Pro-Flex

DISC COUPLING

T·Y·Gear
Since 1974

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Foreword

TIEN YI GEAR WORKS CO., LTD., established in 1974, proficiently manufactures complete range of pro-flex coupling. With advanced technique, complete production equipment as well as outstanding technicians and R&D teams, we have been providing innovative and high quality products according to different machinery demands. Our rich experience in this field also enables us to develop a variety of special-purpose pro-flex coupling that meet the high and strict requirements of transmission systems.

DISC COUPLING

Pro-Flex Coupling Features

1. NO LUBRICANTS REQUIRED

No lubricants are needed and no noises or wear and tear produced because there Is no sliding or friction.

2. MAINTENANCE-FREE: "LEAVE IT FOR GOOD AFTER INSTALLATION"

It lasts forever as long as is used correctly.

3. LIGHT-WEIGHT AND HIGH-TORQUE

By operations, it is available in a wide range; it can be made of aluminum alloy to reduce the weight.

4. LARGER OFF-CENTER ALLOWED

With large range of off-centering, it can be used flexibly in all kinds of transmission systems.

5. SUITS HIGH-TEMPERATURE APPLICATIONS

All-metal-part construct makes it suitable for high temperatures.

6. BACKLASH-FREE; WITH GOOD TORSIONAL RIGIDITY

Perfect for axial rotation that requires accuracy and machines with phase-control.

7. CAN BE USED IN EVEN HIGHER SPEEDS

It is highly balanced due to being backlash-free and light weight.

8. EASY TO INSTALL

Comprising small number of parts and being compact, it can be installed/uninstalled quickly.

9. ROBUST STRUCTURE AND HIGH SAFETY COEFFICIENT

With load stress kept at low standard, it works with very high safety coefficient.

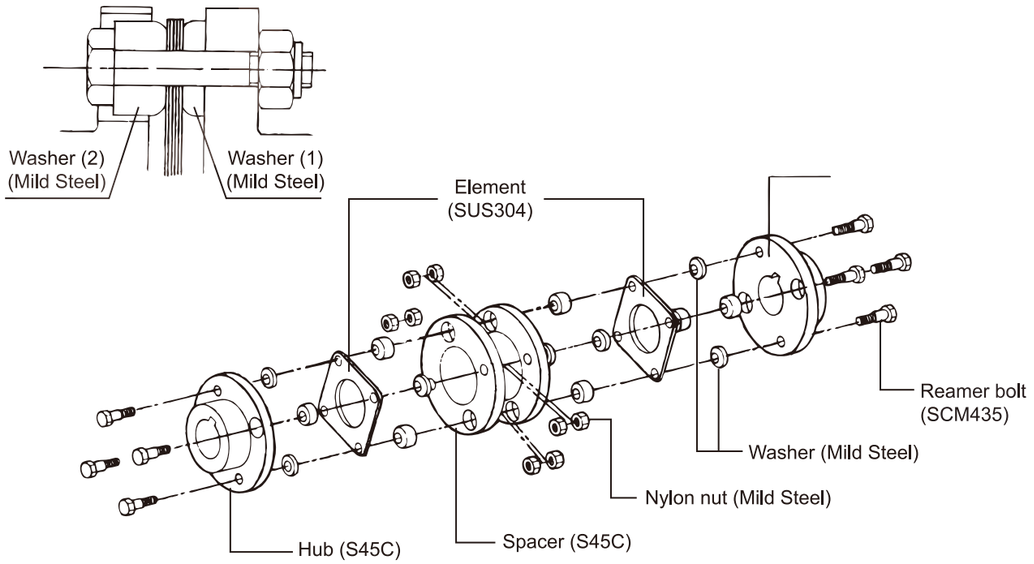
10. AUTOMATIC PROTECTIVE DEVICE

In case of damage, an automatic protective device rotates via pads.

