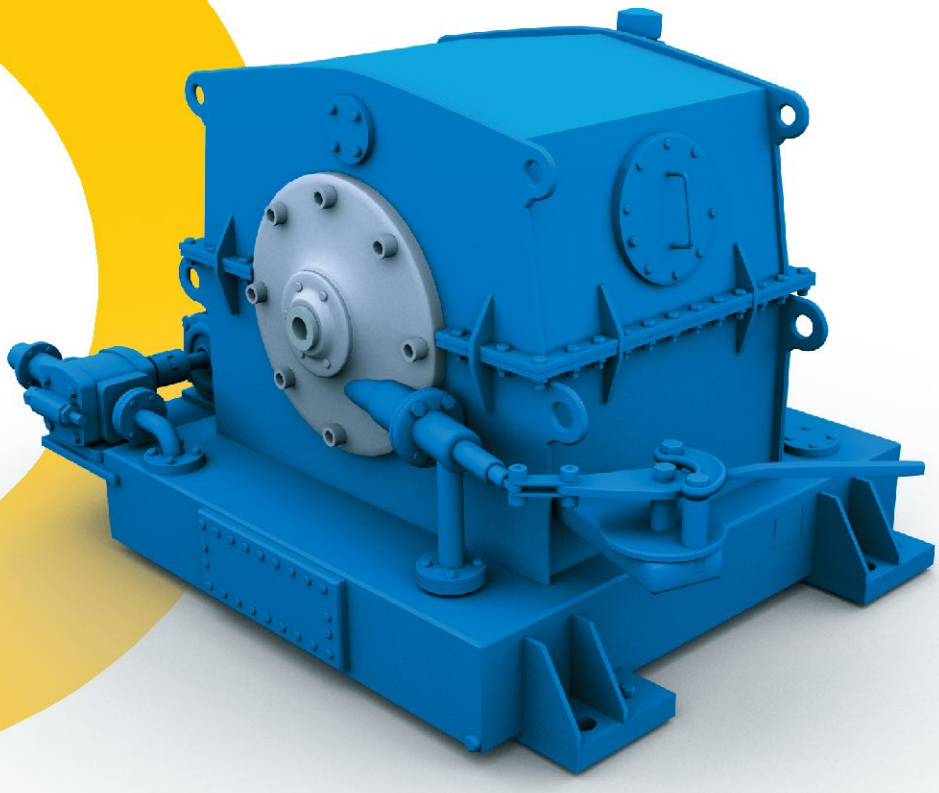
MODEL	Input Speeds in RPM							
	600	750	900	1000	1200	1500	1800	3000
SC-6	-	-	9	12	21	40	70	125
SC-7	5	10	17	23	39	75	130	300*
SC-8	7	14	24	32	56	100	173	500*
SC-9	13	25	44	60	104	205	300	-
SC-9 HT	-	-	-	-	-	-	355*	1250*
SC-10	25	49	85	116	200	350	425*	-
SC-10 HT	-	-	-	-	-	-	605*	2600*
SC-11A	35	68	118	162	280	500	680	-
SC-11	51	100	172	236	408	725	1100	-
SC-12	90	176	304	416	720	1250	2000*	-
SC-13	128	250	432	592	1024	1700	2300*	-
SC-880	192	375	648	890	1600	2300*	2600*	-
SC-14	435	850	1468	1850	2300	-	-	-
SC-14 HT	-	-	-	-	3000*	-	-	-
SC-16	900	1758	2812	3000	-	-	-	-

* Heat Treated Casting

ADVANTAGES

- Due to its constructional features Fluidomat - SC design offers many distinct advantages like :
- Self - supported stationary housing, hence no weight experienced by driving or driven shafts and does not load motor and machine bearings.
- Rugged design for all site conditions.
- Rotating mass is not exposed, hence, no hazards of accidents.
- Easy mounting of various controls, oil connections, sensors etc.
- Higher misalignment capacity and choice of flexible couplings.
- Easy maintenance and accessibility by opening top cover.
- Continuous declutching possible.
- Very low vibration and noise level.
- Ease of adopting various type of control and compatible with them.
- Scoop tube position can be governed very easily for speed control.
- Easy operation of scoop tube in auto or manual mode.
- Labyrinth Seals on shaft ensures no leakage from shaft ends.





