PYI INC.

Quality Marine
Equipment Since 1981

R & D MARINE

COMPLETE DRIVETRAIN SOLUTIONS

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R & D MARINE

THE STORY

R&D Marine was started in 1973, after several years of development work, to manufacture a flexible shaft coupling suitable for marine use, which was both easy to fit and competitively priced. The company was started with a single garage moving to two garages after one year and then to its current location in 1976. Over the years, the factory has been completely rebuilt and now has 8,000 square feet of modern factory space with all manufacturing being carried out on CNC machines.

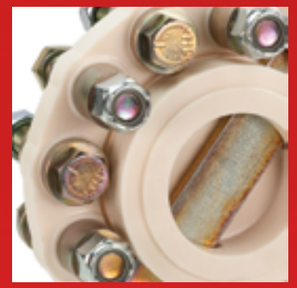
It was only a short while after production started, a customer suggested that if the company produced couplings, it should also manufacture a range of compatible anti-vibration engine mounts. Simiarly, another customer suggested damper drive plates. Hence by 1976 the basis of the product range had been established and since then it has grown to the comprehensive range we have today of couplings, engine mounts, damper drive plates and half couplings for engines from 5 HP to 800 HP.

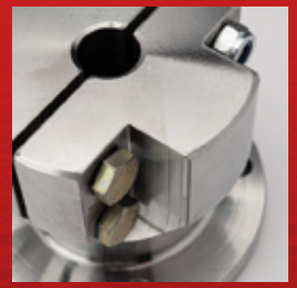
It has always been considered essential that all products should be easy to use, be fail safe and most of all be readily available at the right price. As a manufacturing company R&D Marine prides themselves in that they can supply or assemble from stock most products to cover urgent breakdowns.

Due to the service provided, the suitability of the products and recommendation of their customers it has been possible to develop the world wide distribution network which they have today.

SALES OFFICE

PYI Inc. has proudly represented R&D Marine in North America since 1995. R&D Marine's superior design, quality in-house manufacturing and technical support enable us to provide the type of products that customers have grown to expect.





R & D MARINE

TABLE OF CONTENTS

FLEXIBLE SHAFT COUPLINGS

Reduce vibration and costly transmission repairs

The R&D Flexible Couplings consist of a flexible disc machined from polyester elastomer. The 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 mounts. 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 severe impact, the steel straps make the coupling fail safe and ensure drive is maintained both forward and reverse.

FEATURES

- Reduce engine noise and transmission vibration
- Reduce costly transmission repairs
- Fits most major transmission makes & models
- Under compression load in both forward & reverse
- Quick & easy installation
- Periodically check alignment easily
- Impervious to salt water, diesel and lubrication oils

SIMPLE MAINTENANCE

Checking alignment on installation and during service checks is quick and easy without disassembly by using the red bolt as a reference and checking the gap while manually rotating the shaft.

DURABLE

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

EASY INSTALLATION

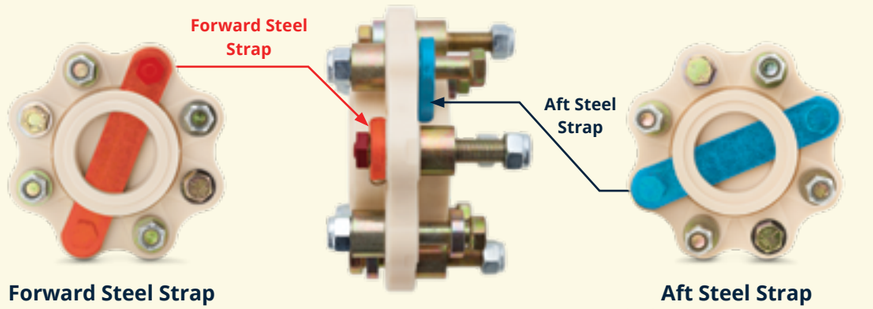
The R&D Marine Flexible Shaft Coupling requires no machining and comes supplied with bolts to connect between the two existing shaft flanges.

FITS MANY APPLICATIONS

For engines 5 to 1,500 hp.

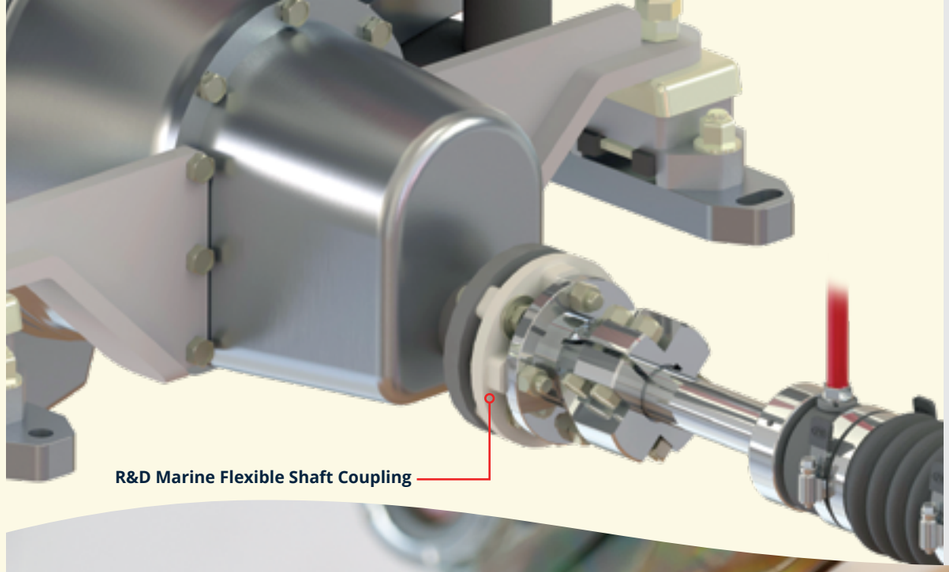
FAIL-SAFE DESIGN

The polyester elastomer disc is backed up by two metal compression straps, one on either side of the flexible coupling. These metal straps hold the system in constant compression whether the drivetrain is in forward or reverse. This feature extends the life of the system dramatically. The aft steel strap bolted to transmission acts as a backing plate to prevent reverse thrust from pulling the element apart.



Forward Steel Strap
Bolted to the shaft coupling

Aft Steel Strap
Bolted to the transmission output



Flexible Shaft Couplings available for V-Drive applications.

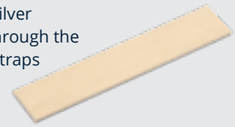
REDUCE NOISE & VIBRATION

Staggered bolts enable the element to isolate vibrations and compensate for some misalignment. This results in reduced engine noise and transmission vibration.

The flexible disc is machined from a resilient and durable polyester elastomer. It allows the unit to flex, absorbing vibrations and temporary misalignment of the shaft and engine due to movement of the engine or flexing in the vessel's structure.

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 Marine have sizes to fit most of our couplings.



PART NUMBERS

Part #	Size (mm)	To Suit Coupling
103-036	9 x 57	910-021
103-037	11 x 57	910-001, 910-002, 910-007, 910-013, 910-014, 910-019, 910-020, 910-028, 910-043
103-038	15 x 57	910-004, 910-005
103-039	17 x 57	910-003, 910-006, 910-009, 910-012, 910-036, 910-037, 910-044, 910-052
103-040	19 x 57	910-017, 910-018, 910-025, 910-026
103-041	23 x 57	910-029, 910-038, 910-039, 910-040
103-042	25 x 57	910-032, 910-033
103-043	15 x 75	910-015, 910-016, 910-022, 910-024, 910-046, 910-048, 910-053
103-044	17 x 75	910-030, 910-041, 910-042, 910-047, 910-051
103-047	9 x 30	910-035, 910-045, 910-049, 910-050
103-053	19 x 75	910-062

REFERENCE GUIDE

STEP 1

Find your transmission make and model in the Flexible Coupling reference guide below, and locate the corresponding part number(s).

Example:
ZF Hurth 45A with 5" output flange

If gearbox requires an adapter (refer to the KEY at the bottom of this page) please contact PYI Inc. at

425-355-3669 or info@pyiinc.com

R&D MARINE

ALLISON			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
M25	9"	910-046	65

BORG WARNER			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
70C	4"	910-001 910-004 910-014	5 8 3
71C			
500			
1000			
1500			
71C	5"	910-009 910-029 910-044 910-057	13 20 8 25
72C			
5000			
73C	6"	910-003 910-025 910-032	20 28 37
7000			

BUKH			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
All models	4"	910-013 910-028	3 5

ENFIELD AND SONIC DRIVES			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
2 Bolt		910-021	2.5

LISTER			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
All Models	4.5"	910-052	10

NEWAGE PRM			
S=Shallow Case / D=Deep Case			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
Delta	4"	910-001 910-004 910-014	5 8 3
80			
120			
150			
101	5"	910-009 910-029 910-044	13 20 8
140			
160			
260			
175	6"	910-003 910-025 910-032	20 28 37
265			
301			
302			
310			
401			
402			
500			
750			
601 3:1			
1000 3:1			
601 4:1	7.25"	910-018 910-040	40 55
1000 4:1			
1200S			
1500S			
1750S			
1200D	10.5"	910-024	85
1500D			
1750D			

PARAGON			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
All Models	4"	910-005	7

SELF CHANGE GEARS			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
350HD	8.75"	910-015	43
700	10.75"	910-016	65

TAIPEOUNGYANG			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
TK250	178mm	910-038	55

TECHNODRIVE			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
TMC30	4"	910-001 910-004 910-014	5 8 3
TMC40			
TMC50			
TMC60			
TM260			
TM93	5"	910-009 910-029 910-044	13 20 8
TM93A			
TM170			
TM170A			
TM345			
TM345A			
TM485A			
TM545A			
TM880A			
TM130B	6"	910-006 910-026 910-033	20 28 37
TM200B (Up to 1.28:1)			
TM265			
TM265A			
TMC200B (Up to 4.48:1)	7.25"	910-018	40
TM1200A			

TWIN DISC			
SC=Shallow Case / DC=Deep Case			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
MG 340	4"	910-001 910-004 910-014	5 8 3
MG 360			
MG5010SC			
MG5011SC			
MG5010V			
MG502-I (2)	4.75"	910-003 910-025 910-032	20 28 37
MG502-V (2)			
MG5010A	5" 4.125" PCD	910-036	10
MG5011A			
MG5005A	5" 4.25" PCD	910-009 910-029 910-044 910-057	13 20 8 25
MG5012SC			
MG5015A			
MG5020SC			
MG5055A			

