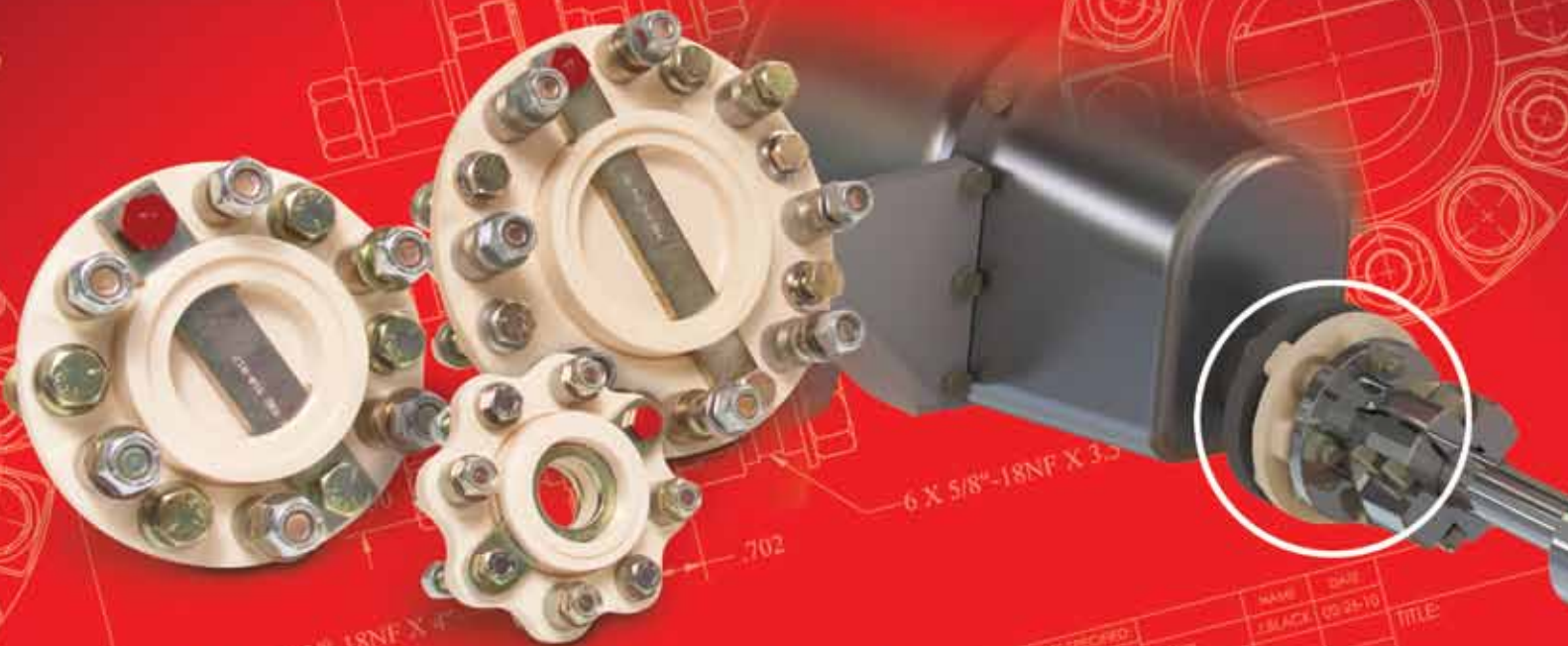


# R&D MARINE



## Flexible Shaft Couplings

### Reduce engine noise and transmission vibration

Staggered bolts enable the polyester elastomer to isolate vibrations and compensate for some misalignment.

### Reduce costly transmission repairs

Absorbs shock loads due to propeller impact or hard gear changes.

### Fail safe design

Two steel straps prevent drive train from separating in the event of severe impact. The aft steel strap is bolted to the transmission coupling and the forward steel strap is bolted to the shaft coupling. The aft strap will engage the forward strap and keep the drive train together if the elastomer is damaged.

### Fits most major transmission makes and models

For engines 5 to 1500 HP.

