



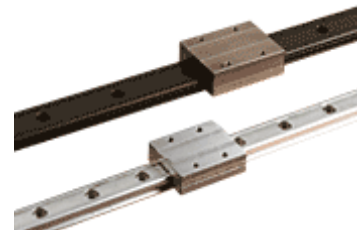
## Simplicity Self-Lubricating Plain Bushes

Simplicity bushes have a unique Teflon composite liner called Frelon. When combined with their anodised aluminium shell they offer 20 times the load capacity, up to 270 times the life expectancy and can run at up to 20 times the speed of a ball bush. This massive load capacity is also combined with a bearing that won't catastrophically fail and makes simplicity ideal for critical applications where downtime can be highly expensive. Simplicity bushes can also be used in rotary or combined linear rotary applications.

The self-lubricating liner makes them virtually maintenance free. Frelon can embed particulates into the liner itself, protecting the shaft and bearing from damage in dirty environments. These bearings have a wide temperature range of -240 to +260degC. Special liner types can also be specified that can run on aluminium or 316 shafting and in wet applications. They have a wide-ranging chemical resistance and certain liner types can be run in submerged applications. 316 stainless shells are also an option for aggressive chemical applications.

Simplicity is dimensionally interchangeable with standard ball bushes and available in imperial, Asian and European metric series. An existing ball bush application can easily be retro fitted with a self-lubricating simplicity bush without machining or reworking of the machine. The Frelon liners can also be applied to many different forms including flanged and press fit sleeve bushes and guideways or even custom parts.

Standard simplicity bushes have a precision fit that offers similar rigidity to a preloaded ball bush. This also allows the bush to wipe the shaft virtually clean with every stroke. For parallel shaft applications a larger internal clearance, "compensated" type is recommended as this reduces binding that can occur in parallel shaft applications. For severe misalignment a self-aligning bush with a crowned outer that allows the bush to float within a standard housing can give even greater tolerance of misalignment and eccentricity.



The surface finish of the shafts must be between 8-16RMS. Too rough a shaft will cause excessive liner wear and too smooth a finish will inhibit Teflon transfer from the bush to the shaft. Hardened and ground chrome, SS or standard linear shafts are recommended. As the bush transfers Teflon to the shaft excessive cleaning can cause increased wear of the bushes. The bushes can be run without lubrication but a 3 in 1 type oil especially at commissioning is recommended. Do not use spray on oils, grease or PTFE sprays with simplicity. Avoid canter levered loads greater than 2:1, mass offset to bush spacing, as this will cause plain bushes to bind up.

