

Please read and observe

these operating instructions carefully! Non-observation of the information it contains may lead to coupling malfunction or failure and consequential damage.

Shaft-hub connections of Semiflex®



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Semiflex®

The compact Semiflex® precision coupling combines a high radial misalignment capacity with extremely compact dimensions and – depending on the system – zero restoring forces. It is also available in aluminium for dynamic applications.

Danger and information symbols



Caution! Danger of personal injury and machine damage.



Note! Important points to observe.

These installation and operating instructions are an integral part of your Semiflex® coupling. They provide important information about correctly installation, operating and maintenance of your coupling.



Please read these instructions carefully and observe all notes.



The coupling must be installed only by qualified and trained personnel.



Semiflex® must be used only as outlined in the associated technical specifications.

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these operating instructions carefully! Non-observation of the information it contains may lead to coupling malfunction or failure and consequential damage.

Manufacturer's Declaration

This product is a component intended for installation in a plant or machine as defined by Machinery Safety Directive 98/37/EC. Commissioning must be performed only after the machine or plant in which this product is to be fitted has been confirmed as conforming to the requirements of the above EC Directive.

Safety instructions

These installation and operating instructions are an integral part of your Semiflex®. Always keep these instructions in an easily accessible place near the coupling. They provide important information about correctly fitting, operating and maintaining your coupling. Please read these instructions carefully and observe all notes.

Semiflex® must be used only as outlined in the associated technical specifications.



Danger! Rotating drive components are potential for danger !

All persons working on or operating the machine or plant must observe the applicable safety regulations and instructions and take appropriate safety precautions. The machine's owner/operator is responsible for ensuring that all necessary safety precautions are in place and that the personnel has been appropriately instructed. The drive components must be used only for their intended purpose and within their specified technical operation limits.



Modifications

The product must not be reworked or otherwise modified.



The coupling must be installed only by qualified and trained personnel.



Carefully read these installation and operating instructions before fitting and commissioning the coupling.

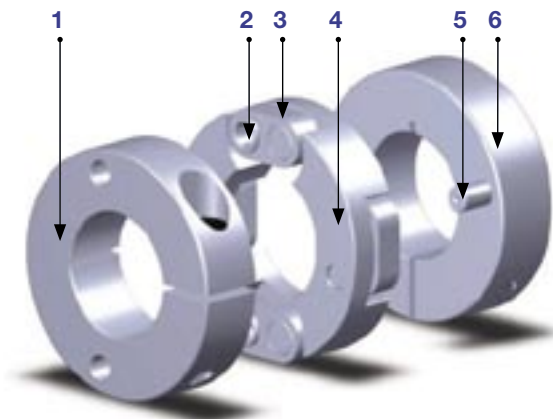


The notes on safety contained in these instructions do not represent completeness.

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Assembly of Semiflex®



Function

Semiflex® transmit rotary motion and torque torsionally stiff through a system of two pairs of parallel links that are offset by 90 degrees and from the link between the hubs and the centre disk. When the input and output shafts are perfectly aligned, the coupling's hubs and centre disk are also aligned. As soon as radial misalignment occurs, the links of each group move parallel with each other and the centre disk moves off the centre line. Because the coupling's elements always remain parallel to each other, the Semiflex® transmits rotational movement with constant velocity.

Semiflex® does not compensate parallel misalignment through flexional, elastic behaviour, but through the restoring force-free swivelling motion of the link pairs. For optimum, smooth performance, the links are mounted on the hubs' drive pins with needle bearings.

State of delivery

Although exceptionally rugged, Semiflex® should be protected from external forces. After the goods-in inspection, keep the couplings in their original packaging until they are ready to be fitted at their installation site. Special packaging, such as overseas packaging or for long-term corrosion protection, is available by special arrangement. Semiflex® are supplied ready for use. Because of the small

Parts list

- 1 Input hub
- 2 Needle bearing
- 3 Coupling link
- 4 Centre disk
- 5 Drive pins
- 6 Output hub

bearing movements, they are usually life-time lubricated. Contaminated environments can impair the effectiveness of the lubrication. Keep dirt, caustic solutions, fibres and similar substances away from the coupling. The sealing properties can be improved by fitting additional seals.



The coupling must not be reworked or otherwise modified. SCHMIDT-KUPPLUNG GmbH does not accept liability for any loss or damage resulting from such modifications.

Temperature stability

The couplings are suitable for continuous operation at temperatures from -20 °C to +110 °C. At higher temperatures, the lubricant or seals may deteriorate, which can cause premature failure of the coupling. Lubricants and seals for higher temperatures are available on request.

Maximum bore diameter

Semiflex® are supplied ready to install with the desired bore diameter.



SCHMIDT-KUPPLUNG GmbH does not accept liability for any couplings with prebored hubs that have been reworked by the customer. The customer is solely responsible for any consequential loss, damage or injury in this case.