### Under compression load in both foreword and reverse

The aft steel strap bolted to transmission acts as a backing plate to prevent reverse thrust from pulling the element apart.

### Quick and easy installation

The R&D Coupling requires no machining and comes supplied with bolts to connect between the two existing shaft flanges.

### Periodically check alignment easily

Checking alignment on installation and during service checks is quick and easy using the red bolt as a reference and checking the gap while manually rotating the shaft.

### Impervious to salt water, diesel and lubrication oils

The couplings are made from a polyester elastomer which is not affected by salt water, diesel and lubrication fluids.



(800) 523-7558

[www.pyiinc.com](http://www.pyiinc.com)

## How to Select (details required)

1. Engine horse power and engine speed
2. Gearbox type and reduction ratio
3. Gearbox flange details. Diameter of flange. Diameter of register. Pitch circle diameter of fixing holes. Size and quantity of holes.  
(Pitch circle diameter is the distance between the center of hole at 12 o'clock position to the center of the hole at 6 o'clock)

### Example

1. Ford 150 HP at 2500 RPM
2. Borg Warner Velvet Drive 72C 2:1 Reduction
3. 5" Flange, 2.500 diameter Register, 4.250 PCD, 4 off holes 0.437 diameter

### To calculate power of coupling required:

$$\text{Horse Power of Engine} \times \text{Reduction Ratio} \times 100 = \text{HP}/100\text{rpm}$$

$$\frac{150 \times 2 \times 100}{2500} = 12 \text{ HP}/100\text{rpm}$$

Coupling required 910-009 Borg Warner

The R&D 910 Series couplings consist of a contoured flexible disc moulded in tough yet resilient new type of Polyester Elastomer. The contoured disc gives clearance for bolt heads, and is able to flex freely to take up any temporary misalignment of the engine and shaft, due to flexing of the boat structure or the engine moving on its rubber vibration isolation mountings. Forward thrust is taken in compression on the disc between the two half couplings and reverse thrust is taken again in compression on the disc between the two fail safe straps. In the unlikely event of a disc failure, the steel straps make the coupling fail safe and ensure drive is maintained both forward and reverse.

Couplings as standard are non-conducting but we can supply a silver impregnated rubber element to fit in the center of the coupling between the two fail safe straps to give continuity if required.