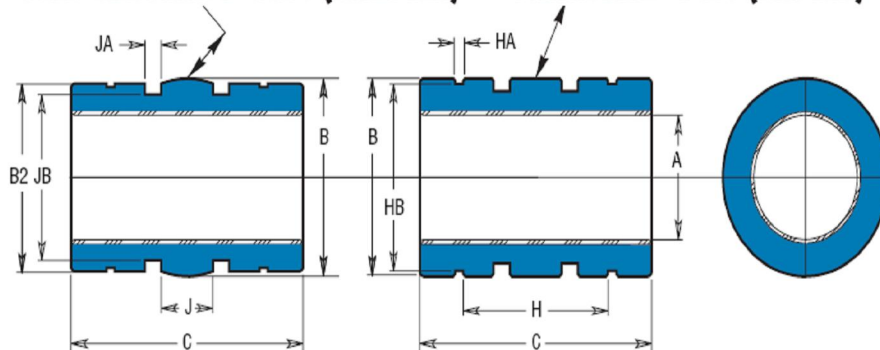




# simplicity™

**Metric Sizes – Dimensionally equivalent to LME series ball bush**

**\*SELF-ALIGNING O.D. (FMA-XX)    STANDARD O.D. (FM-XX)**



PRECISION I.D. SERIES Similar to preloaded ball bearing				COMPENSATED I.D. SERIES Similar to standard ball bearing			Standard		SELF-ALIGNING			C		Concentric	Bearing Weight
Part No.	Nominal Size	A Bearing I.D. (F8)		Part No.	A Bearing I.D.		B O.D. (h7)		B2 O.D.			Length		Max.	(kg.)
Closed	mm	Min.	Max.	Closed	Min.	Max.	Min.	Max.	Min.	Min.	Max.	Min.	Max.	Max.	
FM 05	5	5.01	5.028	<b>FMC 05</b>	<b>5.06</b>	<b>5.078</b>	11.982	12	FMA05	11.941	11.966	21.746	22	0.0254	0.004
<b>FM 08</b>	<b>8</b>	<b>8.013</b>	<b>8.035</b>	FMC 08	8.063	8.085	15.982	16	FMA08	15.941	15.966	<b>24.746</b>	<b>25</b>	<b>0.0254</b>	<b>0.009</b>
<b>FM 10</b>	<b>10</b>	<b>10.013</b>	<b>10.035</b>	FMC 10	10.063	10.085	18.979	19	FMA10	18.94	18.964	<b>28.746</b>	<b>29</b>	<b>0.0254</b>	<b>0.014</b>
<b>FM 12</b>	<b>12</b>	<b>12.016</b>	<b>12.043</b>	FMC 12	12.066	12.093	21.979	22	FMA12	21.94	21.963	<b>31.746</b>	<b>32</b>	<b>0.0254</b>	<b>0.017</b>
<b>FM 16</b>	<b>16</b>	<b>16.016</b>	<b>16.043</b>	FMC 16	16.066	16.093	25.979	26	FMA16	25.94	25.964	<b>35.746</b>	<b>36</b>	<b>0.0254</b>	<b>0.028</b>
<b>FM 20</b>	<b>20</b>	<b>20.02</b>	<b>20.053</b>	FMC 20	20.096	20.129	31.975	32	FMA20	31.94	31.963	<b>44.746</b>	<b>45</b>	<b>0.0254</b>	<b>0.054</b>
<b>FM 25</b>	<b>25</b>	<b>25.02</b>	<b>25.053</b>	FMC 25	25.096	25.129	39.975	40	FMA25	39.94	39.962	<b>57.746</b>	<b>58</b>	<b>0.0254</b>	<b>0.109</b>
<b>FM 30</b>	<b>30</b>	<b>30.02</b>	<b>30.053</b>	FMC 30	30.096	30.129	46.975	47	FMA30	46.94	46.962	<b>67.746</b>	<b>68</b>	<b>0.0254</b>	<b>0.176</b>
<b>FM 40</b>	<b>40</b>	<b>40.025</b>	<b>40.064</b>	FMC 40	40.127	40.166	61.97	62	FMA40	61.935	61.961	<b>79.746</b>	<b>80</b>	<b>0.0254</b>	<b>0.356</b>
<b>FM 50</b>	<b>50</b>	<b>50.025</b>	<b>50.064</b>	FMC 50	50.127	50.166	74.97	75	FMA50	74.935	74.96	<b>99.746</b>	<b>100</b>	<b>0.0254</b>	<b>0.628</b>
<b>FM 60</b>	<b>60</b>	<b>60.03</b>	<b>60.076</b>	FMC 60	60.182	60.228	89.965	90	FMA60	89.931	89.957	<b>124.492</b>	<b>125</b>	<b>0.038</b>	<b>1.117</b>
FM 80	80	80.03	80.076	FMC 80	80.182	80.228	119.97	120	FMA80	119.931	119.957	164.492	165	0.051	2.679