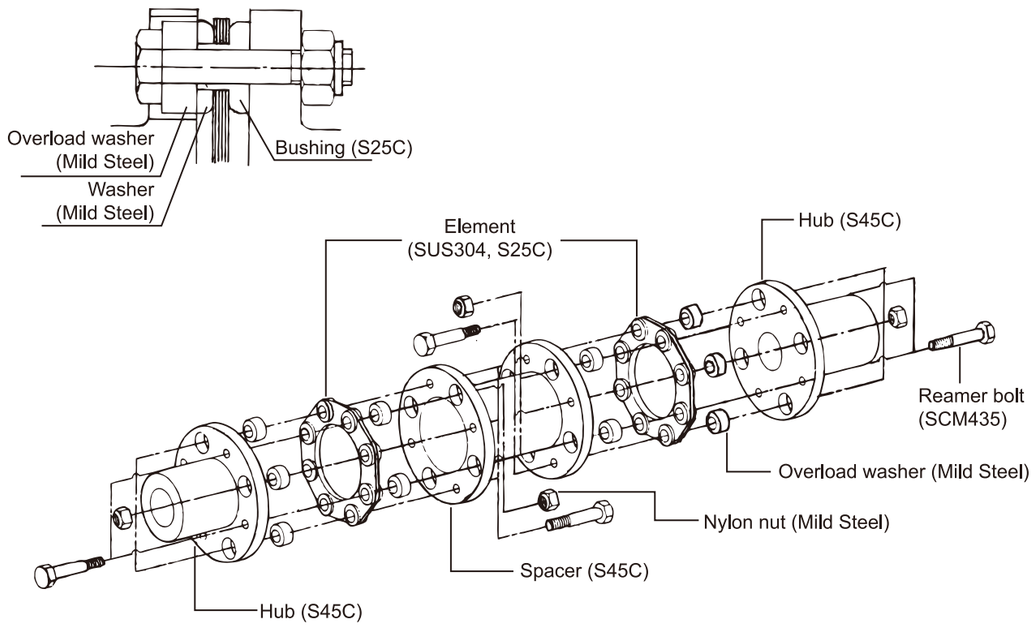
Pro-Flex Material

Name	Material
Hub	S45C
Element	SUS304 S25C
Spacer	S45C
Bolt	SCM435
Nylon nut	S25C
Bushing	S25C
Overload washer	S25C

Structure features of 4-bolt coupling



Structure features of 6-8 -bolt coupling



PART NO.

T40 - 23 PF 04

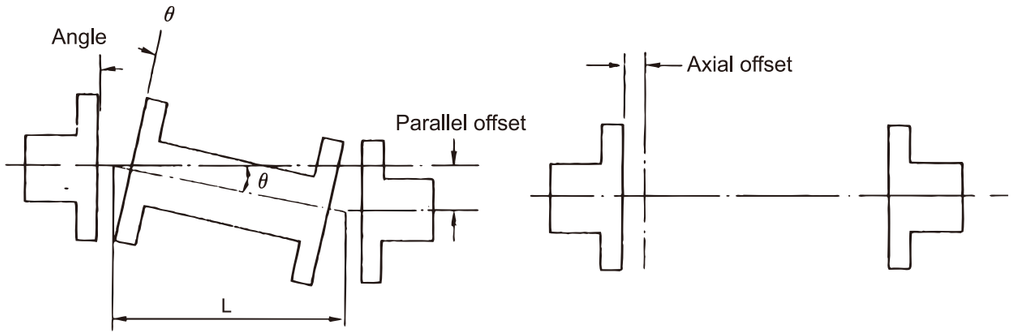
- **Bolts come in 4, 6, 8**
- **Code**
- **Max. bore, i.e., the column Emax**
- **Name**
  - **T40=Single-Flex Series**
  - **T41=General Purpose Series 4 bolt**
  - **T41=Floating Shaft Type 4 bolt**
  - **T61= General Purpose series 6 bolt**
  - **T61= Floating Shaft Type 6 bolt**
  - **T81= General Purpose Series 8 bolt**
  - **T81= Floating Shaft Type 8 bolt**

APPLICATION OF FLOATING AXLE

1. In floating axial type, the spacer can be made in different lengths as customer specifies ('D' dimension in T41, T61, T81 can be longer), other dimensions remain unchanged.
2. For long span, floating axle offers ease of mechanical applications.
3. Max. operation depends on total length.
4. Middle section made of pipes to reduce the weight of the axle.

