MiroMAX
Empowering solutions

TRANSMISSIONS

Mechanical Power Transmission

CONTENTS/TURINYS

FRC COUPLINGS (EN)

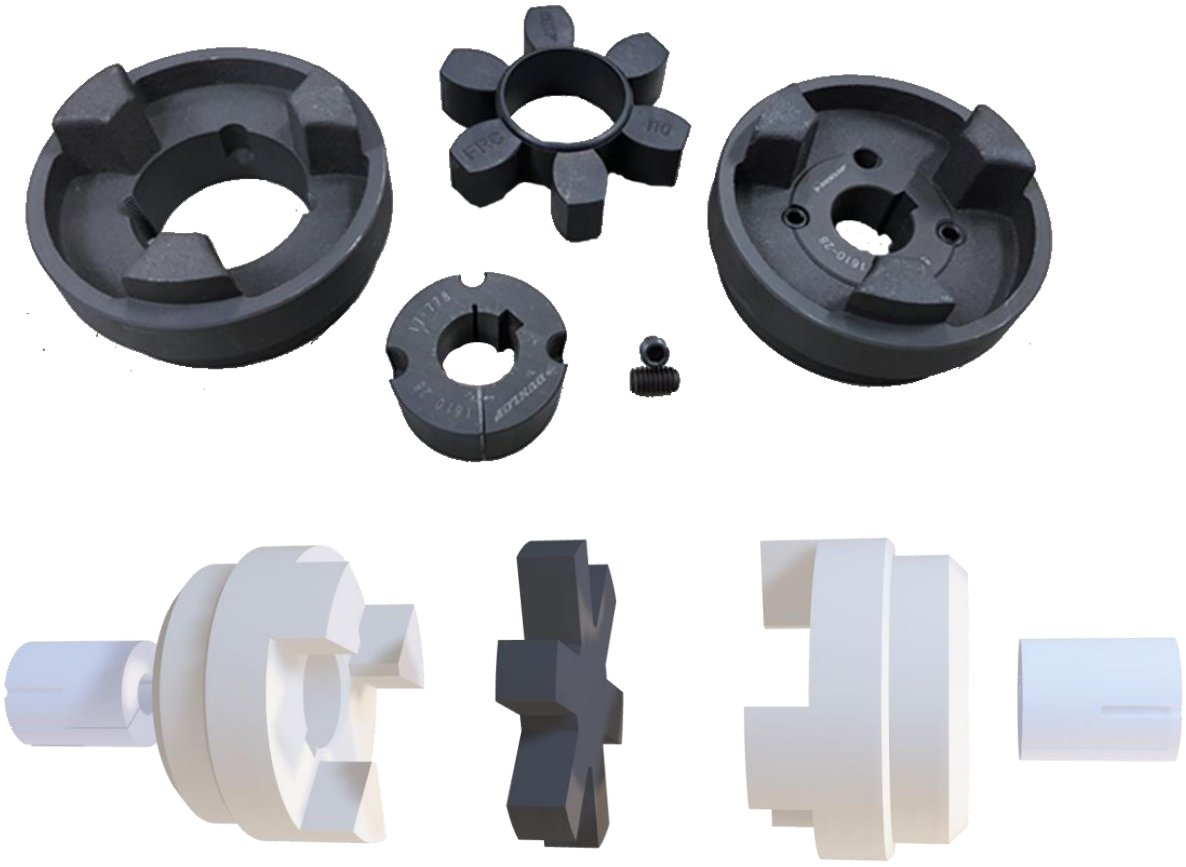
With a higher load capacity than jaw couplings and maintenance-free operation, FRC coupling are designed as a general purpose coupling. They are able to cushion moderate shock loads, dampen low levels of vibration and accommodate incidental misalignment. FRC couplings offer a range of hubs and elements to select, to meet the demand for low cost, general purpose flexible coupling.

FRC couplings are phosphate coated for improved corrosion resistance and available with fire-resistant and anti-static elements (F.R.A.S.) FRC coupling are available with a pilot bore, finished bore or taper bushing (face or hub) to make installation quick and simple.

Fully machined outside surface allow alignment with a simple straight edge. Shaft connections are „fail safe“ due to their inter-locking jaw design.

COUPLING SET CONSIST OF:

1. Left coupler *(with taper bush)* **2. Insert Rubber** **3. Right coupler** (with taper bush).



Interact with the picture above to move 3D model (WORD 2016 or above is needed).

