

## WDG Nut Series

An economical anti-backlash nut assembly that provides precise positional accuracy and repeatability.

The WDG Series anti-backlash assembly utilizes an exceptionally compact design to provide stiffness and balanced accuracy for precise positioning. The unique wedge design locks the nut at the correct preload without excessive drag.

Shorter than other self-compensating nuts with similar performance, the WDG nut permits the design of smaller assemblies without sacrificing stroke length. Nut wear or momentary overload is accommodated through the WDG Series' compensation mechanism, which maintains positional accuracy in demanding applications.

### ■ Highlights

- Compact Size, Moderate Load
- Cost Effective

### ■ Grease Compatibility

Coatings	Compatible
Kerkote® TFE Coating	YES
Black Ice® TFE Coating	YES
Grease	NO

### ■ Anti-Backlash Life

Without Kerkote® TFE Coating inch / (cm)	With Kerkote® TFE Coating inch / (cm)
100 to 125 million (250 to 315 million)	200 to 250 million (500 to 635 million)

Anti-backlash life is defined as the nut's ability to compensate for wear while maintaining its zero backlash properties. Above life data is based on 25% of the dynamic load rating. Life will vary with loading, operating environment, and duty cycle. The longer screw leads generally provide longer life.



WDG Series Nut Assembly

### ■ Technical Data

Material	Polyacetal, Lubricant Additive
Tensile Strength	9,700 psi
Coefficient of Expansion	6.0 x 10 <sup>-5</sup> in/in/°F
Coefficient of Friction Polyacetal Nut to Screw	Static = .08 .08 ** Dynamic = .15 .09 **
Standard Operating Temperature Range	32 - 200° F* (0 - 93° C)*

\* Very high or low temperatures may cause significant changes in the nut fit or drag torque. Please call the HKP Engineering Team at 603 213 6290 for optional temperature range materials.

\*\* with Kerkote® TFE Coating.

### ■ Identifying the WDG Series Nut Part Number Codes when Ordering

WDG	A	K	R	018	0039	XXXX
Prefix	Nut Mounting Style	Lubrication	Thread Direction	Diameter Code	Nominal Thread Lead Code	Unique Identifier
WDG	A = Flanged (Triangular) P = Flange (Triangular with pilot) T = Threaded Micro Series X = Custom	S = Uncoated K = Kerkote® TFE Coating N = Nut only B = Black Ice® TFE Coating	R = Right hand L = Left hand (Refer to leadscrew charts for availability)	018 = .188 in (5 mm) 021 = .219 in (5.6 mm) 025 = .250 in (6 mm) 031 = .313 in (8 mm) 037 = .375 in (10 mm) 043 = .438 in (11 mm) 050 = .500 in (13 mm)	(Refer to LEAD CODE Specifications charts, pages 3 to 5)	Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 603 213 6290.

