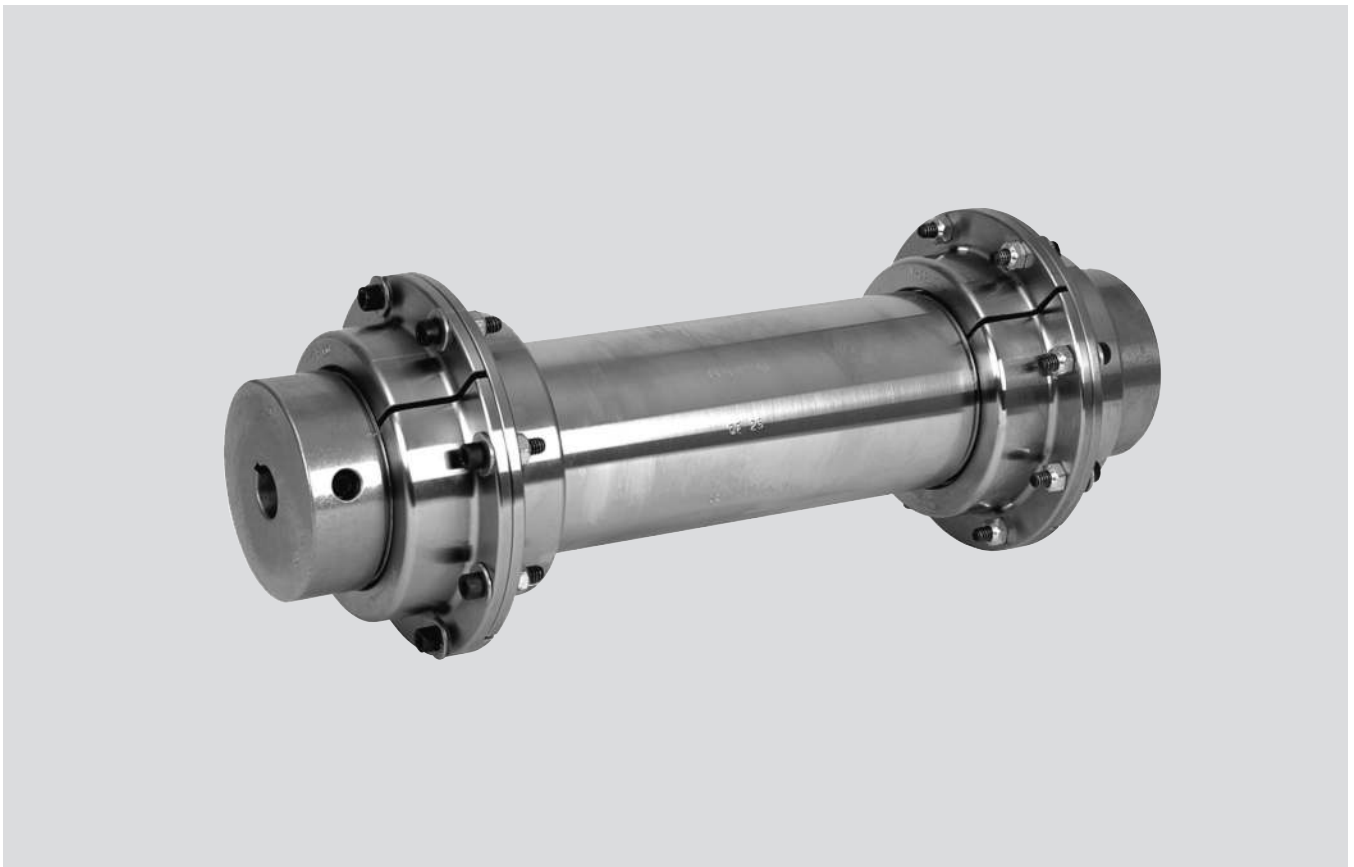


TIMKEN

Installation Guide

Timken Quick-Flex[®] Coupling: Double-Ended Spacer



DOUBLE-ENDED SPACER COUPLING INSTALLATION

Please complete the following steps to install Timken Quick-Flex double-ended spacer couplings.