The Compact Scoop Controlled Fluid Coupling

Delta SC fluid couplings by Fluidomat are self supported compact - scoop control variable speed fluid coupling with flange connection on both ends.

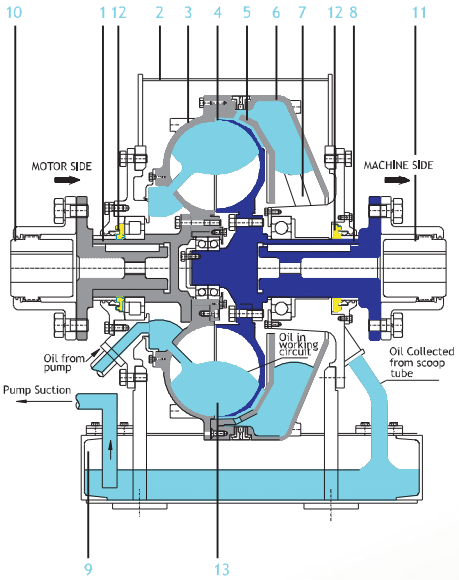
Delta SC couplings can replace the rotating body coupling design type SCR of Fluidrive type PSC of Pembril and type SCR of Sime on one to one basis and will fit into the existing drive set up with minor modification. The Delta SC couplings provide complete solution to the problems of above mentioned rotating body couplings having operational maintenance and alignment problems inherent to the type of these couplings as experienced by several users from different sites. Delta SC couplings are a perfect solution to the problems of above rotating body fluid couplings.

Delta SC are totally enclosed and self supported compact scoop control fluid couplings without any weight reaction on driving or driven machine. The oil sump is built with the stationary housing and oil is introduced into the working circuit through a separate oil pump. The oil circulates through the working circuit and finally passes to the outer casing and is collected by the sliding scoop tube.

The oil in the working circuit is governed by the position of scoop tube. The position of scoop tube can be governed through suitable electric actuator or manually by hand lever.

On the input and output ends, suitable flexible couplings are provided for the shaft connections. A suitable oil cooler is provided in the circuit to cool the circulating oil.

FLUIDOMAT DELTA-SC



DESCRIPTION

1 INPUT SHAFT
2 UPPER HOUSING
3 IMPELLER
4 ROTOR
5 PRIMARY CASING
6 SECONDARY CASING
7 SCOOP TUBE
8 OUTPUT SHAFT
9 BOTTOM HOUSING
10/11 HALF GEAR COUPLING
12 LABYRINTH SEAL WITH OIL SEAL
13 WORKING CIRCUIT

OPERATION

The sliding scoop tube governs the oil level in the working circuit depending on its (scoop tube) position between 0 to 100%. By varying the oil level in the working circuit, the torque transmission capacity of the coupling varies, thus changing the slip in the coupling and provides stepless speed variation.

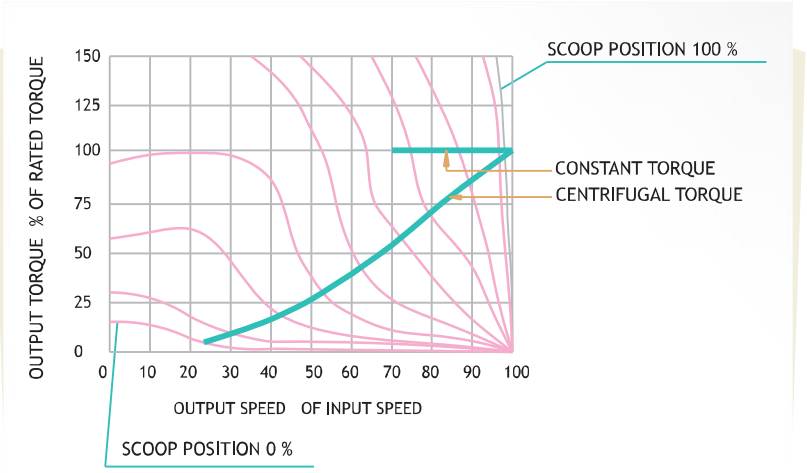
Delta SC couplings provide stepless speed regulation in the range of 4:1 as standard for centrifugal loads like fans and pumps. They also provide continuous declutching duty for select drives.

