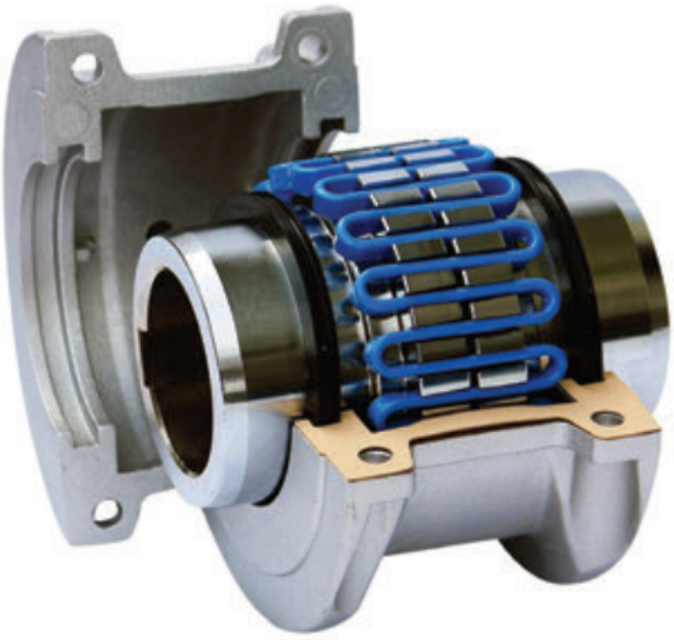
The Pump People

Patterson

A Gorman-Rupp Company

GRID COUPLING <FM> CERTIFIED RATINGS & INSTALLATION INSTRUCTIONS



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FM CERTIFIED RATINGS BHP AT RPM

Certified coupling for rated BHP's and speed given below can be used for fixed speed Centrifugal Fire Pumps with Service factor 1.0.

PATTERSON ELECTRIC DRIVER COUPLING RATINGS

Evaluated Coupling HP with <FM> required service factor

	1450	1750	1800	3000	3600	TORQUE (IN-LBS)
P1040	50	61	62	105	125	2204
P1050	88	106	110	183	219	3850
P1060	139	168	172	288	345	6054
P1070	202	244	252	418		8798
P1080	417	503	518			18144
P1090	725	852				33013

PATTERSON DIESEL DRIVEN COUPLING RATINGS

Evaluated Coupling HP with <FM> required service factor

	1470	1760	2100	2350	2400	2600	2800	3000
P1040	26	31	37	41	42	45	49	53
P1050	45	54	64	72	73	79	86	92
P1060	94	113	134	150	153	166	179	192
P1070	137	163	195	219	223			
P1080	282	337	403					
P1090	472	571						

SERIES P1000 HORIZONTALLY SPLIT COVER COUPLINGS

COUPLING DATA

SIZE	COUPLING RATING (IN-LBS)	SPEED	MAX BORE (IN)	MIN BORE (IN)	WEIGHT (LBS)	(LBS/FT^2)
P1040	2204	3600	0.5	1.63	7.1	11.3
P1050	3850	3600	0.5	1.88	11.5	23.9
P1060	6054	3600	0.75	2.13	15.7	41
P1070	8798	3600	0.75	2.5	22.3	61.5
P1080	18144	3600	1.06	3	39	153.8
P1090	33013	1800	1.06	3.5	54	268.9

APPLICATION GUIDE

The calculated driver torque, and adjusted by the motor service factor and above service factor, shall not exceed the maximum torque rating of the flexible coupling.

For Diesel Driven fire Pumps service factor is 2.0.

For Variable speed Fire Pumps service factor is 1.25.

BHP = torque (ft – lb.) X RPM / 5252

MATERIAL OF CONSTRUCTION

Part	Material uses Grid Coupling	Produce method
Hub	Steel SM45C (Equivalent to AISI 1045)	Machining
Grid	Spring Steel HSWR82B (Equivalent to SAE 9254)	Forming - Heat Treatment - Peening and Powder Coating (or Phosphate Coating)
Cover H-type	Aluminum alloy ALDCS/8 (Equivalent to ASTM 380)	Die-Casting
Gasket	Fiber	
Oil seal	NBR	

