

5 Allowable loading capacity of cast iron housing

FK cast iron housing is produced by high quality HT200 material, and designed to meet insert bearing loading capacity. However, housing strength must be taken into consideration under low speed heavy load or impact load and other special application.

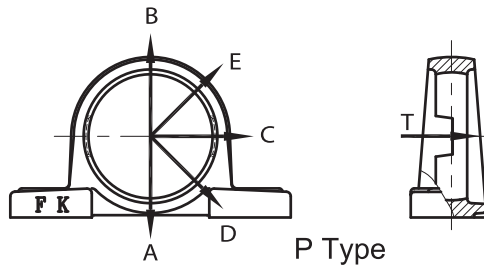
5.1 Destruction strength of cast iron housing

FK housing lab gets following data by many years research and test. This is the average destruction strength under static loading, so $\pm 30\%$ deviation must be considered. Cast iron housing has many good properties, but it is fragile under impact load, so safety factor must be considered.

Table20

Load type	Static load	Dynamic load		
		Repeated load	Alternating load	Variable load Impact load
Safety factor	4	6	10	15

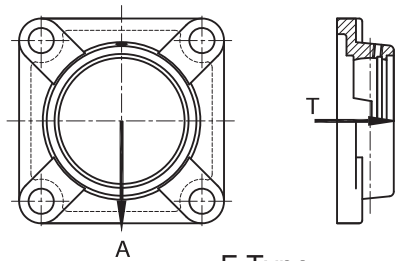
* Some applications may have impact load, such as crane, windlass, air compressor, rolling mill etc, must consider cast steel or ductile iron housing for these applications.



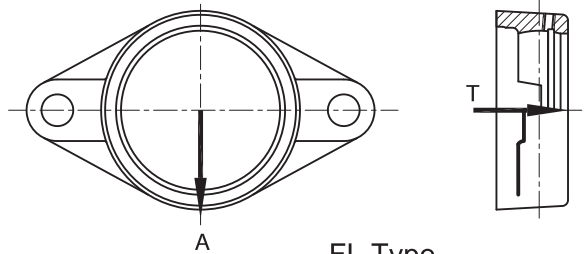
Destruction strength of cast iron housing

Table21
KN

Housing No.	Direction A,D	Direction C	Direction B	Direction E	Direction T	Housing No.	Direction A,D	Direction C	Direction B	Direction E	Direction T
P204	70.4	50.8	31.9	25.5	13.8	P307	122.4	74.0	54.8	44.0	26.0
P205	80.0	53.5	33.7	27.5	15.0	P308	145.6	63.2	61.6	50.0	28.0
P206	91.5	59.4	37.6	31.5	17.0	P309	172.0	94.4	68.8	56.8	30.8
P207	104.6	67.2	43.0	36.6	20.0	P310	198.4	105.2	76.4	64.4	34.4
P208	119.0	76.6	49.2	42.3	23.0	P311	228.0	117.6	84.8	72.0	38.4
P209	135.3	87.0	56.5	48.5	26.6	P312	258.4	131.2	93.6	80.8	42.4
P210	153.7	98.9	64.4	55.7	31.0	P313	292.8	146.8	103.2	90.4	48.4
P211	172.9	110.8	72.5	63.1	34.5	P314	328.0	164.0	113.6	101.6	54.0
P212	195.4	123.8	81.7	71.0	39.8	P315	363.2	182.4	125.2	111.2	60.8
P213	217.5	137.4	91.1	79.2	44.7	P316	398.4	203.2	138.0	124.0	67.2
P214	242.6	151.8	100.9	88.2	50.5	P317	437.6	227.2	152.8	136.8	75.2
P215	270.2	166.6	111.6	97.5	56.4	P318	478.4	253.6	167.2	150.4	83.6
P216	297.6	182.2	122.4	107.1	62.4	P319	520.0	280.8	185.2	164.8	92.8
P217	327.8	198.0	133.8	117.7	69.1	P320	564.0	312.0	204.0	180.4	102.8
P218	360.0	213.2	144.9	128.2	76.5	P321	607.2	344.8	224.0	196.8	113.2
						P322	651.2	380.0	246.4	214.4	123.2
P305	79.2	57.6	42.4	35.2	21.6	P324	740.0	452.8	292.0	251.2	146.8
P306	100.0	64.8	48.8	39.2	23.2	P326	834.4	532.0	340.0	292.8	172.4