Comparison of Delta SC with Rotating Body scoop controlled couplings

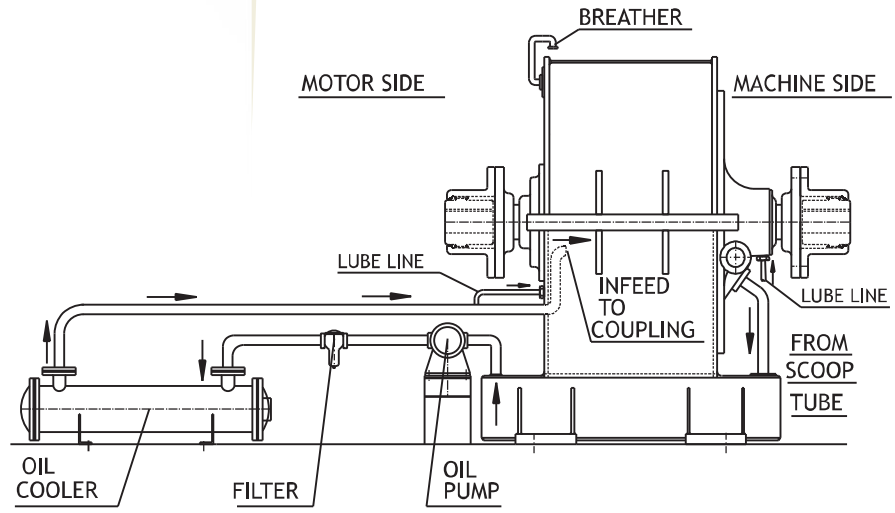
Fluidomat -Delta SC	Fluidrive,Sime / Pembril rotating body Type SCR/ PSC
Fully self -supported	Not self-supported.
Rotating parts light	Rotating parts heavy, since rotating oil sump.(rotating body)
No weight experienced on the motor and machine bearings by the rotating parts.	The weight of primary parts including rotating oil sump and oil volume is to be supported by the motor bearing.
Self supported and closed steel housing, splash-proof and dust proof.	Open running rotational body.
Fully enclosed parts in a simple way. Totally safe and no fear to operators.	Not possible. Accident prone with coupling fly off and potent danger of damages. Thin Driving plate connection supporting coupling weight on input side is must in types 24 and 25 of SCR/PSC designs.
Assembly independent from motor and driven machine, hardly any alignment problems.	Assembly only possible in connection with motor and driven machine. A very precise alignment is necessary.
Simple dismantling of rotating parts for repair by removing the cover of the housing, partial inspection is possible.	Complete dismantling of the coupling is required for repair.
Shorter response times, since the scoop tube is dipping directly into the working oil circuit.	Slower response times, as the scoop tube is changing the oil flow rate in the oil sump, which means it is not directly in the working oil circuit.
Smaller outer dia of rotating parts. Lower inertia.	Higher outer dia of rotating parts and thus higher peripheral speed and noise level. Higher inertia.
Oil flow rate through oil cooler is constant and hence best performance of oil cooler	Oil flow rate through oil cooler is variable depending on scoop tube position. Hence oil cooler performance varies.

CHARACTERISTIC CURVE

(AT VARIOUS SCOOP TUBE POSITIONS BETWEEN 100% & 0%)



OIL FLOW CIRCUIT DIAGRAM



Selection and Power Rating

Delta SC couplings are offered in three different execution designated by a four digit system. The first three digits show the size of fluid coupling while the fourth digit shows the type. Thus the fourth digit as 1 can replace type SCR24R/PSC24, fourth digit as 2 can replace type SCR25/PSC25 and fourth digit as 3 can replace 26/25B of Fluidrive and Pembril makes.