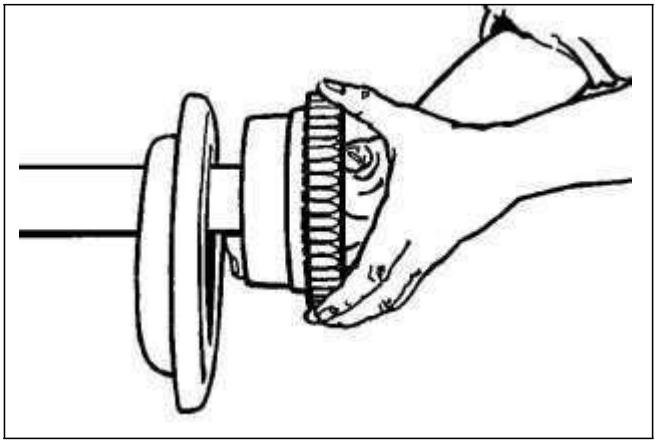
TECHNICAL DATA

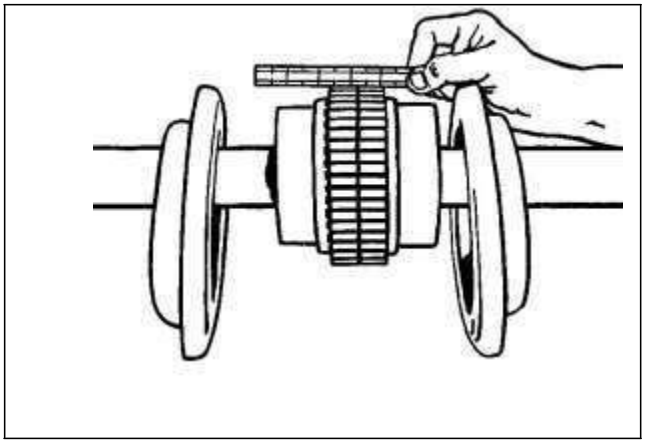
RECOMMENDED GREASE: SKF – LMC or 1/0.035

Designation	**LMCG 1/ (pack size)**
DIN 51825 code	G0G1G-0
NLGI consistency class	1
Soap Type	Polyethylene
Color	Brown
Base oil type	Mineral
Operating temperature range	0 to 120°C (32 to 248°C)
Dropping point DIN ISO 2176	210°C (410°F)
Base oil viscosity	
40°C, mm2/s	670
100°C, mm2/s	34
Penetration DIN ISO 2137	
60 strokes, 10-1 mm	310-340

Corrosion protection	
SKF Emcor:	-standard ISO 11007
	-salt water test (100%)
Copper corrosion ASTM	24 hrs. at 100°C
EP performance	Wear scar DIN 51350
	4 ball test, welding
Koppers Method ASTM	K36, 24h
Approximate density	At 20 C, IPPM-CS/03

General Guidance for the Installation of Patterson Grid Couplings



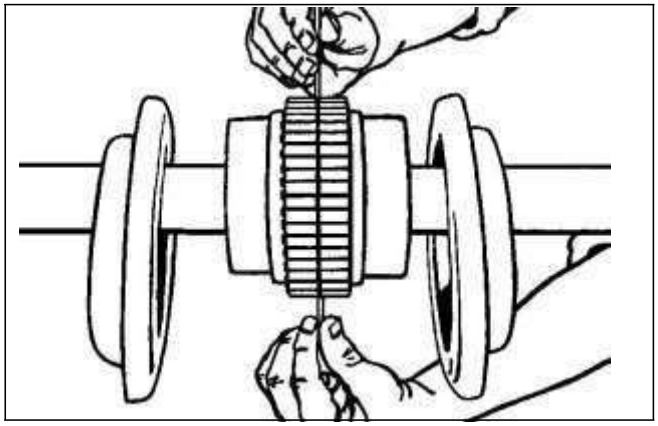


1. Mount Seals and Hubs

P1000 Series (horizontal split cover). Lightly smear seals with grease and place on shafts before mounting hubs.

2. Alignment

Satisfactory alignment can be achieved with the use of a straight edge and feeler gauge, although a dial indicator would generally improve accuracy**.**



3. Gap and Angular Alignment

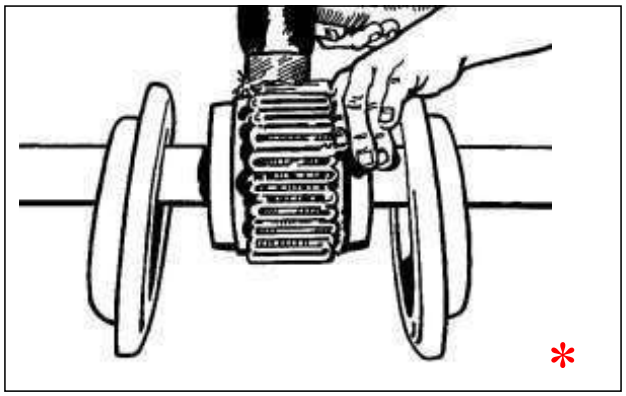
Set gap using a spacer bar equal in thickness to the nominal gap specified in the table on back page. Using feelers; with the spacer bar inserted to the same depth, measure clearance between bar and hub face at 90° intervals.