You should have the following pieces before starting the job:

- Two hubs
- One spacer body
- Two inserts
- Two covers with included hardware

NOTE

It is critical to identify what style cover you are using, as this will change the hardware included, as well as the installation procedure. A mismatch between the coupling and the application may result in less than optimal performance.

There are four types of covers (fig. 1):

- **High-speed cover:** QF5 through QF175 use a standard snap ring to secure cover in place. QF250 and larger use eight bolts with lock washers.
- **Low-speed split cover:** This cover is free-floating and is located outside the shoulders of the two hubs. All sizes come with four bolts for securing the two halves together around the insert.
- **High-speed split cover:** This cover will be supplied in four pieces to fit over the spacer body. QF15 through QF250 use eight bolts around the rim to secure the two halves together, QF500 through QF1890 use 16 bolts, and QF3150 and larger use 20 bolts. QF250 and larger use eight bolts with lock washers to secure the cover to each hub.
- **High-performance split cover:** This cover is free-floating and is located on the insert with an internal radial groove. All sizes come with four socket-head cap screws for securing the two halves together around the insert.

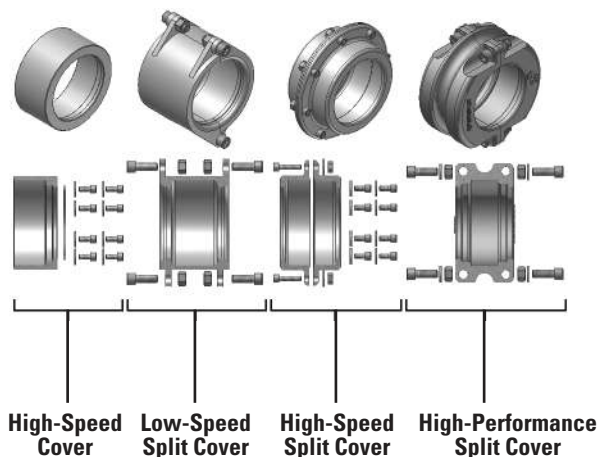


Fig. 1. Quick-Flex cover types and included hardware.

INSTALLATION

1. Check the bore size of the coupling halves and the shafts. Ensure that they are the correct bore size to fit the application.
2. If the coupling does not fit easily, clean and deburr the shafts.
3. Identify cover style:
 - a. **If using high-speed covers QF5 through QF175,** slide one snap ring down each shaft, then slide one cover onto each shaft with the larger opening facing the shaft separation. For QF250 and larger, slide one cover onto each shaft with the larger opening facing the shaft separation.
 - b. **If using low-speed or high-performance split covers,** leave covers aside and continue to step 4.
 - c. **If using high-speed split covers, QF250 and larger,** use bolts and washers to secure in place. In some instances, one or both vertically split pieces cover halves will also be split horizontally. The horizontally split half should be placed on the spacer body side. If both halves are split, then splits should be aligned 90 degrees from each other when bolted together. Do not bolt to coupling hub until installation is complete.
4. Install the hubs. They should be mounted so the end of the shaft is flush with surface "A" as shown in fig. 2.
5. Install the spacer body and inserts. Slide all three components (spacer body and two inserts) tight to one side and check the gap from the insert face to hub flange face shown as surface "A" in fig. 2. This should not exceed $[(2 \times G_{Max}) - (2 \times G_{Min})]$ using the appropriate minimum hub gap (G_{Min}) and the maximum hub gap (G_{Max}) from table 2. If this gap exceeds your calculation, adjust one or both hubs to set within specs, paying attention not to have the shaft end extend past surface "B" as shown in fig. 2.
6. Tighten both hubs securely to the shafts using the set screws.
7. Check coupling for misalignment (table 3) and align as necessary.

WARNING

Failure to observe the following warnings could create a risk of death or serious injury.

Contact with moving parts and/or rotating shafts poses a risk of serious injury. Proper guards in accordance with OSHA and American Society of Mechanical Engineers standards must be installed on all power transmission equipment. Power transmission equipment should not be started if proper guarding is not in place. Observe all required lock out/tag out procedures when servicing power transmission equipment.

