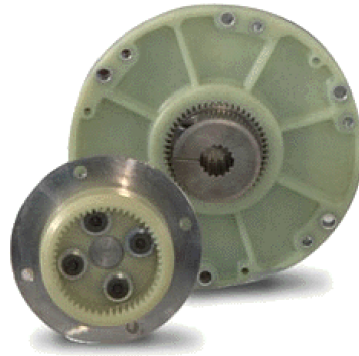


# Flywheel Coupling



## Flywheel Coupling

**Minimum space** The entire coupling length is normally mounted inside the housing compartment requiring only a flat steel pump mounting plate which we also manufacture. Rear end plate designs also available for Kubota, Perkins, Ford, GM, Nissan, and Deutz engines.

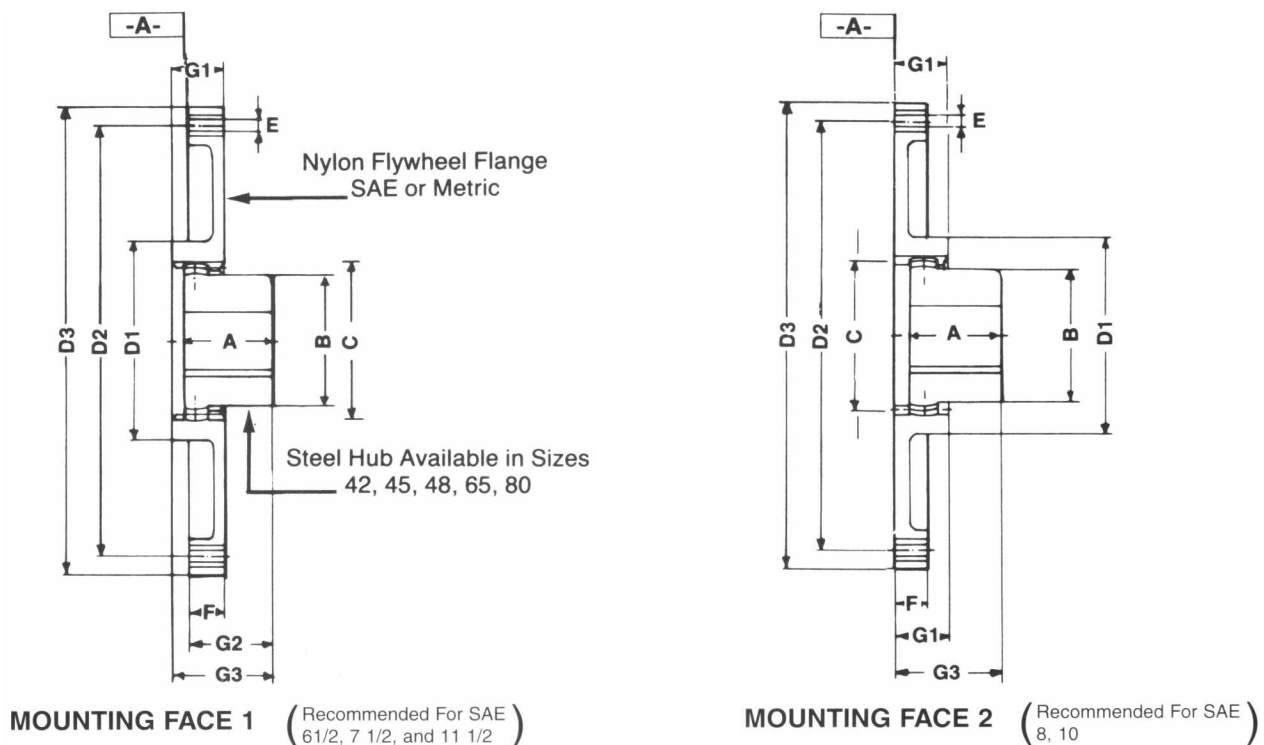
**Free axial travel** Crowned teeth slide freely in the nylon spline with a  $\pm .080$ " axial travel. Any shaft float is absorbed by the coupling and not transmitted to the pump components.

**Blind assembly** Pump hub gear ring fits through the pilot hole of the plate. Faster assembly at lower cost and no inspection ports or hand holes necessary.

**Crowned gear teeth** Provides for angular misalignment, preventing angular force on the pump shaft bearings and seals.

**Heat Stable** Fiberglass reinforced nylon designed to operate in diesel engine ambients without air circulation. Dimensionally stable to 250 F.