■ Dimensional Drawings

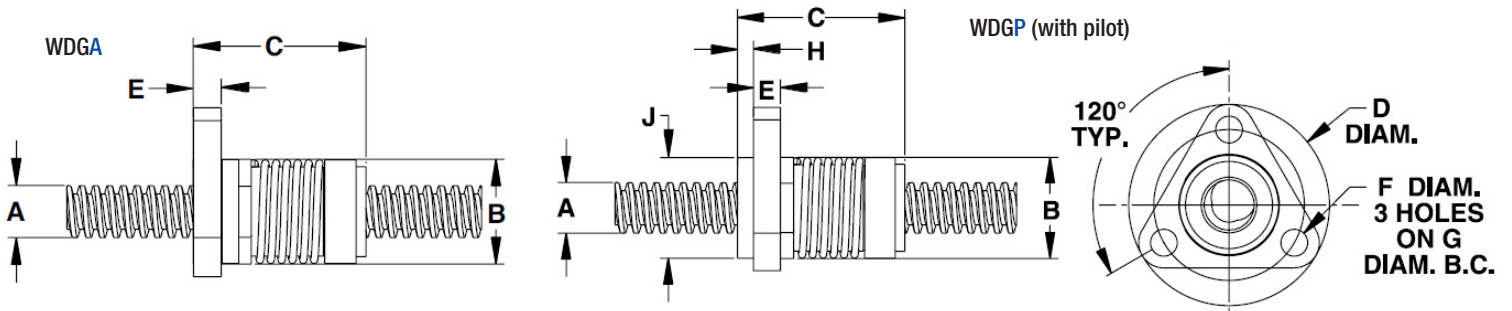
WDG Flange Mount and with pilot

	Screw Diam. A inch (mm)	Nut Diam. B inch (mm)	Nut Length C inch (mm)	Flange Diam. D inch (mm)	Flange Thickness E inch (mm)	Mounting Hole Diam. F inch (mm)	Bolt Circle Diam. G inch (mm)	Hub Length H inch (mm)	Hub Diam. J inch (mm)	Dynamic Load lbs (Kg)	Drag Torque oz-in (N-m)
WDGA Flange Mount & WDGP (with pilot)	3/16 (4)	0.625 (16)	1.05 (26.6)	1.125 (28.6)	0.160 (4.1)	0.143 (3.7)	0.875 (22.2)	0.08 (2.04)	0.625 (15.9)	10 (4.5)	4 (.03)
	7/32 (5)	0.625 (16)	1.05 (26.6)	1.125 (28.6)	0.160 (4.1)	0.143 (3.7)	0.875 (22.2)	0.08 (2.04)	0.625 (15.9)	10 (4.5)	4 (.03)
	1/4 (6)	0.625 (16)	1.05 (26.6)	1.125 (28.6)	0.160 (4.1)	0.143 (3.7)	0.875 (22.2)	0.08 (2.04)	0.625 (15.9)	10 (4.5)	4 (.03)
	5/16 (8)	0.750 (19)	1.32 (33.5)	1.5 (38.1)	0.200 (5.08)	0.200 (5.08)	1.125 (28.6)	0.120 (3.05)	0.750 (19.1)	25 (11.3)	5 (.04)
	3/8 (10)	0.750 (19)	1.32 (33.5)	1.5 (38.1)	0.200 (5.08)	0.200 (5.08)	1.125 (28.6)	0.120 (3.05)	0.750 (19.1)	25 (11.3)	5 (.04)
	7/16 (11)	1.00 (25.4)	2.078 (52.8)	1.750 (44.5)	0.250 (6.35)	0.220 (5.6)	1.406 (35.7)	0.255 (6.48)	1.000 (25.4)	75 (34)	9 (.06)
	1/2 (13)	1.00 (25.4)	2.078 (52.8)	1.750 (44.5)	0.250 (6.35)	0.220 (5.6)	1.406 (35.7)	0.255 (6.48)	1.000 (25.4)	75 (34)	9 (.06)

<sup>1</sup>metric available as required

<sup>2</sup>other spring pre-loads available

Metric numbers are for reference only.



