

WS Series Right-angle Gearboxes

FEATURES

- Torque capacity: 1.25~42kgf*m (12.2Nm~411Nm)
- Backlash free (as low as 1 arc-min)
- Spiral Bevel gearing in output stages enabling backlash value adjustable via certain tools¹
- Hollow output shaft design for various applications
- 5 mounting surfaces for flexible installations
- 6 standard sizes with a wide range of ratios
- Adjustable backlash and suitable for low load and intermitted motion



TYPICAL APPLICATIONS



All 6 sizes are available with solid output shaft. However, for the 5 larger gearheads, the WS-F baseline standard is “Hollow”, y-axis, output shaft. Other options are available as below:

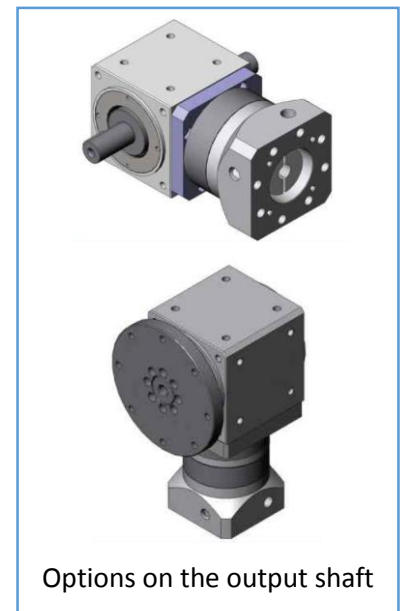
- Double “solid shaft” (y-axis) extensions
- Output shafts in both y and z axes.
- “Stand-alone” gearboxes (Type WS-DS) with solid shaft input and hollow or solid shaft output.
- Gearboxes with a rotating faceplate instead of a shaft.

Application Notes: -

Output Y- axis is mounted on angular contact ball bearings. Very quiet and smooth power transmission. The customer’s solid output shaft should completely occupy the length of the “hollow” Y- axis.

Radial load caused deflection of the customer’s solid output shaft (installed in the hollow bore, from the face of the coupling, along the theoretical centerline of the shaft) should not exceed 0.5 degree.

Eccentricity of the customer’s solid output shaft installed in the hollow bore should not exceed 0.03 mm T.I.R.



¹ This can be done by recommended tools and suggested procedures. The information will be provided, upon request, to adjust backlash or tightness at user’s own risk.