TWIN DISC Continued...			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
MG5010DC	6"	910-006 910-026 910-033	20 28 37
MG5050			
MG5050-V			
MG5050-A			
MG5061SC			
MG5061-A			
MG5061V			
MG5062V			
MG506-1			
MG506A-1			
MG507-1			
MG507A-1			
MG5075IV			
MG5075-A			
MG5075SC	7.25"	910-017 910-039	40 55
MG506DC			
MG5065A			
MG507-1			
MG507-1SC			
MG507-2SC			
MG507A-2			
MG5075A (1)			
MG5075SC			
MG5075IV			
MG5081SC			
MG5081A (1)	7.25"	910-017 910-039	40 55
MG5082A			
MG5082SC (1)			
MG5085A (1)			
MG5090A			
MG509SC			
MG509U			
MG5091SC			
MG5095A			
MGX5095A			
MG5111SC	9" Scalloped Flange	910-048	65
MG5114SC			
MG510SC	9"	910-022 910-050	65 85
MG510A			
MG5111A			
MG5114A			
MG5111V			
MG5114V			
MG514CU			
MG514U			
MG5135A			

TWIN DISC Continued...			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
MG5091DC	10.5	910-024	85
MG509DC			
MG510DC			
MG5111DC			
MG5114DC			
MG5113			
MG514			

VOLVO			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
MS	4"	910-007 910-019 910-020 910-059	3 3 5 8
RB			
MS 2			
MS 10			
MS 15			
MS 25			
MS 3	5"	910-009 910-029 910-044 910-057	13 20 8 25
MS 4			
MS 5			
HS25A			
HS45A			
HS63A			

YANMAR (KANZAKI)			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
KBW10	4" 78mm PCD	910-002 910-043	3 5
KM2			
KM3			
KM35			
KBW10	5" 100mm PCD	910-012	10
KBW21			
KM4			
KM4A			
KMH4A			
KM40	5" 4.25 PCD	910-009 910-029 910-037 910-057	13 20 13 25
KM5			

ZF-HURTH			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
ZF	4"	910-001 910-004 910-014	5 8 3
35			
4M			
5M			
10M			
12			
M12M			
15M			
15MA			
25M			
25			
25A			
25MA			
30M			

ZF-HURTH Continued...			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
45A 1.25:1	4"	910-001 910-004 910-014	5 8 3
45C			
35 HBW			
40HBW			
50HBW			
100 HBW			
125H HSW			
125HBW			
150HBW			
150A HBW			
250 HBW			
250H HSW			
250A HSW			
450D HSW			
ZF (3)	4.75"	910-003 910-025 910-032	20 28 37
220A (3)			
225A (3)			
220A-1 IRM (3)			
ZF	5"	910-009 910-029 910-044 910-057	13 20 8 25
45A			
45C			
63			
63A			
63C			
88C			
90TS			
90ATS			
110TS			
360 HBW			
450H2 HSW			
450AW HSW			
450D HSW			
630H1 HSW			
630A1 HSW			
630D HSW			
ZF	6" (0.5" bolt holes)	910-003 910-025 910-032	20 28 37
45			
ZF	6" (0.625" bolt holes)	910-006 910-026 910-033	20 28 37
45-1			
80A			
80-1A			
85A			
800A2 HSW			
800A3 HSW			
220			
280A			
280-1A			
280-1A			
280IV			
285A			
285IV			
286			
286A			
286IV			
300TS			

ZF-HURTH Continued...			
Model #	**Flange Size**	**R&D Part #**	**Max HP/100 RPM**
300-1TS	6" (0.625" bolt holes)	910-006 910-026 910-033	20 28 37
300ATS			
300-1ATS			
301C			
301A			
300IVTS			
110ATS			
110IVTS			
280V-LD IRM			
280PL IRM			
301PL-2IRM			
301A-2 IRM			
300VTS IRM			
311 IRM	7.25"	910-017	40
ZF	8"	910-049	75
311			
325-1A Volvo			
350			
350A			
350TS			
350ATS			
350V			
350IV			
311PL IRM			
350PL-2 IRM			
350A-2 IRM			
350PL-1 IRM			
350A-1 IRM			
350 IRM			
350V-LD IRM			
ZF	8.75"	910-049	75
W320			
320A			
320-2 IRM			

ZF-HURTH V DRIVE (OPEN CENTER)			
Model #	**Flange Size**	**R&D Part #**	
ZF (4)	4"	910-034 910-055 910-061	12 7 19
15MIV (4)			
150V HSW (4)			
ZF	5"	910-034 910-055 910-061	12 7 19
90IVTS			
63IV			

KEY

(1) - Needs adapter 202-356

(2) - Needs adapter 202-148

(3) - Needs adapter 202-384

(4) - Needs adapter 202-351

QUICK GUIDE

Use this guide to quickly choose the correct coupling based off the flange diameter and coupling capacity.

Flange Size	Gearbox Manufacturer and Compatible Couplings	Horsepower / 100 RPM
4"	**Borg Warner, Twin Disc, ZF-Hurth, Newage, Technodrive**	
	910-001	5
	910-004	8
	910-014	3
	Yanmar (Kanzaki)	
	910-002	3
	910-043	5
	Volvo	
	910-007 (3)	3
	910-019	3
	910-020	5
	910-059	8
	Bukh	
	910-013	3
	910-028	5
	Paragon	
	910-005	7
	ZF-Hurth V-Drive - Open Center - *Adapter Required*	
	910-034	12
	910-055	7
	910-061	19
5"	**Borg Warner, Twin Disc - *4.25" PCD*, ZF-Hurth, Yanmar - *4.25" PCD*, Newage, Technodrive, Volvo**	
	910-009	13
	910-029	20
	910-044	8
	910-057	25
	Yanmar (Kanzaki) - *100mm PCD*	
	910-012	10
	Twin Disc - *4.125" PCD*	
	910-036	10
	ZF-Hurth V-Drive - Open Center - *Adapter Required*	
	910-034	12
	910-055	7
	910-061	19
6"	**Twin Disc, ZF-Hurth - *0.625" Holes***	
	910-006	20
	910-026	28
	910-033	37
	ZF-Hurth - 0.5" Holes	
	910-003	20
	910-025	28
	910-032	37

STEP 2

Calculate power of coupling required.

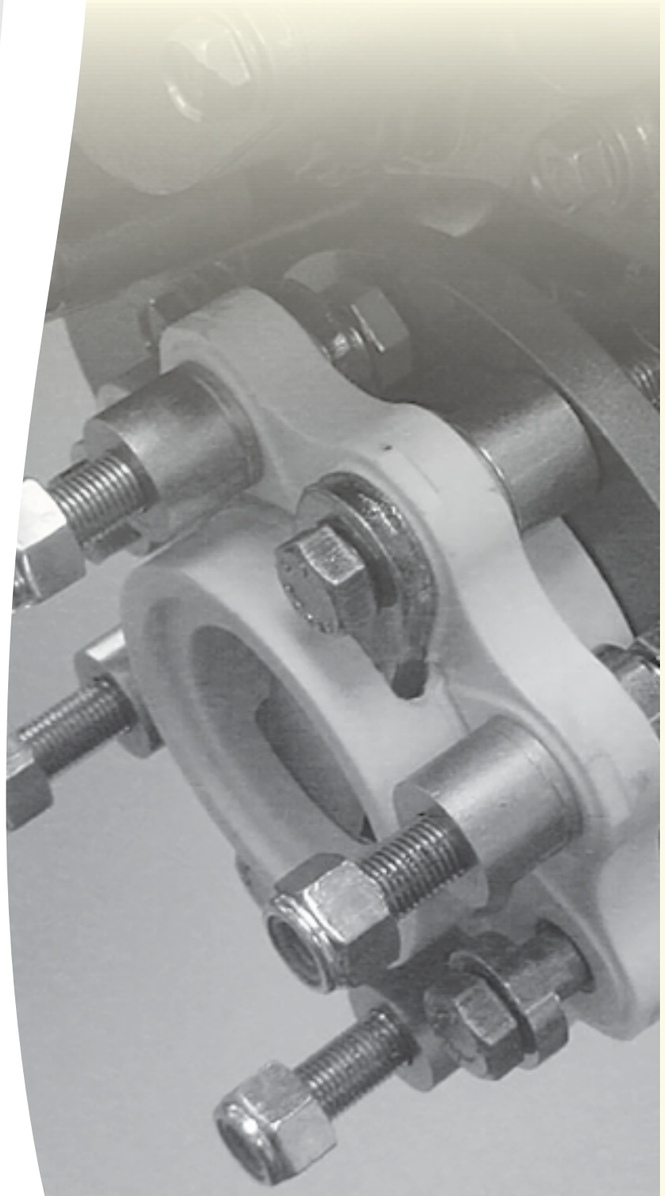
To calculate power of coupling required use the formula below:

Formula:

$$\left[\frac{\text{Horsepower of Engine}}{\text{Engine Speed (Max RPM)}} \times \text{Reduction Ratio} \times 100 = \text{HP/100 RPM}\right]$$

Example:

$$\frac{150}{2{,}500} \times 2 \times 100 = 12 \text{ HP/100 RPM}$$



STEP 3

Select part number that closest matches your HP / 100 RPM dictated in Step 2. * *HP / 100 RPM cannot exceed max.*

Example:

Using the example, there are four options for a ZF Hurth 45A with a 5" flange. The 910-009, 910-029, 910-044 or 910-057. Based on our 12 HP/100 RPM the best option would be 910-009 that is rated for 13 HP/100 RPM.