HOW TO CHOOSE CORRECT COUPLINGS

 **(1KG)**	 **(1.17KG)**	 **(5KG)**
SIZE 70 [1008] 31 Nm(Nominal) 72 Nm(Maximum)	**SIZE 90** [1108] 80 Nm(Nominal) 180 Nm(Maximum)	**SIZE 110** [1610] 160 Nm(Nominal) 360 Nm(Maximum)

RECOMMENDED FOR MOTORS:

BLT – 500; BLT – 600; BLT – 800;	BLDC – 108 (HPM-1.5K) HPM – 3K; HPM – 5K.	HPM – 10K ME MAX 1616 (12-20kW)	HPM – 20K HPM – 20K – DS (Double shafted) ME MAX 1507

ORDER EXAMPLE

Please provide us following information:

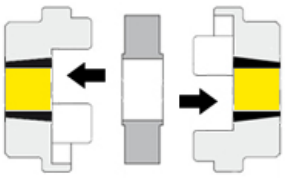
1. Coupler size or model/power of Motor
2. Axle diameter of motor
3. Axle diameter of opposite side

- Coupling set **Size 70**
- Motor HPM-3K (22mm)
- Opposide side axle 25mm

Item ID: **[** FRC70F L22.2/R25 **]**

F/F Type

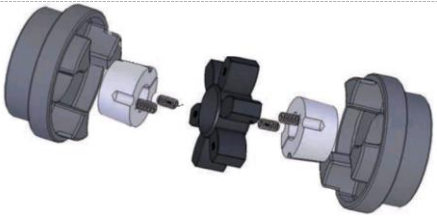
Insert the tapered locking bush from the flanged (inner) side



Coupling set will consist of:

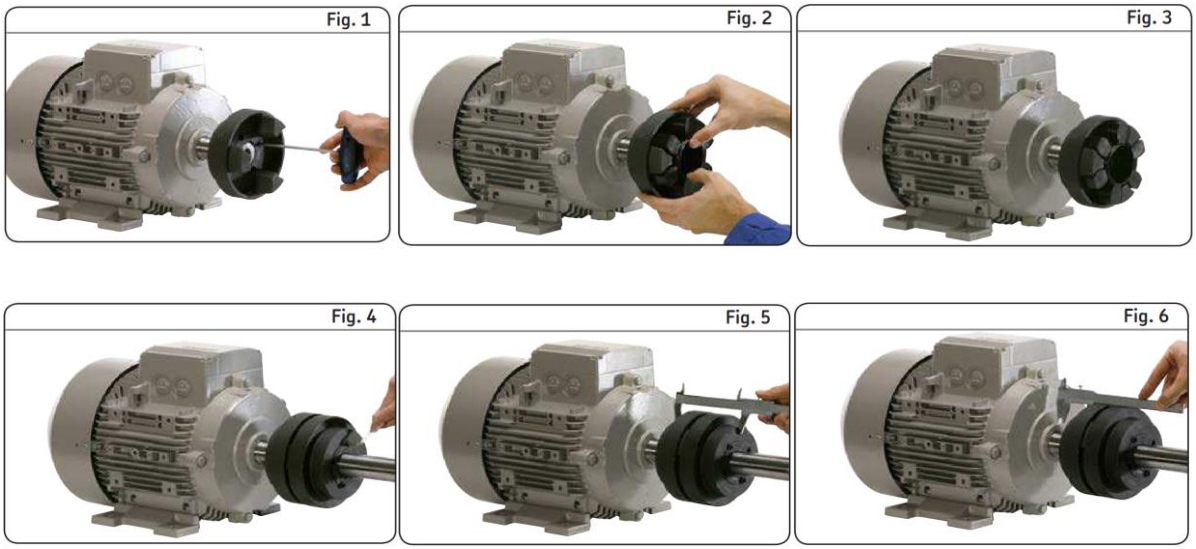
1. Left coupler *(a. With taper lock bushing)*
2. Insert Rubber
3. Right coupler *(b. With taper lock bushing)*

Bore diameter of the taper locks will be respective to your order.