OFFSET

1. Parallel and axial offsets in coupling depend on the number of bots and operational speed.
2. Parallel offset and axial offset are reversely related: one increases while the other decreases.
3. Relation of parallel offset to the angle θ is X=lxTanθ



TO SELECT

1. Determine the length of the spacer.
2. Determine the amount of load torque.
   Equation: T=974 x KW/N T=Kgf-m N=rpm
   (as 1HP=0.75kw， convert from HP to kw, before substituting in the above equation.)
3. Determine the load coefficients; see Attachment.
4. Design torque = load torque x load coefficient.
5. Select a larger coupling to use.
6. Ensure the axial diameter does not exceed E=max.
7. Ensure the distance from end to end does not exceed D-max.
8. It is necessary to check dynamic balance.

EXAMPLE

Ex.: Transmission capacity is 400KW, the driven is a centrifugal pump,
N=1800rpm，axial diameter D=80mm，drift angle at 1.

Calculations: T=974x400/1800=216.4kgf-m

∵ Ta=216.4x1.5=324.6kgf-m (coefficient used is 1.5 according to Table)
Look up in Brochure T41-95PF04 for compliance
Allowed torque is 340kgf-m>Ta
Max. axis is 95mm>80mm.
∴ The requirement is met.

TABLE OF COEFFICIENTS

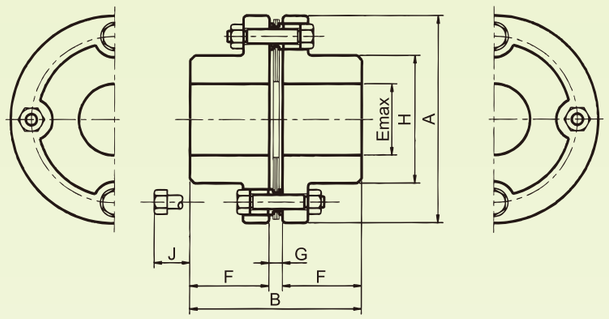
1. BLOWER	
Labe	1.75
Vone	1.5
Centrifugal	1.5
2. CHAIN CONVEYORS	
Uniformly	1.5
Heavy Duty	1.75
3. CHEMICAL MACHINE	
Reactor Drive	1.75
Liguid Static Agitator	1.5
Liguid Variable Agitator	2.0
Centrifuger	1.75
4. COMPRESSORS	
Centrifugal	1.5
Axial	1.75
5. CRANES-HOISTS	
Main Hoist	1.5
Heavy Duty	2.25
Medium Duty	1.75
Skip Hoist	1.75
6. ELEVATOR	
Bucket	1.5
Uniform Load	1.5
Continuous	1.5
Heavy Duty	1.75
7. FOOD MACHINE	
Removal Machine	1.5
Packing Machine	1.5
Meat Grinder	1.75
Atomizer	1.75
8. METEL WORKING MACHINE	
Bending Machine	1.75
Cutting Machine	1.5
Hammer	2.25
Forging Press	2.0
Shear	2.0
9. PAPER MILLS	
Smooth Cylinder	2.0
Wood Cutter	1.75
Wood Grinder	2.25
Baking Cylinder	1.75
10. PLASTIC	
Calender	1.75
Extruder	
Variable Speed	1.75
Fixed Speed	2.0
Batch Mixer	2.0
Continuous Mixer	1.75
11. PUMP	
Centrifugal	1.5
Single or Double Act 2	1.75
or More Cylinder	
Gear	1.5
Feed Water Pump	1.75
Drain Pump	1.75
12. RUBBER	
Caiender	1.75
Extruder	
Continuous	1.75
Intermittent	2.0
Mixer Mill	1.75
Refiner	1.75
13. SUGER MACHINE	
Crusher	1.75
Cutter	2.0
14. TEXTILE MACHINE	
Calender	1.75
Card Machine	1.75
Dryer	1.75
Pad	1.75
15. Roller Work	
Main Driver	2.0
Strip Roller	2.0
Block & Slab Roller	2.25
Wire Rod Mill	1.75
Heavy Place Rolling Train	2.5
Block Pusher	2.25
Straight Machine	1.75
Cooling Bed Drive	1.75
Shifting Device	2.2
Plate Reverser	1.75

Single Flexing Coupling

Type T40
4 BOLT

SINGLE TYPE

This type allows only angular deviation.
A pair of them can be used to make a long floating shaft.
It can be used as middle transmission shaft.