		Gearbox Flange Dimensions									Flexible Coupling Details						
Part #	Manufacturer	Diameter inches / mm		# of Bolts	Ø of holes inches / mm		Bolt Pitch Circle inches / mm		Register inches / mm		Diameter inches / mm		Length inches / mm		Bolt Ø	Max / 100 rpm hp / kW		Ref
910-001	B/W, PRM, ZF-Hurth, Technodrive	4	101.6	4	0.39	10	3.25	82.55	2.5	63.5	4.5	114.3	1.28	32.5	M10	5	3.73	
910-002	Yanmar	4	101.6	4	0.39	10	3.07	78	1.97	50	4.5	114.3	1.28	32.5	M10	3	2.24	
910-003	B/W, PRM, ZF-Hurth, Twin Disc	5.75	146	6	0.5	12.7	4.75	120.6	3	76.2	6	152.4	1.87	47.5	1/2 UNF	20	14.92	X O
910-004	B/W, PRM, ZF-Hurth	4	101.6	4	0.39	10	3.25	82.55	2.5	63.5	4.5	114.3	1.4	35.6	M10	8	5.97	
910-005	Paragon	4	101.6	4	0.38	9.7	3.25	82.55	2.63	66.7	4.5	114.3	1.35	34.5	3/8 UNF	7	5.22	
910-006	Twin Disc, ZF-Hurth	5.75	146	6	0.63	16	4.75	120.6	3	76.2	6	152.4	1.87	47.5	1/2 UNF	20	14.92	O X O
910-007	Volvo	4	101.6	4	0.39	10	3.15	80	2.36	60	4.5	114.3	1.72	43.7	M10	3	2.24	
910-009	B/W, PRM, ZF-Hurth, Volvo	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	5.63	143	1.77	45	7/16 UNF	13	9.69	X O
910-012	Yanmar	5	127	4	0.39	10	3.93	100	2.56	65	5.31	135	1.77	45	M10	10	7.46	
910-013	Bukh	3.54	90	4	0.32	8.1	2.93	74.5	1.85	47	4.5	114.3	1.28	32.5	M8	3	2.24	
910-014	B/W, PRM, ZF-Hurth, Technodrive	4	101.6	4	0.39	10	3.25	82.55	2.5	63.5	4.5	114.3	1.28	32.5	M10	3	2.24	
910-015	Self Change 350HD	8.75	222.2	6	0.44	11.2	7.5	190.5	6	152.4	8.75	222.2	1.75	44.5	7/16 UNF	43	32.1	O
910-016	Self Change 700HD	10.25	260.4	6	0.63	16	9	228.6	6	152.4	10.88	276.4	2.28	58	5/8 UNF	65	48.47	X O
910-017	Twin Disc	7.25	184.2	6	0.75	19	6	152.4	3.75	190.5	7.5	190.5	2.39	60.7	5/8 UNF	40	29.84	O X O
910-018	PRM	7.25	184.2	6	0.63	16	6	152.4	3.75	190.5	7.5	190.5	2.39	60.7	5/8 UNF	40	29.84	X O
910-019	Volvo	4	101.6	4	0.39	10	3.15	80	2.36	60	4.5	114.3	1.28	32.5	M10	3	2.24	
910-020	Volvo	4	101.6	4	0.39	10	3.15	80	2.36	60	4.5	114.3	1.28	32.5	M10	5	3.73	
910-021	Enfield, Sonic	4	101.6	2	0.44	11.2	3	76	-	-	4.25	108	1.64	41.7	7/16 UNF	2.5	1.87	
910-022	Twin Disc	9	228.6	8	0.89	22.6	7.5	190.5	6	152.4	8.75	222.2	1.75	44.5	1/2 UNF	65	48.47	O X O
910-024	Twin Disc	10.5	266.7	8	1	25.4	8.75	222.2	5	127	10.88	276.4	2.23	56.7	5/8 UNF	85	63.38	O X O
910-025	B/W, PRM, ZF-Hurth, Twin Disc	5.75	146	6	0.5	12.7	4.75	120.6	3	76.2	6	152.4	1.96	49.8	1/2 UNF	28	20.88	X O
910-026	Twin Disc, ZF-Hurth	5.75	146	6	0.63	16	4.75	120.6	3	76.2	6	152.4	1.96	49.8	1/2 UNF	28	20.88	O X O
910-027	ZF W320 320A	8.86	225	8	0.67	17	7.72	196	5.51	140	9	228.6	1.75	44.5	1/2 UNF	65	48.47	O
910-028	Bukh	3.54	90	4	0.32	8.1	2.93	74.5	1.85	47	4.5	114.3	1.28	32.5	M8	5	3.73	
910-029	B/W, ZF-Hurth, Volvo	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	5.63	143	2.06	52.4	7/16 UNF	20	14.92	O
910-030		11.5	292.1	8	1	25.4	9.75	247.6	6	152.4	11.5	292.1	2.3	58.4	5/8 UNF	120	89.48	O X O
910-032	B/W, PMR, ZF-Hurth, Twin Disc	5.75	146	6	0.5	12.7	4.75	120.6	3	76.2	6	152.4	2.18	55.4	1/2 UNF	37	27.6	
910-033	Twin Disc, ZF-Hurth	5.75	146	6	0.63	16	4.75	120.6	3	76.2	6	152.4	2.18	55.4	1/2 UNF	37	27.6	O
910-034	Open Center V Drive 52mm Bore	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	6.38	162	1.77	45	7/16 UNF	12	8.95	#
910-035		13.38	340	8	1	25.4	11.63	295.3	6	152.4	13.7	348	4.25	108	5/8 UNF	160	119.3	O
910-036	Twin Disc	5	127	4	0.39	10	4.13	104.8	2.5	63.5	5.63	143	1.77	45	M10	10	7.46	
910-037	Yanmar	5.12	130	4	0.48	12.3	4.25	107.9	2.5	63.5	5.63	143	2.01	51.1	7/16 UNF	13	9.69	
910-038	Taipeoungyang TK 250	7	178	6	0.56	14.3	5.98	152	3.94	100	7.5	190.5	2.49	63.3	M14	55	41	
910-039	Twin Disc	7.25	184.2	6	0.75	19	6	152.4	3.75	190.5	7.5	190.5	2.49	63.3	5/8 UNF	55	41	O
910-040	PRM	7.25	184.2	6	0.63	16	6	152.4	3.75	190.5	7.5	190.5	2.49	63.3	5/8 UNF	55	41	
910-041		11.5	292.1	8	1	25.4	9.75	247.6	6	152.4	11.5	292.1	2.3	58.4	5/8 UNF	140	104.4	O
910-043	Yanmar	4	101.6	4	0.39	10	3.07	78	1.97	50	4.5	114.3	1.28	32.5	M10	5	3.73	
910-044	B/W, PRM, ZF-Hurth, Volvo	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	5.6	143	1.77	45	7/16 UNF	8	5.97	
910-045		13.38	340	8	1	25.4	11.63	295.3	6	152.4	13.7	348	4.25	108	3/4 UNF	230	171.5	O
910-046	Allison M25	9	228.6	8	0.75	19	7.5	190.5	6	152.4	8.75	222.2	1.75	44.5	1/2 UNF	65	48.47	O
910-048	Twin Disc MG 5111 SC	9	228.6	6 (8)	0.89	22.6	7.5	190.5	6	152.4	8.75	222.2	2.47	62.7	1/2 UNF	65	48.47	O X O
910-049	ZF 325-1A	8.07	205	10	0.71	18	6.69	170	5.51	140	8.78	223	4.88	124	M18	75	56	
910-050	Twin Disc 510A/5114A	9	228.6	8	0.89	22.6	7.5	190.5	6	152.4	9	228.6	4	101.6	1/2 UNF	85	63.38	O
910-051	Twin Disc MG 521	11	279.4	8	0.75	19	9.5	241.3	6	152.4	11.25	260.4	2.3	58.4	5/8 UNF	120	89.48	O
910-052	2F, 220A, Lister, Twin Disc 502	4.75	120.7	6	0.44	11.2	3.88	98.5	2.5	63.5	5.94	150.9	2.75	69.9	7/16 UNF	10	7.46	
910-054	Open Center V Drive 58mm Bore	5.75	146	6	0.5	12.7	4.75	120.6	3	76.2	6.77	172	1.87	47.5	1/2 UNF	24	17.9	
910-055	Open Center V Drive 52mm Bore	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	6.38	162	1.77	45	7/16 UNF	7	5.2	#
910-057	B/W, Hurth, Volvo	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	5.63	143	2.06	52.4	7/16 UNF	25	18.64	
910-059	Volvo	4	101.6	4	0.39	10	3.15	80	2.36	60	4.5	114.3	1.4	35.6	M10	8	5.96	
910-060	TMP	4.44	112.8	2	0.44	11.2	3.19	81	-	-	4.44	112.8	1.5	38.1	7/16 UNF	3.25	2.42	
910-061	Open Center V Drive 52mm Bore	5	127	4	0.44	11.2	4.25	107.9	2.5	63.5	6.38	162	2.07	52.6	7/16 UNF	19	14.16	
910-063	Open Center V Drive 58mm Bore	5.75	146	6	0.5	12.7	4.75	120.6	3	76.2	6.77	172	2.185	55.5	1/2 UNF	32	23.8	
910-064	Open Center V Drive 67mm Bore	7.25	184.2	6	0.63	16	6	152.4	3.75	190.5	9.06	230	2.51	63.8	5/8 UNF	50	37.3	

O - These couplings are fitted with a shouldered bush to locate in the gearbox flange.

O - These flexible couplings have been approved by Bureau Veritas.

X - These flexible couplings have been approved by Lloyds Register of Shipping.

- For the Hurth HBW 150 V Gearbox an adapter 202-351 is required (0.875" long).

- Open center flexible couplings

SPLIT SHAFT COUPLINGS

R&D Marine has developed a comprehensive range of Split Shaft Couplings with flange sizes from 4” to 7-1/4” diameter. Split Shaft Couplings can accommodate the variations that occur with normal shaft tolerances, are easy to install, and can be adjusted to the required position on the shaft.

FEATURES

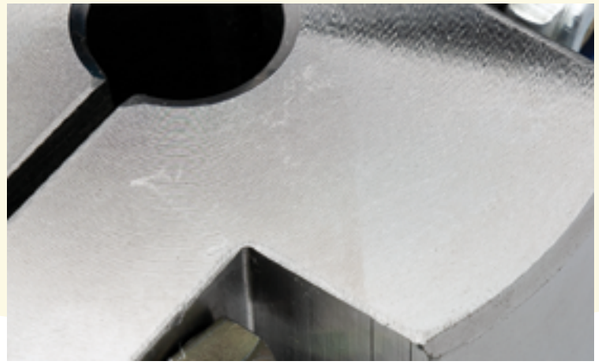
- Easy installation
- Easy removal
- Better fit and face than solid coupling
- Machined from solid steel

BEST FIT POSSIBLE

By clamping onto the shaft the R&D Marine Split Shaft Coupling can overcome normal shaft tolerances. Easy to remove shaft, even after years of use. Provides a better fit and face than a solid slip-on coupling.

