

FL Flywheel
Coupling/
Guardex™
Type FLD
Pulley
Coupling

An Altra Industrial Motion Company

# FL FLYWHEEL COUPLING FEATURES AND ADVANTAGES

#### MINIMUM SPACE

The entire coupling length is normally mounted inside the flywheel housing face requiring only a flat pump mounting plate, saving valuable space inside the equipment frame.

# **HEAT STABLE**

The glass reinforced nylon flywheel flange is designed to operate in diesel engine ambients without air circulation. It is dimensionally stable to 250° F.

# **CROWNED GEAR TEETH**

The steel hub gear tooth design provides for angular misalignment, preventing angular forces on the pump shaft bearings and seals.

# FREE AXIAL TRAVEL

The crowned steel hub teeth slide freely in the nylon flywheel gear teeth. Any shaft float is absorbed by the coupling and is not transmitted to the pump.

# **BLIND ASSEMBLY**

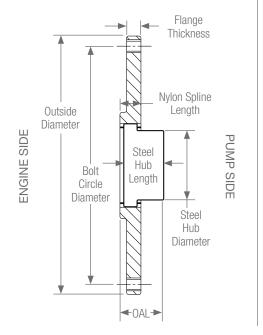
In most assemblies, the steel hub gear passes through the pilot hole of the pump mounting plate. This allows for quick assembly without the need for a view or hand ports.





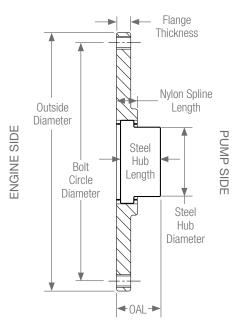
#### **ARRANGEMENT 1**

Typical arrangement for SAE 6-1/2, SAE 7-1/2, and SAE 11-1/2



## **ARRANGEMENT 2**

Typical arrangement for SAE 8 and SAE 10



\*Consult Guardian for specific product installation instructions!

# **Dimensions**

		Steel Hub Dimensions					n Flange sions	Coupling Assembly Dimensions		
Ozverline	Available Bore Range		Cha al III.da	Charl Hab	Number	Flores	Nylon	Overall Length	Overall Length	
Coupling Size	Min.	Max.	Steel Hub Length	Steel Hub Diameter	of Gear Teeth	Flange Thickness	Spline Length	Arrangement 1	Arrangement 2	
FL42	.625" 16mm	1.625" 42mm	1.50" 38.1mm	2.56" 65mm	50	.51" 13mm	.78" 20mm	1.30" 33mm	1.65" 42mm	
FL45	.625" 16mm	1.625" 42mm	2.19" 55.6mm	2.56" 65mm	50	.51" 13mm	.78" 20mm	2.00" 51mm	2.36" 60mm	
FL48	.625" 16mm	1.875" 48mm	1.80" 45.7mm	2.68" 68mm	50	.51" 13mm	.78" 20mm	1.61" 41mm	1.97" 50mm	
FL48\ TSB	.625" 16mm	1.875" 48mm	2.20" 56mm	2.60" 66mm	50	.51" 13mm	.78" 20mm	1.93" 49mm	2.20" 56mm	
FL65\ TSB 10	.625" 16mm	2.500" 65mm	2.17" 55mm	3.78" 96mm	42	.82" 21mm	1.05" 27mm	1.90" 49mm	2.20" 55mm	
FL65\ TSB 11-1/2	.625" 16mm	2.500" 65mm	1.92" 48.7mm	3.78" 96mm	42	.84" 21.3mm	1.20" 30.5mm	1.89" 48mm	1.92" 48.7mm	
FL80\ TSB 11-1/2	.875" 22mm	3.125" 80mm	1.92" 48.7mm	4.88" 124mm	46	.84" 21.3mm	1.20" 30.5mm	1.89" 48mm	1.83" 48.7mm	