Dimensions Data

unit : mm

Model No. \ Item	A	B	Emax	F	G	H	J	Hole diameter
T40-23PF04	67	56.9	23	25.4	6.1	33	13	8
T40-32PF04	81	57.4	32	25.4	6.6	46	16	10
T40-35PF04	93	65.8	35	28.7	8.4	51	22	10
T40-42PF04	104	78.2	42	33.5	11.2	61	20	10
T40-50PF04	126	93.9	50	41.1	11.7	71	25	16
T40-58PF04	143	107.3	58	47.8	11.7	84	28	16
T40-74PF04	168	131.2	74	57.2	16.8	106	23	25
T40-83PF04	194	144	83	63.5	17	119	30	25
T40-95PF04	214	174	95	76.2	21.6	137	22	45
T40-109PF04	246	201.7	109	88.9	23.9	157	23	50
T40-118PF04	276	230.4	118	101.6	27.2	170	40	50

Engineering Data

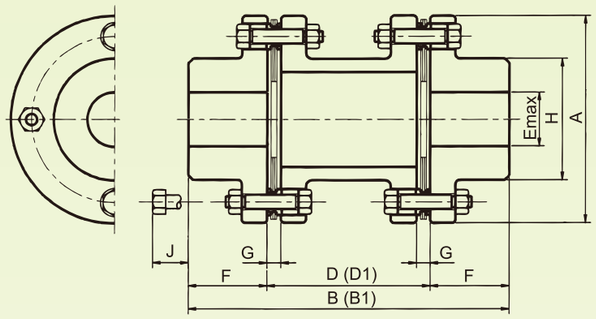
Model No. \ Item	Torsional moment (kgf-m)	Maximum diametral (kgf)	Maximum rpm (RPM)	Inertia effect (GD^2 kg-cm^2)	Torsional strength (kpf-m/rad)	Shaft spring constant (kgf/mm)	Weight (kg)
T40-23PF04	3.4	15	47000	8	$0.22x10^4$	4.1	0.6
T40-32PF04	9.2	25	39000	24	$0.63x10^4$	6	1.1
T40-35PF04	18	56	34000	48	$1.5x10^4$	14.4	1.7
T40-42PF04	25	83	30000	80	$2.4x10^4$	17.1	2.5
T40-50PF04	43	120	25000	224	$4.3x10^4$	22.3	4.3
T40-58PF04	79	180	22000	440	$7.2x10^4$	31.3	6.9
T40-74PF04	130	270	19000	1080	$13x10^4$	36.2	11.3
T40-83PF04	210	380	16000	2080	$21x10^4$	44.9	16.7
T40-95PF04	340	450	15000	3520	$30x10^4$	47.9	22.7
T40-109PF04	500	610	13000	7200	$44x10^4$	54.8	35.4
T40-118PF04	650	770	11000	12800	$59x10^4$	57.2	52

General Purpose Serious

Type T41
4 BOLT

STANDARD SPACING BUSHING TYPE

Suits general conditions; one with larger size suits turbines, water-suction pump and generator.
Being backlash-free, perfect for printing and Indexing.



Dimensions Data

unit : mm

Model No. \ Item	A	B	D	Emax	F	G	H	J	Hole diameter
T41-23PF04	67	139.4	88.9	23	25.4	6.1	33	13	8
T41-32PF04	81	139.4	88.9	32	25.4	6.6	46	16	10
T41-35PF04	93	159	101.6	35	28.7	8.4	51	22	10
T41-42PF04	104	194	127	42	33.5	11.2	61	20	10
T41-50PF04	126	209.2	127	50	41.1	11.7	71	25	16
T41-58PF04	143	222.6	127	58	47.8	11.7	84	28	16
T41-74PF04	168	241.4	127	74	57.2	16.8	106	23	25
T41-83PF04	194	266.7	139.7	83	63.5	17	119	30	25
T41-95PF04	214	304.8	152.4	95	76.2	21.6	137	22	45
T41-109PF04	246	355.6	177.8	109	88.9	23.9	157	23	50
T41-118PF04	276	381	177.8	118	101.6	27.2	170	40	50