## Type NF Flywheel Coupling



# Flywheel Coupling

## SAE FLANGES

SAE Flywheel/Hub	Hole Centerline (D2)	Outside Dia. (D3)	Bushing I.D. (E)	No. of Holes	Torque		Max. RPM
					Nom.	Max.	
6 1/2" /42	7.875" 200.02 mm	8.5" 215.9 mm	.354" 9 mm	6 5/6-18	2100" lb 237 Nm	5300" lb 599 Nm	5,000
7 1/2" /42	8.750" 222.25 mm	9.5" 241.3 mm	.354" 9 mm	8 5/6-18	2100" lb 237 Nm	5300" lb 599 Nm	5,000
8" /45	9.625" 244.47 mm	10.375" 263.52 mm	.433" 11 mm	6 3/8-16	2100" lb 237 Nm	5300" lb 599 Nm	5,000
10" /48	11.625" 295.27 mm	12.375" 314.32 mm	.433" 11 mm	8 3/8-16	2100" lb 237 Nm	5300" lb 599 Nm	5,000
10" /48 TBS	11.625" 295.27 mm	12.375" 314.32 mm	.433" 11 mm	8 3/8-16	2700" lb 305 Nm	6600" lb 745 Nm	5,000
10" /-65	11.625" 295.27 mm	12.375" 314.32 mm	.433" 11 mm	8 3/8-16	5700" lb 644 Nm	14,200" lb 1,605 Nm	3,600
10" /65 TSB	11.625" 295.27 mm	12.375" 314.32 mm	.433" 11 mm	8 3/8-16	7000" lb 791 Nm	17,700" lb 2000 Nm	3,600
11 1/2" /65	13.125" 333.37 mm	13.875" 352.42 mm	.433" 11 mm	8 3/8-16	5700" lb 644 Nm	14,200" lb 1,605 Nm	3,600
11 1/2" /65 TSB	13.125" 333.37 mm	13.875" 352.42 mm	.433" 11 mm	8 3/8-16	7000" lb 791 Nm	17,700" lb 2000 Nm	3,600
11 1/2" /80	13.125" 333.37 mm	13.875" 352.42 mm	.433" 11 mm	8 3/8-16	10,600" lb 1,198 Nm	26,600" lb 3,006 Nm	3,600
11 1/2" /80 TSB	13.125" 333.37 mm	13.875" 352.42 mm	.433" 11 mm	8 3/8-16	13,700" lb 1548 Nm	34,300" lb 3,875 Nm	3,600

**Note:** TSB hubs are machined from steel rounds, and have wider tooth form than standard hubs. These hubs yield approximately 30% greater torque-carrying capacity than the standard design. All TSB hubs are black phosphate-coated for superior corrosion protection.

## Type NF Coupling Dimensions

Coupling Size	Steel Hub Dimensions					SAE Nylon Flange Dimensions			Coupling Assembly Dimensions	
	Available Bore Range		Steel Hub Length (A)	Steel Hub Diameter (B)	Steel Gear Diameter (C)	Nylon Sleeve Diameter (D1)	Bolt Hole Depth (F)	Nylon Spline Length (G1)	OAL from Flywheel face 1 (G2)	OAL from Flywheel Face 2 (G3)
	Min	Max								
NF42	.625" 16 mm	1.625" 42 mm	1.50" 38.1 mm	2.56" 65 mm	3.07" 78 mm	3.90" 100 mm	.51" 13 mm	.78" 20 mm	1.30" 33 mm	1.65" 42 mm
NF45	.625" 16 mm	1.625" 42 mm	2.19" 55.6 mm	2.56" 65 mm	3.07" 78 mm	3.90" 100 mm	.51" 13 mm	.78" 20 mm	2.00" 51 mm	2.36" 60 mm
NF48	.625" 16 mm	1.875" 48 mm	1.80" 45.7 mm	2.68" 68 mm	3.07" 78 mm	3.90" 100 mm	.51" 13 mm	.78" 13 mm	1.61" 41 mm	1.97" 50 mm
NF48/TSB	.625" 16 mm	1.875" 48 mm	2.20" 56 mm	2.60" 66 mm	3.07" 78 mm	3.90" 100 mm	.51" 13 mm	.78" 20 mm	1.93" 49 mm	2.20" 56 mm
NF65/TSB 10	.625" 16 mm	2.500" 65 mm	2.17" 55 mm	3.78" 96 mm	4.33" 110 mm	5.15" 132 mm	.82" 21 mm	1.05" 27 mm	1.90" 48 mm	2.17" 55 mm
NF65/TSB 11 1/2	.625" 16 mm	2.500" 65 mm	2.17" 55 mm	3.78" 96 mm	4.33" 110 mm	6.69" 170 mm	.885" 22 mm	1.21" 31 mm	1.78" 45 mm	2.17" 55 mm
NF80/TSB 11 1/2	.875" 22 mm	3.125" 80 mm	2.13" 54 mm	4.88" 124 mm	5.66" 144 mm	6.69" 170 mm	.820" 21 mm	1.18" 30 mm	1.69" 43 mm	1.82" 46 mm