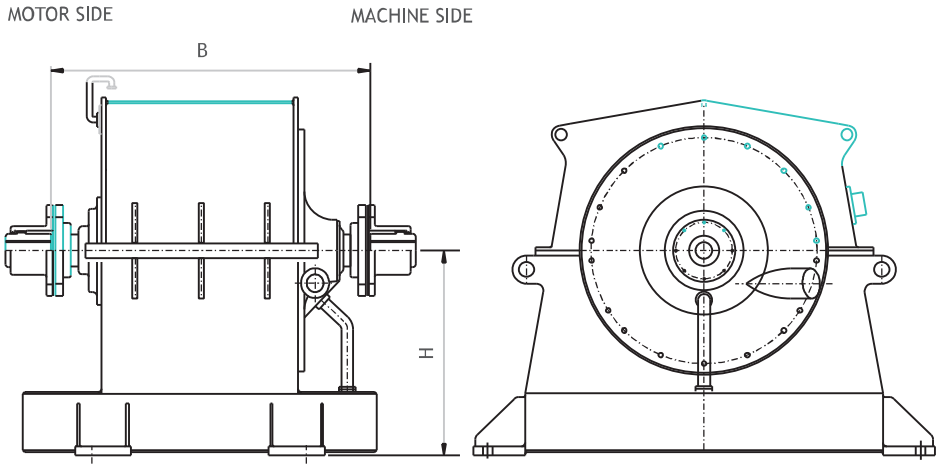
Rating of Delta SC couplings in KW

Delta SC couplings are offered in eight standard sizes to cover a range upto 1100 KW. The rating table gives the power ratings at various input speeds.

RATING OF DELTA SC COUPLING IN KW

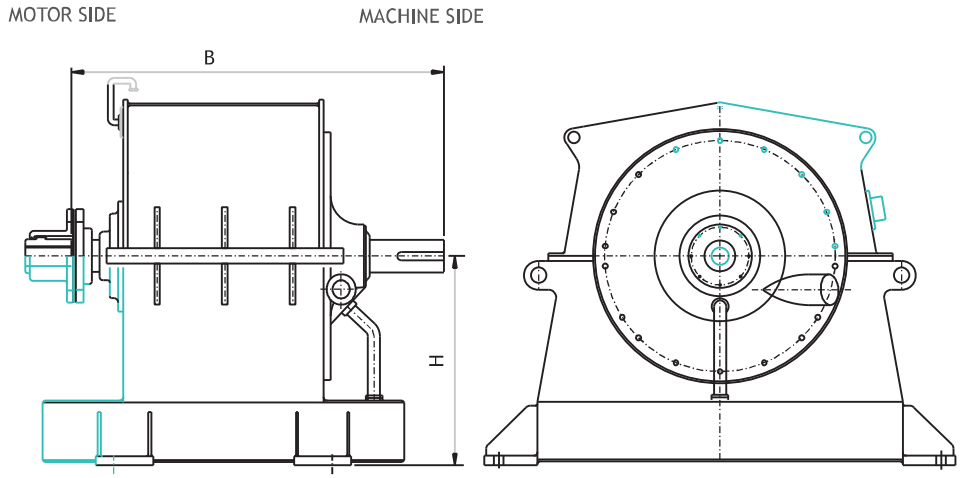
Delta SC Model	Input Speeds in RPM					
	750	900	1000	1200	1500	1800
0801,0802,0803	15	25	35	61	119	206
0901,0902,0903	26	42	60	104	200	311
1001,1002,1003	51	84	118	208	375	550
1101,1102,1103	72	135	170	300	523	575
1201,1202,1203	100	175	237	410	800	--
1301,1302,1303	185	326	400	715	930	--
1401,1402,1403	282	535	650	905	--	--
1501,1502,1503	750	905	1150	-	-	-

FLUIDOMAT MODEL: DELTA SC-0801 TO 1501



MODEL	B	H1* ALT 1	H2* ALT 2
SC-0801	481	355	395
SC-0901	497	355	447
SC-1001	735	457	500
SC-1101	735	457	525
SC-1201	735	559	559
SC-1301	1027	559	600
SC-1401	1148	711	711
SC-1501	1249	711	812