## Flexible Coupling Information

Flexible Coupling	Manufacturer	Gearbox Flange Dimensions						Flexible Coupling Details						Ref				
		Diameter		No Bolts	Nom Dia Of Holes		Bolt Pitch Circle		Register		Diameter		Length		Bolt Dia	Capacity /100 rpm		
		mm	Inch		mm	Inch	mm	Inch	mm	Inch	mm	Inch				kW	HP	
910-001	B/W, PRM, ZF-Hurth, Technodrive	101.6	4.00	4	10.0	0.39	82.55	3.25	63.5	2.50	114.3	4.5	32.5	1.28	M10	3.73	5	
910-002	Yanmar	101.6	4.00	4	10.0	0.39	78.00	3.07	50.0	1.97	114.3	4.5	32.5	1.28	M10	2.24	3	
910-003	B/W, PRM, ZF-Hurth, Twin Disc	146.0	5.75	6	12.7	0.50	120.6	4.75	76.2	3.00	152.4	6.0	47.5	1.87	1/2 UNF	14.92	20	X O
910-004	B/W, PRM, ZF-Hurth	101.6	4.00	4	10.0	0.39	82.55	3.25	63.5	2.50	114.3	4.5	35.6	1.40	M10	5.97	8	
910-005	Paragon	101.6	4.00	4	9.7	0.38	82.55	3.25	66.7	2.63	114.3	4.5	34.5	1.35	3/8 UNF	5.22	7	
910-006	Twin Disc, ZF-Hurth	146.0	5.75	6	16.0	0.63	120.6	4.75	76.2	3.00	152.4	6.0	47.5	1.87	1/2 UNF	14.92	20	O X O
910-007	Volvo	101.6	4.00	4	10.0	0.39	80.0	3.15	60.0	2.36	114.3	4.5	43.7	1.72	M10	2.24	3	
910-009	B/W, PRM, ZF-Hurth, Volvo	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	143.0	5.63	45.0	1.77	7/16 UNF	9.69	13	X O
910-012	Yanmar	127.0	5.00	4	10.0	0.39	100.0	3.93	65.0	2.56	135.0	5.31	45.0	1.77	M10	7.46	10	
910-013	Bukh	90.0	3.54	4	8.1	0.32	74.5	2.93	47.0	1.85	114.3	4.5	32.5	1.28	M8	2.24	3	
910-014	B/W, PRM, ZF-Hurth, Technodrive	101.6	4.00	4	10.0	0.39	82.55	3.25	63.5	2.50	114.3	4.5	32.5	1.28	M10	2.24	3	
910-015	Self Change 350HD	222.2	8.75	6	11.2	0.44	190.5	7.50	152.4	6.00	222.2	8.75	44.5	1.75	7/16 UNF	32.1	43	O
910-016	Self Change 700HD	260.4	10.25	6	16.0	0.63	228.6	9.00	152.4	6.00	276.4	10.88	58.0	2.28	5/8 UNF	48.47	65	X O
910-017	Twin Disc	184.2	7.25	6	19.0	0.75	152.4	6.00	95.25	3.75	190.5	7.5	60.7	2.39	5/8 UNF	29.84	40	O X O
910-018	PRM	184.2	7.25	6	16.0	0.63	152.4	6.00	95.25	3.75	190.5	7.5	60.7	2.39	5/8 UNF	29.84	40	X O
910-019	Volvo	101.6	4.00	4	10.0	0.39	80.0	3.15	60.0	2.36	114.3	4.5	32.5	1.28	M10	2.24	3	
910-020	Volvo	101.6	4.00	4	10.0	0.39	80.0	3.15	60.0	2.36	114.3	4.5	32.5	1.28	M10	3.73	5	
910-021	Enfield, Sonic	101.6	4.00	2	11.2	0.44	76.0	3.00	—	—	108.0	4.25	41.7	1.64	7/16 UNF	1.87	2.5	
910-022	Twin Disc	228.6	9.00	8	22.6	0.89	190.5	7.50	152.4	6.00	222.2	8.75	44.5	1.75	1/2 UNF	48.47	65	O X O
910-024	Twin Disc	266.7	10.5	8	25.4	1.00	222.2	8.75	127.0	5.00	276.4	10.88	56.7	2.23	5/8 UNF	63.38	85	O X O
910-025	B/W, PRM, ZF-Hurth, Twin Disc	146.0	5.75	6	12.7	0.5	120.6	4.75	76.2	3.00	152.4	6.0	49.8	1.96	1/2 UNF	20.88	28	X O
910-026	Twin Disc	146.0	5.75	6	16.0	0.63	120.6	4.75	76.2	3.00	152.4	6.0	49.8	1.96	1/2 UNF	20.88	28	O X O
910-027	ZF W320 320A	225	8.86	8	17.0	0.67	196	7.72	140	5.51	228.6	9.0	44.5	1.75	1/2 UNF	48.47	65	O
910-028	Bukh	90.0	3.54	4	8.1	0.32	74.5	2.93	47.0	1.85	114.3	4.5	32.5	1.28	M8	3.73	5	
910-029	B/W, ZF-Hurth, Volvo	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	143.0	5.63	52.4	2.06	7/16 UNF	14.92	20	O
910-030		292.1	11.5	8	25.4	1.00	247.6	9.75	152.4	6.00	292.1	11.5	58.4	2.30	5/8 UNF	89.48	120	O X O
910-032	B/W, PRM, ZF-Hurth, Twin Disc	146.0	5.75	6	12.7	0.5	120.6	4.75	76.2	3.00	152.4	6.0	55.4	2.18	1/2 UNF	27.6	37	
910-033	Twin Disc, ZF-Hurth	146.0	5.75	6	16.0	0.63	120.6	4.75	76.2	3.00	152.4	6.0	55.4	2.18	1/2 UNF	27.6	37	O