Normal stock items in bold type

## Load data

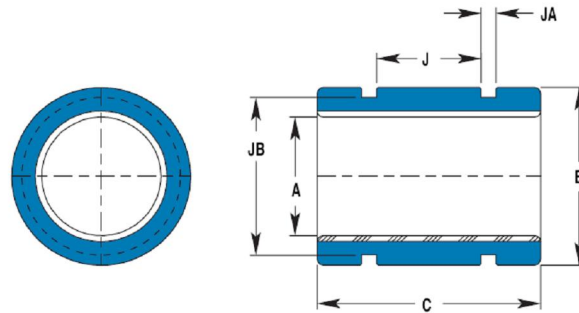
PART NO.	Effective surface area (SQ. CM)	Max. Static Load (kg)		
		GOLD	F & J	
FM 05	1.1	232	116	<b>Max PV (m/min.kg/sq.cm)</b> Frelon Gold 430 F&J 215
FM 08	2	420	210	
FM 10	2.9	610	305	
FM 12	3.8	806	403	<b>Max Speed m/min (dry)</b> Frelon Gold 91.4 F&J 42.6
FM 16	5.8	1210	605	
FM 20	9	1890	945	
FM 25	14.5	3046	1523	<b>Max Speed m/min (lubed)</b> Frelon Gold 251.5 F&J 122
FM 30	20.4	4284	2142	
FM 40	32	6720	3360	
FM 50	50	10500	5250	
FM 60	75	15750	7875	
FM 80	132	27720	13860	



1kg = 9.8N



## Thin walled – Dimensionally equivalent to KH series ball bush



PRECISION I.D. SERIES Similar to preloaded ball bearing				COMPENSATED I.D. SERIES Similar to standard ball bearing				B		C		Concentric Max.	Bearing Weight (kg.)
Part No.	Nominal Size	A Bearing I.D. (F8)		Part No.	A Bearing I.D.		O.D. (h7)		Length (h13)				
	mm	Min.	Max.		Closed	Min.	Max.	Min.	Max.	Min.	Max.		
<b>FMT 06</b>	<b>6</b>	<b>6.01</b>	<b>6.028</b>	<b>FMTC 06</b>	<b>6.06</b>	<b>6.078</b>	<b>11.982</b>	<b>12</b>	<b>21.746</b>	<b>22</b>	<b>0.0254</b>	<b>0.0057</b>	
FMT 08	8	8.013	8.035	FMTC 08	8.063	8.085	14.982	15	23.746	24	0.0254	0.0071	
<b>FMT 10</b>	<b>10</b>	<b>10.013</b>	<b>10.035</b>	<b>FMTC 10</b>	<b>10.063</b>	<b>10.085</b>	<b>16.982</b>	<b>17</b>	<b>25.746</b>	<b>26</b>	<b>0.0254</b>	<b>0.0085</b>	
<b>FMT 12</b>	<b>12</b>	<b>12.016</b>	<b>12.043</b>	<b>FMTC 12</b>	<b>12.066</b>	<b>12.093</b>	<b>18.979</b>	<b>19</b>	<b>27.746</b>	<b>28</b>	<b>0.0254</b>	<b>0.0113</b>	
FMT 14	14	14.016	14.043	FMTC 14	14.066	14.093	20.979	21	27.746	28	0.0254	0.0128	
<b>FMT 16</b>	<b>16</b>	<b>16.016</b>	<b>16.043</b>	<b>FMTC 16</b>	<b>16.066</b>	<b>16.093</b>	<b>23.979</b>	<b>24</b>	<b>29.746</b>	<b>30</b>	<b>0.0254</b>	<b>0.0184</b>	
<b>FMT 20</b>	<b>20</b>	<b>20.02</b>	<b>20.053</b>	<b>FMTC 20</b>	<b>20.096</b>	<b>20.129</b>	<b>27.979</b>	<b>28</b>	<b>29.746</b>	<b>30</b>	<b>0.0254</b>	<b>0.0227</b>	
<b>FMT 25</b>	<b>25</b>	<b>25.02</b>	<b>25.053</b>	<b>FMTC 25</b>	<b>25.096</b>	<b>25.129</b>	<b>34.975</b>	<b>35</b>	<b>39.746</b>	<b>40</b>	<b>0.0254</b>	<b>0.0439</b>	
<b>FMT 30</b>	<b>30</b>	<b>30.02</b>	<b>30.053</b>	<b>FMTC 30</b>	<b>30.09</b>	<b>30.129</b>	<b>39.975</b>	<b>40</b>	<b>49.746</b>	<b>50</b>	<b>0.0254</b>	<b>0.0652</b>	
<b>FMT 40</b>	<b>40</b>	<b>40.025</b>	<b>40.064</b>	<b>FMTC 40</b>	<b>40.127</b>	<b>40.166</b>	<b>51.97</b>	<b>52</b>	<b>59.746</b>	<b>60</b>	<b>0.0254</b>	<b>0.1233</b>	
<b>FMT 50</b>	<b>50</b>	<b>50.025</b>	<b>50.064</b>	<b>FMTC 50</b>	<b>50.127</b>	<b>50.166</b>	<b>61.97</b>	<b>62</b>	<b>69.746</b>	<b>70</b>	<b>0.0254</b>	<b>0.1772</b>	