# Flywheel Coupling

## Special Metric Nylon Flanges

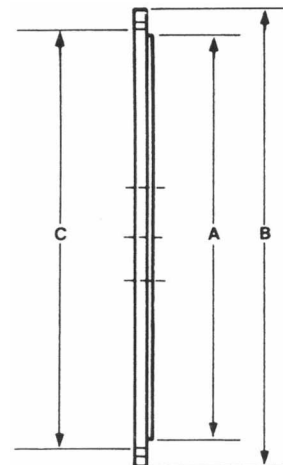
Outside Diameter	Bolt Circle	Number and Size of Bolts	Pilot Diameter	Engines
96 mm (3.78")	50 mm (1.97")	4 x 10 mm	70 mm (2.76")	Hatz-Z788, 789, 790
125 mm (4.92")	100 mm (3.94")	3 x 10 mm	80 mm (3.15") 125 mm (4.92")	Deutz-F2L511-1338, F1L210 (125mm Pilot), Perkins-4.108, Lister Petter-"ALPHA" Series
135 mm (5.32")	100 mm (3.94")	3 x 10 mm	135 mm (5.32")	Kubota-650, 750, 850, 950,V1100, 1200, and Super 5 Series (905 thru 1505), Perkins 103-10
150 mm (5.91")	130 mm (5.12")	5 x 8 mm	106 mm (4.17")	Kubota-D600B, Z400, D722, V800, WG600, WG750 (Super Mini Series), Briggs Daihatsu DM700, DM950
152 mm (5.98")	122 mm (4.80") 125 mm (4.92")	3 x 12 mm 3 x 12 mm	105 mm (4.13") 100 mm (3.94")	Hatz-573, 673, 780, 786, E71, E75, E79 (122 mm B.C.) Perkins-4108 (125 mm B.C.), 504-2T/2LR Deutz-F2L511 (125 mm B.C.)
155 mm	125 mm (4.92")	3 x 12 mm	155 mm (6.10")	Perkins 103-12/13/15, 104-22
165 mm (6.50")	142 mm (5.59")	6 x 12 mm	125 mm (4.92")	Hatz E786, 2,3,4, L/M Series
180 mm	155 mm (6.10")	4 x 10 mm	As required	All purpose Adaptor, with 65FL ratings
210 mm	185 mm (7.28")	3 x 10 mm	125 mm (4.92")	Kubota Super 3 Series, D1403, D1703,V1903,V2203
220 mm (8.661")	165mm (6.496") EC version	6 x 10 mm	220 mm	Kubota Super 3 Series, D1403, D1703,V1903,V2203
220 mm (8.661")	185 mm (7.283") KTC version	3 x 12 mm	125 mm	Kubota Super 3 Series, D1403, D1703,V1903,V2203
252 mm (9.92")	234 mm (9.21") 218 mm (8.58")	6 x 8 mm 6 x 8 mm	252 mm (9.92") 234 mm (9.21")	VW-068,126,127 (218 mm B.C.), Kubota 950

### 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 hub gear in flange internal spline is  $\pm .080"$  ( $\pm 2\text{mm}$ ), parallel misalignment to  $.030"$ , angular misalignment to 2 degrees.
3. Steel Hub bores are available with shaft keyways, tapers, and SAE or metric splines with crossbolt clamping.
4. Flanges may be installed in either Face 1 or Face 2 position, and hubs may be reversed in either position to obtain optimum overall dimension.

## Steel Pump Mounting Plates

Housing Size	Housing Pilot A	O.D. B	B.C. C	Plate Thickness
1	20.125	21.75	20.88	.625"
2	17.625	19.25	18.38	.625"
3	16.125	17.75	16.88	.500"
4	14.250	15.88	15.00	.500"
5	12.375	14.00	13.13	.500"
6	10.500	12.12	11.25	.500"



# Flywheel Coupling

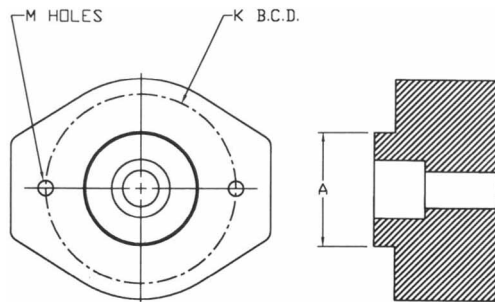
## Special Aluminum Pump Mounting Castings