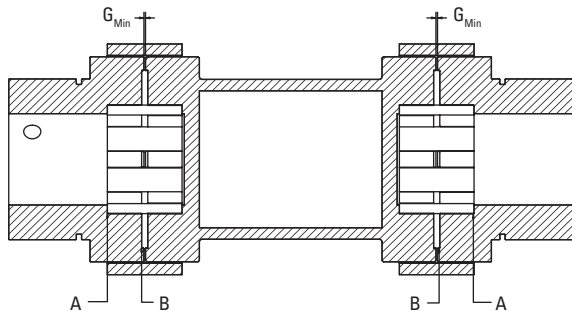
8. Install the cover:
 - a. **High-speed cover:** Slide the cover over the coupling hub and insert until fully rested against the shoulder of the coupling hub. Use the included hardware to secure the cover.
 - b. **Low-speed or high-performance split cover:** Place each half over the insert and secure using the four bolt/washer/nut hardware combinations supplied. For the high-performance split cover bolt tightening torque ratings, see table 1.
 - c. **High-speed split cover:** Match the four pieces into two complete cover halves using the flange face detail to distinguish the two halves. For QF250 and larger, make sure the cover half with the eight holes for mounting to the coupling hub is on the coupling hub side, not the spacer side. Bolt the four pieces together using the supplied hardware, ensuring the splits in each half are rotated 90 degrees relative to each other. Install bolts to secure the cover to the coupling hub.

NOTE

Standard hubs are supplied with a clearance fit and should slide onto the shaft without excessive force. If the hubs have been ordered with interference fit, then heat the coupling halves to approximately 300° C (572° F) before installing on shafts. If not heated properly, the couplings will not fit on the hub properly.

TABLE 1. HIGH-PERFORMANCE SPLIT COVER TIGHTENING TORQUE

Coupling Series	Bolts in.	Tightening Torque	
		Nm	ft.-lbs.
QF15HPCOVER	(4) 1/4 nc x 7/8	10.8	8
QF25HPCOVER	(4) 3/8 nc x 1 1/4	40.7	30
QF50HPCOVER	(4) 1/2 nc x 1 3/4	101.7	75
QF100HPCOVER	(4) 1/2 nc x 2 1/4	101.7	75
QF175HPCOVER	(4) 5/8 nc x 2 1/2	169.5	125
QF250HPCOVER	(4) 3/4 nc x 2 1/4	203.4	150
QF500HPCOVER	(4) 3/4 nc x 2 1/4	203.4	150



REVOLUTIONS PER MINUTE (RPM) AND BALANCE

The Timken Quick-Flex coupling is machined on all surfaces and thus its dynamic balance is good. If the coupling is run at a high speed, it is important that the key used to attach the coupling hubs is the same length as the coupling hub. The set screws should also be changed to full length to fill the hole. Please refer to table 4 for maximum RPM ratings.