Interchangeable with other FLE flywheel couplings

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# **SAE Flanges**

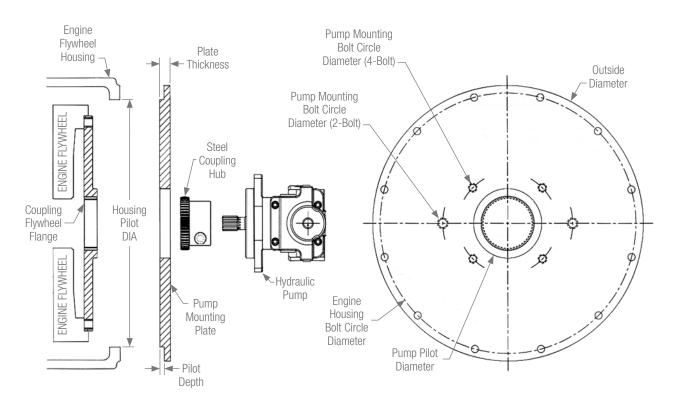
SAE Flywheel	Mating	Bolt Circle Diameter	Outside Diameter	Number of Bolt	Tor	Torque		
Size	Hub Size	(D2)	(D3)	Holes	T <sub>KN</sub>	T <sub>Kmax</sub>	RPM	
6-1/2	M-42	7.875" 200.02mm	8.500" 215.90mm	6	2,100 in-lbs 237 Nm	5,300 in-lbs 599 Nm	5,000	
7-1/2	M-42	8.750" 222.25mm	9.500" 241.30mm	8	2,100 in-lbs 237 Nm	5,300 in-lbs 599 Nm	5,000	
8	I-45	9.625" 244.47mm	10.375" 263.52mm	6	2,100 in-lbs 237 Nm	5,300 in-lbs 599 Nm	5,000	
10	M-48	11.625" 295.27mm	12.375" 314.32mm	8	2,100 in-lbs 237 Nm	5,300 in-lbs 599 Nm	5,000	
10	M-48 TSB	11.625" 295.27mm	12.375" 314.32mm	8	2,700 in-lbs 305 Nm	6,600 in-lbs 745 Nm	5,000	
10	M-65	11.625" 295.27mm	12.375" 314.32mm	8	5,700 in-lbs 644 Nm	14,200 in-lbs 1,605 Nm	3,600	
10	M-65 TSB	11.625" 295.27mm	12.375" 314.32mm	8	7,000 in-lbs 791 Nm	17,700 in-lbs 2,000 Nm	3,600	
11-1/2	M-65	13.125" 333.37mm	13.875" 352.42mm	8	5,700 in-lbs 644 Nm	14,200 in-lbs 1,605 Nm	3,600	
11-1/2	M-65 TSB	13.125" 333.37mm	13.875" 352.42mm	8	7,000 in-lbs 791 Nm	17,700 in-lbs 2,000 Nm	3,600	
11-1/2	M-80	13.125" 333.37mm	13.875" 352.42mm	8	10,600 in-lbs 1,198 Nm	26,600 in-lbs 3,006 Nm	3,600	
11-1/2	M-80 TSB	13.125" 333.37mm	13.875" 352.42mm	8	13,700 in-lbs 1,458 Nm	34,300 in-lbs 3,875 Nm	3,600	

# **Special & Metric Nylon Flanges**

Outside Diameter	Bolt Circle	Number and Size of Bolts	Pilot Diameter	Engines
96mm (3.78")	50mm (1.97")	4 x M10	70mm (2.76")	Hatz-Z788, 789, 790
125mm (4.92")	100mm (3.94")	3 x M10	80mm (3.15") 125mm (4.92")	Deutz F2L511-1338, F1L210 (125mm Pilot) Perkins-4.108, Lister-Petter "ALPHA" Series
135mm (5.32")	100mm (3.94")	3 x M10	135mm (5.32")	Kubota-650, 750, 850, 950, V1100, 1200 and Super 5 Series (905 thru 1505), Perkins 103-10
150mm (5.91")	130mm (5.12")	5 x M8	106mm (4.17")	Kubota-D600B, Z400, D722, V800, WG600, WG750, D902, Z602, WG972 (Super Mini Series), Briggs Daihatsu DM700, DM950, Yanmar 3TNM68, Yanmar 3TNM72
152mm (5.98")	122mm (4.80") 125mm (4.92")	3 x M12 3 x M12	105mm (4.13")	Hatz 573, 673, 780, 786, E71, E75, E79, (122mm B.C.) Perkins 4108 (125mm B.C.), 504-2T/2LR Deutz F2L511 (125mm B.C.)
155mm (6.10")	125mm (4.11")	3 x M12	155mm (6.10")	Perkins 103-12/13/15, 104-22
170mm (6.69")	165mm (6.50")	3 x M16	104mm (4.09")	Yanmar 4TNV88/4TNV99
210mm (8.27")	185mm (7.28")	3 x M16	104mm (4.09")	Isuzu-CC-4JG1PAC, Mitsubishi-M40-EA
210mm/220mm (8.66")	210mm/220mm (8.66")	3 x M10 6 x M12	125mm (4.92") 220mm (8.66")	Kubota Super 3 Series, D1403, D1703, V1903, V2203, V2403
252mm (9.92")	234mm (9.21") 218mm (8.58")	6 x M8 6 x M8	252mm (9.92") 234mm (9.21")	VW-068, 126, 127 (218mm B.C.), Kubota 950
327mm (12.88")	308mm (12.13")	6	287mm (11.30")	John Deere Flywheel 123203
279mm (11.00")	260mm (10.25")	6	260mm (10.25")	Ford LRG425, Ford DSG423