910-034	Open Centre V Drive 52mm Bore	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	162.0	6.38	45.0	1.77	7/16 UNF	8.95	12	#
910-035		340.0	13.38	8	25.4	1.00	295.3	11.63	152.4	6.00	348.0	13.7	108.0	4.25	5/8 UNF	119.3	160	O
910-036	Twin Disc	127.0	5.00	4	10.0	0.39	104.8	4.13	63.5	2.50	143.0	5.63	45.0	1.77	M10	7.46	10	
910-037	Yanmar	130.0	5.12	4	12.3	0.48	107.9	4.25	63.5	2.50	143.0	5.63	51.1	2.01	7/16 UNF	9.69	13	
910-038	Taipeungyang TK 250	178.0	7.00	6	14.3	0.56	152.0	5.98	100	3.94	190.5	7.50	63.3	2.49	M14	41.0	55	
910-039	Twin Disc	184.2	7.25	6	19.0	0.75	152.4	6.00	95.25	3.75	190.5	7.50	63.3	2.49	5/8 UNF	41.0	55	O
910-040	PRM	184.2	7.25	6	16.0	0.63	152.4	6.00	95.25	3.75	190.5	7.50	63.3	2.49	5/8 UNF	41.0	55	
910-041		292.1	11.5	8	25.4	1.00	247.6	9.75	152.4	6.00	292.1	11.5	58.4	2.30	5/8 UNF	104.4	140	O
910-042	Dong-I DMT 170HL	287.2	11.3	6	25.1	0.98	240.0	9.45	160.0	6.30	292.1	11.5	58.4	2.30	5/8 UNF	67.0	90	O
910-043	Yanmar	101.6	4.00	4	10.0	0.39	78.0	3.07	50.0	1.97	114.3	4.5	32.5	1.28	M10	3.73	5	
910-044	B/W, PRM, ZF-Hurth, Volvo	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	143.0	5.63	45.0	1.77	7/16 UNF	5.97	8	
910-045		340.0	13.38	8	25.4	1.00	295.3	11.63	152.4	6.00	348.0	13.7	108.0	4.25	3/4 UNF	171.5	230	O
910-046	Allison M25	228.6	9.00	8	19.0	0.75	190.5	7.50	152.4	6.00	222.2	8.75	44.5	1.75	1/2 UNF	48.47	65	O
910-047	Dong-I DMT 260H	292.1	11.5	6	21.0	0.826	240.0	9.45	150.0	5.90	292.1	11.5	58.4	2.30	5/8 UNF	67.0	90	O
910-048	Twin Disc MG 5111 SC	228.6	9.00	6 (8)	22.6	0.89	190.5	7.50	152.4	6.00	222.2	8.75	62.7	2.47	1/2 UNF	48.47	65	O X O
910-049	ZF 325-1A Volvo Flange	205.0	8.07	10	18.0	0.71	170.0	6.69	140.0	5.51	223.0	8.78	124.0	4.88	M18	56	75	
910-050	Twin Disc 510A/5114A	230.0	9.00	8	22.6	0.89	190.5	7.50	152.4	6.00	230.0	9.00	101.6	4.0	1/2 UNF	63.38	85	O
910-051	Twin Disc MG 521	279.4	11.00	8	19.0	0.75	241.3	9.50	152.4	6.00	260.4	11.25	58.4	2.30	5/8 UNF	89.48	120	O
910-052	Lister	120.7	4.75	6	11.2	0.44	98.5	3.88	63.5	2.50	150.9	5.94	69.9	2.75	7/16 UNF	7.46	10	
910-053	Dong-I DMT 150H	218	8.58	6	20.0	0.79	180.0	7.09	140.0	5.51	222.2	8.75	45.0	1.77	1/2 UNF	35.8	48	O
910-054	Open Centre V Drive 58mm Bore	146.0	5.75	6	12.7	0.50	120.6	4.75	76.2	3.00	172.0	6.77	47.5	1.87	1/2 UNF	17.9	24	
910-055	Open Centre V Drive 52mm Bore	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	162.0	6.38	45.0	1.77	7/16 UNF	5.2	7	#
910-057	B/W, Hurth, Volvo	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	143.0	5.63	52.4	2.06	7/16 UNF	18.64	25	
910-058	Dong-I DMT 70T, 90T, 100T	178.0	7.00	6	16.0	0.63	152.0	5.98	100.0	3.94	190.5	7.50	63.3	2.49	5/8 UNF	41.0	55	
910-059	Volvo	101.6	4.00	4	10.0	0.39	80.0	3.15	60.0	2.36	114.3	4.5	35.6	1.40	M10	5.96	8	
910-060	TMP	112.8	4.44	2	11.2	0.44	81.0	3.19	—	—	112.8	4.44	38.1	1.50	7/16 UNF	2.42	3.25	
910-061	Open Centre V Drive 52mm Bore	127.0	5.00	4	11.2	0.44	107.9	4.25	63.5	2.50	162.0	6.38	52.6	2.07	7/16 UNF	14.16	19	
910-062	Dong-I DMT 140H	198.0	7.80	6	16.0	0.63	170.0	6.69	130.0	5.12	210.0	8.27	48.2	1.90	M16	47.0	63	
910-063	Open Centre V Drive 58mm Bore	146.0	5.75	6	12.7	0.50	120.6	4.75	76.2	3.00	172.0	6.77	55.5	2.185	1/2 UNF	23.8	32	
910-064	Open Centre V Drive 67mm Bore	184.2	7.25	6	16.0	0.63	152.4	6.00	95.25	3.75	230.0	9.06	63.8	2.51	5/8 UNF	37.3	50	

