WGN

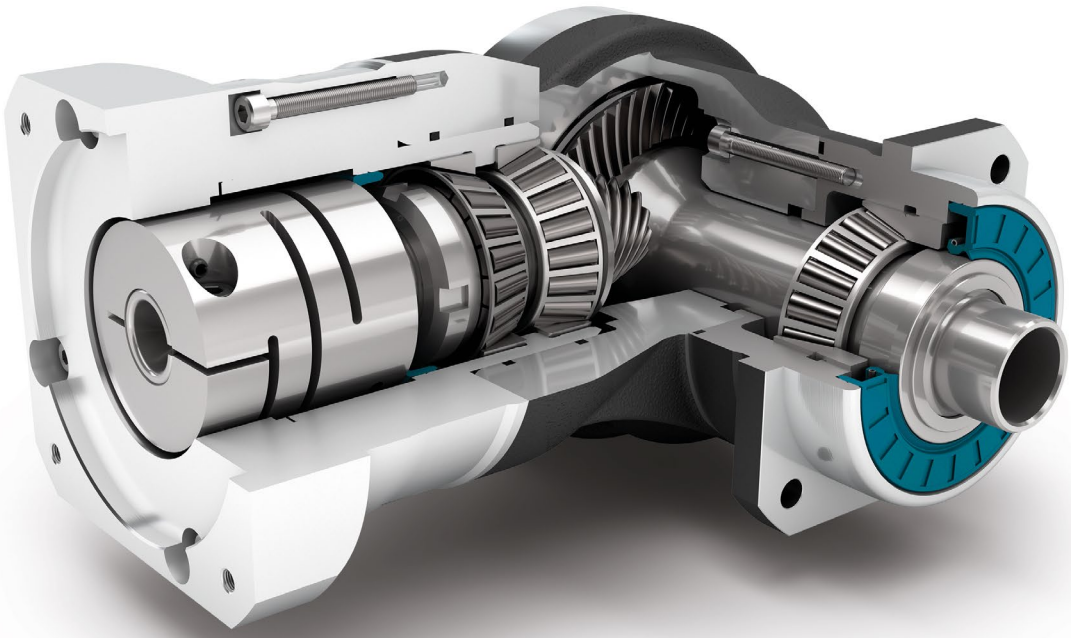
The spiral right angle gearbox with hollow shaft – low noise levels and force-fit installation

Our **WGN** is a hollow-shaft right angle gearbox that operates with particularly low noise levels. At the same time, the spiral teeth increase the quality of your workpiece surfaces. It can be connected directly to the application via a shrink disc, a simple and reliable solution that offers you new design possibilities.

Nominal output torque	**22 - 320 Nm**
Radial force	**2700 - 10000 N**
Axial force	**4300 - 14500 N**
Torsional backlash	**5 arcmin**
Protection class	**IP65**

Frame sizes

70 **90** **115** **142**



Precision Line

Right angle gearbox

Hypoid gear right angle stage

Preloaded tapered roller bearings

Extra long centering collar

Counterdirectional rotation

Square type output flange

Rotary shaft seal

Hollow shaft for clamping system with shrink disc

Detailed explanations of the technical features starting on page 169.

Code	Gearbox characteristics			WGN070	WGN090	WGN115	WGN142	p(1)
	Service life (L_{10h})	t_L	h	20,000				
	Service life at T_{2N} x 0,88			30,000				
	Efficiency at full load(2)	η	%	95				
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)				
	Max. operating temperature	T_{max}		90 (194)				
	Protection class			IP65				
S	Standard lubrication			Oil (lifetime lubrication)				
F	Food grade lubrication			Oil (lifetime lubrication)				
	Installation position			Any				
S	Standard backlash	j_t	arcmin	< 5				
R	Reduced backlash			-				
	Torsional stiffness(2)	c_g	Nm /arcmin (lb$_f$.in/ arcmin)	1.6 - 2.2 (14 - 19)	4.2 - 5.7 (37 - 50)	9.2 - 12.4 (81 - 110)	23.5 - 31.5 (208 - 279)	
	Gearbox weight(2)	m_G	kg (lb$_m$)	3.2 - 3.3 (7.1 - 7.2)	5.1 - 5.6 (11.3 - 12.3)	10.9 (24.0)	23.3 - 23.8 (51.3 - 52.5)	
S	Standard surface			Right angle housing: Aluminum – anodized (black)				
	Running noise(3)	Q_g	dB(A)	66	67	68	70	
	Max. bending moment based on the gearbox input flange(4)	M_b	Nm (lb$_f$.in)	12 (106)	25.5 (226)	53 (469)	120 (1062)	