INSTALLATION

1) Place the couplings on their shafts so that shaft ends do not protrude into the internal section of the coupling. Then tighten the screws on the taper bushing to the torque values listed in the mounting instructions (fig. 1).
2) Insert the coupling element into one side of the coupling (fig. 2).
3) Move the other coupling into position and connect the two halves (fig. 4). Check that the assembled length is correct (fig. 5).
4) Check angular misalignment by measuring the assembled length in four positions at 90° around the coupling. Then check for parallel misalignment using a straight edge across the length of the coupling flange (fig. 6). Allowable angular mis- alignment for all FRC couplings is 1°. Allowable parallel misalignment for FRC couplings is based on size.
   Note: For the most consistent results, check across at least 3 of the 6 points where the rubber elements are visible between the flanges.
   Allowable parallel misalignment – **0,3mm.**



EXAMPLE OF USE:

TIMING PULLEYS TAPER BORE

All of specified pulley are capable to withstand Slip Torques (Nm) ranging from 28 Nm to 420 Nm./

Part numbers are identifed by a 2 or 3 digit number (e.g. 44) which represents the number of teeth, a number and a letter (e.g. 8M) the pulleys pitch and a 2 or 3 digit number (e.g. 30) the width of the appropriate corresponding timing belt, for example 44-8M-30.

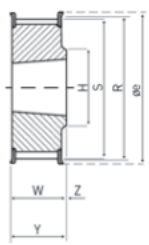
Please provide us required number of teeth for small and big pulley as well as diameter of the motors shafts on which pulleys will be fitted.

In the table bellow please choose your desired timing pulleys.
(To find best matching combination, check the table in the APPENDIX). /

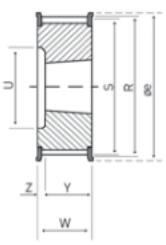
8M - SECTION 20

Part Number	Type	Bushing Type	Bushing Max Bore	R mm	S mm	Ø e mm	U mm	W mm	H mm	Y mm	Z mm	Flange	Material
22-8M-20F	4	1008	25	56.02	54.65	62	38	28	-	6	22		
24-8M-20F	4	1108	28	61.12	59.74	67	42	28	-	6	22		
26-8M-20F	4	1108	28	66.21	64.84	73	45	28	-	6	22		
28-8M-20F	4	1108	28	71.30	69.93	77	52	28	-	6	22		
30-8M-20F	4	1108	28	76.39	75.02	84	56	28	-	6	22		
32-8M-20F	4	1210	32	81.49	80.12	88	65	28	-	3	25		
34-8M-20F	4	1210	32	86.58	85.21	94	66	28	-	3	25		
36-8M-20F	4	1210	32	91.67	90.30	98	68	28	-	3	25		
38-8M-20F	4	1610	42	96.77	95.39	104	76	28	-	3	25		
40-8 M-20F	4	1610	42	101.86	100.49	108	80	28	-	3	25		
44-8M-20F	1	1610	42	112.05	110.67	121	-	28	99	4	32		
48-8M-20F	1	1610	42	122.23	120.86	129	-	28	105	4	32		
56-8M-20F	1	2012	50	142.60	141.23	149	-	28	105	4	32		
64-8M-20F	6	2012	50	162.97	161.60	168	140	28	110	4	32		
72-8M-20F	6	2012	50	183.35	181.97	191	158	28	110	4	32		
80-8M-20	9	2012	50	203.72	202,.35	-	178	28	110	4	32	*	
90-8M-20	12	2012	50	229.18	227.81	-	204	28	110	4	32		

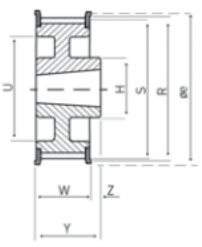
Pictures bellow shows dimensions of the timing pulleys by their type, which is highlighted in green colour in the table above.
(1, 4, 6 types has a flange).



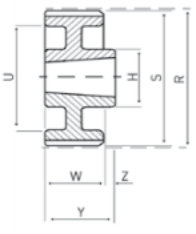
Type 1



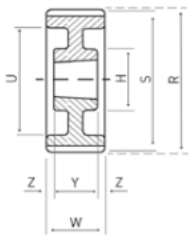
Type 4



Type 6



Type 9



Type 12

ORDER EXAMPLE

Please provide us following information:

A. Small Pulley

1. Teeth qty of small pulley - Item ID according table above: 24-8M-20F
2. Axle diameter of motor (or our offered motor model) - Motor HPM-3K (22mm)

B. BIG pulley

1. Teeth qty of BIG pulley - Item ID according table above: 48-8M-20F
2. Axle diameter of motor (or our offered motor model) - Axle diameter (25mm)

Pulley set consist of:

1. Timming pulley
2. Taper lock bushing
Bore diameter of the taper locks will be respective to your order.

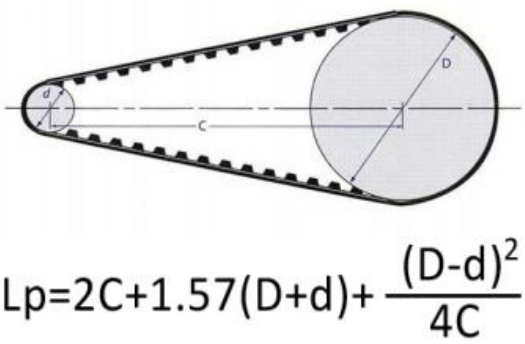
As an option as well you can order separately additional Taper bushing with required diameter.