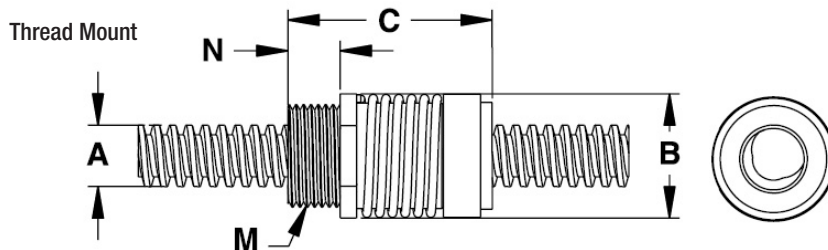
■ WDG Thread Mount

	Screw Diam. A inch (mm)	Nut Diam. B inch (mm)	Nut Length C inch (mm)	Thread M * inch (mm)	Thread Lenth N inch (mm)	Dynamic Load** lbs (Kg)	Drag Torque** oz-in (N-m)
WDGT Thread Mount	3/16 (4)	0.625 (16)	1.05 (26.6)	9/16 - 18	0.240 (6.1)	10 (4.5)	4 (.03)
	7/32 (5)	0.625 (16)	1.05 (26.6)	9/16 - 18	0.240 (6.1)	10 (4.5)	4 (.03)
	1/4 (6)	0.625 (16)	1.05 (26.6)	9/16 - 18	0.240 (6.1)	10 (4.5)	4 (.03)
	5/16 (8)	0.750 (19)	1.32 (33.5)	5/8 - 18	0.320 (8.1)	25 (11.3)	5 (.04)
	3/8 (10)	0.750 (19)	1.32 (33.5)	5/8 - 18	0.320 (8.1)	25 (11.3)	5 (.04)
	7/16 (11)	1.00 (25.4)	2.078 (52.8)	15/16 - 16	0.500 (12.7)	75 (34)	9 (.06)
	1/2 (13)	1.00 (25.4)	2.078 (52.8)	15/16 - 16	0.500 (12.7)	75 (34)	9 (.06)

<sup>1</sup>metric available as required

<sup>2</sup>other spring pre-loads available

Metric numbers are for reference only.



Dimensional Tolerances			
Inches	Metric (mm)		
.X	± .02	< L 4	± 0.1
.XX	± .010	4 < L ≤ 16	± 0.15
.XXX	± .005	16 < L ≤ 63	± 0.2
		63 < L ≤ 250	± 0.3

## WDG Nut Series - General Purpose Anti-Backlash

### ■ Lead Screw Compatibility: WDG Series

Diameter		Diameter Code	Lead		LEAD CODE	Left Hand Available	Outside Diameter (for reference)		Root Diameter (for reference)		Efficiency %*
inches	mm		inches	mm			inches	mm	inches	mm	
<b>3/16</b>	<b>5</b>	<b>018</b>	0.020	0.50	<b>0020</b>		0.188	4.78	0.163	4.14	30
			0.025	0.64	<b>0025</b>		0.188	4.78	0.150	3.81	39
			0.039	1.00	<b>0039</b>		0.188	4.78	0.144	3.66	47
			0.050	1.27	<b>0050</b>		0.188	4.78	0.124	3.15	58
			0.100	2.54	<b>0100</b>		0.188	4.78	0.136	3.45	69
			0.1875	4.76	<b>0188</b>		0.188	4.78	0.167	4.24	78
			0.200	5.08	<b>0200</b>		0.188	4.78	0.124	3.15	82
			0.375	9.53	<b>0375</b>		0.188	4.78	0.161	4.09	84
			0.400	10.16	<b>0400</b>		0.188	4.78	0.124	3.15	84
			0.427	10.85	<b>0427</b>		0.188	4.78	0.162	4.11	85
			0.500	12.70	<b>0500</b>	•	0.188	4.78	0.142	3.61	86
<b>7/32</b>	<b>5.6</b>	<b>021</b>	0.024	0.61	<b>0024</b>		0.218	5.54	0.181	4.60	31
			0.03125	0.79	<b>0031</b>		0.204	5.18	0.160	4.06	39
			0.048	1.22	<b>0048</b>		0.216	5.49	0.156	3.96	50
			0.050	1.27	<b>0050</b>		0.200	5.08	0.135	3.43	52
			0.0625	1.59	<b>0063</b>		0.218	5.54	0.142	3.61	60
			0.096	2.44	<b>0096</b>		0.218	5.54	0.156	3.96	66
			0.192	4.88	<b>0192</b>		0.218	5.54	0.156	3.96	78
			0.250	6.35	<b>0250</b>	•	0.204	5.18	0.140	3.56	81
			0.384	9.75	<b>0384</b>		0.218	5.54	0.159	4.04	86
<b>1/4</b>	<b>6</b>	<b>025</b>	0.024	0.61	<b>0024</b>		0.250	6.35	0.218	5.54	28
			0.025	0.64	<b>0025</b>		0.250	6.35	0.214	5.44	30
			0.03125	0.79	<b>0031</b>		0.250	6.35	0.208	5.28	34
			0.039	1.00	<b>0039</b>		0.250	6.35	0.190	4.83	40
			0.048	1.22	<b>0048</b>		0.250	6.35	0.190	4.83	45
			0.050	1.27	<b>0050</b>	•	0.250	6.35	0.191	4.85	46
			0.059	1.50	<b>0059</b>		0.250	6.35	0.172	4.37	52
			0.0625	1.59	<b>0063</b>		0.250	6.35	0.170	4.32	52
			0.079	2.00	<b>0079</b>		0.250	6.35	0.170	4.32	59
			0.096	2.44	<b>0096</b>		0.250	6.35	0.190	4.83	61
			0.100	2.54	<b>0100</b>		0.250	6.35	0.190	4.83	62
			0.118	3.00	<b>0118</b>		0.250	6.35	0.175	4.45	68
			0.125	3.18	<b>0125</b>		0.250	6.35	0.190	4.83	67
			0.197	5.00	<b>0197</b>		0.250	6.35	0.172	4.37	72
			0.200	5.08	<b>0200</b>		0.250	6.35	0.170	4.32	65
			0.250	6.35	<b>0250</b>	•	0.250	6.35	0.168	4.27	79
			0.3125	7.94	<b>0313</b>		0.250	6.35	0.184	4.67	81
			0.333	8.46	<b>0333</b>		0.250	6.35	0.170	4.32	82
			0.394	10.00	<b>0394</b>		0.250	6.35	0.170	4.32	78
			0.400	10.16	<b>0400</b>		0.250	6.35	0.170	4.32	84
0.500	12.70	<b>0500</b>	•	0.250	6.35	0.169	4.29	85			
0.750	19.05	<b>0750</b>		0.250	6.35	0.170	4.32	86			
1.000	25.40	<b>1000</b>	•	0.250	6.35	0.170	4.32	84			