Engine	Reference Information
Deutz F2/3/4/L1011	Used on Deutz Housing #0553, where flywheels 1771 (SAE 8) and 1772 (SAE 6 1/2) are optional.
Kubota Super Mini (B-1 Mounting)	Used on engines Z400, D600, D722, V800, WG600 and WG750. Use with NF42-150 mm coupling assembly.
Kubota Super 3 (B-1 Mounting)	Used on engines D1403, D1703, V1903 and V2203. Use with NF48-210 mm coupling assembly.
Kubota Super 5 (B-1 Mounting)	Used on engines D905, D1005, D1105, V1205, V1305 and V1505. Use NF42-135 mm coupling assembly.
GM 3.0/4.3L	Used with GM Flywheel # 93422872. Use with 48NF-10 or 65NF-10. 8" O.D. steel pilot washer provided with either assembly.
PK 103-9-10	Used on Perkins rear end plate designs. Use with 42NF-135 mm assembly.
PK 103-13-15	Used on Perkins rear end plate designs. Use with 48NF-155 mm assembly.
PK 104-22	Used on Perkins rear end plate designs. Use with 48NF-155 mm assembly.
BSD 700/950	Used on Briggs Stratton Diahatsu DM 700, DM950 gas and diesel engines. Use with 42NF-150 mm assembly.
Ford LRG 413	Foot mounted casting. Use with 42NF assembly (Flange P/N 15385)
Ford LRG 425	Foot mounted casting. Use with 42NF assembly (Flange P/N 15390)
Cummins B33	Use with L1011 casting and 48NFTSB10 assembly
Yanmar	Used on 3TNE 78A/82A/84/88 4TNE 84T/88. Use with 42NF 7-1/2.
Deere	Used on 3011D/3015D/4020D/ 4020T. Use with 42NF 7-1/2.
Kubota V3300	Use with L1011 casting and 48NF10 assembly, 1.500 OAL

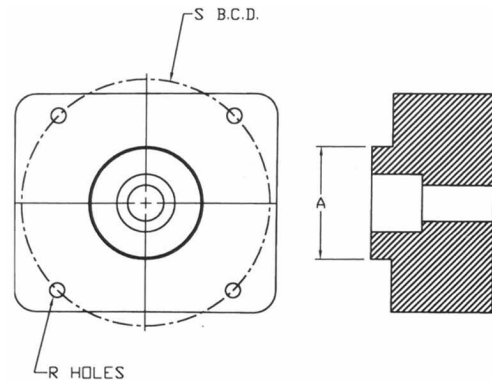
These castings are used in conjunction with Flywheel couplings where short axial distances prohibit use of a flat mounting plate. These lightweight, compact and economical castings extend beyond the flywheel to offer a quick, reliable pump drive connection.

## SAE Pump/Pump Shaft Data

### SAE 2-Bolt Mounting Flanges



### SAE 4-Bolt Mounting Flanges



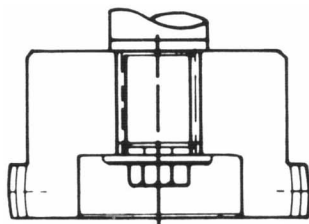
Mounting Flange		Pilot Dimensions	Flange Dimensions		Bolts	Mounting Flange		Pilot Dimensions	Flange Dimensions		Bolts
USA	SAE	A	K	M		USA	SAE	A	S	R	
--	AA	2.000/1.908	3.255 3.245	0.406	5/16-8	4F17	AA	1.781/1.799	2.843 2.833	0.375	5/16-18
2F32	A	3.250/3.248	4.192 4.182	0.438	3/8-16	4F32	A	3.250/3.248	4.130 4.120	0.438	3/8-16
2F40	B	4.000/3.998	5.755 5.745	0.562	1/2-13	4F40	B	4.000/3.998	5.005 4.995	0.562	1/2-13
2F50	C	5.000/4.998	7.130 7.120	0.687	5/8-11	2F50	C	5.000/4.998	6.380 6.370	0.562	1/2-13
2F60	D	6.000/5.998	9.005 8.995	0.812	3/4-10	2F60	D	6.000/5.998	9.005 8.995	0.812	3/4-10
2F65	E	6.500/6.498	12.530 12.495	1.062	1-8	2F65	E	6.500/6.498	12.505 12.495	0.812	3/4-10
2F70	F	7.000/6.998	13.786 13.776	1.062	1-8	2F70	F	7.000/6.998	13.786 13.776	1.062	1-8

