

SEMIFLEX

INSTALLATION AND OPERATING MANUAL



Semiflex

The compact precision coupling without restoring forces: the unit combines high radial displacement capacity with extremely compact dimensions. Depending on the system, it operates without any restoring forces. Also available in aluminium for dynamic applications.

The installation and operating manual (I+O) is an essential part of the Semiflex. It gives information about installation, operation and maintenance.



Please read it in full and observe the instructions it contains.



The coupling may only be installed by trained and qualified technical staff.



Semiflex couplings may only be used in conformity with their technical data.

Hub versions of Semiflex



Hub version 1

Clamp hub

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Hub version 2

Split clamp hub

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Hub version 3

Locking-assembly

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Flange-mounting

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Hub version 6

Standard hub with keyway

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Hub version 7

Internal hub

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Please read the operating manual in full and follow its recommendations!

Failure to do so can lead to malfunction, including failure of the coupling, and the consequent damage.

Safety and warning symbols

 Attention! Danger of injury and damage to the machine.

 Warning on important points.

Manufacturer's declaration

Pursuant to Machinery Directive 2006/42/EC, the product is a component for integration into a machine or plant. Commissioning is not permitted until the machine or plant into which the product is to be integrated is itself conforming with EC Directives.

Safety instructions

The installation and operating manual (I+O) is an essential part of the Semiflex. Please keep the I+O in the vicinity of the coupling itself for easy access at all times.

It gives information about installation, operation and maintenance.

Please read it in full and observe the instructions it contains.

Semiflex couplings may only be used in conformity with their technical data.

 Danger! Rotating drive parts are hazardous.

The user must implement protective measures pursuant to applicable safety regulations in their current editions. The user is responsible for implementing such measures and for using the drive components exclusively as specified and within their specified technical limits.

 Tampering and modifications are expressly prohibited.

 The coupling may only be installed by trained and qualified technical staff.

 Read the installation and operating manual carefully before installing and commissioning the unit.

 The safety warnings make no claim to completeness.

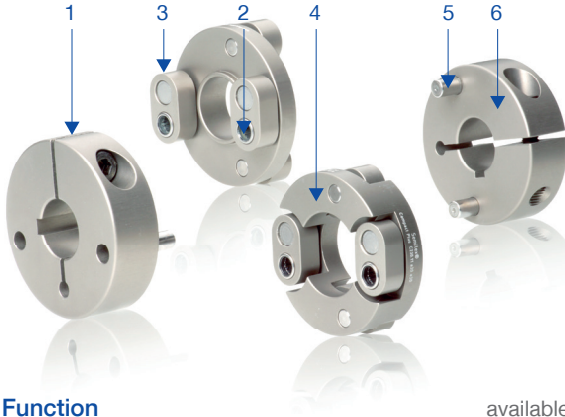
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Failure to do so can lead to malfunction, including failure of the coupling, and the consequent damage.

Installing the Semiflex



Parts list

- 1 Input shaft hub
- 2 Needle bearing
- 3 Coupling link
- 4 Center disk
- 5 Coupling bolts
- 6 Output shaft hub

Function

The Semiflex coupling transmits the rotary motion and torque via two pairs of parallel links offset by 90°.

They connect the driving or power take-off side with the centre disc. In case of perfectly aligned shafts, all three discs are also in an aligned position. In case of radial displacement, the links move parallel as a single group, while the the centre disc displaces radially by a corresponding amount. Semiflex couplings provide a constant angular velocity of the input and output shafts without phase displacement and hence absolute synchronisation, since the coupling links remain parallel to each other at all times.

Semiflex couplings compensate parallel offsets not by flexing, but by means of a no-load swivelling of the link pairs, supported by needle bearings, on the bolts in the disks.

Consignment

The Semiflex coupling is very robust, however it should be protected against external stresses and delivered to the assembly location in its original packaging after acceptance controls. Special packaging, e.g. for marine transport or or long-term corrosion protection, is

available on request. Semiflex couplings are supplied ready for operation and are generally lubricated for life thanks to their small bearing movement. However, unclean operating conditions can compromise the lubrication. Make sure to keep dirt, alkalis, fibres and so on away from the coupling. The seal of the assembly can be improved by additional sealing.



Tampering and modifications are expressly prohibited. SCHMIDT-KUPPLUNG GmbH is not liable for any consequent damage.

Temperature range

The couplings are designed for operating temperature of -20 °C to +120 °C. Higher temperatures will compromise the lubrication and seals and can quickly lead to failure. Lubrication and seals for higher temperatures are available on request.