INCREASED STRENGTH

Unlike other shaft couplings on the market that are cast steel, the R&D Marine Split Shaft Couplings are machined from solid steel. This gives increased strength and durability.



ACCESSORIES

FLANGE ADAPTERS

R&D Marine can provide an adapter for most gearboxes to allow the fitting of a flexible coupling from their extensive range. Please contact PYI Inc. for sizes and pricing.

BOBBINS

R&D Marine can provide a Bobbin to extend the shaft. Please contact PYI Inc. for sizes and pricing.

IMPERIAL

		Bore Diameters (Inches)										
Part #	Type of Gearbox	0.75"	0.875"	1"	1.125"	1.25"	1.5"	1.75"	2"	2.25"	2.5"	2.75"
202-153	4" BW, PRM, ZF Hurth Max Bore: 1.5"	B		B	B	B	B					
202-254	4" Yanmar Max Bore" 1.5"	B		B	B	B						
202-255	4" Volvo Max Bore: 1.5"	B										
202-489	4" Bukh Max Bore: 1.5"	B										
202-168	5" BW, PRM, ZF Hurth, Volvo Max Bore: 2"		P	B	B	BK	BK	BK	BK			
202-313	5" IRM 220, MG 502, Lister Max Bore 2"		P									
202-316	5" Yanmar Max Bore: 2"		P			BK						
202-176	6" PRM Max Bore: 2.5"		P			BK	BK	BK	BK	BK	BK	
202-188	6" Twin Disc Max Bore: 2.5"		P									
202-381	7.25" PRM 601, 1000 4:1 Max Bore: 2.75"						P					
202-468	7.25" PRM 1500 Max Bore: 2.75"						P					
202-469	7.25" Twin Disc Max Bore: 2.75"						P					
202-470	7.25" ZF 311A Max Bore: 2.75"						P					

METRIC

		Bore Diameters (mm)									
Part #	Type of Gearbox	22mm	25mm	30mm	35mm	40mm	45mm	50mm	55mm	60mm	70mm
202-153	4" BW, PRM, ZF Hurth Max Bore: 40mm	B	B	B	B						
202-254	4" Yanmar Max Bore" 40mm	B	B	B							
202-255	4" Volvo Max Bore: 40mm	B	B	B							
202-489	4" Bukh Max Bore: 40mm										
202-168	5" BW, PRM, ZF Hurth, Volvo Max Bore: 50mm			BK	BK	BK	BK	BK			
202-313	5" IRM 220, MG 502, Lister Max Bore 50mm										
202-316	5" Yanmar Max Bore: 50mm			BK	BK						
202-176	6" PRM Max Bore: 60mm					BK	BK	BK	BK	BK	
202-188	6" Twin Disc Max Bore: 60mm							BK		BK	
202-381	7.25" PRM 601, 1000 4:1 Max Bore: 70mm										
202-468	7.25" PRM 1500 Max Bore: 70mm										
202-469	7.25" Twin Disc Max Bore: 70mm										
202-470	7.25" ZF 311A Max Bore: 70mm										

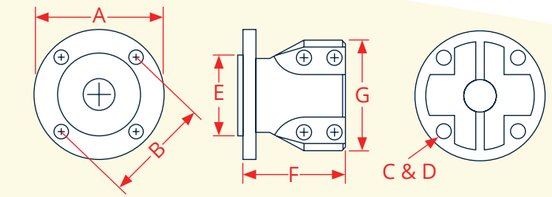
P - Pilot drilled open tolerance

B - Bored Only / Can be keyed

BK - Bored and must be keyed

Shaded area designates range of bores covered.

Note: Please contact PYI if shaft size is not listed.



* Male register shown

	Coupling Dimensions														
Part #	Flange Ø (A) inches / mm		Hole Pitch Circle (B) inches / mm		# of Holes (C)	Hole Size (D) inches / mm		Register Ø (E) M = Male* F = Female inches / mm			Length (F) inches / mm		Boss Ø (G) inches / mm		Clamp Bolt Size
202-153	4	102	3.25	82.55	4	0.394	10	2.5	63.5	M	3.19	81	3.38	85.9	M10
202-254	4	102	3.07	78	4	0.394	10	1.97	50	M	3.19	81	3.38	85.9	M10
202-255	4	102	3.15	80	4	0.394	10	2.36	60	F	3.28	85.8	3.38	85.9	M10
202-489	3.54	90	2.93	74.5	4	0.32	8.1	1.85	47	F	3.28	85.8	3.38	85.9	5/16” UNF
202-168	5	127	4.25	107.94	4	0.44	11.2	2.5	63.5	M	3.75	95.3	4.06	103.2	7/16” UNF
202-316	4.72	119.9	3.94	100	4	0.394	10	2.56	65	M	3.75	95.3	4.06	103.2	M10
202-176	5.75	146	4.75	120.6	6	0.5	12.7	3	76.2	M	5.5	139.7	5.38	136.7	1/2” UNF
202-188	5.75	146	4.75	120.6	6	0.63	16	3	76.2	F	5.5	139.7	5.38	136.7	5/8” UNF
202-313	5	127	3.88	98.6	6	0.47	12	2.5	63.5	F	5.63	143	4.06	103.2	M12
202-381	7.45	189.2	6	152.4	6	0.63	16	3.75	95.25	M	7.5	190.5	6.63	168.4	5/8” UNF
202-468	7.45	189.2	6	152.4	6	0.63	16	3.75	95.25	F	7.5	190.5	6.63	168.4	5/8” UNF
202-469	7.45	189.2	6	152.4	6	0.75	19	3.75	95.25	F	7.5	190.5	6.63	168.4	3/4” UNF
202-470	7.45	189.2	6	152.4	8	0.63	16	3.75	95.25	F	7.5	190.5	6.63	168.4	5/8” UNF

Supplied with clamp bolts and nuts:

- Imperial Sizes: Keyways to BS46: Part 1 Square
- Metric Sizes: Keyways to BS4235: Part 1 Rectangular

Recommended torque specs:

- M10 - 45ft. lbs.
- 7/16” UNF - 60 ft. lbs.
- 1/2” UNF - 75 ft. lbs.
- 5/8” UNF - 155 ft. lbs.

ENGINE MOUNTS

Weight capacity ranging from 30 to 2,000 pounds per mount

The R&D Engine Mounts are specifically designed for the rigors of marine, industrial, commercial, and heavy equipment applications.

These engine mounts are pre-loaded to provide a dampening effect when encountering upward or downward pressure. Most R&D mounts are shear loaded to absorb forward and reverse thrust, yet soft enough to isolate engine vibrations from the surface they are mounted. To facilitate in the ease of installation, the mounts have nuts to adjust the height. The slotted holes in the base of the mount assist in alignment and installation.

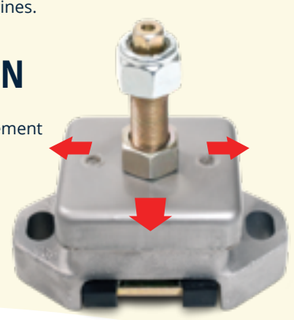
To help increase the longevity of the mounts, all steel parts are zinc plated and passivated to limit corrosion. The threads of the stud are rolled and reduce the possibility of shearing the stud. This technology produces a significantly stronger thread than possible when the material is cut away in conventional cut-thread die methods. More specifically, the thread rolling (cold forming) process strengthens the thread in three ways: tension, shear, and fatigue resistance. The rubber component is covered by an oil shield to protect the rubber from petroleum based products.

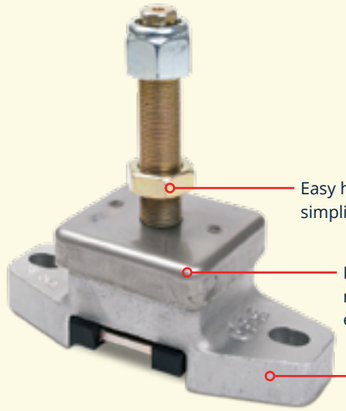
FEATURES

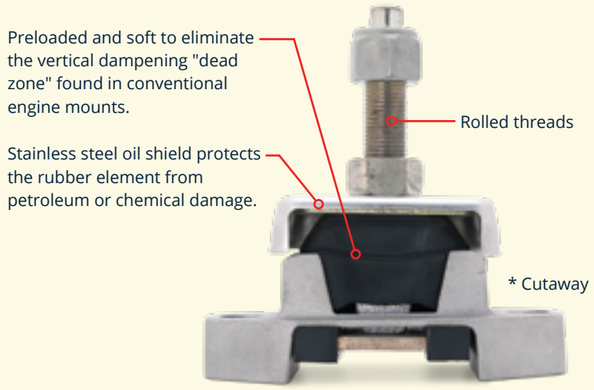
- Slotted holes & height adjustment to simplify alignment.
- Designed for a wide variety of engines.

VIBRATION ISOLATION

Shear loaded mounts provide superior isolation and restrict fore and aft movement to maintain alignment.







* Cutaway

How To Select The Right Engine Mount

Below are the formulas you will need to use to determine the required pounds per engine mount.

FORMULAS

Front Engine Mount
W x 0.4 = ___ x 0.5 = ___ lbs per mount

Back Engine Mount
W x 0.6 = ___ x 0.5 = ___ lbs per mount

W = weight of engine and gearbox

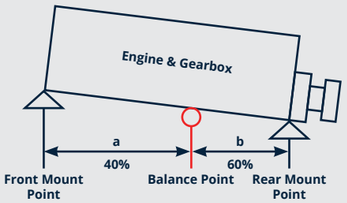
Example:

Total weight of engine & gearbox = 1,200 lbs

Front Engine Mount
1,200 x 0.4 = 480 x 0.5 = 240 lbs per mount

Back Engine Mount
1,200 x 0.6 = 720 x 0.5 = 360 lbs per mount

GENERAL WEIGHT DISTRIBUTION

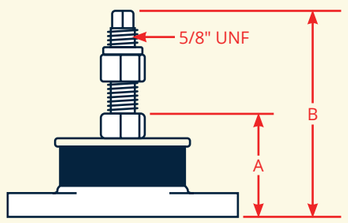


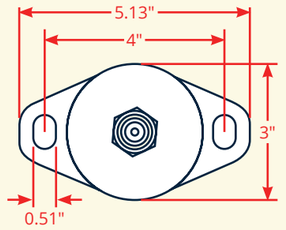
1. Find the center of gravity by balancing on a roller *(if possible)*.
2. If the center of gravity cannot be found, assume weight distribution of 60% on rear engine mounts, with 40% on the front engine mounts *(if rear mount is in line with flywheel)*.