If you would like to order Taper bushing additionally as separate part – please let us know.

Necessary provide:
1. Required Bore diameter of taper bushing.
2. Timing pulley model for that you plan to use Taper lock bushing for example.

After choosing timing pulley set, please refer to the information bellow, which explains how to calculate length of the belt for the desired application,

when distance between pulleys C is known (Or press on the picture bellow for the online calculator).



If would you like to order the belt also let us know distance C and we will find you required length.

Or Calculate the length of the belt and provide it for us !
Standart sizes of the belt can be found in the tabale below.

TIMING BELT CATALOG

8M - CROSS SECTION			BELT WIDTH			
Part Number	Length (mm)	Number of teeth	20mm	30mm	50mm	85mm
288-8M-	288	36	20	30	50	85
320-8M-	320	40	20	30	50	85
352-8M-	352	44	20	30	50	85
360-8M-	360	45	20	30	50	85
384-8M-	384	48	20	30	50	85
408-8M-	408	51	20	30	50	85
416-8M-	416	52	20	30	50	85
456-8M-	456	57	20	30	50	85
480-8M-	480	60	20	30	50	85
536-8M-	536	67	20	30	50	85
544-8M-	544	68	20	30	50	85
560-8M-	560	70	20	30	50	85
600-8M-	600	75	20	30	50	85
608-8M-	608	76	20	30	50	85
632-8M-	632	79	20	30	50	85
640-8M-	640	80	20	30	50	85
680-8M-	680	85	20	30	50	85
720-8M-	720	90	20	30	50	85
1200-8M-	1200	150	20	30	50	85
1224-8M-	1224	153	20	30	50	85
1280-8M-	1280	160	20	30	50	85
1352-8M-	1352	169	20	30	50	85
1424-8M-	1424	178	20	30	50	85
1440-8M-	1440	180	20	30	50	85
1464-8M-	1464	183	20	30	50	85
1512-8M-	1512	189	20	30	50	85
1600-8M-	1600	200	20	30	50	85
1680-8M-	1680	210	20	30	50	85
1760-8M-	1760	220	20	30	50	85
1792-8M-	1792	224	20	30	50	85
1800-8M-	1800	225	20	30	50	85
1904-8M-	1904	238	20	30	50	85

8M - CROSS SECTION			BELT WIDTH			
Part Number	Length (mm)	Number of teeth	20mm	30mm	50mm	85mm
760-8M-	760	95	20	30	50	85
800-8M-	800	100	20	30	50	85
840-8M-	840	105	20	30	50	85
880-8M-	880	110	20	30	50	85
896-8M-	896	112	20	30	50	85
920-8M-	920	115	20	30	50	85
960-8M-	960	120	20	30	50	85
1000-8M-	1000	125	20	30	50	85
1040-8M-	1040	130	20	30	50	85
1080-8M-	1080	135	20	30	50	85
1120-8M-	1120	140	20	30	50	85
1200-8M-	1200	150	20	30	50	85
1224-8M-	1224	153	20	30	50	85
1280-8M-	1280	160	20	30	50	85
1352-8M-	1352	169	20	30	50	85
1424-8M-	1424	178	20	30	50	85
1440-8M-	1440	180	20	30	50	85
1464-8M-	1464	183	20	30	50	85
2000-8M-	2000	250	20	30	50	85
2200-8M-	2200	275	20	30	50	85
2240-8M-	2240	280	20	30	50	85
2272-8M-	2272	284	20	30	50	85
2400-8M-	2400	300	20	30	50	85
2520-8M-	2520	315	20	30	50	85
2600-8M-	2600	325	20	30	50	85
2800-8M-	2800	350	20	30	50	85
2840-8M-	2840	355	20	30	50	85
3048-8M-	3048	381	20	30	50	85
3280-8M-	3280	410	20	30	50	85
3600-8M-	3600	450	20	30	50	85
4000-8M-	4000	500	20	30	50	85
4400-8M-	4400	550	20	30	50	85