Normal stock items in bold type

## Load data

PART NO.	Effective surface area (SQ. CM)	Max. Static Load (kg)		
		GOLD	F & J	
FMT 06	1.3	278	139	<b>Max PV (m/min.kg/sq.cm)</b> Frelon Gold 430 F&J 215
FMT 08	1.9	404	202	
FMT 10	2.6	546	273	<b>Max Speed m/min (dry)</b> Frelon Gold 91.4 F&J 42.6
FMT 12	3.4	706	353	
FMT 14	3.9	824	412	<b>Max Speed m/min (lubed)</b> Frelon Gold 251.5 F&J 122
FMT 16	4.8	1008	504	
FMT 20	6	1260	630	
FMT 25	10	2100	1050	
FMT 30	15	3150	1575	
FMT 40	24	5040	2520	
FMT 50	35	7350	3675	

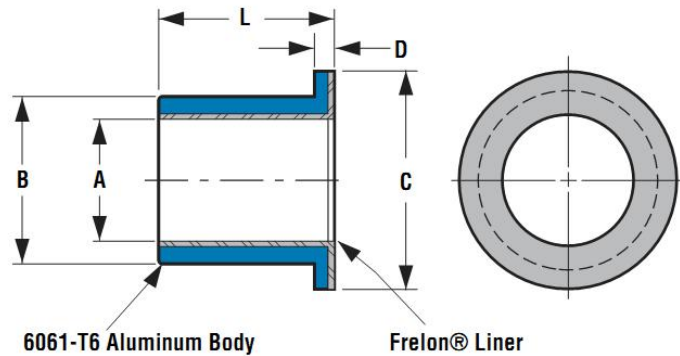


1kg = 9.8N



**simplicity™**

## ISO metric sleeve bearings



6061-T6 Aluminum Body

Frelon® Liner

Part Number	Nominal Bearing size			A Bearing I.D.		B OD		C Flange OD	D Flange Width	L Length		Max Static Load (kg)		Bearing Weight	Recommended Housing Bore			
	ID	OD	Length	Min	Max	Min	Max	Max	Max	Min	Max	Gold	F & J	kg	Slip fit and epoxy		Press Fit	
PSFM0610-06	6	10	6	6.028	6.058	10.023	10.038	14	2	5.75	6	76	38	0.00126	10.038	10.063	10.000	10.015
PSFM0610-10	6	10	10	6.028	6.058	10.023	10.038	14	2	9.75	10	126	63	0.00182	10.038	10.063	10.000	10.015
PSFM0812-06	8	12	6	8.033	8.066	12.028	12.046	16	2	5.75	6	100	50	0.00153	12.046	12.071	12.000	12.018
PSFM0812-08	8	12	8	8.033	8.066	12.028	12.046	16	2	7.75	8	134	67	0.00189	12.046	12.071	12.000	12.018
PSFM0812-12	8	12	12	8.033	8.066	12.028	12.046	16	2	11.75	12	202	101	0.00259	12.046	12.071	12.000	12.018
PSFM1016-08	10	16	8	10.033	10.066	16.028	16.046	22	3	7.75	8	168	84	0.00421	16.046	16.071	16.000	16.018
PSFM1016-10	10	16	10	10.033	10.066	16.028	16.046	22	3	9.75	10	210	105	0.00489	16.046	16.071	16.000	16.018
<b>PSFM 1016-16</b>	<b>10</b>	<b>16</b>	<b>16</b>	<b>10.033</b>	<b>10.066</b>	<b>16.028</b>	<b>16.046</b>	<b>22</b>	<b>3</b>	<b>15.75</b>	<b>16</b>	<b>336</b>	<b>168</b>	<b>0.00694</b>	<b>16.046</b>	<b>16.071</b>	<b>16.000</b>	<b>16.018</b>
PSFM1218-08	12	18	8	12.034	12.07	18.028	18.046	24	3	7.75	8	202	101	0.00478	18.046	18.071	18.000	18.018
<b>PSFM 1218-12</b>	<b>12</b>	<b>18</b>	<b>12</b>	<b>12.034</b>	<b>12.07</b>	<b>18.028</b>	<b>18.046</b>	<b>24</b>	<b>3</b>	<b>11.75</b>	<b>12</b>	<b>302</b>	<b>151</b>	<b>0.00636</b>	<b>18.046</b>	<b>18.071</b>	<b>18.000</b>	<b>18.018</b>