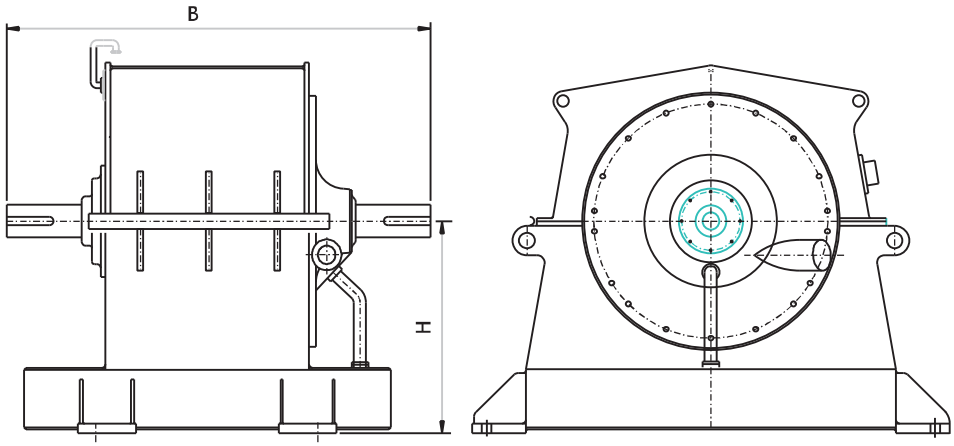
FLUIDOMAT MODEL: DELTA SC-0802 TO 1502



MODEL	B	H1* ALT 1	H2* ALT 2
SC-0802	563	355	395
SC-0902	578	355	447
SC-1002	735	457	500
SC-1102	740	457	525
SC-1202	788	559	559
SC-1302	1027	559	600
SC-1402	1148	711	711
SC-1502	1249	711	812

FLUIDOMAT MODEL: DELTA SC-0803 TO 1503

MOTOR SIDE MACHINE SIDE



MODEL	B	H1* ALT 1	H2* ALT 2
SC-0803	760	355/400	395
SC-0903	760	355/400	447
SC-1003	972	435/465	500
SC-1103	972	465/485	525
SC-1203	1110	570	559
SC-1303	1280	570	600
SC-1403	1280	636	711
SC-1503	1470	711	812

NOTE: ALL DIMENSIONS ARE IN mm.

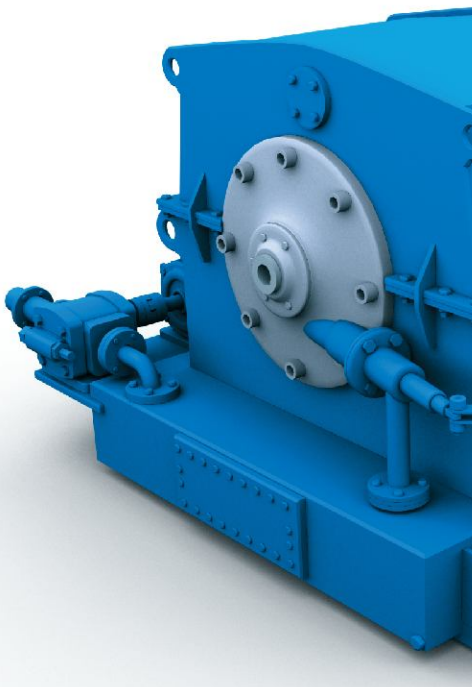
* Centre Height H1i is with oil tank placed separately from coupling.
Centre Height H2 is with oil tank integral with coupling.
The figures show coupling with integral oil tank i.e, as per centre height H2.