# **Notes:**

- 1. Several hub lengths are available, or the steel hubs can be machined to specific lengths to meet other mounting dimensions.
- 2. Axial adjustment of the steel gear in flange gear is +/-.08" (+/- 2mm), parallel misalignment to .03", angular misalignment to 2°.
- 3. Steel hub bores are available with shaft keyways, tapers, and SAE or metric splines with cross-bolt clamping.
- 4. The TSB hubs have a wider tooth form than standard hubs and yield approximately 30% greater torque-carrying capacity.



# **Steel Pump Mounting Plates**

Housing Size	Housing Pilot Diameter	Outside Diameter	Housing Bolt Circle Diameter	Number of Bolt Holes	Plate Thickness	Pilot Depth
SAE 1	20.125"	21.750"	20.875"	12	.625" & .750"	.125"
SAE 2	17.625"	19.250"	18.375"	12	.625" & .750"	.125"
SAE 3	16.125"	17.750"	16.875"	12	.500" & .750"	.125"
SAE 4	14.250"	15.875"	15.000"	12	.500" & .750"	.125"
SAE 5	12.375"	14.000"	13.125"	8	.500"	.125"
SAE 6	10.500"	12.125"	11.250"	8	.500"	.125"

All plates come standard with a black rust preventative finish.

# **SAE Standard Pump Pilot & Shaft Data**

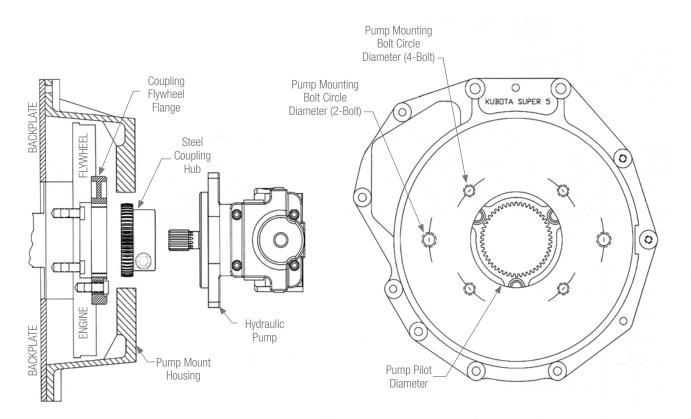
	Typical SAE Pump Flange Mounting Dimensions							Pump Shaft Dimensions (Straight & Splined)					
	SAE Pump	2-Bolt Flange		4-Bolt Flange		Straight Shafts		SAE Splined Pump Shafts					
SAE Pump Designation	Pilot Diameter	Bolt Circle Diameter	Typical Bolt Size	Bolt Circle Diameter	Typical Bolt Size	Shaft Diameter	Keyway Width	Major Diameter	No. of Teeth	Diametral Pitch	Pressure Angle		
А	3.250"	4.188"	3/8"-16	4.125"	3/8"-16	.625"	.188"	.625"	9	16/32	30°		
AH	3.250"	4.188"	3/8"-16	4.125"	3/8"-16	.750"	.188"	.750"	11	16/32	30°		
В	4.000"	5.750"	1/2"-13	5.000"	1/2"-13	.875"	.188"	.875"	13	16/32	30°		
BB	4.000"	5.750"	1/2"-13	5.000"	1/2"-13	1.000"	.250"	1.000"	15	16/32	30°		
С	5.000"	7.125"	5/8"-11	6.375"	1/2"-13	1.250"	.250"	1.250"	14	12/24	30°		
CC	5.000"	7.125"	5/8"-11	6.375"	1/2"-13	1.500"	.375"	1.500"	17	12/24	30°		
D	6.000"	9.000"	3/4"-10	9.000"	3/4"-10	1.750"	.375"	1.750"	13	8/16	30°		
Е	6.500"	12.500"	1"-8	12.500"	3/4"-10	1.750"	.375"	1.750"	13	8/16	30°		
F	7.000"	13.781"	1"-8	13.781"	1"-8	-	-	2.000"	15	8/16	30°		

Other SAE, DIN and JIS spline sizes are available - Inquire!