F Type

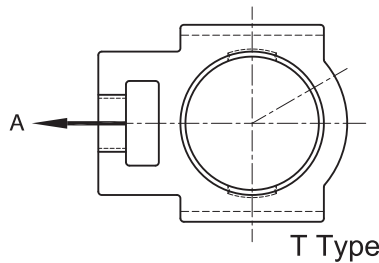


FL Type

Destruction strength of cast iron housing

Table22
KN

Housing No.	Direction A	Direction T	Housing No.	Direction A	Direction T
F204	66.8	15.0	FL204	44.2	16.1
F205	71.6	17.8	FL205	54.2	20.1
F206	77.0	19.6	FL206	63.4	24.0
F207	83.7	22.5	FL207	73.8	28.7
F208	91.0	26.5	FL208	84.0	32.9
F209	99.0	31.1	FL209	93.7	36.8
F210	107.3	36.4	FL210	102.9	40.8
F211	115.9	42.2	FL211	111.3	44.7
F212	125.0	48.7	FL212	118.8	48.0
F213	134.5	55.8	FL213	126.2	51.6
F214	144.9	63.4	FL214	133.5	54.3
F215	155.2	71.4	FL215	140.0	58.4
F216	166.3	79.4	FL216	146.3	61.6
F217	176.8	87.8	FL217	152.4	65.6
F218	187.9	95.8	FL218	157.8	72.9
F305	86.8	21.6	FL305	47.4	21.9
F306	89.6	27.2	FL306	57.5	28.2
F307	108.0	32.8	FL307	68.9	34.2
F308	121.2	38.4	FL308	80.6	40.8
F309	134.8	45.2	FL309	93.6	47.0
F310	149.6	51.6	FL310	106.6	53.8
F311	162.4	58.8	FL311	117.8	59.4
F312	177.6	66.4	FL312	129.0	65.4
F313	193.2	74.0	FL313	139.5	71.0
F314	208.8	83.2	FL314	151.1	76.9
F315	226.4	92.8	FL315	161.1	82.4
F316	243.2	102.4	FL316	171.0	87.9
F317	262.0	113.6	FL317	181.0	93.7
F318	281.6	125.6	FL318	190.5	99.2
F319	300.0	138.0	FL319	199.8	104.6
F320	319.2	151.2	FL320	209.5	110.4
F321	337.6	164.8	FL321	218.3	116.0
			FL322	225.8	121.0



Destruction strength of cast iron housing

Table23
KN

Housing No.	Direction A	Housing No.	Direction A	Housing No.	Direction A
T204	26.7	T216	115.0	T313	113.5
T205	32.6	T217	124.6	T314	126.2
T206	38.6	T218	134.2	T315	140.2
T207	45.0			T316	154.1
T208	51.9	T305	38.9	T317	168.4
T209	59.1	T306	44.6	T318	184.9
T210	66.8	T307	51.3	T319	199.1
T211	74.2	T308	59.3	T320	216.7
T212	82.0	T309	67.4	T321	232.1
T213	89.8	T310	77.6	T322	249.5
T214	98.2	T311	89.0	T324	285.0
T215	106.5	T312	100.8	T326	320.8

5.2 Allowable Load of Pressed Housings

Pressed housing shows deformation when subjected to heavy load. The deformation depends upon direction and amount of the load, form of the housing and thickness of steel plate. Therefore, the allowable load of the pressed housing must be such an amount that deformation of the housing may not disturbed the function.

The allowable radial load of pressed housing is approximately 1/6 of the bearing basic dynamic load rating (Cr), and allowable axial load of pressed housing is approximately 1/18 of the bearing basic dynamic load rating (Cr).

6 LUBRICATION OF BALL BEARING UNITS

6.1 Permissible Speed

Permissible speed of a insert bearing is expressed normally in terms of dn value (Bearing bore diameter mm x operating speed r.p.m.), although it is influenced by the shape, size, lubricant type and seal device. The permissible speed can be roughly determined by the sliding speed at the friction part of the holding device and rolling body. In the case of ball bearing unit, it is provided with grease sealed by the oil seals and slingers. Accordingly, the friction resistance at seal contact yields also a large influence on the permissible speed.

When such factors are taken into consideration, the permissible speed is given as follows:

$$Dn \leq 150,000 \quad [dn=d \times n]$$

Whereas, **d**: Bearing bore diameter (mm)

n: Operating speed (r.p.m.)