Output shaft loads			WGN070	WGN090	WGN115	WGN142	p(1)
Radial force for 20,000 h(5)(6)	$F_{r\,20.000\,h}$	N (lb$_f$)	2700 (607)	4000 (899)	6500 (1461)	10000 (2248)	
Axial force for 20,000 h(5)(6)	$F_{a\,20.000\,h}$		4300 (967)	5900 (1326)	7000 (1574)	14500 (3260)	
Radial force for 30,000 h(5)(6)	$F_{r\,30.000\,h}$		2700 (607)	4000 (899)	6500 (1461)	10000 (2248)	
Axial force for 30,000 h(5)(6)	$F_{a\,30.000\,h}$		3700 (832)	5200 (1169)	6100 (1371)	12000 (2698)	
Maximum radial force(6)(7)	$F_{r\,Stat}$		2700 (607)	4000 (899)	6500 (1461)	10000 (2248)	
Maximum axial force(6)(7)	$F_{a\,Stat}$		4300 (967)	5900 (1326)	7000 (1574)	14500 (3260)	
Tilting moment for 20,000 h(5)(7)	$M_{K\,20.000\,h}$	Nm (lb$_f$.in)	252 (2230)	442 (3912)	970 (8585)	1505 (13320)	
Tilting moment for 30,000 h(5)(7)	$M_{K\,30.000\,h}$		252 (2230)	442 (3912)	970 (8585)	1505 (13320)	

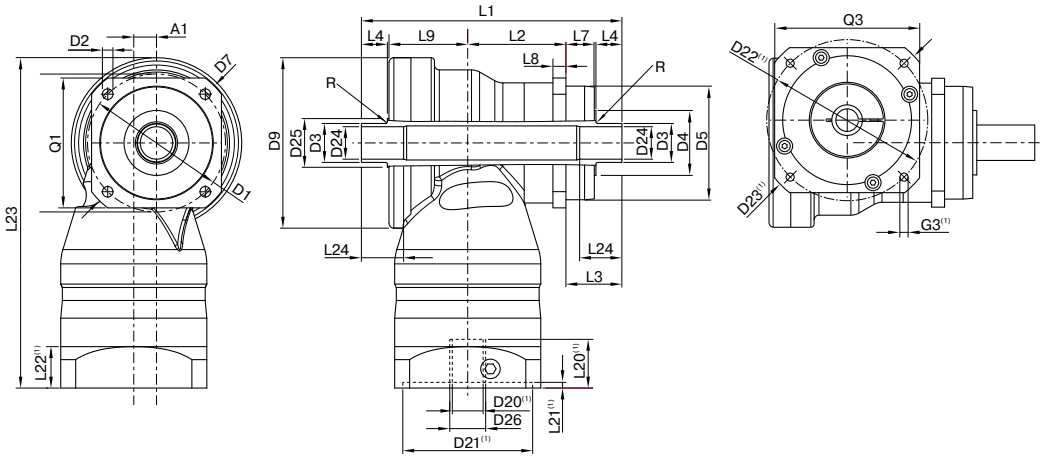
Moment of inertia			WGN070	WGN090	WGN115	WGN142	p(1)
Mass moment of inertia(2)	J	kgcm^2 (lb$_f$.in.s^{2}10^{-4})	0.502 - 0.834 (4.443 - 7.382)	1.018 - 1.417 (9.010 - 12.542)	4.805 - 6.111 (42.528 - 54.087)	12.934 - 18.905 (114.476 - 167.323)	

(1) Number of stages
(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(3) Sound pressure level from 1 m, measured on input running at n_1=3000 rpm no load; i=5
(4) Max. motor weight* in kg = 0.2 x M_b / motor length in m
* with symmetrically distributed motor weight
* with horizontal and stationary mounting
(5) These values are based on an output shaft speed of n_2=100 rpm
(6) Based on center of output shaft
(7) Other (sometimes higher) values following changes to T_{2N}, F_r, F_a, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

Output torques			WGN070	WGN090	WGN115	WGN142	i[1]	p[2]
Nominal output torque[3]	T_{2N}	Nm (lb_f.in)	45 (398)	70 (620)	140 (1239)	320 (2832)	4	1
			42 (372)	70 (620)	140 (1239)	280 (2478)	5	
			28 (248)	51 (451)	91 (805)	189 (1673)	7	
			27 (239)	50 (443)	90 (797)	180 (1593)	8	
			22 (195)	40 (354)	75 (664)	160 (1416)	10	
Max. output torque[4]	T_{2max}	Nm (lb_f.in)	72 (637)	112 (991)	224 (1983)	512 (4532)	4	
			67 (593)	112 (991)	224 (1983)	448 (3965)	5	
			45 (398)	82 (726)	145 (1283)	302 (2673)	7	
			43 (381)	80 (708)	144 (1275)	288 (2549)	8	
			35 (310)	64 (566)	120 (1062)	256 (2266)	10	
Emergency stop torque[5]	T_{2Stop}	Nm (lb_f.in)	100 (885)	200 (1770)	400 (3540)	800 (7081)	4	
			100 (885)	200 (1770)	400 (3540)	800 (7081)	5	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	7	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	8	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	10	