Engineering Data

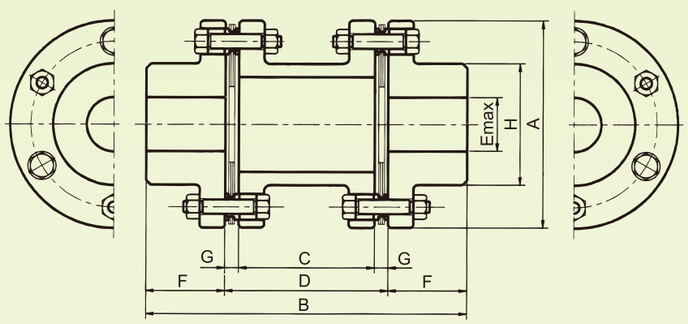
Deflection allows each side to be less than 1°.

Model No. \ Item	Torsional moment (kgf-m)	Maximum diametral (kgf)	Maximum rpm (RPM)	Inertia effect (GD^2 kg-cm^2)	Torsional strength (kpf-m/rad)	Shaft spring constant (kgf/mm)	Weight (kg)
T41-23PF04	3.4	15	47000	18	$0.09x10^4$	2.1	1.2
T41-32PF04	9.2	25	39000	44	$0.28x10^4$	3	1.9
T41-35PF04	18	56	34000	84	$0.62x10^4$	7.2	2.9
T41-42PF04	25	83	30000	148	$0.95x10^4$	8.5	4.1
T41-50PF04	43	120	25000	396	$1.74x10^4$	11.1	7.1
T41-58PF04	79	180	22000	800	$2.82x10^4$	15.6	10.8
T41-74PF04	130	270	19000	1680	$5.62x10^4$	18.1	16.3
T41-83PF04	210	380	16000	3400	$8.89x10^4$	22.4	24.7
T41-95PF04	340	450	15000	5600	$13.13x10^4$	23.9	32.5
T41-109PF04	500	610	13000	11200	$18.96x10^4$	27.4	50
T41-118PF04	650	770	11000	20400	$26.05x10^4$	28.6	75

General Purpose Serious

STANDARD SPACING BUSHING TYPE

Type T61
6 BOLT



Dimensions Data

unit : mm

Model No. \ Item	A	B	C	D	Emax	F	G	H
T61- 51PF06	119	168	39.4	60	51	54	10.3	74
T61- 55PF06	137	198	50	72	55	63	11	81
T61- 67PF06	161	238	67.2	90	67	74	11.4	97
T61- 72PF06	180	269	82.4	109	72	80	13.3	104
T61- 85PF06	212	308	87.6	118	85	95	15.2	124
T61-110PF06	276	377	118	153	110	112	17.5	161
T61-111PF06	276	377	115	153	111	112	19	161
T61-133PF06	308	440	134	172	133	134	19	193
T61-152PF06	346	497	148	191	152	153	21.5	218
T61-165PF06	375	553	175	223	165	165	24	240
T61-178PF06	410	610	195	254	178	178	29.5	258
T61-187PF06	445	646	211	270	187	188	29.5	272
T61-205PF06	470	686	212	274	205	206	31	297

Engineering Data

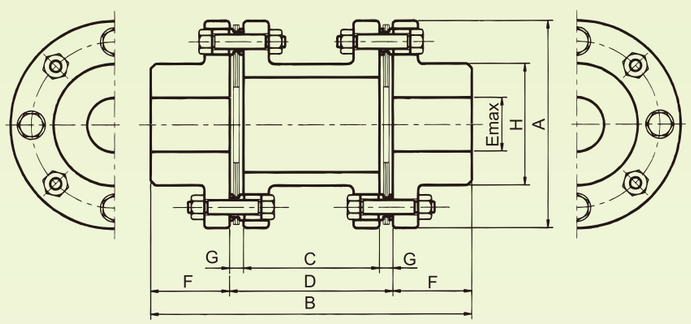
Deflection allows each side to be less than 0.7º