Caution!
The maximum bore diameter of Semiflex® (see table 1) must not be exceeded. Larger bores can result in destruction of the coupling. Coupling fragments hurled at high speed can cause serious or fatal injury.

Table 1: Maximum bore diameter (mm)

Model	Hub version 1	Hub version 2	Hub version 6	Hub version 7
Standard				
F 45	22		26	
F 70	35	25	40	25
F 230	44	30	35	25
F 265	50	35	40	35
F 320	70	45	45	45
F 440	45		32	
F 575	60	35	15	30
F 725			55	45
F 830			60	60
F 1120			45	
F 1370			60	40
F 1580			60	60
F 2010			55	
F 2390			60	60
F 2700			65	70
F 4220			70	
F 5620			80	90
F 7040			100	120
Compact Plus				
C 70	35	25	40	
C 230	44	30	40	25
C 265	50	35	50	35
C 320	70	45	50	45
C 575	60	35	45	30
C 725			55	
C 830			60	
C 1370			60	40
C 1580			60	60
C 2390			60	
C 2700			65	70
C 5620			80	90
C 7040			100	
Dynamic				
D 40	30			
D 45	25			
D 180	35			
D 185	35			

Misalignment capacity ratings

The torsionally stiff Semiflex® accommodate radial, axial and angular shaft misalignments (see table 2). The technical specifications list the greatest permissible ratings for each kind of misalignment. The couplings reliably accommodate misalignments during operation, caused, for example by thermal expansion or settling of the plant's foundations. Where several misalignment types occur at the same time, the maximum misalignment figures must be reduced. The sum of the actually occurring misalignments must not exceed 100 percent of the maximum value.

Radial misalignment

Radial misalignment has a complex effect on the coupling's lifespan and usable torque and speed. During normal operation (at given conditions), displacement ΔK should not be exceeded. In addition, the coupling's maximum displacement $5 \times \Delta K_r$ (depending on construction type) must occur only at standstill, during installation or at low speeds.

Axial misalignment

The installation dimension L must not be less than the ratings given in table 5. To compensate for thermal expansion for example, an extension of ΔK_a is permissible. It is recommended that the coupling is operated near its nominal length. The couplings are not axially fixed and can therefore be used for an axial installation.


Angular misalignment

Angular misalignment ΔK_w also affects the coupling's lifespan. The angular misalignment should remain within the specified ratings.

Table 2: Maximum misalignment ratings

Model	ΔK_r (mm)	ΔK_a (mm)	ΔK_w (°)
Standard			
F 45	1	1	1
F 70	1	1	1
F 230	1,6	1	1
F 265	1,6	1	1
F 320	3	1	1
F 440	2,4	1	1
F 575	2,4	1	1
F 725	2,4	1	1
F 830	4	1	1
F 1120	3	1	0,8
F 1370	3	1	0,8
F 1580	4	1	0,8
F 2010	3,2	1	0,7
F 2390	3,2	1	0,7
F 2700	4,4	1	0,5
F 4220	4	2	0,5
F 5620	5,4	2	0,5
F 7040	6,6	2	0,3
Compact Plus			
C 70	1	1	1
C 230	1,6	1	1
C 265	1,6	1	1
C 320	3	1	1
C 575	2,4	1	1
C 725	2,4	1	1
C 830	4	1	1
C 1370	3	1	0,8
C 1580	4	1	0,8
C 2390	3,2	1	0,7
C 2700	4,4	1	0,5
C 5620	5,4	2	0,5
C 7040	6,6	2	0,3
Dynamic			
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® must not be fitted under axial pressure, as this could damage the needle bearings (see table 5).



Caution! Make sure the coupling does not accidentally come apart during installation and dismounting. Take care when transporting, installation and assembling the coupling. Do not pull the coupling apart, as components may drop out.

Hub version 1 and 2 with clamp and split-clamp hubs



The shaft ends to be joined and the hubs must be clean, dry and free from burrs. These couplings are supplied as standard with keyway following DIN 6885/1.

Check the connection dimensions and tolerances. The bores are supplied in tolerance H8.

Tighten the clamping screws to the specified tightening torque (see table 3). The table 3 gives the recommended screw tightening torques for Semiflex® Standard, Semiflex® Compact Plus and Semiflex® Dynamic in hub version 1 and 2 (clamp and split-clamp hubs).

On split-clamp hubs make sure that the two screws are tightened evenly – the gap between the two hub halves should be the same on both sides.