TABLE 2. QUICK-FLEX DOUBLE-ENDED SPACER COUPLING HUB GAP (G) DIMENSIONS

Coupling Series	High-Speed Cover		Low-Speed Split Cover		High-Speed Split Cover		High-Performance Split Cover	
	G _{Min}	G _{Max}	G _{Min}	G _{Max}	G _{Min}	G _{Max}	G _{Min}	G _{Max}
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
QF5	1.60 0.063	2.34 0.092	N/A	N/A	N/A	N/A	N/A	N/A
QF15	0.91 0.036	2.79 0.110	0.91 0.036	2.52 0.099	0.91 0.036	3.20 0.126	0.91 0.036	5.59 0.22
QF25	2.03 0.080	5.21 0.205	2.03 0.080	3.38 0.133	2.03 0.080	3.57 0.140	2.03 0.080	4.06 0.16
QF50	0.89 0.035	5.28 0.208	0.89 0.035	2.57 0.101	0.89 0.035	5.59 0.220	0.89 0.035	4.06 0.16
QF100	3.56 0.140	7.37 0.290	3.56 0.140	9.65 0.380	3.56 0.140	9.65 0.380	3.56 0.140	9.40 0.37
QF175	4.78 0.188	5.28 0.208	4.78 0.188	9.53 0.375	4.78 0.188	8.84 0.348	4.57 0.180	9.35 0.368
QF250	2.54 0.100	5.84 0.230	2.54 0.100	9.27 0.365	2.54 0.100	6.35 0.250	2.54 0.100	8.08 0.318
QF500	3.18 0.125	6.35 0.250	N/A	N/A	3.18 0.125	9.53 0.375	3.18 0.125	9.53 0.375
QF1000	4.06 0.160	9.86 0.388	N/A	N/A	4.06 0.160	10.41 0.410	N/A	N/A
QF1890	5.13 0.202	7.06 0.278	N/A	N/A	5.13 0.202	11.53 0.454	N/A	N/A
QF3150	1.78 0.070	7.75 0.305	N/A	N/A	1.78 0.070	9.65 0.380	N/A	N/A
QF10260	3.23 0.127	12.83 0.505	N/A	N/A	3.23 0.127	12.50 0.492	N/A	N/A

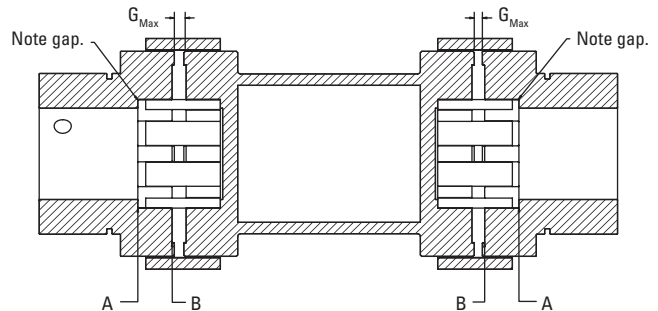


Fig. 2. Proper shaft-to-hub engagement.

TABLE 3. QUICK-FLEX DOUBLE-ENDED SPACER COUPLING MISALIGNMENT TOLERANCES

Coupling Series	Radial Misalignment Tolerance		Axial Misalignment Tolerance		Angular Misalignment Tolerance
	mm	in.	mm	in.	
QF5	1.02	0.040	3.96	0.156	4°
QF15	1.98	0.078	5.89	0.232	4°
QF25	1.98	0.078	5.89	0.232	4°
QF50	2.95	0.116	5.89	0.232	4°
QF100	2.95	0.116	7.93	0.312	4°
QF175	2.95	0.116	8.89	0.350	2.6°
QF250	2.95	0.116	11.89	0.468	2.6°
QF500	2.95	0.116	11.89	0.468	2°
QF1000	2.95	0.116	11.89	0.468	2°
QF1890	2.95	0.116	15.85	0.624	2°
QF3150	3.96	0.156	15.85	0.624	2°
QF10260	3.96	0.156	15.85	0.624	2°

TABLE 4. QUICK-FLEX DOUBLE-ENDED SPACER MAXIMUM RPM RATINGS⁽¹⁾

Coupling Series	High-Speed Cover	Low-Speed Split Cover	High-Speed Split Cover	High-Performance Split Cover
	RPM	RPM	RPM	RPM
QF5	N/A	N/A	N/A	N/A
QF15	4500	400	4500	4500
QF25	4500	375	4500	4500
QF50	4500	350	4500	4500
QF100	4500	300	4500	4500
QF175	3600	250	3600	3600
QF250	3200	200	3200	3200
QF500	3000	N/A	3000	3000
QF1000	2500	N/A	2500	2500
QF1890	2100	N/A	2100	2100
QF3150	1800	N/A	1800	1800
QF10260	1000	N/A	1100	1000

⁽¹⁾Maximum RPM ratings are for off-the-shelf Quick-Flex couplings. If your application requires higher RPM ratings, the couplings should be dynamically balanced.

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The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance steel as well as mechanical components, including bearings, gears, chain and related mechanical power transmission products and services.

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