

Materials of Insert Bearings

The materials of the races and balls of FIT mounted units are made of S20C (high carbon chromium bearing steel), which displays the following properties:

- 1) High fatigue strength capacity.
- 2) A high limit of elasticity and yield strength.
- 3) Abrasion resistance.
- 4) Strength against cracking.
- 5) Resistance of secular change in dimension and shape.

CHEMICAL COMPOSITION							
Class	Symbol	%					
		C	Si	Mn	P	S	Cr
1		0.95-1.10	0.15-0.35	Under 0.50	Under 0.025	Under 0.025	0.90-1.20

In order to maintain uniform quality of materials, FIT rigorously performs tests and inspections on products. Tests include chemical analysis, magnetic exploration, ultrasonic exploration, corrosion tests, inspection of structure using microscope, and hardness tests.

Materials of Housings

The material of the housings used in FIT mounted units is gray cast iron class 3 FC20 or higher.

HOUSING PROPERTIES							
Class	Symbol	Thickness	Diameter	Tensile Strength	Max. Load	Deflection	Hardness
		inch		1bf/in	1bf.	inch	HB
3	FC20	0.16-0.31	0.51	over 34.14	over 440.9	over 0.079	under 255
		0.31-0.59	0.79	over 31.29	over 992.1	over 0.118	under 235
		0.59-1.18	1.18	over 28.45	over 1984	over 0.177	under 223
		1.18-1.97	1.77	over 24.18	over 4409	over 0.256	under 217

Materials of Other Components

MATERIALS OF OTHER COMPONENTS	
Components	Materials Used
	Type
Bearing Cage	Cold-rolled carbon steel sheet and strip
Cage Rivet	Low carbon steel wire rods
Oil Seal	Synthetic nitrile rubber
Slinger	Cold-rolled carbon steel sheet and strip
Hex Set Screw	Nickel chromium molybdenum steel
Allen Key	Nickel chromium molybdenum steel
Zirk Fitting	Free-cutting brass bar

All FIT mounted units are manufactured to exacting tolerances to insure adequate operational characteristics and consistent product uniformity.

Bearings

INTERNAL CLEARANCE											
BORE DIAMETER				C2		STANDARD		C3		C4	
Over		Incl.		Low	High	Low	High	Low	High	Low	High
inch	mm	inch	mm								
0.3937	10	0.7087	18	—	3.5	1	7	4	10	7	13
0.7087	18	0.9449	24		4	2	8	5	11	8	14
0.9449	24	1.1811	30	—	4.5	2	8	5	11	9	16
1.1811	30	1.5748	40					6	13	11	18
1.5748	40	1.9685	50				9	7	14	12	20
1.9685	50	2.5591	65	—	6	3	11	9	15	15	24
2.5591	65	3.1496	80				4	12	10	18	18

BEARING INNER RING								
BORE DIAMETER				CYLINDRICAL BORE				
Over		Incl.		Tolerance of Bore		Tolerance of Inner Ring Width		Radial Runout
inch	mm	inch	mm	Low	High	Low	High	Max.
0.3937	10	0.7087	18	-2	+9	-47	0	6
0.7087	18	1.1811	30		+10			7
1.1811	30	1.9685	50		+12			8
1.9685	50	3.1496	80		+14			10
3.1496	80	4.7244	120		+17			12

BEARING OUTER RING						
BORE DIAMETER				TOLERANCE OF OUTSIDE DIAMETER		RADIAL RUNOUT
Over		Incl.		Low	High	Max.
inch	mm	inch	mm			
1.1811	30	1.9685	50	-4	0	8
1.9685	50	3.1496	80	-5		10
3.1496	80	4.7244	120	-6		14
4.7244	120	5.9055	150	-7		16
5.9055	150	7.0866	180	-10		18

BEARING RADIUS			
Normal Radius Dimensions		Min.	Max.
inch	mm	inch	
0.039	1	0.024	0.059
0.059	1.5	0.039	0.079
0.079	2	0.059	0.098
0.098	2.5	0.079	0.118
0.118	3	0.098	0.138
0.138	3.5		0.157
0.157	4	0.118	0.177
0.197	5	0.157	0.236

Housings

SPHERICAL INNER DIAMETER					
SPHERICAL DIAMETER				CLEARANCE FIT D1	
Over		Incl.		Deviations	
inch	mm	inch	mm	Low	High
1.1811	30	1.9685	50	-2	+12
1.9685	50	3.1496	80	-2	+14
3.1496	80	4.7244	120	-3	+17
4.7244	120	7.0866	180	-3	+19
7.0866	180	9.8425	250	-4	+22

PILLOW BLOCK HOUSINGS				
Spherical Diameter				Tolerance of Center Height
P	PA	LP	PH	
203-210				+/-59
211 +				+/-79

PFL HOUSINGS	
Spherical Diameter	Tolerance of Bolt Hole Center
PFL	
203+	+/- 200

HOUSING - SPHERICAL INNER DIAMETER					
SPHERICAL DIAMETER				CLEARANCE FIT D1	
Over		Incl.		Deviations	
inch	mm	inch	mm	Low	High
1.1811	30	1.9685	50	-2	+12
1.9685	50	3.1496	80	-2	+14
3.1496	80	4.7244	120	-3	+17
4.7244	120	7.0866	180	-3	+19
7.0866	180	9.8425	250	-4	+22

TAKE UP UNITS		
Spherical Dia.	Tolerance of Slot Distance	Tolerance of Slot Width
T		
203-210	-200(+0)	+80(-0)
211 +	-320(+0)	+120(-0)

FLANGE HOUSINGS				
Spherical Diameter			Tolerance of Bolt Hole Centers	Tolerance of Center Height
F	FL	FC		
203-210			+/- 280	-/+ 200
211 +			+/- 320	-/+ 320

SPECIAL FLANGE HOUSINGS	
Spherical Diameter	Tolerance of Center Height
HA FA	
203-210	+/- 200
211 +	+/- 320