Shaded areas have been translated from their designed inch or mm dimension to an equivalent mm or inch dimension.

\* Listed efficiencies are theoretical values based on Kerkote® TFE coated lead-screw

\*\* Listed efficiencies for Micro screws are theoretical values based on non-coated lead-screws

## WDG Nut Series - General Purpose Anti-Backlash

### ■ Lead Screw Compatibility: WDG Series

Diameter		Diameter Code	Lead		LEAD CODE	Left Hand Available	Outside Diameter (for reference)		Root Diameter (for reference)		Efficiency %*
inches	mm		inches	mm			inches	mm	inches	mm	
<b>5/16</b>	<b>8</b>	<b>031</b>	0.039	1.00	<b>0039</b>		0.315	8.00	0.261	6.63	34
			0.057	1.44	<b>0057</b>		0.315	8.00	0.243	6.17	43
			0.0741	1.88	<b>0074</b>		0.312	7.92	0.211	5.36	51
			0.111	2.82	<b>0111</b>		0.312	7.92	0.232	5.89	60
			0.167	4.24	<b>0167</b>		0.312	7.92	0.211	5.36	69
			0.250	6.35	<b>0250</b>		0.312	7.92	0.234	5.94	76
			0.500	12.70	<b>0500</b>		0.312	7.92	0.232	5.89	83
			0.800	20.32	<b>0800</b>		0.306	7.77	0.243	6.17	86
<b>3/8</b>	<b>10</b>	<b>037</b>	0.025	0.64	<b>0025</b>		0.375	9.53	0.337	8.56	21
			0.039	1.00	<b>0039</b>		0.394	10.01	0.350	8.89	28
			0.04167	1.06	<b>0042</b>		0.375	9.53	0.320	8.13	34
			0.050	1.27	<b>0050</b>	•	0.375	9.53	0.301	7.65	36
			0.055	1.40	<b>0055</b>		0.375	9.53	0.303	7.70	38
			0.059	1.50	<b>0059</b>	•	0.389	9.88	0.313	7.95	38
			0.0625	1.59	<b>0063</b>	•	0.388	9.86	0.295	7.49	41
			0.068	1.73	<b>0068</b>		0.388	9.86	0.295	7.49	42
			0.079	2.00	<b>0079</b>		0.375	9.53	0.264	6.71	47
			0.0833	2.12	<b>0083</b>		0.375	9.53	0.293	7.44	48
			0.100	2.54	<b>0100</b>	•	0.375	9.53	0.266	6.76	53
			0.125	3.18	<b>0125</b>	•	0.375	9.53	0.295	7.49	59
			0.157	4.00	<b>0157</b>		0.375	9.53	0.274	6.96	65
			0.1667	4.23	<b>0167</b>		0.371	9.42	0.261	6.63	61
			0.197	5.00	<b>0197</b>		0.375	9.53	0.266	6.76	69
			0.200	5.08	<b>0200</b>	•	0.375	9.53	0.266	6.76	69
			0.250	6.35	<b>0250</b>		0.375	9.53	0.268	6.81	70
			0.300	7.62	<b>0300</b>		0.375	9.53	0.255	6.48	76
			0.333	8.46	<b>0333</b>		0.375	9.53	0.245	6.22	78
			0.363	9.22	<b>0363</b>	•	0.375	9.53	0.260	6.60	79
			0.375	9.53	<b>0375</b>		0.375	9.53	0.265	6.73	79
			0.394	10.00	<b>0394</b>		0.375	9.53	0.260	6.60	79
			0.400	10.16	<b>0400</b>		0.375	9.53	0.293	7.44	79
			0.472	12.00	<b>0472</b>		0.388	9.86	0.287	7.29	82
			0.500	12.70	<b>0500</b>	•	0.388	9.86	0.265	6.73	81
			0.667	16.94	<b>0667</b>		0.375	9.53	0.273	6.93	83
			0.667	19.05	<b>0750</b>		0.388	9.86	0.273	6.93	84
			0.984	25.00	<b>0984</b>		0.375	9.53	0.262	6.65	84
1.000	25.40	<b>1000</b>		0.383	9.73	0.254	6.45	84			
1.200	30.48	<b>1200</b>	•	0.383	9.73	0.254	6.45	84			
1.250	31.75	<b>1250</b>		0.375	9.53	0.278	7.06	84			
1.500	38.10	<b>1500</b>		0.375	9.53	0.264	6.71	83			