R&D MARINE

COMPRESSION MOUNTS

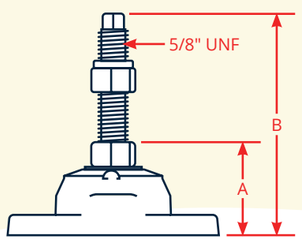
R&D compression mounts provide a competitive low height mount with basic deflection and vibration control.

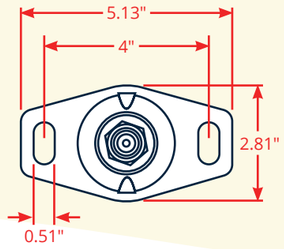




	5/8" Stud				
Part #	Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-003	100 - 180 lbs	0.06"	0.09"	2.3"	4.58"
800-004	160 - 370 lbs	0.06"	0.09"	2.3"	4.58"
800-005	320 - 500 lbs	0.06"	0.09"	2.3"	4.58"

This is a low height mount with minimum deflection.



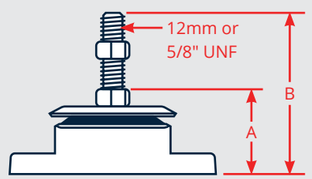


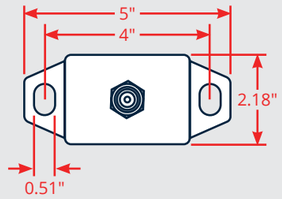
	5/8" Stud			
Part #	Capacity / Mount	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-033	190 lbs	0.065"	2.3"	5.37"
800-036	300 lbs	0.065"	2.3"	5.37"

This mounting is a competitive, low height medium capacity mount giving good engine control.

RECTANGULAR SHEAR MOUNTS

The R&D Marine Rectangular Shear Mountings offer low height with the best combination of stiffness. Soft vertically and at right angles to the crankshaft to isolate vibration, stiff fore and aft to take the propeller thrust.

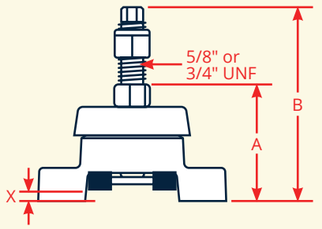


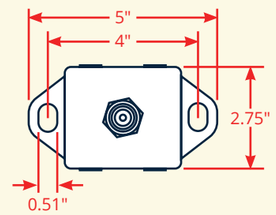


	12mm Stud				
Part #	Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-038	30 - 90 lbs	0.07"	0.07" - 0.14"	2.03"	3.19"
800-039	70 - 170 lbs	0.07"	0.07" - 0.14"	2.03"	3.19"
	5/8" Stud				
800-040	30 - 91 lbs	0.07"	0.07" - 0.14"	2.19"	3.19"
800-041	70 - 171 lbs	0.07"	0.07" - 0.14"	2.19"	3.19"

SHEAR LOADED SUPER MOUNTS

The R&D shear loaded super mounts are suited to accommodate a wide range of applications in a marine and industrial environment. Each mount has an oil shield to protect the rubber and has exceptional dampening in all directions.

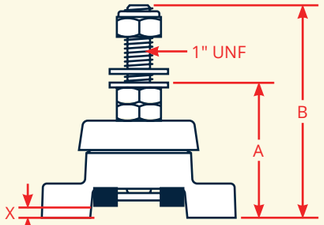


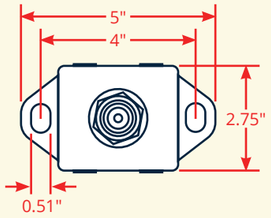


"X" Dimensions on initial installation should not be less than 3.8mm (0.15").

	5/8" Stud				
Part #	Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-037	50 - 175 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-010	80 - 230 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-011	120 - 410 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-012	250 - 560 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-014	300 - 680 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
	3/4" Stud				
800-020	80 - 231 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-021	120 - 411 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-022	250 - 561 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-023	300 - 681 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"

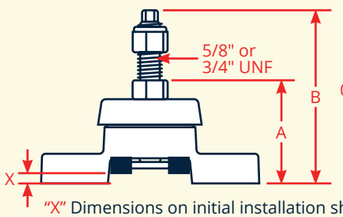
SHEAR LOADED SUPER MOUNTS CONT...

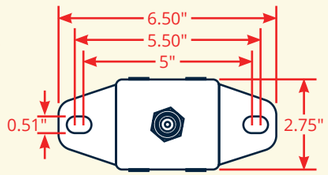




"X" Dimensions on initial installation should not be less than 3.8mm (0.15").

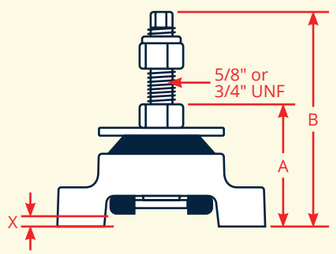
Part #	1" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-051	80 - 235 lbs	0.09"	0.09" - 0.21"	3.47"	5.45"
800-052	120 - 415 lbs	0.09"	0.09" - 0.21"	3.47"	5.45"
800-053	250 - 565 lbs	0.09"	0.09" - 0.21"	3.47"	5.45"
800-054	300 - 685 lbs	0.09"	0.09" - 0.21"	3.47"	5.45"

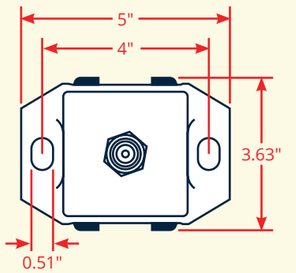




"X" Dimensions on initial installation should not be less than 3.8mm (0.15").

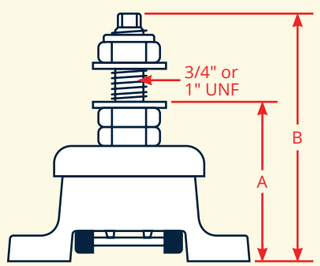
Part #	5/8" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-062	50 - 176 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-024	80 - 232 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-025	120 - 412 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-026	250 - 562 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
800-027	300 - 682 lbs	0.09"	0.09" - 0.21"	3.05"	5.38"
	3/4" Stud				
800-028	80 - 233 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-029	120 - 413 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-030	250 - 563 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"
800-031	300 - 683 lbs	0.09"	0.09" - 0.21"	2.93"	6.5"

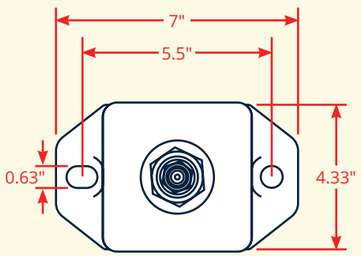




"X" Dimensions on initial installation should not be less than 3.8mm (0.15").

Part #	5/8" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-013	340 - 760 lbs	0.09"	0.09" - 0.19"	2.93"	5.38"
	3/4" Stud				
800-035	340 - 761 lbs	0.09"	0.09" - 0.19"	2.81"	6"

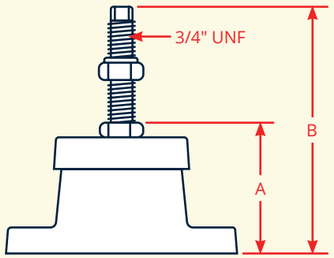


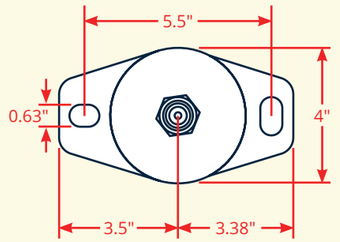


Part #	3/4" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-063	500 - 1,300 lbs	0.12"	0.12" - 0.25"	3.97"	7.16"
800-064	650 - 1,700 lbs	0.12"	0.12" - 0.25"	3.97"	7.16"
800-065	1,100 - 2,100 lbs	0.12"	0.12" - 0.25"	3.97"	7.16"
	1" Stud				
800-066	500 - 1,301 lbs	0.12"	0.12" - 0.25"	4.59"	7.16"
800-067	650 - 1,701 lbs	0.12"	0.12" - 0.25"	4.59"	7.16"
800-068	1,100 - 2,101 lbs	0.12"	0.12" - 0.25"	4.59"	7.16"

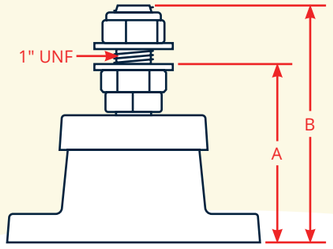
CIRCULAR SHEAR MOUNTS

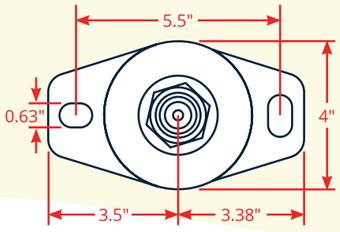
This mount is designed to provide excellent vibration isolation and is fitted with an oil shield to protect the rubber.





Part #	3/4" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-015	500 - 1,200 lbs	0.12"	0.12" - 0.25"	4.04"	7.22"
800-016	650 - 1,500 lbs	0.12"	0.12" - 0.25"	4.04"	7.22"
800-017	880 - 2,000 lbs	0.12"	0.12" - 0.25"	4.04"	7.22"

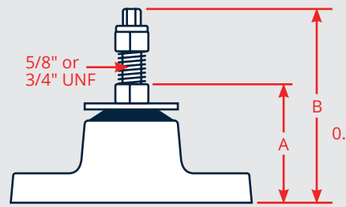


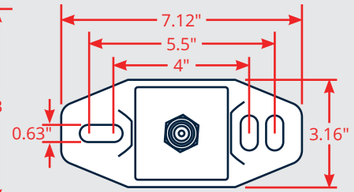


Part #	1" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-055	500 - 1,201 lbs	0.12"	0.12" - 0.25"	4.66"	6.34"
800-056	650 - 1,501 lbs	0.12"	0.12" - 0.25"	4.66"	6.34"
800-057	880 - 2,001 lbs	0.12"	0.12" - 0.25"	4.66"	6.34"

DOUBLE ACTING MOUNT

The Double Acting Shear Mount is a unique mount incorporating 2 rubber elements which are pre-loaded against each other, giving excellent isolation together with good control on problem installations.