Input speeds			WGN070	WGN090	WGN115	WGN142	i[1]	p[2]
Average thermal input speed at T_{2N} and S1[4][5]	n_{1N}	rpm	1750[6]	1700[6]	1150[6]	950[6]	4	1
			1900[6]	1850[6]	1200[6]	1000[6]	5	
			2250[6]	2200[6]	1400[6]	1200[6]	7	
			2300[6]	2200[6]	1400[6]	1200[6]	8	
			2400[6]	2350[6]	1500[6]	1300[6]	10	
Max. mechanical input speed[4]	n_{1Limit}	rpm	16000	14000	9500	8000		

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) 30,000 rotations of the output shaft permitted; see page 158
(5) Permitted 1000 times
(6) Application-specific speed configurations with NCP – www.neugart.com
(7) See page 158 for the definition
(8) Average thermal input speed at 50% T_{2N} and S1



Drawing corresponds to a WGN090 / 1-stage / hollow output shaft on both sides / 19 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

(1) The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at www.neugart.com

Geometry(2)			**WGN070**	**WGN090**	**WGN115**	**WGN142**	**p**(3)	**Code**
Axis offset	A1		10 (0.394)	14 (0.551)	20 (0.787)	26 (1.024)	1	
Pitch circle diameter output	D1		68 - 75 (2.677 - 2.953)	85 (3.346)	120 (4.724)	165 (6.496)		
Mounting bore output	D2	4x	5.5 (0.217)	6.5 (0.256)	9.0 (0.354)	11.0 (0.433)		
Shaft diameter output	D3	h8	18 (0.709)	24 (0.945)	36 (1.417)	50 (1.969)		
Shaft collar output	D4		30 (1.181)	34 (1.339)	45 (1.772)	70 (2.756)		
Centering diameter output	D5	g7	60 (2.362)	70 (2.756)	90 (3.543)	130 (5.118)		
Diagonal dimension output	D7		92 (3.622)	100 (3.937)	140 (5.512)	185 (7.283)		
Max. diameter	D9		86 (3.386)	105 (4.134)	120 (4.724)	170 (6.693)		
Flange cross section output	Q1	■	70 (2.756)	80 (3.150)	110 (4.331)	142 (5.591)		
Housing length	L2		46.5 (1.831)	60.5 (2.382)	73.5 (2.894)	76 (2.992)		
Shaft length output	L3		33 (1.299)	34.5 (1.358)	48 (1.890)	54 (2.126)		
Centering depth output	L7		18 (0.709)	17.5 (0.689)	27 (1.063)	28 (1.102)		
Flange thickness output	L8		7 (0.276)	8 (0.315)	10 (0.394)	12 (0.472)		
Offset length	L9		43 (1.693)	48.5 (1.909)	56.5 (2.224)	87 (3.425)		
Min. overall height	L23		179 (7.047)	203.5 (8.012)	247.5 (9.744)	318 (12.520)		
Max. radius	R		1.5 (0.059)					
Motor shaft diameter j6/k6	D20		More information on page 155/156					
Clamping system diameter input	D26							
Hollow output shaft on one side								F
Hollow shaft diameter	D24	H6	15 (0.591)	20 (0.787)	30 (1.181)	40 (1.575)		
Total length	L1		122.5 (4.823)	143.5 (5.650)	178 (7.008)	217 (8.543)		
Shaft length from shoulder	L4		14 (0.551)	16 (0.630)	20 (0.787)	25 (0.984)		
Min. fit length	L24		20 (0.787)	25 (0.984)	30 (1.181)	35 (1.378)		
Hollow output shaft on both sides								G
Hollow shaft diameter	D24	H6	15 (0.591)	20 (0.787)	30 (1.181)	40 (1.575)		
Shaft collar	D25		25 (0.984)	30 (1.181)	42 (1.654)	55 (2.165)		
Total length	L1		137.5 (5.413)	160.5 (6.319)	199 (7.835)	243 (9.567)		
Shaft length from shoulder	L4		14 (0.551)	16 (0.630)	20 (0.787)	25 (0.984)		
Min. fit length	L24		20 (0.787)	25 (0.984)	30 (1.181)	35 (1.378)		

(2) Dimensions in mm
(3) Number of stages