X These couplings are fitted with a shouldered bush to locate in the gearbox flange

These flexible couplings have been approved by LLOYDS REGISTER OF SHIPPING

O These flexible couplings have been approved by BUREAU VERITAS

# For the Hurth HBW 150 V Gearbox an adaptor 202-351 is required (22.3 mm 0.875" long)

For the IRM 220A Gearbox, we can supply adapter plate 202-384 (54mm 2.125" long) and for the Twin Disc 502 Gearbox, adapter plate 202-148 (54mm 2.125" long) that bolt onto flexible coupling 910-003, 910-025 or 910-032 and with half coupling 202-037 or 202-054, alternatively clamp type 202-176 or 202-178

HP x 0.7457 = KW

KW x 1.341 = HP

## ALLISON

M25 9" Flange 910-046

## BORG WARNER

4" Flange 910-001, 910-004, 910-014

70C  
71C  
500  
1000  
1500

5" Flange 910-009(BW) 910-029, 910-044(BW), 910-057

71C  
72C  
5000

6" Flange 910-003, 910-025, 910-032

73C  
7000

## BUKH

4" Flange 910-013, 910-028

## DONG I

DMT 70T 178 mm Flange 910-058

DMT 90T

DMT 100T

DMT 140H 198 mm Flange 910-062

DMT 150H 218 mm Flange 910-053

DMT 170HL 287 mm Flange 910-042

DMT 260H 292 mm Flange 910-047

## ENFIELD and SONIC DRIVES

2 Bolt 910-021

## LISTER

4 1/2" Flange 910-052

## NEWAGE PRM

S= Shallow Case, D= Deep Case

4" Flange 910-001, 910-004, 910-014

Delta

80

120

150

5" Flange 910-009(PR) 910-044(PR)