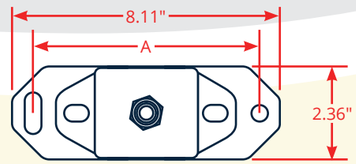


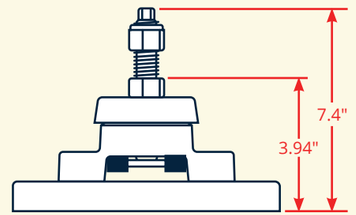
Part #	5/8" Stud Capacity / Mount	Mount Pre-Loaded	Deflection	Min. Height With Adjustment Nut (A)	Height (B)
800-032	100 - 420 lbs	0.19"	0.19" - 0.30"	3.51"	6"
800-034	160 - 670 lbs	0.19"	0.19" - 0.30"	3.39"	6"
	3/4" Stud				
800-042	160 - 671 lbs	0.19"	0.19" - 0.30"	3.39"	6"

YANMOUNT ENGINE MOUNTS

PYI offers a range of direct replacement engine mounts for Yanmar installations. Using the proven engineered features of the R&D Marine shear loaded engine mounts and combining it with a simple, reliable lifting block to duplicate the height and bolt spacing of the Yanmar mounts.

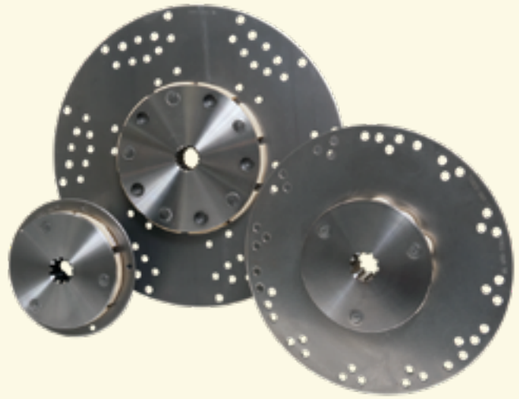
PYI Part #	Yanmar Engine	Yanmar Ref.	Capacity Per Mount	Stud Size	(A)
Both 800-037Y	1GM	Front 128170-08350 / Rear 128170-08340	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	2GM / 3GM	Front 124772-08341 / Rear 128170-08340	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	3YM	Both 124772-08341	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	3HM	Both 124772-08341	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	2QM20	Both 124772-08341	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	3QM30	Front 121370-08530 / Rear124772-08341	50 - 175 lbs.	5/8"	6.85"
Both 800-037Y	3JH's	Oil filter side 124772-08341 Starter side 121370-08530	50 - 175 lbs.	5/8"	6.85"
Oil filter side 800-010Y Starter side 800-011Y	4JH's	Oil filter side 121370-08351 Starter side 129470-08350	800-010Y: 80 - 230 lbs. 800-011Y: 120 - 410 lbs.	5/8"	6.85"
800-021YX	4LH	Both 119173-08440	120 - 410 lbs.	3/4"	7.25"





DAMPER PLATES

Reduces gear noise and allows the engine to run at lower speeds



R&D Marine Damper Drive Plates are designed to prevent gearbox rattle at low engine speeds, which allows an engine to operate through its entire RPM range. Today's marine diesels are designed with lightweight flywheels which do not create the inertia of an older heavy flywheel. The lighter flywheels result in gear chatter or rattle at low RPM's. This rattle translates into gear wear and damage to the drivetrain. Our damper plates eliminate this problem.

Three types of damper plates are available for different applications:

1. A "Loop" damper plate is designed for general applications. This damper provides a linear dampening of the torque with 3 degrees of deflection of the element.
2. A "Hammer Head" damper plate is designed for general use where motoring at low RPM's is common. This damper provides a two stage dampening of the torque with 9 degrees deflection of the element.
3. A "High Deflection" damper plate is designed for use in vessels where low RPM engine use is the norm as in work boats or where gear noise is being experienced. The "HD" damper gives three distinct stages of dampening with 30 degrees deflection of the element, virtually eliminating gearbox rattle for extended use even at idle speeds.

All R&D Damper Plates use a molded polyurethane element to absorb the engine torque. The fail safe design of the plate ensures that even in the unlikely event of a flexible element failure (from severe shock load), the drivetrain system would remain functional. The back plates for the R&D Marine damper plates are punched and ready to install. They can be installed within the existing space of a metal spring damper.

FEATURES

- Reduces gear noise.
- Fail safe design.
- Quick and easy installation.

VIBRATION ISOLATION

The R&D Marine Damper Drive Plates reduce gear noise by preventing transmission rattle at low engine speed and allows the engine to run at lower speeds.

DURABLE

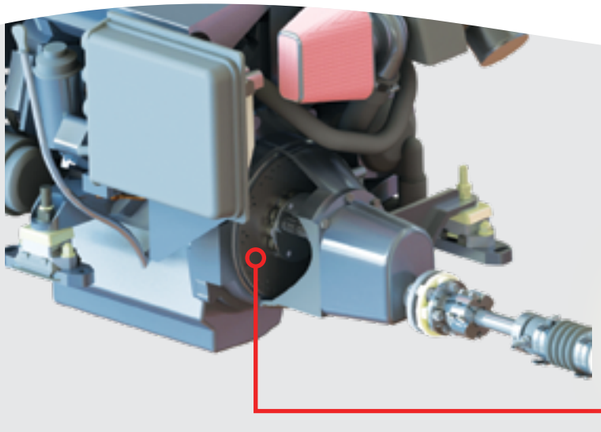
No springs to rust or fret. The flexible element is designed to withstand increased temperatures and are not affected by salt water, diesel and lubrication oils.

WIDE RANGE OF STOCK

Damper Plates to fit most engine and gearbox combinations for engines up to 800 horsepower and torque range from 60 - 1,400 ft/lbs.

EASY INSTALLATION

The R&D Marine Damper Drive Plate requires no machining and is ready to bolt to the flywheel.



Many marine engines are fitted with a spring type damper plate. Most spring plates only provide 3 degrees of deflection. Also, steel springs will tend to corrode in a marine environment.

The drive, or damper plate, as it is often called, bolts to the engine flywheel and connects the engine to the transmission / gearbox's splined shaft.

The R&D Marine Damper Plates use a special element and are designed to load at lower RPM's, and prevent the input spline from backlashing to reduce spline gear wear.

ELEMENT TYPES

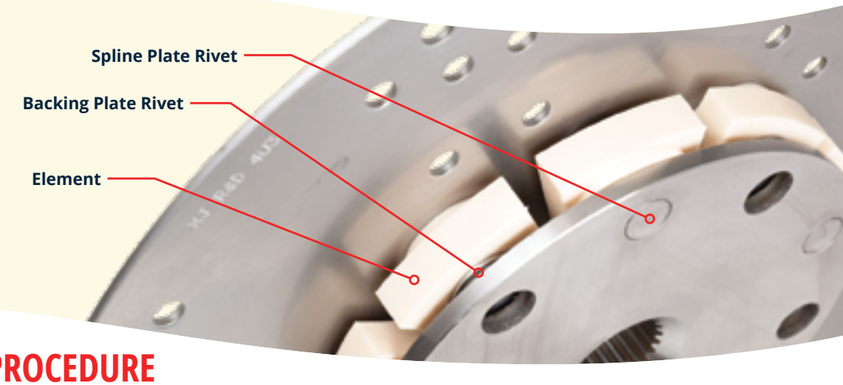
Loop Type
Linear stiffness up to 3 degrees of deflection. General purpose robust element which can be mounted either way round on the flywheel and can rotate in either direction.

Hammer Head
Two stage with up to 9 degrees of deflection. More torsionally flexible than the loop type, usually has smaller diameter element than our other designs but still retains the ability to be mounted either way round on the flywheel and rotate in either direction.

High Deflection (H/D)
A maximum deflection up to 30 degrees, slightly larger diameter element than other designs and can easily be fitted to rotate in the standard direction of rotation (counter-clockwise looking at the flywheel). With the element facing the gearbox. Suitable for work boats with slow speed work and pleasure boats.

FAIL SAFE DESIGN

If the flexible element fails, the rivets on the spline plate will engage the rivets on the backing plate. This will allow the drive to be maintained in the unlikely event of an element failure.



DAMPER PLATE SELECTION PROCEDURE

The R&D Marine Damper Plate comprises of 3 main components, Spline Plate, Element, and Back Plate. These 3 components are given a code which make up the finished part number. The following procedure will lead you through the selection process.

1. SELECT ELEMENT

Select the correct power and style of element for the application. Use the manufacturers maximum torque figure for the engine or calculate from the known data of maximum horsepower rating and RPM. Using the example installation we get 61.25 ft. lbs. of torque.

Example

1. Westerbeke 42B with 42HP at 3,600 RPM
2. ZF HBW35 transmission with 10 tooth spline
3. Back plate diameter 6.12", fixing holes 5" x 0.25" on 5.593"

To calculate output torque of engine:

Formula:

$$\left[\frac{\text{Max Horsepower of Engine}}{\text{Engine Speed (Max RPM)}} \times 5{,}250 = \text{Torque lbft}\right]$$

Example:

$$\frac{42}{3{,}600} \times 5{,}250 = 61.25 \text{ ft. lbs.}$$

From the Element Selection Chart **(List #1)** we see the most suitable element has a code of AM and a fixing of 3 x 3/8 (4.00).

2. SELECT SPLINE / SPLINE CODE

Select the correct spline/ spline code **(List #2)** to suit the gearbox input shaft. Using the example, go to the gearbox details to find the ZF-Hurth HBW 35 has a 10 Tooth DIN 5464 input spline. Next, use **List #3** to choose the spline code that corresponds with the chosen element ("AM"). In this case we choose spline code "22" because it is compatible with the "AM" element.

3. SELECT BACKING PLATE

Select the correct back plate to suit the flywheel. Using the example, go to **List #4** to find the matching bolt pattern to fit the flywheel fixing, in this case back plate code "4". Damper required for this example: Spline Plate: 22 | Element: AM | Back Plate: 4 | **Part number: RD-22-AM-4**

DAMPER PLATE SELECTION

STEP 1 - SELECT ELEMENT

- Calculate ft/lbs. of torque.
- Select type of element.
- Match ft/lbs of torque to find element code.
- Find your element code in the table below.