TAPPER BORE BUSHING INSTALLATION

TO INSTALL

1) After ensuring that the mating tapered surfaces, bore and shaft are completely clean and free from oil or dirt, insert bush in hub so that hole line up.
2) Sparingly oil thread and point of grub screws, or thread and under head of cap screws. Place screws loosely in holes threaded in hub.
3) If a key is to be fitted place in the shaft keyway before fitting the bush. It is essential that it is parallel key and side fitting only has TOP CLEARANCE.
4) Clean shaft and fit hub to shaft as one unit and locate in position desired, remembering that bush will nip the shaft first and then hub will be slightly drawn on to the bush.
5) Using a hexagon wrench tighten screws gradually and alternately to torque shown in table below.
6) Hammer against large end of bush, using a block or sleeve to prevent damage. (This will ensure that the bush is seated squarely in the bore.) Screws will no turn a little more. Repeat this alternate hammering and screw tightening once or twice to achieve maximum grip on the shaft.
7) After drive has been running under load for a short time, stop and check tightness of screws.
8) Fill empty holes with grease to exclude dirt.

INSERT BUSH

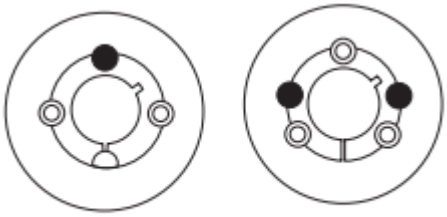
INSERT SCREWS AND LOCATE ON SHAFT

TIGHTEN SCREWS FINGER TIGHT

TIGHTEN SCREWS ALTERNATELY

TO REMOVE

1) Slacken all screws by several turns, remove one or two according to number of removal holes shown thus ● in diagram. Insert screws into removal holes after oiling thread and under head of cap screws.
2) Tighten screws alternately until bush is loosened in hub and assembly is free on the shaft.
3) Remove assembly from shaft.



REMOVAL HOLES ●

Bush size		1008	1108	1210	1610	1615	2012	2517	3020	3030	3525	3535	4030	4040	4535	4545	5040	5050
Screw tightening torque (Nm)		5,6	5,6	20	20	20	30	50	90	90	115	115	170	170	190	190	270	270
	qty	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3

HOW TO CALCULATE GEAR RATIO

Lets say, that as a driven unit we have HPM-10k electrical motor, which maximum rotational speed is 4700 RPM. Our goal is to reduce maximum rotational speed till 3000 RPM. Hence, we will need to chose timing pulleys which will have gear ratio equal to the engine speed ratio, for our case:
n=4700/3000=1.56. Then, following the table from **APPENDIX**, we need to choose pulleys which gear ratio is 1.6. By considering free space for a pulley set, we choose bigger pulley and according to the gear ratio smaller one. (For eg.: Bigger pulley T=56, smaller pulley T=36). After that, please provide us diameters of the current shafts and length of the measured timing belt (eg.: when centre distance between pulleys is 400 mm), where rest of the job is on us! So your final product will look accordingly:

Sets of bigger and smaller pulleys according to the needed gear ratio (for reducing gear set).

With 90 teeth pulley							
Big Pulley	**90***	**90***	**90***	**90***	**90***	**90***	**90***
Smaill Pulley	**56**	**44**	**36**	**30**	**26**	**22**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**
With 80 teeth pulley							
Big Pulley	**80***	**80***	**80***	**80***	**80***	**80***	**80***
Smaill Pulley	**48**	**40**	**32**	**26**	**22**	**...**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**
With 72 teeth pulley							
Big Pulley	**72**	**72**	**72**	**72**	**72**	**72**	**72**
Smaill Pulley	**44**	**36**	**28**	**24**	**...**	**...**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**
With 64 teeth pulley – Optimal for HPM-10K							
Big Pulley	**64**	**64**	**64**	**64**	**64**	**64**	**64**
Smaill Pulley	**56**	**32**	**26**	**22**	**...**	**...**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**
With 56 teeth pulley							
Big Pulley	**56**	**56**	**56**	**56**	**56**	**56**	**56**
Smaill Pulley	**36**	**28**	**22**	**18**	**...**	**...**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**
With 48 teeth pulley							
Big Pulley	**48**	**48**	**48**	**48**	**48**	**48**	**48**
Smaill Pulley	**30**	**24**	**...**	**...**	**...**	**...**	**...**
Gear ratio	**1:1.6**	**1:2**	**1:2.5**	**1:3**	**1:3.5**	**1:4**	**1:5**

Recommended to use in applications with High continuous torque. For example reducing box for E-Boat, inboard solution.
Suitable for 10-15kW - HPM-10K / ME MAX 1507 / ME MAX 1616.