Shaded areas have been translated from their designed inch or mm dimension to an equivalent mm or inch dimension.

\* Listed efficiencies are theoretical values based on Kerkote® TFE coated lead-screw

\*\* Listed efficiencies for Micro screws are theoretical values based on non-coated lead-screws

## WDG Nut Series - General Purpose Anti-Backlash

### ■ Lead Screw Compatibility: WDG Series

Diameter		Diameter Code	Lead		LEAD CODE	Left Hand Available	Outside Diameter (for reference)		Root Diameter (for reference)		Efficiency %*
inches	mm		inches	mm			inches	mm	inches	mm	
7/16	11	043	0.050	1.27	0050		0.437	11.10	0.362	9.19	30
			0.0625	1.59	0063	•	0.436	11.07	0.358	9.09	38
			0.079	2.00	0079		0.472	11.99	0.374	9.50	42
			0.111	2.82	0111		0.437	11.10	0.327	8.31	52
			0.118	3.00	0118		0.438	11.13	0.363	9.22	52
			0.125	3.18	0125		0.438	11.13	0.357	9.07	54
			0.197	5.00	0197		0.438	11.13	0.315	8.00	65
			0.236	6.00	0236		0.433	11.00	0.313	7.95	70
			0.250	6.35	0250		0.442	11.23	0.325	8.26	70
			0.307	7.80	0307		0.445	11.30	0.343	8.71	73
			0.325	8.26	0325		0.444	11.28	0.342	8.69	74
			0.394	10.00	0394		0.446	11.33	0.331	8.41	78
			0.472	12.00	0472		0.438	11.13	0.318	8.08	80
			0.500	12.70	0500		0.452	11.48	0.327	8.31	80
			0.615	15.62	0615		0.475	12.07	0.376	9.55	82
1/2	13	050	0.050	1.27	0050		0.495	12.57	0.433	11.00	29
			0.079	2.00	0079		0.473	12.01	0.355	9.02	41
			0.098	2.50	0098		0.500	12.70	0.383	9.73	46
			0.100	2.54	0100	•	0.490	12.45	0.364	9.25	46
			0.125	3.18	0125		0.500	12.70	0.374	9.50	51
			0.157	4.00	0157		0.500	12.70	0.384	9.75	58
			0.160	4.06	0160		0.500	12.70	0.388	9.86	67
			0.1667	4.23	0167		0.500	12.70	0.384	9.75	58
			0.197	5.00	0197		0.500	12.70	0.365	9.27	62
			0.200	5.08	0200	•	0.492	12.50	0.366	9.30	63
			0.250	6.35	0250		0.500	12.70	0.382	9.70	67
			0.333	8.46	0333	•	0.497	12.62	0.362	9.19	73
			0.394	10.00	0394		0.497	12.62	0.362	9.19	76
			0.400	10.16	0400		0.497	12.62	0.364	9.25	76
			0.500	12.70	0500		0.488	12.40	0.352	8.94	79
			0.630	16.00	0630		0.500	12.70	0.374	9.50	80
			0.750	19.05	0750		0.525	13.34	0.399	10.13	83
			0.800	20.32	0800		0.500	12.70	0.370	9.40	83
0.984	25.00	0984		0.500	12.70	0.369	9.37	84			
1.000	25.40	1000	•	0.490	12.45	0.372	9.45	84			
1.500	38.10	1500		0.490	12.45	0.374	9.50	85			
2.000	50.80	2000		0.488	12.40	0.378	9.60	87			