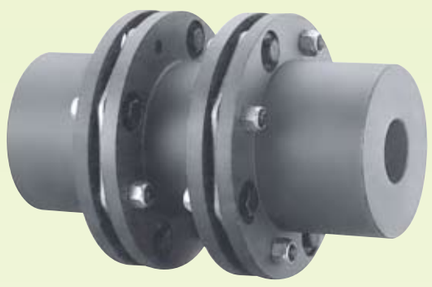
Model No. \ Item	Torsional moment (kgf-m)	Maximum diametral (kgf)	Maximum rpm (RPM)	Inertia effect (GD^2 kg-cm^2)	Torsional strength (kpf-m/rad)	Shaft spring constant (kgf/mm)	Weight (kg)
T61- 51PF06	58	3	26000	0.03	$0.45x10^5$	16.5	6
T61- 55PF06	94	3.4	23000	0.06	$0.65x10^5$	21.1	9.1
T61- 67PF06	174	3.6	19000	0.14	$0.94x10^5$	28	16.9
T61- 72PF06	341	4.2	17000	0.26	$1.61x10^5$	45.7	21.6
T61- 85PF06	633	4.5	15000	0.59	$3.14x10^5$	60.6	35.1
T61-110PF06	620	3.9	11600	1.8	$3.98x10^5$	42.2	65.1
T61-111PF06	840	3.9	11600	1.9	$4.95x10^5$	59.5	66.1
T61-133PF06	1090	4.2	10300	3.7	$7.34x10^5$	57	107.8
T61-152PF06	1820	4.9	9200	6.7	$1.22x10^6$	76.2	156.1
T61-165PF06	2690	5.2	8500	10.6	$1.70x10^6$	85.7	211.8
T61-178PF06	3410	5.4	7800	16.5	$2.17x10^6$	99.2	274.5
T61-187PF06	4070	5.6	7200	23.9	$2.44x10^6$	103.4	333.3
T61-205PF06	4720	6.3	6800	30.7	$2.99x10^6$	102	399.2

General Purpose Serious

STANDARD SPACING BUSHING TYPE

Type T81
8 BOLT





Dimensions Data

unit : mm

Model No. \ Item	A	B	C	D	Emax	F	G	H
T81- 95PF08	214	333	92.6	117	95	108	12.2	137
T81-108PF08	246	369	99.6	127	108	121	13.7	156
T81-110PF08	276	421	118	153	110	134	17.5	161
T81-111PF08	276	421	115	153	111	134	19	161
T81-133PF08	308	492	134	172	133	160	19	193
T81-152PF08	346	557	148	191	152	183	21.5	218
T81-165PF08	375	619	175	223	165	198	24	240
T81-178PF08	410	682	195	254	178	214	29.5	258
T81-187PF08	445	720	211	270	187	225	29.5	272
T81-205PF08	470	768	212	274	205	247	31	297

Engineering Data

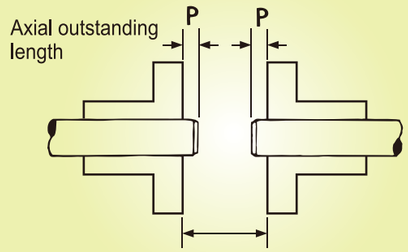
Deflection allows each side to be less than 0.5º