Maximum bores

Semiflex couplings are supplied ready for installation with the specified bore diameter.



SCHMIDT-KUPPLUNG GmbH is not liable for the consequences of re-machining the pre-bored coupling hubs. The user or client is alone responsible.



Attention! Do not exceed the maximum permitted bore diameter of Semiflex (Table 1). Doing so can destroy the unit. Projected parts in case of catastrophic failure can cause serious injury.

Table 1: Maximum bores (mm)

Type Standard	Hub version 1	Hub version 2	Hub version 6
F 45	22		25
F 70	35	25	30
C 70	35	25	30
F 230	44	30	32
C 230	44	30	32
F 265	50	35	38
C 265	50	35	38
F 320	60	45	40
C 320	60	45	40
F 440	45		30
F 575	60	35	42
C 575	60	35	42
F 725			50
C 725			50
F 830			55
C 830			55
F 1120			45
F 1370			55
C 1370			55
F 1580			55
C 1580			55
F 2010			55
F 2390			55
C 2390			55
F 2700			60
C 2700			60
F 4220			60
F 5620			75
C 5620			75
F 7040			100
C 7040			100
D 40	30		
D 45	30		
D 180	40		
D 185	40		

Permitted shaft displacement

Semiflex couplings are torsionally rigid compensating couplings designed to compensate radial, axial and angular shaft displacements (Table 2). The technical specifications give the maximum values for the various types of displacement. They ensure that the unit is able to handle the actual operating conditions, including thermal expansion and movements of the foundation slab. In the event of the simultaneous occurrence of several combined types of offset, every single one may not achieve its maximum value. They must be aligned in such a way that the sum of the actual offset percentages does not exceed 100%.

Radial displacement

The specified radial displacement ΔK_r assumes a moderate shaft speed.

Fundamentally, higher speeds lead to a reduction of the possible radial offset; conversely, higher radial offset values than those specified in the catalogue can be realised for applications with low speeds.

Axial displacement

Do not install the unit to less than the specified assembly dimension L (Table 5). The value ΔK_a is permitted as a margin for factors such as thermal expansion. We recommend operating the unit close to the nominal length. The couplings are not fixed axially. This can be exploited in case of axial assembly.

Angular displacement

The angular displacement ΔK_w also affects the coupling's service life. The angular displacement must be kept within the indicated range.

Table 2: Permitted shaft displacement

Type	ΔK_r mm	ΔK_a + mm	ΔK_w °
F 45	2	1	1
F 70	2	1	1
C 70	2	1	1
F 230	2	1	1
C 230	2	1	1
F 265	2	1	1
C 265	2	1	1
F 320	3	1	1
C 320	3	1	1
F 440	3	1	1
F 575	3	1	1
C 575	3	1	1
F 725	3	1	1
C 725	3	1	1
F 830	4	1	1
C 830	4	1	1
F 1120	3	1	0,8
F 1370	3	1	0,8
C 1370	3	1	0,8
F 1580	4	1	0,8
C 1580	4	1	0,8
F 2010	4	1	0,7
F 2390	4	1	0,7
C 2390	4	1	0,7
F 2700	5	1	0,5
C 2700	5	1	0,5
F 4220	5	2	0,3
F 5620	6	2	0,3
C 5620	6	2	0,3
F 7040	6	2	0,3
C 7040	6	2	0,3
F 7500	6	1	0,2
F 9750	6	1	0,2
F 14500	6	2	0,2
D 40	1,2	0,5	1
D 45	1,2	0,5	1
D 180	1,5	0,5	0,5
D 185	1,5	0,5	0,5

Installation



Semiflex couplings should not be installed with a high axial thrust; doing so may damage the roller bearing races (Table 5).



Attention! The coupling can be pulled apart unintentionally during disassembly. Exercise caution during transportation, installation and assembly. Please do not pull apart, as parts of the coupling could fall off.

Hub version 1 und 2

Versions with clamp hub and split clamp hub

Check shaft connection dimensions (also feather key dimensions) and tolerances. The bored holes are delivered in Fit H8 for the Standard and Compact Plus designs and in F9 for the Dynamic design.

The clamping screws must be tightened to the recommended driving torque according to size (see below). The following table shows the recommended tightening torques for all Semiflex Standard, Semiflex Compact Plus and Semiflex Dynamic product lines in hub forms 1 and 2 - clamp hub and split clamp hub.

For hub form 2 (split clamp hub), the screws must be tightened evenly (clamping slot on both sides should sit at the same distance).