# Flywheel Coupling

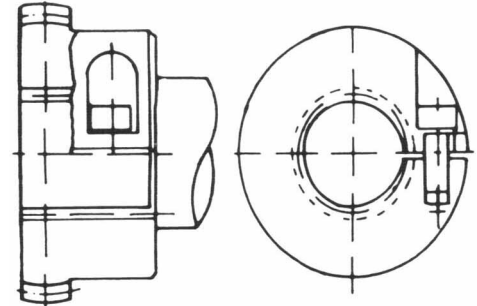
## SAE Pump/Pump Shaft Data

SAE Code	Number of Teeth	Diameter Pitch	Press Angle	Major Diameter	Minor Diameter
A	9	16/32	30°	0.625	0.509
--	11	16/32	30°	0.750	0.631
B	13	16/32	30°	0.875	0.754
B-B	15	16/32	30°	1.000	0.877
C	14	12/24	30°	1.250	1.087
--	19	16/32	30°	1.260	1.130
--	21	16/32	30°	1.380	1.250
C-C	17	12/24	30°	1.500	1.334
D & E	13	8/16	30°	1.750	1.506
F	15	8/16	30°	2.000	1.753

### Pump Hub Options Bolt & Washer Clamping



### Pump Hub Options Cross & Bolt Clamping

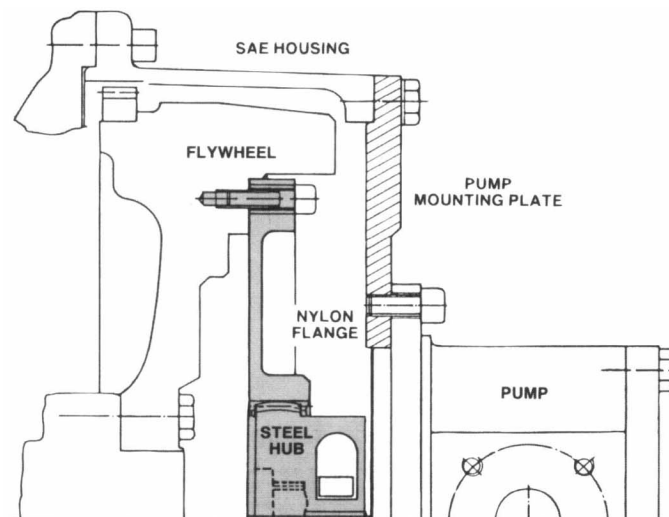


- Simple, inexpensive, positive clamping.
- Requires drilled and tapped pump shaft.
- Available for SAE, metric or special splines and straight shafts with keyway.
- Excellent for tapered shafts.

- Available in all hub sizes with straight keyed shafts and DIN or SAE splines.
- Maximum holding power without damage to pump spline. Easy removal.
- Hub length machined to meet minimum assembly requirements and available space.
- Sintered steel hubs for excellent corrosion protection.
- Cross-bolt tightening torques.

FL42, 45, 48 @ 61 ft. #'s (83) Nm  
 FL65 @ 61 ft. #'s (83) Nm  
 FL80 @ 150 ft. #'s (204) Nm

## Typical Layout For a Hydrostatic Pump Direct-Coupled to an Engine Flywheel



### Assembly:

1. Center nylon flange on engine flywheel O.D. pilot. Tighten flywheel flange bolts.
2. Center pump mounting plate on engine housing pilot. Tighten pump mounting bolts.
3. Mount steel hub on pump spline shaft. Tighten crossbolt clamp.
4. Slide pump and hub assembly through mounting plate pilot hole, into flange splines. Tighten pump mounting bolts.
5. (Special Advisory) Starting torque and braking loads should not exceed listed maximum torque. Intermittent transient peak loads should not exceed listed maximum torque.

# Flywheel Coupling

## SAE Flywheel Dimension Reference

Nominal Clutch	A	B	C	D	G	H	J	Tapped Holes	
								No.	Size
6 1/2	7.25	8.500	7.875	5.00	1.19	0.50	0.38	6	5/6-18
7 1/2	8.12	9.500	8.750	--	1.19	0.50	0.50	8	5/6-18
8	8.88	10.375	9.625	--	2.44	0.50	0.50	6	3/8-16
10	10.88	12.375	11.625	7.75	2.12	0.62	0.50	8	3/8-16
11 1/2	12.38	13.875	13.125	8.00	1.56	1.12	0.88	8	3/8-16

## Typical Flywheel Housing Combinations

Clutch Size	Sizes	SAE Flywheel Housing					
		6	5	4	3	2	1
6 1/2	42	•	•				
7 1/2	42		•	•			
8	45			•			
10	48,65			•	•	•	
11 1/2	65,80				•	•	•

