Scoop Controlled
Variable Speed Fluid Couplings
For powers up to 3840 kW
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.

**Advantages**
- Self-supported stationary housing
- 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

**Applications:**
- Belt Conveyors, Pipe Conveyors
- Conveyors with multi drive units
- Reversible Conveyors, Inclined Conveyors
- Ring Granulators (Crushers)
- Hammer type Crushers
- Ball mills, Rod mills
- Beaters, Pulverizers
- Vibrating Screens
- Centrifugal Fans & Pumps with Speed Variation
- Boiler Feed Pumps
- Blowers & Fans
- Wagon Tipplers
- Bucket Elevators
- Dredgers

**Operating principle**

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**

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 circuit.

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.
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.

**Advantages**
- Self-supported stationary housing
- 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

**Applications:**
- Belt Conveyors, Pipe Conveyors
- Conveyors with multi drive units
- Reversible Conveyors, Inclined Conveyors
- Ring Granulators ( Crushers )
- Hammer type Crushers
- Ball mills, Rod mills
- Beaters, Pulverizers
- Vibrating Screens
- Centrifugal Fans & Pumps with Speed Variation
- Boiler Feed Pumps
- Blowers & Fans
- Wagon Tipplers
- Bucket Elevators
- Dredgers

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**

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 circuit. 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.
### Selection Table (rating in kW)

<table>
<thead>
<tr>
<th>Model SC</th>
<th>Input Speeds in RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500</td>
</tr>
<tr>
<td>SC-6</td>
<td>-</td>
</tr>
<tr>
<td>SC-7</td>
<td>-</td>
</tr>
<tr>
<td>SC-8</td>
<td>-</td>
</tr>
<tr>
<td>SC-9</td>
<td>-</td>
</tr>
<tr>
<td>SC-9 HT</td>
<td>-</td>
</tr>
<tr>
<td>SC-10</td>
<td>-</td>
</tr>
<tr>
<td>SC-11A</td>
<td>-</td>
</tr>
<tr>
<td>SC-11</td>
<td>-</td>
</tr>
<tr>
<td>SC-12</td>
<td>-</td>
</tr>
<tr>
<td>SC-13</td>
<td>74</td>
</tr>
<tr>
<td>SC-880</td>
<td>111</td>
</tr>
<tr>
<td>SC-14</td>
<td>252</td>
</tr>
<tr>
<td>SC-14 HT</td>
<td>370</td>
</tr>
<tr>
<td>SC-16</td>
<td>740</td>
</tr>
<tr>
<td>SC-1330</td>
<td>1.200</td>
</tr>
</tbody>
</table>
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.

**SC Typical Power & Speed Characteristics at Centrifugal Machines**

This curve 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 & Power Saving by SC-Couplings at Centrifugal Machines**

This curve 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.
esco - Excellent service for excellent brands

By service, we – the esco team – mean far more than maintenance and repair. That’s why our service already starts with the first phone call. Our experienced experts advise you on choosing the appropriate components and offer technically and economically convincing solutions meeting your requirements. In constructive collaboration with you and our suppliers we realize the solution concepts efficiently and give you our support throughout the whole project phase until the start-up on site. Engineering and consulting service, products of leading manufacturers and first class support – esco offers optimum performance at an economical price.

Personal consultation

At the Troisdorf offices, our field experienced engineering team answers in detail all questions regarding conception of complete drives or customization to the requirements of the application. Close cooperation and personal consultation provide confidence – and this is now more important than ever.

Service activities

We know how cost-intensive production losses resulting from machine downtime are. So, we do our utmost to make your equipment ready for operation again as fast as possible. Short reaction times due to best organized service processes and an extensive stock at the Troisdorf location with 24/48 hours delivery of all important spare parts guarantee safe operation of your machines and minimum downtimes.

For more information on clever drive solutions from esco please refer to www.esco-antriebstechnik.de.
Or simply call us! Our sales team will be pleased to help you.