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# **Aluminum & Cast Iron Pump Mount Housings**

Engine	Reference Information
Deutz L1011/L2011	Used on Deutz engines equipped with housing #0553
Briggs Daihatsu	Used on DM700D, DM950D, DM700G, and DM950G engines.
Cummins B3.3	Used on engines equipped with semi-SAE #4 housings.
Ford	Used on DSG-423 and LRG-425 engines.
GM 3.0/4.3L	Used with GM flywheel #93422872 on GM 3.0L & 4.3L engines.
Isuzu	Used on 4LE2 engines.
John Deere	Used on 3011D, 3015D, 4020D, and 4020T engines.
Kubota Super 3 (B-1 mounting)	Used on D1403, D1703, V1903, and V2203 engines.
Kubota Super 5 (B-1 mounting)	Used on D905, D1005, D1105, V1205, V1305, and V1505 engines.
Kubota Super Mini (B-1 mounting)	Used on Z400, D600, D722, V800, WG600, and WG750 engines.
Kubota Super Mini (K106 NSM series)	Used on WG972, D902, and Z602 engines.
Perkins 103-13-15 Perkins 403C-13-15	Used on these Perkins engines with the rear end plate design.
Perkins 103-9-10 Perkins 403C-10-11	Used on these Perkins engines with the rear end plate design.
Perkins 104-19-22 Perkins 404C-19-22	Used on these Perkins engines with the rear end plate design.
Yanmar	Used on 3TNE78A, 3TNE82A, 3TNE84, 3TNE88, 4TNE84T, and 4TNE88 engines.



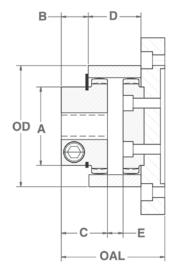
\*Consult Guardian for specific product installation instructions!

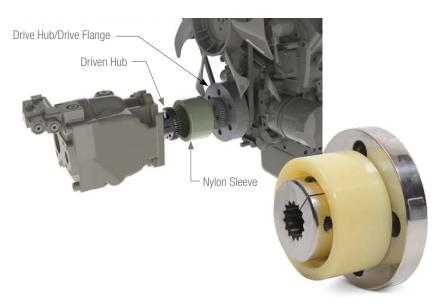
# GUARDEX™ TYPE FLD PULLEY COUPLINGS (FOR GAS & DIESEL ENGINE PULLEY-END OPERATION)

The FLD coupling provides a shiftable sleeve that can be retracted to allow for easy V-belt replacement without disassembling the pump.

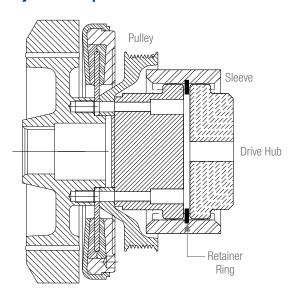
	Torque IN-LBS		Torque IN-LBS Finish Bore			Dimensions							
Series	T <sub>KN</sub>	T <sub>Kmax</sub>	Min	Max	OAL	OD	Α	В	C	D	E		
FLD 28	400	800	.39" 10mm	1.02" 26mm	3.19" 81mm	2.75" 69.8mm	1.73" 43.9mm	.89" 22.5mm	1.40" 35.5mm	1.54" 39mm	.51" 13mm		
FLD 32	530	1,060	.47" 12mm	1.18" 30mm	3.19" 81mm	3.31" 84mm	1.95" 49.5mm	.85" 21.5mm	1.40" 35.5mm	1.57" 40mm	.51" 13mm		
FLD 45	1,240	2,480	.79" 20mm	1.65" 42mm	3.39" 86mm	3.94" 100mm	2.68" 68mm	.89" 22.5mm	1.80" 45.7mm	1.69" 43mm	.51" 13mm		
FLD 65	3,360	6,720	.98" 25mm	2.56" 65mm	4.88" 124mm	5.51" 140mm	3.78" 96mm	1.65" 42mm	2.52" 64mm	2.36" 60mm	.63" 16mm		
FLD 80	6,000	12,000	1.18" 30mm	3.15" 80mm	6.38" 162mm	6.89" 175mm	4.88" 124mm	2.30" 58.5mm	3.27" 83mm	2.72" 69mm	.79" 20mm		

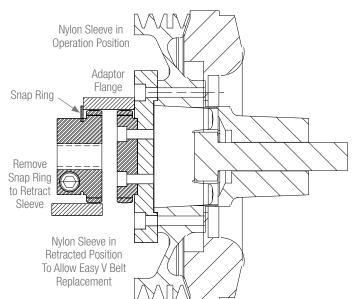
NOTE: Flange dimensions are made specific to the engine pulley.





# Designed For Minimum Overall Length And Easy V-Belt Replacement





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Guardian provides a wide range of standard and custom products including flywheel couplings, hydraulic pump mounts, bearing supported stub shafts, flexible shaft-to-shaft couplings, motion control couplings as well as compression pipe couplings.

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