Table 3: Screw tightening torques

Model	Screw size	Tightening torque (Nm)
Standard		
F 45	M6	15
F 70	M8	36
F 230	M10	72
F 265	M12	125
F 320	M12	125
F 440	M12	145
F 575	M12	145
Compact Plus		
C 45	M6	15
C 70	M8	36
C 230	M10	72
C 265	M12	125
C 320	M12	125
C 440	M12	145
C 575	M12	145
Dynamic		
D 40	M5	6
D 45	M6	8
D 180	M8	24
D 185	M8	24



Hub version 3

with locking assembly

The bores are supplied in tolerance F7.

The locking assembly versions transmit the torque to the shaft through the outer and inner rings, which have a friction fit between each other and with the hub. Tightening screws are used to secure the hub to the shaft. Before they are tightened, there is a clear gap between the outer ring and the coupling. The gap width and number of screws are matched so that enough spare tightening capacity remains after closing the gap to tighten the outer ring against the coupling.

Table 4: Screw tightening torques

Model	Screw size	Tightening torque (Nm)
Standard		
F 230	M8	29
F 265	M8	29
F 320	M8	29
F 440	M8	29
F 575	M10	58
F 725	M12	100
F 830	M12	100
F 1120	M12	100
F 1370	M12	100
F 1580	M12	100
F 2010	M12	100
F 2390	M16	240
F 2700	M16	240
F 4220	M16	240
F 5620	M16	240
F 7040	M16	240
Compact Plus		
C 230	M8	29
C 265	M8	29
C 320	M8	29
C 575	M10	58
C 725	M12	100
C 830	M12	100
C 1370	M12	100
C 2390	M16	240
C 1580	M12	100
C 2700	M16	240
C 5620	M16	240
C 7040	M16	240

Before installation, degrease the shaft and the coupling's mounting face. Loosely assemble the coupling and locking assembly, slide it onto the shaft and adjust the length. Tighten the screws in several stages up to their full tightening torque (see table 4). To remove the coupling from the shaft, undo the tightening screws one after the other in several stages.

Hub version 5

Flange-mounting



Firmly bolt the flange-mounting hub onto the customer's flanged shafts or other components. Using a torque spanner, tighten the flange mounting bolts to the customer-specified tightening torque.

Hub version 6 and 7

Standard and internal hub with keyway and set screw



To achieve a low backlash, a firm shaft connection is required. To prevent axial compressive forces acting on the coupling during its installation, provide an axial support for the coupling's components. Alternatively you can push the hubs onto the shafts separately before assembling the coupling. The bores are supplied in tolerance F7.

Table 5: Installation length (mm)

Model	Hub version 1	Hub version 2	Hub version 3	Hub version 5	Hub version 6	Hub version 7
Standard						
F 45	60			44	60	
F 70	68	68		44	68	44
F 230	104	104	116	74	104	74
F 265	104	104	116	74	104	74
F 320	104	104	116	74	104	74
F 440	143		116	101	143	
F 575	143	143	151	101	143	101
F 725			161	101	149	101
F 830			161	101	163	101
F 1120			188	134	162	
F 1370			194	134	170	134
F 1580			202	134	182	134
F 2010			202	155	185	
F 2390			235	155	195	155
F 2700			235	155	205	155
F 4220			276	196	236	
F 5620			284	196	266	196
F 7040			296	196	322	196
Compact Plus						
C 70	59	59		35	59	
C 230	88	88	100	58	88	58
C 265	88	88	100	58	88	58
C 320	88	88	100	58	88	58
C 575	120.5	120.5	138.5	78.5	120.5	78.5
C 725			148.5	78.5	126.5	
C 830			148.5	78.5	140.5	
C 1370			170	110	146	110
C 1580			178	110	158	110
C 2390			235	127	167	
C 2700			207	127	177	127
C 5620			240	152	222	152
C 7040			252	152	278	
Dynamic						
D 40	52					
D 45	58					
D 180	59					
D 185	67					

Maintenance

Because of their low bearing movement, Semiflex® are life-time lubricated and are maintenance-free.



Maintenance work on Semiflex® must be performed only by SCHMIDT-KUPPLUNG personnel. SCHMIDT-KUPPLUNG GmbH does not accept liability for damage or injury caused by customer-serviced or modified couplings and/or couplings fitted with parts other than those supplied by SCHMIDT-KUPPLUNG. Any warranty becomes void through any such modifications.



General notes

The failure, incorrect selection and incorrect use of these products can lead to a faulty operation or failure of associated plant sections. Conversely, the incorrect functioning of connected components can cause these products to fail.

Our website, the technical brochures and other publications provide information to help you select the best suited product for your application. The suitability of the selected products should always be verified by a technical expert. Make sure that you have analyzed all aspects of your application and verified the product information provided in these publications.

Because of the many possible applications for these products and the wide range of operating conditions, the user of the products is exclusively responsible for ensuring that the selected products are suitable for the intended application and fulfil all applicable safety requirements. Where necessary, tests should be performed to ensure that the correct product has been selected.

The provided specifications are subject to change at any time without prior notification.

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