Shaded areas have been translated from their designed inch or mm dimension to an equivalent mm or inch dimension.

\* Listed efficiencies are theoretical values based on Kerkote® TFE coated lead-screw

\*\* Listed efficiencies for Micro screws are theoretical values based on non-coated lead-screws

■ Material & Teflon TFE Coating Options

Materials		Teflon TFE Coatings	
<b>Kerkite® Composite Polymer Nuts</b>	In addition to the Kerk® self-lubricating acetal nut material, we offer a variety of custom compounded Kerkite composite polymers. Kerkite polymers are a family of high performance materials that offer exceptional wear properties with the cost and design advantages afforded through injection molding. Kerkite polymers offer a variety of mechanical, thermal and electrical properties and are compatible with many chemicals and environmental conditions. Each member of the Kerkite family is compounded with lubricants, reinforcements and thermoplastic polymers formulated to provide optimum performance in its target conditions and applications.	<b>Kerkote® TFE Coating</b>	Soft coating that is a long-term, maintenance-free, dry lubricant, optimized for softer plastics like acetals and nylons, with or without mechanical reinforcement. Lubrication to the nut/screw interface occurs by the nut picking up Kerkote® TFE particles from the coating as well as from the migration of the internal lubricant within the plastic nut. The transfer of TFE to the nut continues throughout the operating life of the assembly as long as the nut periodically travels over areas with Kerkote® TFE coating. The lubricant, although solid, also has some “spreading” ability as in fluid lubricants. Kerkote® TFE coated screws provide the maximum level of self-lubrication and should not be additionally lubricated or used in environments where oils or other lubricant contamination is possible.
<b>Special Materials</b>	Kerk® has rolled screws in many materials, including 316 stainless, 400 series stainless, precipitate hardening materials, carbon steel, aluminum, and titanium. Kerk® nuts have been produced in many alternative plastics including PEEK, polyester, Torlon®, Vespel®, PVDF, UHMW, Ertalyte®, customer-supplied specialty materials, and metal nuts made from bronze, brass, and stainless steel. If the material can be molded, machined, ground, or rolled, we can likely process it.	<b>Black Ice® TFE Coating</b>	Hard coating that is long term, maintenance-free and is exceptionally durable in all types of environments, with virtually any type of polymer nut. Black Ice® TFE coating remains on the screw, offering a low friction surface upon which the nut travels. Rather than acting as a dry lubricant, Black Ice® TFE is an anti-friction coating whose surface properties displace the metal to which it is applied. Though it is not intended for use with metal or glass fiber reinforced nuts, Black Ice® TFE is bonded securely to the screw’s surface and can withstand abrasion from contamination, rigid polymer systems, fluid impingement and wash down applications. Black Ice® TFE can be used in more aggressive environment conditions, or anywhere reduced friction and a permanent coating is desired. Not intended to be used with additional lubricants.

**Note:** There are certain applications where external lubrication may be desired. These include the use of nut materials such as glass reinforced plastic or metal. Greases, when used properly can provide unique capabilities and Haydon Kerk Motion Solutions does offer a selection of greases developed specifically for these applications. Please contact a sales engineer for assistance selecting the best lubricant for your requirements.