PSFM1519-16	15	19	16	15.034	15.07	19.028	19.046	25	3	15.5	16	504	252	0.00647	19.046	19.071	19.000	19.018
<b>PSFM 1620-16</b>	<b>16</b>	<b>20</b>	<b>16</b>	<b>16.041</b>	<b>16.08</b>	<b>20.035</b>	<b>20.056</b>	<b>27</b>	<b>3</b>	<b>15.5</b>	<b>16</b>	<b>538</b>	<b>269</b>	<b>0.00718</b>	<b>20.056</b>	<b>20.081</b>	<b>20.000</b>	<b>20.021</b>
PSFM1620-20	16	20	20	16.041	16.08	20.035	20.056	27	3	19.5	20	672	336	0.00844	20.056	20.081	20.000	20.021
<b>PSFM 1620-25</b>	<b>16</b>	<b>20</b>	<b>25</b>	<b>16.041</b>	<b>16.08</b>	<b>20.035</b>	<b>20.056</b>	<b>27</b>	<b>3</b>	<b>24.5</b>	<b>25</b>	<b>840</b>	<b>420</b>	<b>0.01002</b>	<b>20.056</b>	<b>20.081</b>	<b>20.000</b>	<b>20.021</b>
PSFM2026-20	20	26	20	20.042	20.084	26.035	26.056	32	3	19.5	20	840	420	0.01432	26.056	26.081	26.000	26.021
<b>PSFM 2026-30</b>	<b>20</b>	<b>26</b>	<b>30</b>	<b>20.042</b>	<b>20.084</b>	<b>26.035</b>	<b>26.056</b>	<b>32</b>	<b>3</b>	<b>29.5</b>	<b>30</b>	<b>1260</b>	<b>630</b>	<b>0.02035</b>	<b>26.056</b>	<b>26.081</b>	<b>26.000</b>	<b>26.021</b>
PSFM2530-20	25	30	20	25.042	25.084	30.035	30.056	39	3.5	19.5	20	1050	525	0.01672	30.056	30.081	30.000	30.021
PSFM2530-25	25	30	25	25.042	25.084	30.035	30.056	39	3.5	24.5	25	1312	656	0.01973	30.056	30.081	30.000	30.021
<b>PSFM 2530-32</b>	<b>25</b>	<b>30</b>	<b>32</b>	<b>25.042</b>	<b>25.084</b>	<b>30.035</b>	<b>30.056</b>	<b>39</b>	<b>3.5</b>	<b>31.5</b>	<b>32</b>	<b>1680</b>	<b>840</b>	<b>0.02394</b>	<b>30.056</b>	<b>30.081</b>	<b>30.000</b>	<b>30.021</b>
PSFM3038-30	30	38	30	30.05	30.096	38.043	38.068	46	4	29.5	30	1890	945	0.04145	38.068	38.093	38.000	38.021
PSFM3545-35	35	45	35	35.052	35.102	45.043	45.068	55	5	34.5	35	2572	1286	0.07192	45.068	45.093	45.000	45.025
PSFM4050-40	40	50	40	40.052	40.102	50.043	50.068	60	5	39.5	40	3360	1680	0.09044	50.068	50.093	50.000	50.025
PSFM5060-50	50	60	50	50.062	50.133	60.053	60.099	70	5	49.5	50	5250	2625	0.13429	60.099	60.124	60.000	60.030

Normal stock items in bold type

$$1\text{kg} = 9.8\text{N}$$

The bushes can be freely machined if a reduced lengths or flangeless bushing is required.