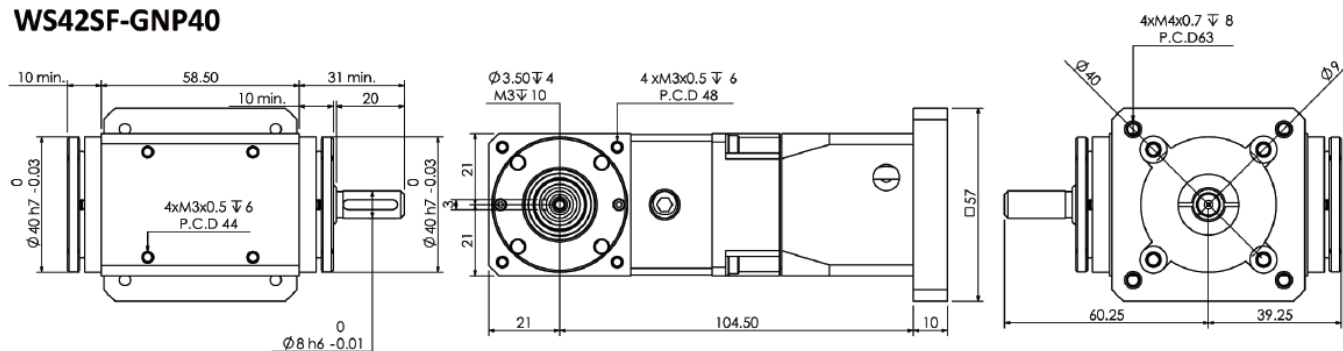
TECHNICAL SPECIFICATIONS

WS gearbox Model ^{(1) (3)}		WS42SF ⁽²⁾		WS70F		WS90F		WS120F		WS150F		WS180F	
includes In-Line input type		- GNP40		- GNP60		- GNP90		- GNP120		- GNP120		- GNP150	
Nominal Output Torque	Lb-in	51.3		130		243		503		1154		1735	
	Nm	5.8		14.7		27.5		56.8		130		196	
Max Acceleration Torque	Lb-in /Nm	3 Times Nominal Output Torque											
Emergency Stop Torque	Lb-in /Nm	3.4 times Nominal Output Torque- Maximum of 1000 times during life of gearhead.											
Max input /output Speed	rpm	1500 / 1500		3000 / 600		3000 / 500		3000 / 400		3000 / 400		3000 / 250	
Gear ratio ^{(2) (4)}	L	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2
Standard Backlash (max) ⁽⁵⁾	Arc- mins	6	8	3	5	3	5	3	5	3	5	3	5
Reduced Backlash (max) ⁽⁵⁾	Arc- mins	-	-	1	3	1	3	1	3	1	3	1	3
Max. radial load ⁽⁶⁾	Lbf/ N	55 / 245		190 / 843		309 / 1373		551 / 2452		772 / 3432		1213 / 5394	
Max. axial force	Lbf/ N	27 / 122		94 / 422		154 / 686		275 / 1226		386 / 1716		605 / 2697	
Allowable input Shaft Diameter	mm	5~9		6.35~14		11~24		19~35		19~35		20~38	
Rated life	H	> 10,000 - at permissible input speed and Nominal Output Torque											
Operating Temperature	°C	-10°C to +40°C ambient -- 90°C max operating case temperature											
Noise level	dB(A)	62	62	65	65	65	65	65	65	70	65	70	65
Mounting Pos & Lubrication	All Positions -- Lubricated for life (synthetic grease)												
Direction of rotation	Motor and gearhead shaft opposite directions												
Protection class	IP54												
Gearhead Inertia	kg-cm ²	0.049	0.049	0.127	0.127	1.247	1.247	1.247	1.247	2.274	1.247	1.019	2.274
Efficiency at full load	%	85 % for 1 stage and 80 % for 2 stage											
Weight	Kg	1	1.1	2.2	2.5	5.7	6.8	12.5	14.8	17	18.3	52.1	52.8
No-load running torque	Lb-in	1	1	3	3	5	5	18	18	18	18	18	18
	Nm	0.1	0.1	0.3	0.3	0.5	0.5	2	2	2	2	2	2

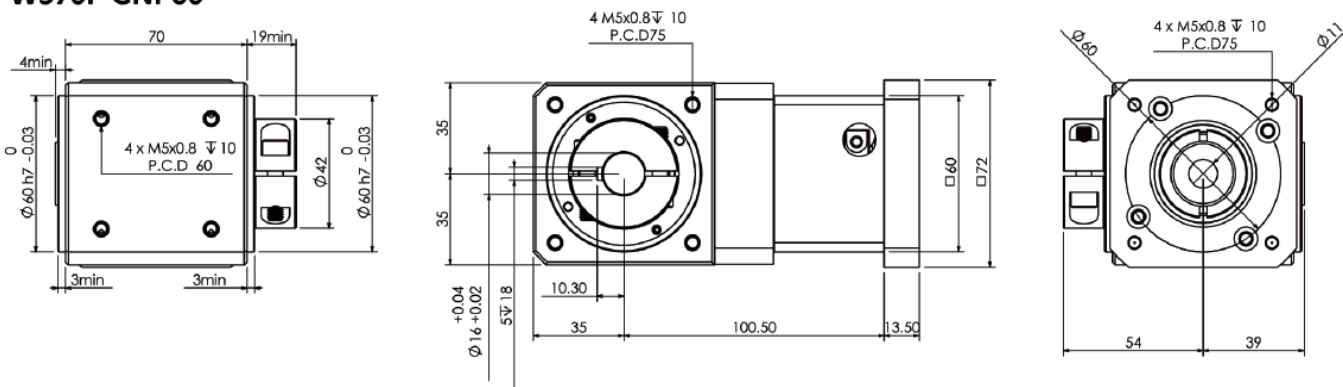
- 1) SF suffix indicates solid shaft -- the 42 size is available only with ratio 1 and solid output shaft.
- 2) WS42SF ratios:
L1 (1stage): 4, 5, 7, 10;
L2 (2stage): 12, 15, 16, 20, 21, 25, 28, 30, 35, 40, 49, 50, 70
- 3) F suffix indicates Hollow shaft is standard. However, "solid output shaft" and "double output shafts" are regular options.
- 4) WS 70 to WS150 ratios:
L1 (1 stage): ratio available 6, 8, 10, 14, 20;
L2 (2 stage): ratio available 18, 24, 30, 32, 40, 42, 50, 56, 60, 70, 80, 98, 100, 140, 200.
Please contact us for any ratio not shown.
- 5) At 3 % of rated load
- 6) At a distance of one-half of one coupling length -- from end of the coupling