STEP 2 - SELECT SPLINE

- Find your gearbox in table to determine spline type.
- Using the location of element code (table below), find matching spline description and note what the spline code is.

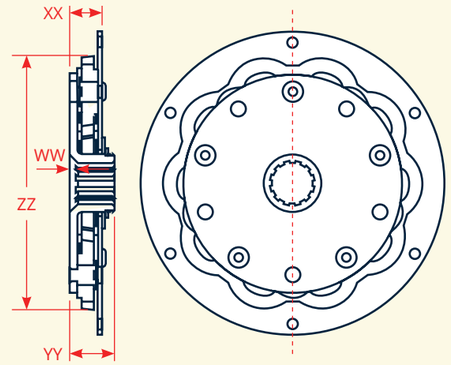
STEP 3 - SELECT BACKING PLATE

Part # Example:

RD-_____-_____-_____

Step	2	1	3
	Spline Code	Element Code	Backing Plate Code

RD-22-AM-4



LIST #3

Spline	STEP 2 Spline Plate Code	STEP 1 Element Code Group 1 (ZZ1)	STEP 1 Element Code Group 2 (ZZ2)	Element Fixing	WW (mm / inch)		XX (mm / inch)		YY (mm / inch)		Group 1 ZZ1 (mm / inch)		Group 2 ZZ2 (mm / inch)		STEP 3 Back Plate Ref
22T PA 30	1	AM, W, A, B		3 x 3/8 (4.00)	0	0	25.4	1.00	32	1.25	127	5.00			4, 8, 37, 43, 49, 60, 88, 91, 95, 117
26T 20/40 DP	2				2.3	0.09	25.4	1.00	32	1.25	127	5.00			
17T 24/48 DP	12				0	0	25.4	1.00	32	1.25	127	5.00			
1" x 10 SAE	13				0	0	25.4	1.00	32	1.25	127	5.00			
10T DIN 5464	22				0	0	25.4	1.00	32	1.25	127	5.00			
20T 30PA 24/48 DP	66				0	0	25.4	1.00	32	1.25	127	5.00			
26T 20/40 DP	42	AN		4 x 3/8 (6.00)	5	0.20	25.4	1.00	35	1.38	182	7.13	214	8.43	8, 37, 49, 60, 91, 94
10T DIN 5464	43				0	0	25.4	1.00	35	1.38	182	7.13	214	8.43	
17T 24/48 DP	44				0	0	25.4	1.00	35	1.38	182	7.13	214	8.43	
17T 16/32 DP	46				1.8	0.07	25.4	1.00	35	1.38	182	7.13	214	8.43	
1" 10 SAE	45				2.3	0.09	25.4	1.00	35	1.38	182	7.13	214	8.43	
20T 30PA 24/48 DP	65				0	0	25.4	1.00	35	1.38	182	7.13	214	8.43	
26T 20/40 DP	71	AL		4 x 3/8 (6.50)	12.5	0.49	26.4	1.04	34	1.34	194	7.64			145, 146, 147, 148, 149
26T 20/40 DP	76				5	0.20	26.4	1.04	34	1.34	194	7.64			
10T DIN 5464	72				0	0	26.4	1.04	34	1.34	194	7.64			
17T 16/32 DP	73				2.4	0.09	26.4	1.04	34	1.34	194	7.64			
1" x 10 SAE	74				2.6	0.10	26.4	1.04	34	1.34	194	7.64			
20T 30PA 24/48 DP	75				1	0.04	26.4	1.04	34	1.34	194	7.64			
26T 20/40 DP	3	D, L	E, G, M	5 x 3/8 (5.593)	5	0.20	25.4	1.00	35	1.38	175	6.90	207	8.13	1, 2, 3, 5, 17, 25, 35, 36, 40
26T 20/40 DP	5				5	0.20	25.4	1.00	35	1.38	175	6.90	207	8.13	
1" x 10 SAE	14				2.3	0.09	25.4	1.00	35	1.38	175	6.90	207	8.13	
1-1/8" x 10 SAE	16				2.3	0.09	25.4	1.00	35	1.38	175	6.90	207	8.13	
17T 16/32 DP	18				1.8	0.07	25.4	1.00	35	1.38	175	6.90	207	8.13	
10T DIN 5464	23				0	0	25.4	1.00	35	1.38	175	6.90	207	8.13	
17T 24/48 DP	32				0	0	25.4	1.00	35	1.38	175	6.90	207	8.13	
26T 20/40 DP	4	Y, U, R	K, V, P	5 x 1/2 (5.593)	5	0.20	28.7	1.13	35	1.38	182	7.13	207	8.13	1, 2, 3, 5, 17, 25, 35, 36, 40
26T 20/40 DP Long	9				0	0	28.7	1.13	43	1.69	182	7.13	207	8.13	
18T 12/24 DP	21				0	0	28.7	1.13	38.1	1.50	182	7.13	207	8.13	
17T 16/32 DP	31				1.8	0.07	28.7	1.13	35	1.38	182	7.13	207	8.13	
32T 16/32 DP	26				0	0	38.5	1.52	57.2	2.25			207	8.13	
1-5/8" x 10	27				0	0	28.7	1.13	38.1	1.50			207	8.13	
1-5/8" x 10	27				0	0	28.7	1.13	38.1	1.50			207	8.13	
1-1/2" x 10	11				0	0	28.7	1.13	38.1	1.50	182	7.13	207	8.13	
PR 1500	54				0	0	63.2	2.49	79.3	3.12			207	8.13	
26T 20/40 DP	4	S		5 x 1/2 (5.593)	5	0.20	31.8	1.25	35	1.38	207	8.13			14, 15, 52
26T 20/40 DP Long	9				0	0	31.8	1.25	43	1.69	207	8.13			
18T 12/24 DP	21				0	0	31.8	1.25	38.1	1.50	207	8.13			
32T 16/32 DP	26				0	0	41.7	1.64	57.2	2.25	207	8.13			
1-5/8" x 10	27				0	0	31.8	1.25	38.1	1.50	207	8.13			
1-1/2" x 10	11				0	0	31.8	1.25	38.1	1.50	207	8.13			
PR 1500	54				0	0	66.3	2.61	79.3	3.12	207	8.13			
26T 20/40 DP	6	H, N		4 x 1/2 (4.50)	5	0.20	29.5	1.16	36	1.41	183	7.19			6, 13
26T 20/40 DP HT	8				5	0.20	29.5	1.16	36	1.41	183	7.19			
1-1/2" x 10	10				0	0	29.5	1.16	36	1.41	183	7.19			
1-1/8" x 10 SAE	17				2.3	0.09	29.5	1.16	36	1.41	183	7.19			
17T 16/32 DP	19				1.8	0.07	29.5	1.16	36	1.41	183	7.19			
1-5/8" x 10	28				0	0	29.5	1.16	38.1	1.50	183	7.19			
26T 20/40 DP	7	AJ, F, J		3 x 1/2 (4.50)	8.1	0.32	29.5	1.16	36	1.41	158	6.19			7
1" x 10 SAE	15				2.3	0.09	29.5	1.16	36	1.41	158	6.19			
17T 16/32 DP	20				1.8	0.07	29.5	1.16	36	1.41	158	6.19			
17T 24/48 DP	41				1.8	0.07	29.5	1.16	36	1.41	158	6.19			
26T 20/40 DP	48	AD		4 x 1/2 (8.00)	6	0.24	29	1.14	36	1.41	235	9.25			1, 2, 3, 5, 17, 25, 34
17T 16/32 DP	49				1.8	0.07	29	1.14	36	1.41	235	9.25			
26T 20/40 DP	57				0	0	29	1.14	36	1.41	235	9.25			
32T 16/32 DP	40	Z, AF		6 x 5/8 (8.00)	0	0	44.2	1.74	57.2	2.25	330	13.00			78, 79
PR 1500	55				0	0	68.6	2.70	79.3	3.12	330	13.00			
26T 20/40 DP	56				0	0	44.2	1.74	51.6	2.03	330	13.00			
32T 16/32 DP	40	AH		6 x 5/8 (8.00)	0	0	47.3	1.86	57.2	2.25	330	13.00			78, 79
PR1500	55				0	0	71.9	2.83	79.3	3.12	330	13.00			
26T 20/40 DP	56				0	0	47.3	1.86	51.6	2.03	330	13.00			
26T 20/40 DP	50	AE		4 x 1/2 (10.25)	0	0	31.8	1.25	39	1.53	302	11.88			101, 103
18T 12/24 DP	51				0	0	31.8	1.25	39	1.53	302	11.88			
17T 16/32 DP	52				0	0	31.8	1.25	39	1.53	302	11.88			

STEP 1: SELECT ELEMENT

LIST #1

Torque (ft lb)	Design	Code	Element Fixing	Rotation
High Deflection				
100	H/D	AM	3 x 3/8 (4.00)	Anti-Clockwise
200	H/D	AN	4 x 3/8 (6.00)	Anti-Clockwise
300	H/D	AL	4 x 3/8 (6.50)	Anti-Clockwise
500	H/D	AD	4 x 1/2 (8.00)	Anti-Clockwise
700	H/D	AE	4 x 1/2 (8.00)	Anti-Clockwise
Hammer Head				
100	Hammer	W	3 x 3/8 (4.00)	Either
160	Hammer	D	5 x 3/8 (5.59)	Either
250	Hammer	Y	5 x 1/2 (5.59)	Either
300	Hammer	AJ	3 x 1/2 (4.50)	Either
310	Hammer	L	5 x 3/8 (5.59)	Either
350	Hammer	U	5 x 1/2 (5.59)	Either
550	Hammer	R	5 x 1/2 (5.59)	Either
Loop Type				
60	Loop	A	3 x 3/8 (4.0)	Either
100	Loop	B	3 x 3/8 (4.0)	Either
180	Loop	E	5 x 3/8 (5.59)	Either
200	Loop	F	3 x 1/2 (4.50)	Either
250	Loop	G	5 x 3/8 (5.59)	Either
270	Loop	H	4 x 1/2 (4.50)	Either
300	Loop	J	3 x 1/2 (4.50)	Either
330	Loop	K	5 x 1/2 (5.59)	Either
400	Loop	M	5 x 3/8 (5.59)	Either
450	Loop	N	4 x 1/2 (4.50)	Either
450	Loop	V	5 x 1/2 (5.59)	Either
550	Loop	P	5 x 1/2 (5.59)	Either
750	Loop	S	5 x 1/2 (5.59)	Either
1200	Loop	Z	6 x 5/8 (10.2)	Anti-Clockwise
1200	Loop	AF	6 x 5/8 (10.2)	Clockwise
1200	Loop	AH	6 x 5/8 (10.2)	Anti-Clockwise