Model No. \ Item	Torsional moment (kgf-m)	Maximum diametral (kgf)	Maximum rpm (RPM)	Inertia effect (GD^2 kg-cm^2)	Torsional strength (kpf-m/rad)	Shaft spring constant (kgf/mm)	Weight (kg)
T81- 95PF08	392	2.1	15000	0.65	$3.51x10^5$	42.9	38.0
T81-108PF08	726	2.1	13000	1.24	$6.21x10^5$	58.9	55.5
T81-110PF08	915	2.1	11600	1.8	$5.66x10^5$	85.7	72.2
T81-111PF08	1200	2.1	11600	1.8	$7.12x10^5$	116.1	73.3
T81-133PF08	1570	2.4	10300	3.7	$1.11x10^6$	115.1	119.7
T81-152PF08	2610	2.9	9200	6.8	$1.82x10^6$	151.8	174.3
T81-165PF08	3850	3.1	8500	10.8	$2.54x10^6$	186.7	233.8
T81-178PF08	4870	3.3	7800	16.7	$3.16x10^6$	200.0	305.3
T81-187PF08	5820	3.6	7200	25	$3.60x10^6$	212.9	367.4
T81-205PF08	6570	4	6800	31.1	$4.56x10^6$	196.4	447.5

RECOMMENDED TIGHT FITTING AXIAL DIAMETER AND BORE TOLERANCE

Axial dimensions	Axial tolerance	Bore dimension	Bore tolerance	Amount of interference	Axial dimensions	Axial tolerance	Bore dimension	Bore tolerance	Amount of interference
14	+0.018 +0.007	14	-0.004 -0.015	0.011 0.033	56	+0.030 +0.011	56	-0.005 -0.024	0.016 0.054
15		15			60		60		
16		16			64		64		
17		17			65		65		
18		18			70		70		
29	+0.021 +0.008	29	-0.004 -0.017	0.012 0.038	75		75		
20		20			80		80		
22		22			85	+0.035 +0.013	85	-0.006 -0.028	0.019 0.063
24		24			90		90		
25		25			95		95		
26		26			100		100		
28		28			105		105		
30		30			110		110		
32	+0.029 +0.009	32	-0.004 -0.020	0.013 0.045	115	+0.040 +0.015	115	-0.008 -0.033	0.023 0.073
34		34			120		120		
35		35			125		125		
36		36			130		130		
38		38			140		140		
40		40			150		150		
42		42			160		160		
44		44			170		170		
45		45			180		180		
46		46			200	+0.046 +0.017	200	-0.008 -0.037	0.023 0.083
48		48			225		225		
50		50			250		250		
52	+0.030 +0.011	52	-0.004 -0.024	0.016 0.054					
55		55							

NOTICES ON ASSEMBLY

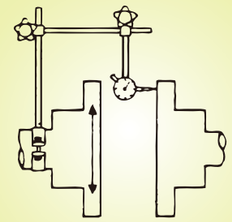


Offset correction during assembly can make the coupling more durable.

1. Shaft outstanding dimension

The outstanding dimensions of each type are as below table. If interference fit is used for the bushing, it should be heated in oil to become even before it can be put on the shaft.

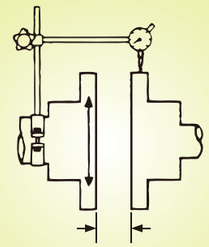
	Model	23	32	35	42	50	58	74	83	95	109	118	-	-
P	T40 T41	1.5	1.5	2	2	3	3	3.5	4	4	5	6	-	-
	Model	51	55	67	72	85	85	111	133	152	165	178	187	205
	T61	1.5	1.5	2	2	2	2	3	3	3	4	4	5	5
	Model	-	-	-	95	108	108	111	133	152	165	178	187	205
	T81	-	-	-	2	2	2	3	3	4	4	5	5	6



2. Angular offset

Set the dial indicator securely; turn the bushing on the other side and take the reading, for which the range is as below table.

	Model	23	32	35	42	50	58	74	83	95	109	118	-	-
Offset	T40 T41	0.1	0.15	0.15	0.2	0.2	0.25	0.3	0.3	0.35	0.4	0.45	-	-
	Model	51	55	67	72	85	85	111	133	152	165	178	187	205
	T61	0.2	0.2	0.25	0.3	0.35	0.45	0.45	0.5	0.6	0.65	0.7	0.7	0.8
	Model	-	-	-	95	108	108	111	133	152	165	178	187	205
	T81	-	-	-	0.3	0.35	0.45	0.45	0.5	0.6	0.65	0.7	0.7	0.8



3. Parallel offset

Set the dial indicator securely (as left figure shows); turn the bushing on the other side and take the reading, which is 2mm in every 1000mm.