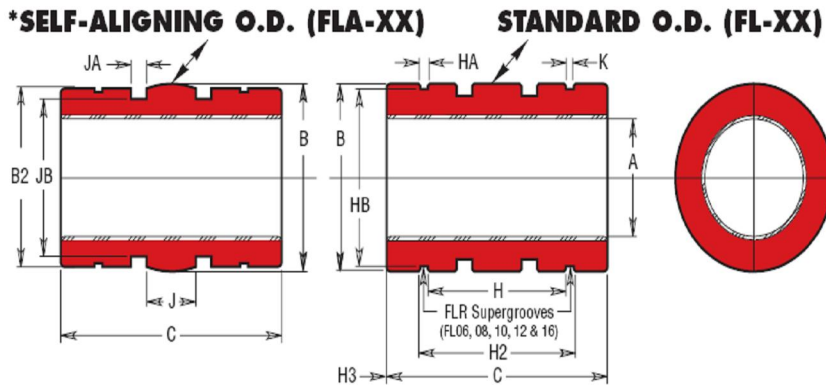
## Installation instructions

**Slip fit:** Slip the bearing sleeve into the housing and epoxy into place with Loctite™ or similar type bonding agent. CAUTION: Do NOT let any of the adhesive touch the bearing liner. It will harden and interfere with the running clearance.

**Press fit:** Freeze the bearings at 0°F (-17.75°C) for 30-45 minutes. Using gloves, remove the bearings from the freezer and slip them into the housing. As they heat to room temperature, full contact between the bearing and housing will be achieved. The greatest advantage to this technique over traditional pressing is greater accuracy in alignment.



## Imperial Sizes



PRECISION I.D. SERIES Similar to preloaded ball bearing				COMPENSATED I.D. SERIES Allows additional running clearance				Standard		SELF-ALIGNING FLA		C		Concentric	Bearing Weight	
Part No.		Nominal Size	A Bearing I.D.		Part No.		A Bearing I.D.		B O.D.		B2 O.D.		Length		Max.	(LBS.)
Closed	Open	Inches	Min.	Max.	Closed	Open	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
FL 03	N / A	3/16 "	0.1877	0.1884	<b>FLC 03</b>	<b>FLCN 03</b>	0.1897	0.1904	0.374	0.375	0.3725	0.3735	0.547	0.562	0.001	0.003
FL 04	FLN 04	1/4 "	0.2502	0.2511	FLC 04	FLCN 04	0.2522	0.2531	0.499	0.5	0.4975	0.4985	0.735	0.75	0.001	0.009
FL 06	FLN 06	3/8 "	0.3752	0.3761	FLC 06	FLCN 06	0.3772	0.3781	0.624	0.625	0.6225	0.6235	0.86	0.875	0.001	0.016
<b>FL 08</b>	<b>FLN 08</b>	<b>1/2 "</b>	<b>0.5002</b>	<b>0.5013</b>	FLC 08	FLCN 08	0.5022	0.5033	0.874	0.875	0.8725	0.8735	1.235	1.25	0.001	0.041
<b>FL 10</b>	<b>FLN 10</b>	<b>5/8 "</b>	<b>0.6252</b>	<b>0.6263</b>	FLC 10	FLCN 10	0.6272	0.6283	1.124	1.125	1.1225	1.1235	1.485	1.5	0.001	0.091
<b>FL 12</b>	<b>FLN 12</b>	<b>3/4 "</b>	<b>0.7503</b>	<b>0.7516</b>	FLC 12	FLCN 12	0.7533	0.7546	1.249	1.25	1.2475	1.2485	1.61	1.625	0.001	0.109
<b>FL 16</b>	<b>FLN 16</b>	<b>1 "</b>	<b>1.0003</b>	<b>1.0016</b>	FLC 16	FLCN 16	1.0033	1.0046	1.5613	1.5625	1.5599	1.5609	2.235	2.25	0.001	0.228
FL 20	FLN 20	1-1/4 "	1.2504	1.2519	FLC 20	FLCN 20	1.2544	1.2559	1.9988	2	1.9974	1.9984	2.605	2.625	0.001	0.459
FL 24	FLN 24	1-1/2 "	1.5004	1.5019	FLC 24	FLCN 24	1.5044	1.5059	2.3738	2.375	2.3724	2.3734	2.98	3	0.001	0.725
FL 32	FLN 32	2 "	2.0004	2.0022	FLC 32	FLCN 32	2.0054	2.0072	2.9986	3	2.9614	2.9586	3.98	4	0.001	1.442
FL 40	FLN 40	2-1/2 "	2.5004	2.5022	FLC 40	FLCN 40	2.5054	2.5072	3.7484	3.75	3.7472	3.7482	4.975	5	0.0013	2.816
FL 48	FLN 48	3 "	3.0004	3.0022	FLC 48	FLCN 48	3.0064	3.0082	4.498	4.5	4.497	4.498	5.97	6	0.0015	4.914
FL 64	FLN 64	4 "	4.0005	4.0026	FLC 64	FLCN 64	4.0065	4.0086	5.998	6	5.997	5.998	7.96	8	0.002	11.836