MECHANICAL DIMENSIONS

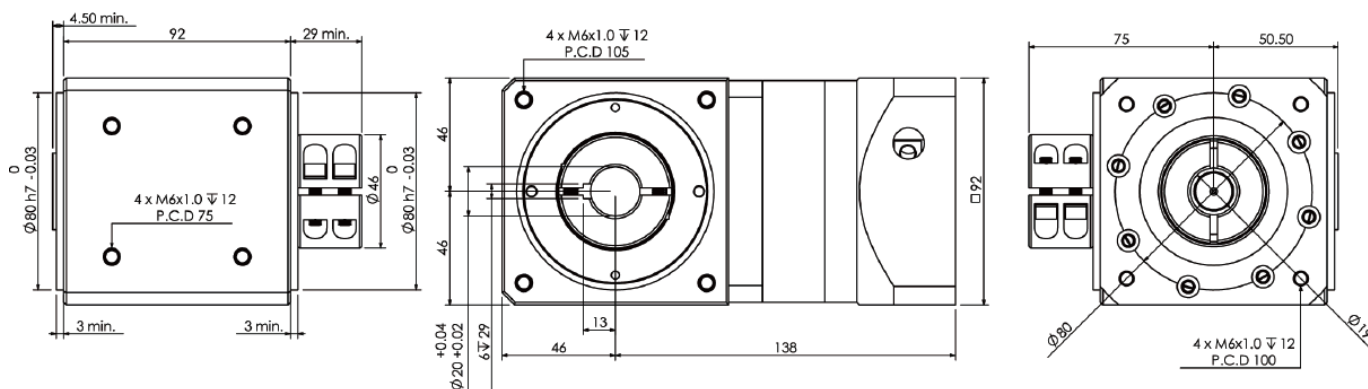
WS42SF-GNP40



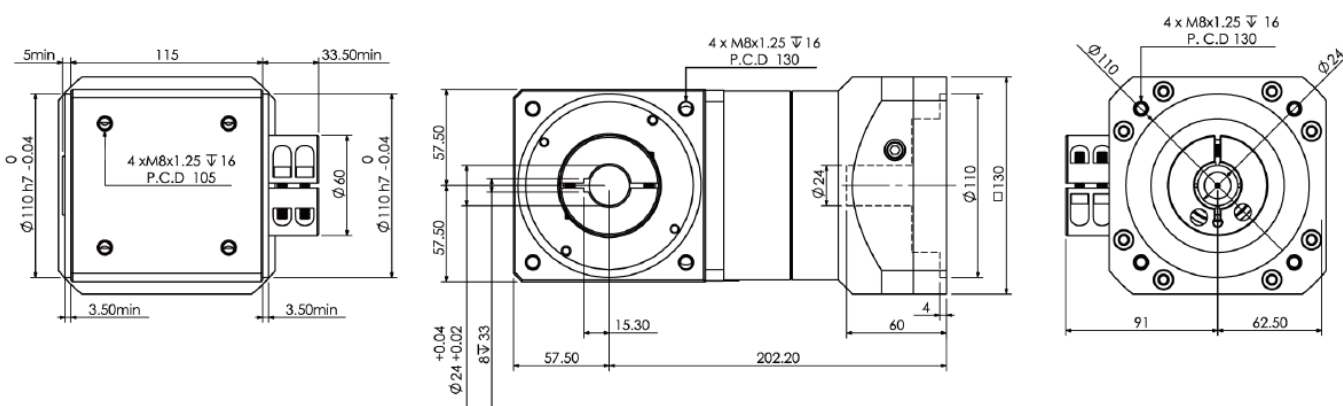
WS70F-GNP60



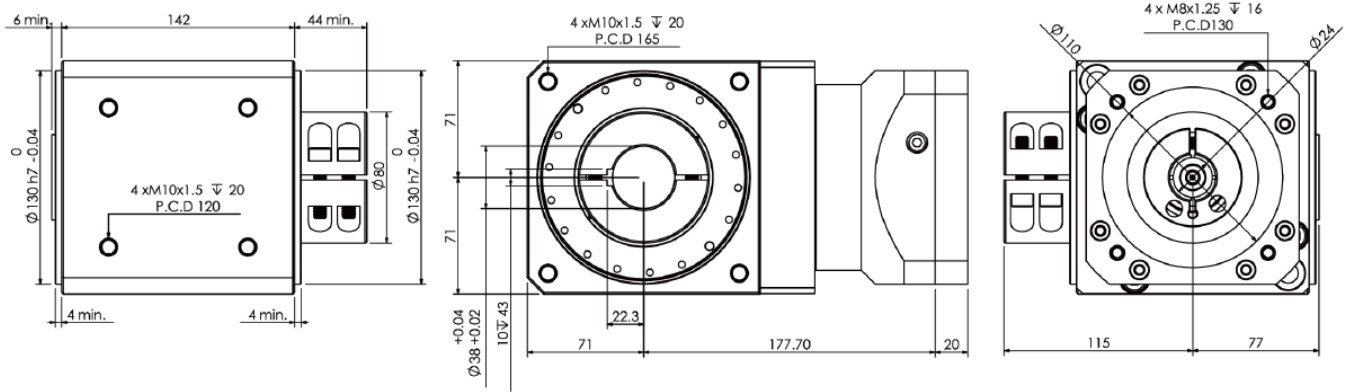
WS90F-GNP90



WS120F-GNP120



WS150F- GNP120



WS180F- GNP150