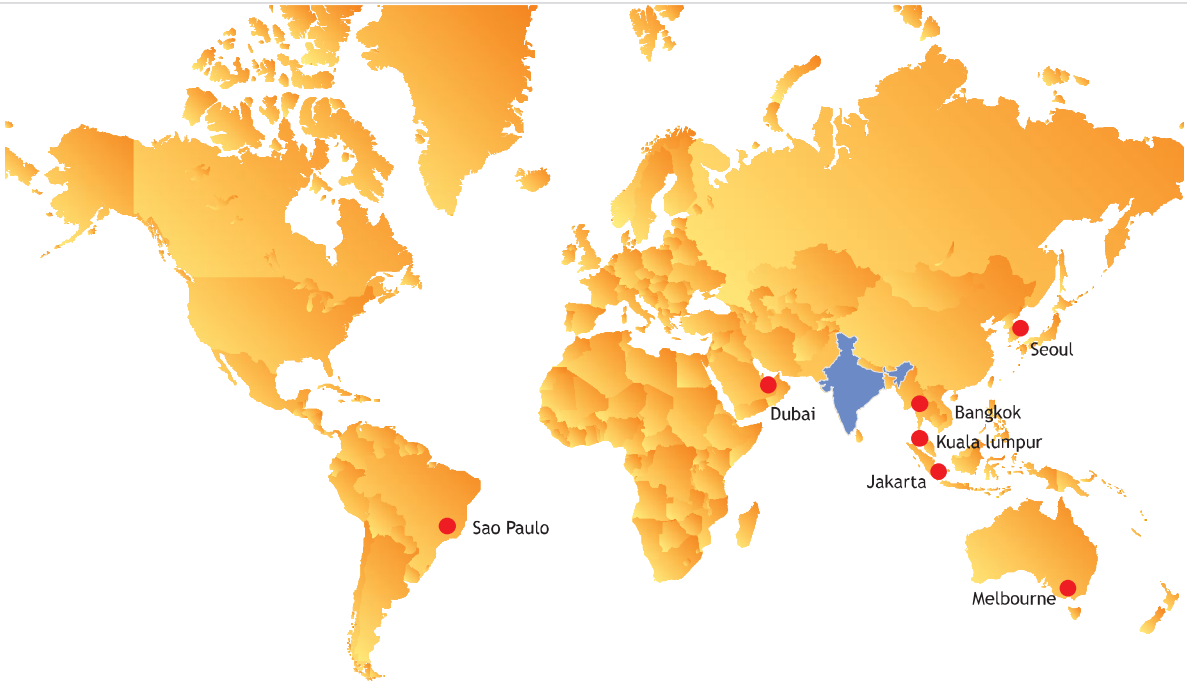
SCR/PSC Size	18	20	23	26	29	32	36	41
Equivalent Delta SC Model	080	090	100	110	120	130	140	150

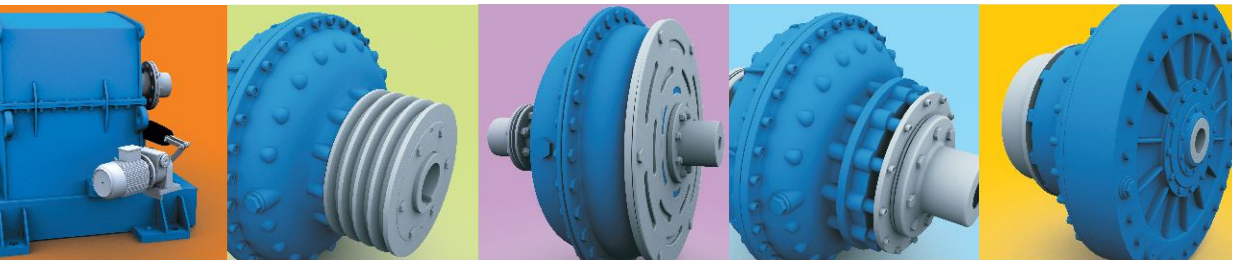
Advantages of Delta SC Couplings

The following features of Delta SC are greatly advantageous and user friendly.

- Self-standing coupling, thus no weight reaction on driving and driven shaft.
- Rotating parts of coupling totally enclosed in self-standing body of the coupling.
- The couplings are radially displaceable without the need of shifting the motor or machine for installation or the removal.
- Low noise and vibration levels.
- Infinite speed variation in a wide range up to 4:1 as standard.
- Continuous declutching possible on select drives.
- Constant flow rate of oil by separate oil pump ensures low temperature operation
- and best performance of the oil cooler throughout the speed range.
- Simple in construction. Ease of assembly and disassembly and trouble shooting.
- Labyrinth Seals on shaft ensures no leakage from shaft ends.







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FLUIDOMAT

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