101 910-029

140

160

260

6" Flange 910-003, 910-025, 910-032

175

265

301

302

310

401

402

500

750

601 3:1

1000 3:1

7 1/2" Flange 910-018, 910-040

601 4:1

1000 4:1

1200S

1500S

1750S

10 1/2" Flange 910-024

1200D

1500D

1750D

## PARAGON

4" Flange 910-005

## SELF CHANGE GEARS

8 1/2" Flange 910-015

350HD

10 1/2" Flange 910-016

700

## TAIPEOUNGYANG

178 mm Flange 910-038

TK250

## TECHNODRIVE

4" Flange 910-001, 910-004, 910-014

TMC30

TMC40

TMC50

TMC60

TM260

5" Flange 910-009(PR) 910-029

TM93 910-044(PR)

TM93A

TM170

TM170A

TM345

TM345A

TM485A

TM545A

TM880A

6" Flange 910-006, 910-026, 910-033

TM130B

TM200B up to 1.28: 1

TM265

TM265A

7 1/2" Flange 910-018

TMC200B up to 4.48: 1

TM1200A

TMP 910-060

2 Bolt 910-009(PR) 910-044(PR)

12000

## TWIN DISC

SC= Shallow Case, DC= Deep Case

4" Flange 910-001, 910-004, 910-014

MG 340

MG 360

MG5010SC

MG5011SC

MG5010V

4 1/2" Flange Adaptor 202-148 with

MG502-I 910-003, 910-025, 910-032

MG502-V

5" Flange 4 1/2 PCD 910-036

MG5010A

MG5011A

5" Flange 4 1/2 PCD 910-009(PR) 910-044(PR)

