Technical Note

Tolerances - Customer Solid Shaft

All SEW-Eurodrive hollowshafts are machined to the dimensional tolerances that are shown in the SEW catalog. An appropriate tolerance for the customer's keyed solid shaft is shown in the tables below. These tolerances are based upon a Load Class that is determined from the inertias of the load, motor, and Z-fan (if present) as follows:

Calculate J_{ratio} :

$$J_{ratio} = \frac{\text{Load Inertia}}{\text{Motor + Z-Fan Inertia}} = \frac{J_X}{J_m + J_z},$$

Determine Load Class:

J_{ratio}	Load Class	Description
$0 < J_{ratio} \leq 0.2$	I	Uniform load
$0.2 < J_{ratio} \leq 3.0$	II	Moderate shock load
$3.0 < J_{ratio} \leq 10$	III	Heavy shock load

Determine Tolerance:

Inch Solid Shaft			
Shaft Dia.	Load Class		
	I	II	III
0.75" to 0.875"	+.0005 -.0006	+.0009 -.0003	+.0011 -0
1.0" to 1.938"	+0 -.0011	+.0004 -.0007	+.0007 -.0004
2.0" to 2.938"	+0 -.0009	+.0005 -.0005	+.0008 -.0001
3.0" to 4.50"	+0 -.0012	+.0005 -.0007	+.0010 -.0003

Metric Solid Shaft			
Shaft Dia.	Load Class		
	I	II	III
18mm	+0 -.011	+.008 -.003	+.0011 -0
20 to 30mm	+0 -.013	+.009 -.004	+.015 +.002
35 to 50mm	+0 -.016	+.011 -.005	+.018 +.002
60 to 80mm	+0 -.019	+.012 -.007	+.021 +.002
90 to 120mm	+0 -.022	+.013 -.009	+.025 +.003

For more information on inertia, refer to Technical Note **GM-039**, Designing for Inertia.