Table 3: Tightening torque

Type		Screw size	Tightening torque Nm
Standard	Compact		
F 45		M6	15
F 70	C 70	M8	36
F 230	C 230	M10	72
F 265	C 265	M12	125
F 320	C 320	M12	125
F 440		M12	125
F 575	C 575	M12	125

Dynamic			
D 40		M5	6
D 45		M6	8
D 180		M8	24
D 185		M8	24

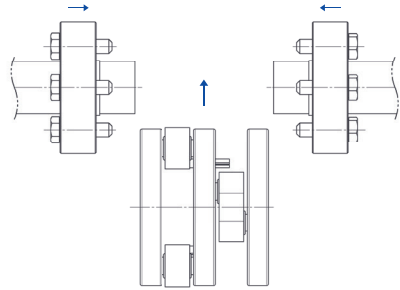
Hub version 3

Versions with locking-assembly

Bores are supplied in fit F7. In the locking-assembly version, the torque is transmitted frictionally from the coupling via the inner ring to the shaft. The clamping screws enable the required pressure. In its untensioned state, a defined gap is present between the outer ring and the coupling.

The relevant screw sizes and tightening torques depend on the selected bore diameters. Please refer to the CAD configurator at <https://www.schmidt-kupplung.com/en/product-range/couplings/semiflex> for the exact specifications of your chosen coupling.

For applications with axially non-displaceable shafts, this hub design offers the possibility of radial mounting. The shaft offset should correspond to the nominal length plus $\frac{1}{2}$ the axial displacement capacity ΔK_a (generally 0.5 mm) of the coupling. First slide the locking assemblies onto the two shafts with the screws inserted. The Semiflex coupling can now be radially positioned between the two shaft ends and then aligned with the two locking assemblies. Before tightening down the screws, move the coupling to its final position and check the mounting length. Hand tighten the screws and check the assembly for axial runout and then tighten the screws down to their specified torque by stages.



Hub version 5

Flange mounting

Screw the coupling with the mounting flanges fixed to the hubs manufactured by the client or other components. Tighten flange fastening screws with a torque wrench to the torque specified by the client.

Hub version 6 und 7

Hub and inner hub

Bores are supplied in fit H7. A fixed shaft seat is desirable to ensure a low backlash shaft connection. The axial compressive forces occurring during assembly must be kept away from the coupling. For this purpose, axial support for the coupling elements is recommended. Alternatively, the hubs can be separately mounted on the shafts and the coupling can then be fitted together cleanly.

Table 5: Installation dimensions

Type	Hub version 1	Hub version 2	Hub version 5	Hub version 6
F 45	60		44	60
F 70	68	68	44	68
C 70	59	59	35	59
F 230	104	104	74	104
C 230	88	88	58	88
F 265	104	104	74	104
C 265	88	88	58	88
F 320	104	104	74	104
C 320	88	88	58	88
F 440	143		101	143
F 575	143	143	101	143
C 575	120,5	120,5	78,5	120,5
F 725			101	149
C 725			78,5	126,5
F 830			101	163
C 830			78,5	140,5
F 1120			134	162
F 1370			134	170
C 1370			110	146
F 1580			134	182
C 1580			110	158
F 2010			155	185
F 2390			155	195
C 2390			127	167
F 2700			155	
C 2700			127	
F 4220			196	
F 5620			196	
C 5620			152	
F 7040			196	
C 7040			152	
F 7500			155	
F 9750			155	
F 14500			196	

D 40	52			
D 45	58			
D 180	59			
D 185	67			

Please refer to the CAD configurator at <https://www.schmidt-kupplung.com/en/product-range/couplings/semiflex> for the exact dimensions of your chosen coupling.

Maintenance

Due to their small bearing movement, Semiflex couplings are lubricated for life and maintenance free.



Maintenance and repairs may only be done by SCHMIDT-KUPPLUNG GmbH staff. We assume no liability or warranty for maintenance done by the user and/or fitting Semiflex couplings with components not originally supplied by SCHMIDT-KUPPLUNG GmbH.

General information

Failure, improper selection or improper use of the product can result in malfunction or failure of the coupled assemblies. On the other hand, malfunction of the coupled assemblies can cause the product itself to fail.

The information on the website, in the technical brochures and other publications allow the technically qualified user to make the proper choice for further tests. It is important that the application be thoroughly analysed and the above-mentioned product information be reviewed in full.

Due to the vast range of applications for these products and the variety of operating conditions, the user alone is responsible for choosing the correct product in accordance with his plant or machine design and testing, compatible with the operating conditions and safety and protection requirements characteristic of the application.

The product's specifications may be changed at any time without notification.

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