Normal stock items in bold type. All dimensions in inches. 1lb = 0.4535kg, 1 lbf = 4.448N

## Load data

PART NO.	Effective surface area (SQ. IN.)	Max. Static Load (lbs)		
		GOLD	F & J	
FL 03	0.11	220	100	<b>Max PV (ft/min.psi)</b> Frelon Gold 20000 F&J 10000
FL 04	0.2	600	300	
FL 06	0.34	1020	510	
FL 08	0.65	1950	975	
FL 10	0.98	2940	1470	<b>Max Speed ft/min (dry)</b> Frelon Gold 300 F&J 140
FL 12	1.27	3810	1905	
FL 16	2.35	7050	3525	<b>Max Speed ft/min (lubed)</b> Frelon Gold 825 F&J 400
FL 20	3.43	10830	5415	
FL 24	4.7	14100	7050	
FL 32	8.35	25050	12525	
FL 40	13	39000	19500	
FL 48	18.8	56400	28200	
FL 64	33.5	100500	50250	





**simplicity™**

**Other Product Offerings from Pacific Bearings**

**Flanged Bushes**

*Equivalent to LMK and LMF series ball bush*

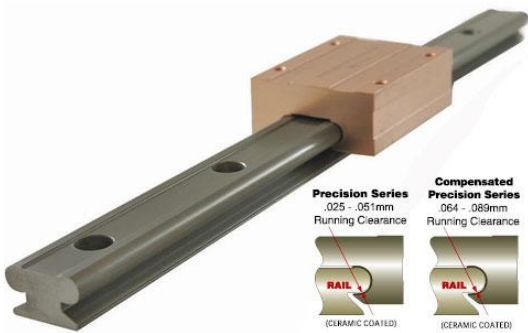


**Die set bushes PAC series**

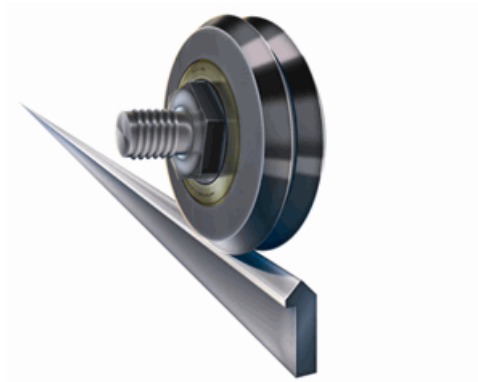


**Mini Rail**

*Equivalent to miniature profile rail*



**V-rail/Dual Vee**



**Belt and Ball screw Actuators**



**Heavy Rail Combined Bearings**