MG5005A 910-029, 910-057

MG5012SC

MG5015A

MG5020SC

MG5055A

6" Flange 910-006, 910-026, 910-033

MG5010DC

MG5050

MG5050-V

MG5050-A

MG5061SC

MG5061-A

MG5061V

MG5062V

MG506-1

MG506A-1

MG507-1

MG507A-1

MG5075IV

MG5075-A

MG5075SC

7 1/2" Flange 910-017, 910-039

MG506DC

MG5065A

MG507-1

MG507-1SC

MG507-2SC

MG507A-2

MG5075A needs adaptor 202-356

MG5075SC

MG5075IV

MG5081SC

MG5081A needs adaptor 202-356

MG5082A

MG5082SC

MG5085SC needs adaptor 202-356

MG5085A needs adaptor 202-356

MG5090A

MG509SC

MG509U

MG5091SC

MG5095A

MGX5095A

## TWIN DISC cont'd

9" Scalloped Flange 910-048

MG5111SC

MG5114SC

9" Flange 910-022, 910-050

MG510SC

MG510A

MG5111A

MG5114A

MG5111V,

MG5114V

MG514CU

MG514U

MG5135A

10 1/2" Flange 910-024

MG5091DC

MG509DC

MG510DC

MG511DC

MG5114DC

MG5113

MG514

## VOLVO

4" Flange 910-007

MS

RB

4" Flange 910-019, 910-020, 910-059

MS 2

MS 10

MS 15

MS25

5" Flange 910-009(VO), 910-029

MS 3 910-044(VO), 910-057

MS4

MS5

HS25A

HS45A

HS63A

## YANMAR (KANZAKI)

4" Flange 78mm PCD 910-002

KBW10 910-043

KM2

KM3

KM35

5" Flange 100mm PCD 910-012

KBW20

KBW21

KM4

KM4A

KMH4A

5 1/2" Flange 4 1/2 PCD 910-009, 910-029, 910-037

KM40 910-057

KM5

KMH50

6" Flange 910-006, 910-026, 910-033

KMH6

KMH60

## ZF-HURTH

4" Flange 910-001, 910-004, 910-014

ZF

35 35 HBW

4M 40 HBW

5M 50 HBW

10M 100 HBW

12 125H HSW

12M 125 HBW

15M 150 HBW

15MA 150A HBW

25M 250 HBW

25 250H HSW

25A 250A HSW

25MA

30M

45A 1.25:1

45C 450D HSW

4 1/2" Adaptor 202-384 with 910-003

910-025, 910-032

ZF

220A 220A-1 IRM

225A

## ZF HURTH cont'd

5" Flange 910-009(PR), 910-029

910-044(PR), 910-057

ZF

360 HBW

450H2 HSW

450A2 HSW

450D HSW

63 630H1 HSW

63A 630A1 HSW

63C 630D HSW

88C

90TS

90ATS

110TS

6" Flange 13.2 mm bolt holes 910-003,

910-025, 910-032

ZF

45

6" Flange 16.3mm bolt holes 910-006,

910-026, 910-033

ZF

45-1

80A 800A2 HSW

80-1A 800A3 HSW

85A

220 needs adaptor 202-329

280A

280-1

280-1A 280V-LD IRM

280IV 280PL IRM

280

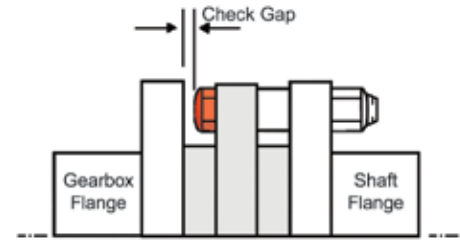
285A

285IV

286

## Installation Procedure For R&D Marine Couplings

1. Roughly align engine and stern gear without flexible coupling i.e. only two rigid half couplings pushed together.
2. Bolt "R&D Marine" coupling between the two rigid couplings. Tightening details as below.
3. Check alignment of engine by placing feeler gauges between **RED CONE HEADED BOLT** and the rigid half coupling. Repeat for the **SAME** bolt at 90° intervals by rotating the shaft.
4. If the gap is the same in all four positions, engine is accurately aligned. Recommended minimum to maximum gap difference: 0.25mm / 0.010 inch.
5. Run installation to bring engine compartment to working temperature.
6. Re-check torque settings.



### Recommended tightening torque:

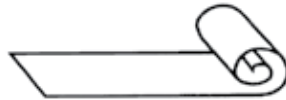
M8 - 27 Nm **20 lbsft** • 3/8 UNF - 40 Nm **30 lbsft** • M10 - 61 Nm **45 lbsft** • 7/16 UNF - 81 Nm **60 lbsft** • M12 - 108 Nm **80 lbsft** • 1/2 UNF - 100 Nm **75 lbsft** • 5/8 UNF - 210 Nm **155 lbsft** • M18 - 338 Nm **250 lbsft** • 3/4 UNF - 366 Nm **270 lbsft**

## Earthing Connectors

"R&D Marine" Earthing Connector consists of a silver impregnated rubber strip, which when fitted through the axis of the coupling between the two fail safe straps gives electrical continuity, R&D have sizes to fit most 910 series couplings.

### Installation Procedure for R&D Earthing Connectors

1. While carrying out the following procedure, ensure that the connector is not contaminated by grease or dirt.
2. Before fitting the coupling into the drive train, remove 2 off bolts holding one of the fail safe straps.
3. Remove the fail safe strap to uncover the hole in the center of the coupling.
4. Roll up the earthing connector (lengthways) as tight as possible.
5. Push into the hole previously uncovered by removing the strap as far as possible.
6. Replace the fail safe strap ensuring that the connector is not damaged, replace 2 off bolts.
7. Check electrical continuity on installation and thereafter at three to six month intervals.



### R & D Marine Earthing Connector Application Guide

Part No	Size (mm)	To Suit Coupling
103-036	9 x 57	910-021
103-037	11 x 57	910-001, 002, 007, 013, 014, 019, 020, 028, 043
103-038	15 x 57	910-004, 005
103-039	17 x 57	910-003, 006, 009, 012, 036, 037, 044, 052
103-040	19 x 57	910-017, 018, 025, 026
103-041	23 x 57	910-029, 038, 039, 040
103-042	25 x 57	910-032, 033
103-043	15 x 75	910-015, 016, 022, 024, 046, 048, 053
103-044	17 x 75	910-030, 041, 042, 047, 051
103-047	9 x 30	910-035, 045, 049, 050
103-053	19 x 75	910-062

## R&D by PYI Inc. offers a full line of drive train solutions such as



## Other products by PYI Inc.