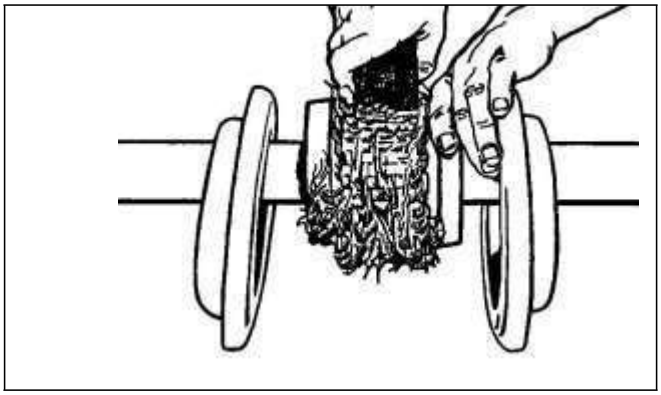
4. Parallel Offset Alignment

Use a straight edge and feelers, or dial indicator over the tops of the coupling teeth, taking measurements at 90° intervals. Error should not exceed offset limit specified in Table 1.

5. Be sure to tighten & torque all set screws & final alignment

Tighten all equipment based plate bolts. Repeat steps 3 & 4 and if necessary re-align.





6. Grid Assembly

* Before inserting the grid segments, thoroughly pack the grooves with NLGI #2 lubricant. A list of recommended lubricants can be found in Table 3. Lubricant packages are included with sizes P1040 through P1090.

When grids are supplied in two or more segments assemble so the cut ends at a segment joint extend in the same direction. Spread the grid slightly so that it will pass over the coupling teeth, and tap all the rungs into the respective slots with a soft mallet.

7. Cover Assembly

Pack the spaces around the grid with lubricant and wipe off the excess flush with top of grid.

P1000 (horizontally split cover): Position seals on hubs so that they line up with grooves on cover. Position gaskets on lower cover half and assemble covers so that match marks are on the same side. If using the coupling in any position other than horizontal, assemble cover halves with the lug and match mark up, or on the high side. Fasten the cover halves to the torque specified in Table 1.

Maintenance

Check coupling misalignment every year and adjust if required. Excessive misalignment, high ambient temperatures and/or frequent rapid reversing may necessitate more frequent inspections.

If quantity of lubricant appears low, check for leaks and change seals. If necessary, replenish lubricant.

Clean coupling of all old lubricant and replace annually.

Table 1 – Misalignment & End Float

Size	Installation Alignment Limits						Operation Alignment Limits				Cover Bolt Tightening Torques		
	Parallel Offset		Angular		Hub Gap 10%		Parallel Offset		Angular		P1000		
	Max Inch	Max mm	Max Inch	Max mm	Max Inch	Max mm	Max Inch	Max mm	Max Inch	Max mm	Nm	(in-lb)	Size
P1040	0.006	0.15	0.003	0.08	0.125	3.2	0.012	.030	00.013	0.33	11	100	M6
P1050	0.008	0.20	0.004	0.10	0.125	3.2	0.016	0.40	0.016	0.40	22	200	M8
P1060	0.008	0.20	0.005	0.12	0.125	3.2	0.016	0.40	0.018	0.45	22	200	M8
P1070	0.008	0.20	0.005	0.12	0.125	3.2	0.016	0.40	0.020	0.50	22	200	M8
P1080	0.008	0.20	0.006	0.15	0.125	3.2	0.016	0.40	0.024	0.60	22	200	M8
P1090	0.008	0.20	0.007	0.18	0.125	3.2	0.016	0.40	0.028	0.70	22	200	M8

Table 2 – Lube Weight

SIZE	MAX RPM	LUBE WT.	
	P1000	lb.	kg
P1040	3600	0.12	0.05
P1050	3600	0.15	0.05
P1060	3600	0.19	0.09
P1070	3600	0.25	0.11
P1080	3000	0.38	0.17
P1090	1800	0.56	0.25

Table 3 - Lubricants

Manufacturer	Product
American Lubricants Co. (Dayton, OH)	Alubco Bison 1650
Brooks Technology (Cleveland, OH) (Fuchs Lubricants)	Superplex EP #1or Benalene 350 EP #2
Chevron Lubricants	Coupling Grease or Duralith EP2
Citgo Petroleum Corp.	Premium Lithium EP2
Exxon I Mobil Corp.	Mobilux EP111
Fiske Bros. Refining Co.	Lubriplate 630AA
Anderol Inc. (Houghton, Canada)	Anderol 786
Kendall Motor Oil	L-424
Lyondell Lubricants (Houston, TX)	Litholene H EP 2
Maryn International/ Power Up Lubricants (Calgary, Canada)	Thixogrease EP #2
Pennzoil I Quaker State	Pennlith EP711 or Pennlith EP712
Syn-Tech Ltd. (Addison, IL)	NS-2913-G1
Texaco Inc.	Mulifax EP2 or Texaco Coupling Grease
UNOCAL 76 (TOSCO Corporation)	UNOBA EP2

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