STEP 2: SELECT SPLINE / SPLINE CODE

LIST #2

Gearbox	Description	Spline Ø mm	Spline Ø inch
Borg Warner			
71, 72, 73, 5000	26T 20/40 DP	35.4	1.394
1000, 1500	22T PA 30	18.5	0.729
500	10T B10 x 23 x 29 DIN 5464	29	1.142
7000	SAE 1.5" x 10T	38.1	1.5
Newage PRM			
Delta	17T 24/48 DP	19.7	0.776
80, 120, 150	10T B10 x 23 x 29 DIN 5464	29	1.142
100, 101, 140, 160, 260	SAE 1" x 10T	25.4	1
175, 250, 265, 310	SAE 1.125" x 10T	28.6	1.125
301, 302, 401, 402, 500, 750	17T 16/32 DP	28.84	1.135
In-Line 301, 302, 401, 402, 500, 750	26T 20/40 DP	35.4	1.394
601, 1000	18T 12/24 DP	40.5	1.595
1200, 1500	20T 12/24 DP	44.8	1.761
Paragon			
P Series	26T 20/40 DP	35.4	1.394
Self Change Gear			
MRF 350HD	32T 16/32 DP	52.3	2.060
MRF 350	SAE 1.625" x 10T	41.3	1.625
Technodrive			
TMC 30, 40, 50, 60	10T B10 x 23 x 29 DIN 5464	29	1.142
TM 93, 170, 260, 345, 485, 545, 880	26T 20/40 DP	35.4	1.394
TMP			
1200, 1500	26T 20/40 DP	35.4	1.394
Twin Disc			
501, 502	26T 20/40 DP	35.4	1.394
Volvo			
140 Leg Old 270-280 Leg	SAE 1" x 10T	25.4	1
MS3, 4, 5 HS1 Sail Drive 110 New 270-280 Leg	26T 20/40 DP	35.4	1.394
120 Leg, MS	20T 30PA 24/48 DP	22.6	0.89
Yanmar			
Kanzaki	20T 30PA 24/48 DP	22.6	0.89
ZF-Hurth			
HBW 35, 40, 50, 100, 125, 150	10T B10 x 23 x 29 DIN 5464	29	1.142
HSW 125, HBW 250, 360, 25M	26T 20/40 DP	35.4	1.394
HSW 450, 630, 800, IRM 220A	26T 20/40 DP	35.4	1.394

STEP 3: SELECT BACKING PLATE

LIST #4

Code	O/D mm	O/D inch	Flywheel Fixing mm	Flywheel Fixing inch	Remarks
1	298.5	11.75	6 x 8.1 on 200	6 x 0.32 on 7.875	
			6 x 8.1 on 250	6 x 0.32 on 9.843	
			6 x 8.1 on 269.9	6 x 0.32 on 10.625	
			6 x 8.1 on 273	6 x 0.32 on 10.75	
2	362	14.25	6 x 8.1 on 200	6 x 0.32 on 7.875	
			6 x 8.1 on 210	6 x 0.32 on 8.268	
			6 x 8.1 on 263	6 x 0.32 on 10.375	
			6 x 8.1 on 269.9	6 x 0.32 on 10.625	
			6 x 8.1 on 276.3	6 x 0.32 on 10.875	
			6 x 8.1 on 289	6 x 0.32 on 11.375	
			6 x 8.1 on 295.3	6 x 0.32 on 11.625	
			6 x 8.8 on 304.8	6 x 0.32 on 12.00	
			6 x 8.1 on 314.4	6 x 0.32 on 12.375	
			6 x 8.1 on 320.7	6 x 0.32 on 12.625	
			12 x 9.5 on 343	6 x 0.375 on 13.5	
			Ford	Ford	
3	336.5	13.24	6 x 8.1 on 200	6 x 0.32 on 7.875	
			6 x 8.1 on 210	6 x 0.32 on 8.268	
			6 x 8.1 on 263	6 x 0.32 on 10.375	
			6 x 8.1 on 269.9	6 x 0.32 on 10.625	
			6 x 8.1 on 276.3	6 x 0.32 on 10.875	
			6 x 8.1 on 289	6 x 0.32 on 11.375	
			6 x 8.1 on 295.3	6 x 0.32 on 11.625	
			6 x 8.8 on 304.8	6 x 0.344 on 12.00	
			6 x 8.1 on 314.4	6 x 0.32 on 12.375	
			6 x 9.5 on 320.7	6 x 0.375 on 12.625	
4	155.45	6.12	5 x 6.35 on 142	5 x 0.25 on 5.593	
5	352.5	13.875	8 x 10.6 on 142	8 x 0.416 on 13.125	SAE 11-1/2
6	202.6	7.978	8 x 8.1 on 181	8 x 0.32 on 7.125	
7	180.8	7.12	9 x 6.35 on 167.4	9 x 0.25 on 6.589	
8	298.5	11.75	6 x 8.1 on 200	6 x 0.32 on 7.875	
			6 x 8.1 on 250	6 x 0.32 on 6.843	
			6 x 8.1 on 269.9	6 x 0.32 on 10.625	
			6 x 8.1 on 273	6 x 0.32 on 10.75	
13	234	9.212	6 x 13.1 on 210	6 x 0.515 on 8.267	
14	352.5	13.875	8 x 10.6 on 333.4	8 x 0.416 on 13.125	SAE 11-1/2
15	362	14.25	12 x 9.5 on 342.9	12 x 0.375 on 13.50	Ford
17	314.3	12.375	6 x 8.1 on 200	6 x 0.32 on 7.875	
			6 x 8.1 on 250	6 x 0.32 on 9.843	
			6 x 8.1 on 269.9	6 x 0.32 on 10.625	
			6 x 8.1 on 273	6 x 0.32 on 10.750	SAE 10
			8 x 10.6 on 296	8 x 0.416 on 11.625	

Code	O/D mm	O/D inch	Flywheel Fixing mm	Flywheel Fixing inch	Remarks
25	287.4	11.312	6 x 9.1 on 269.96	6 x 0.356 on 10.625	TAMD 40
			6 x 6.3 on 269.96	3 x 0.25 on 10.625	
34	466.7	18.375	8 x 13.5 on 438.15	8 x 0.53 on 17.250	SAE 14
35	263.5	10.375	6 x 9.5 on 244.5	6 x 0.375 on 9.625	SAE 8
36	266.7	10.5	12 x 8.1 on 222.3	12 x 0.32 on 8.750	Suit Ford XLD and Mitsubishi
			6 x 8.1 on 244.5	6 x 0.32 on 9.625	
			Spaced 3 groups of 2 apart 23°59'07	Spaced 3 groups of 2 apart 23°59'07	
			12 x 8.1 on 246	12 x 0.32 on 9.685	
			12 x 8.1 on 242	12 x 0.32 on 9.527	
37	266.7	10.5	12 x 8.1 on 222.3	12 x 0.32 on 8.750	Suit Ford XLD and Mitsubishi
			6 x 8.1 on 244.5	6 x 0.32 on 9.625	
			Spaced 3 groups of 2 apart 23°59'07	Spaced 3 groups of 2 apart 23°59'07	
			12 x 8.1 on 246	12 x 0.32 on 9.685	
			12 x 8.1 on 242	12 x 0.32 on 9.527	
40	241.3	9.5	8 x 8.5 on 222.25	8 x 0.334 on 8.750	SAE 7-1/2
43	263.5	10.375	6 x 9.5 on 244.5	6 x 0.375 on 9.625	SAE 7-1/2
49	241.3	9.5	8 x 8.5 on 222.25	8 x 0.334 on 8.750	Beta
52	-0.05	-0.002	8 x 13.5 on 438.15	8 x 0.53 on 17.250	SAE 14
60	215.9	8.5	6 x 8.1 on 200	6 x 0.32 on 7.875	SAE 6-1/2
78	352.5	13.875	8 x 10.6 on 333.4	8 x 0.416 on 13.125	SAE 11-1/2
79	466.7	18.375	8 x 13.5 on 438.15	8 x 0.53 on 17.250	SAE 14
88	189.9	7.48	6 x 8.1 on 170	6 x 0.31 on 6.693	Nanni, Yanmar
91	314.3	12.375	6 x 8.1 on 200	6 x 0.32 on 7.875	SAE 10
	-0.05	-0.002	6 x 8.1 on 250	6 x 0.32 on 9.843	
	-0.13	-0.005	6 x 8.1 on 269.9	6 x 0.32 on 10.625	
		SAE	6 x 8.1 on 273	6 x 0.32 on 10.750	
		10	8 x 10.6 on 296	8 x 0.416 on 11.625	
94	287.4	11.312	6 x 9.1 on 269.96	6 x 0.356 on 10.625	Trans Auto
			6 x 6.3 on 269.96	3 x 0.25 on 10.625	TAMD 40
95	235	9.250	6 x 8.1 on 222.25	6 x 0.32 on 8.750	Beta
101	352.5	13.875	8 x 10.6 on 333.4	8 x 0.416 on 13.125	SAE 11-1/2
103	466.7	18.375	8 x 13.5 on 438.15	8 x 0.53 on 17.250	SAE 14
117	276	10.866	6 x 8.1 on 250	6 x 0.32 on 9.843	Yanmar JH
118	170	6.693	6 x 8.1 on 150	6 x 0.32 on 5.91	Yanmar 3GM
145	215.9	8.5	6 x 8.1 on 200	6 x 0.32 on 7.875	SAE 6-1/2
146	241.3	9.5	8 x 8.5 on 222.25	8 x 0.334 on 8.750	SAE 7-1/2
147	263.5	10.375	6 x 9.5 on 244.5	6 x 0.375 on 9..625	SAE 8
148	314.3	12.375	8 x 10.6 on 296	8 x 0.416 on 11.625	SAE 10
149	352.5	13.875	8 x 10.6 on 333.4	8 x 0.416 on 13.125	SAE 11-1/2

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