

B320 Series

Rugged and dependable bevel gear operators for manual or motorized valve control applications



Limitorque

B320 Series

B320 bevel gear operators provide mechanical advantage for multi-turn actuation applications.

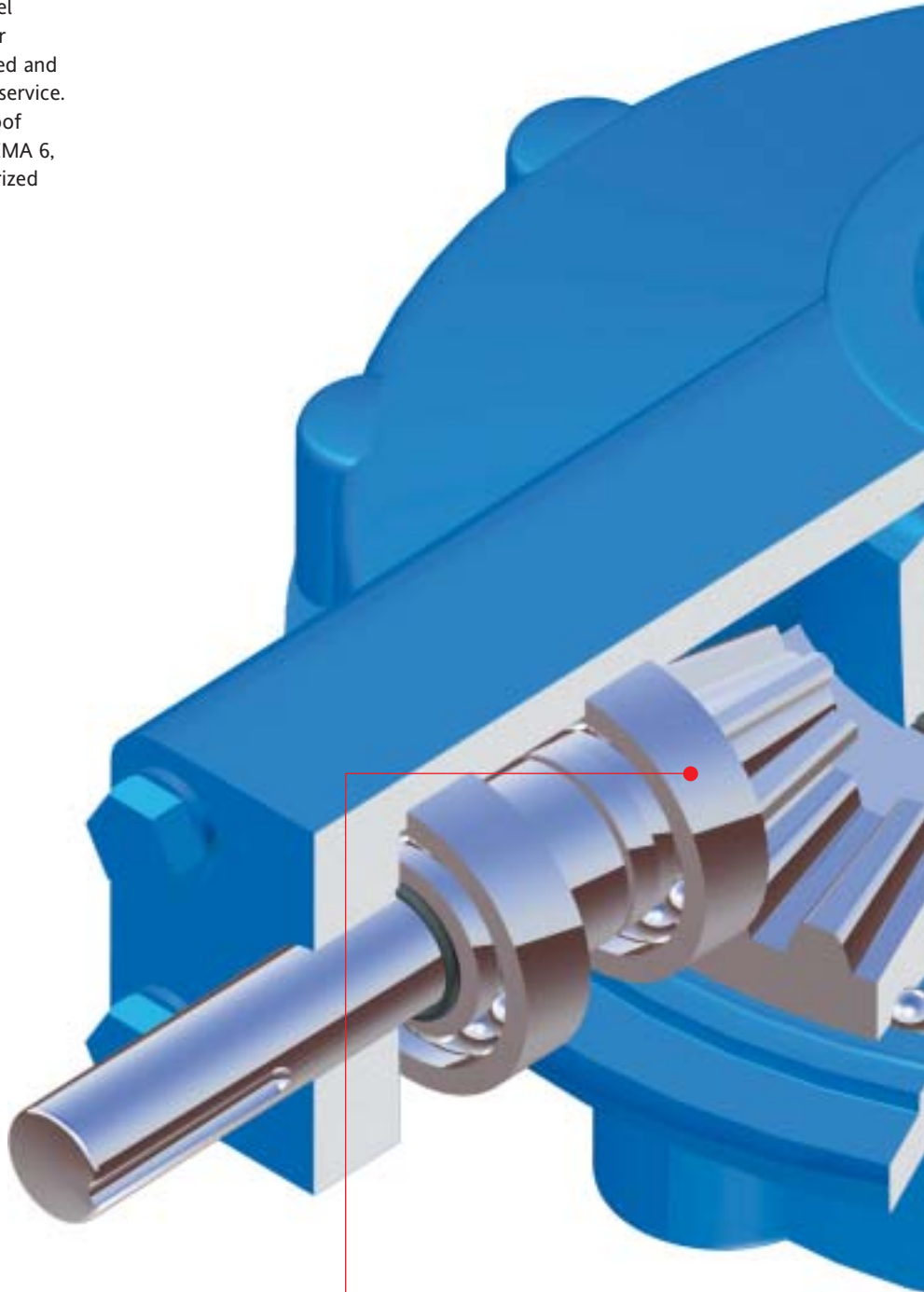




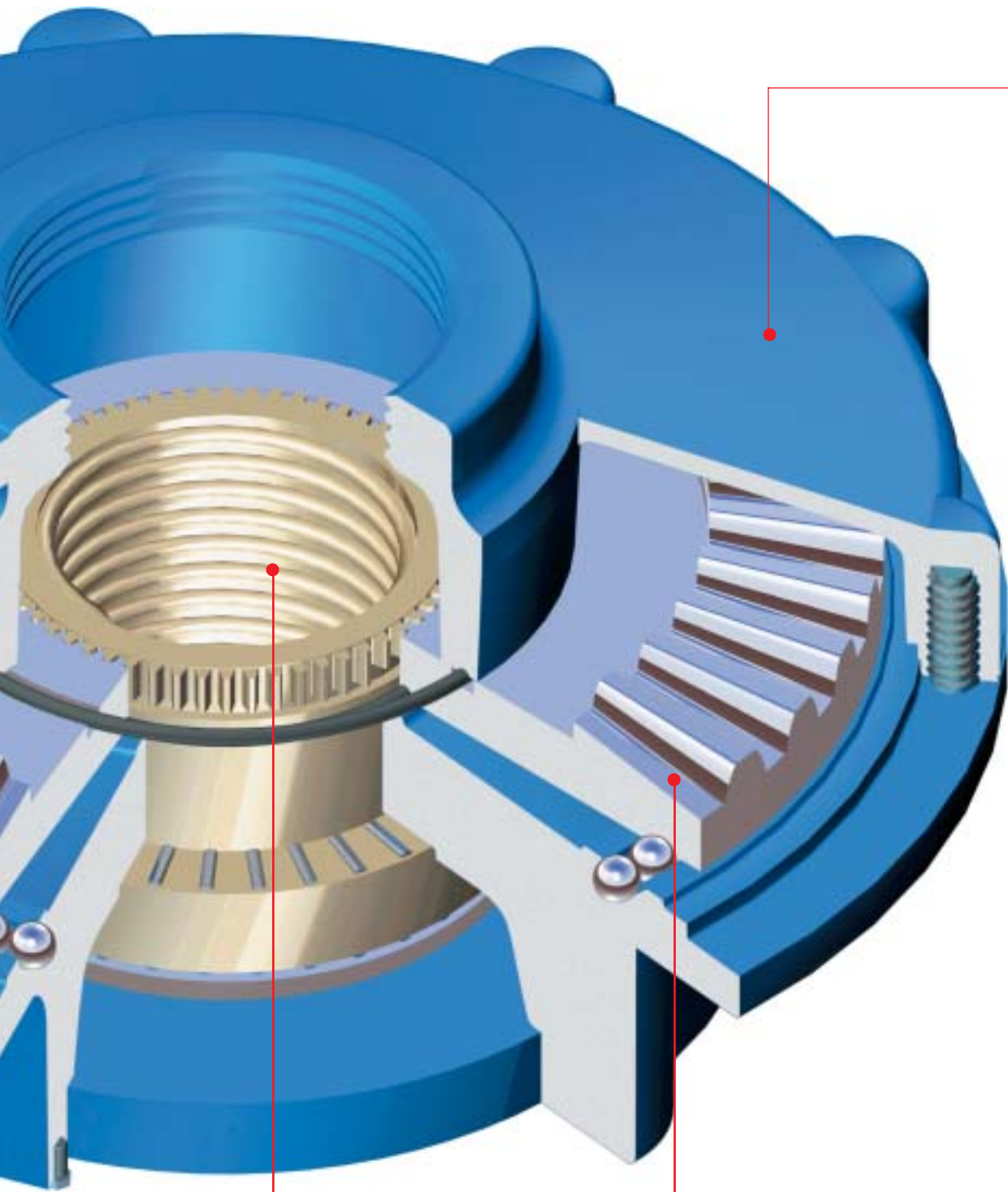
Limatorque's **B320 Bevel Gear Operator** not only makes it easy to manually operate multi-turn valves—it also makes it easy to convert to motorized service. Limatorque offers the B320 in an extended array of standard sizes and configurations to cover the widest range of applications—and the most common units are in stock for immediate shipment. Limatorque also accommodates specialized needs with a variety of options, including handwheels, chainwheels, spur gears, and operating wrench nuts. Like every Limatorque product, the B320 is backed by Limatorque's worldwide service and parts supply network.

Solid construction inside and out

All B320 series operators are manufactured from the highest quality materials for maximum reliability. All gears are machined from high-strength alloy steel, ensuring smooth operation with minimum backlash. Input and output bevel gears—as well as the bevel pinion itself—are supported on anti-friction roller bearings. Every B320 unit is permanently lubricated and fully waterproof to endure the harshest outdoor service. B320 series operators are suitable for weatherproof (NEMA 4) or temporary submergence service (NEMA 6, IP 67/68). All units are easily converted for motorized applications.



Bevel pinion and bevel gears are completely supported on anti-friction ball bearings.



Rugged cast iron enclosure meets the most severe environmental conditions.

Splined bronze alloy stem nut is removable for threading or custom bore and key.

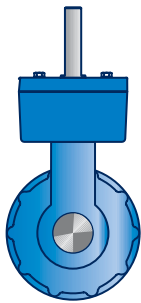
Machine-generated gearing assures minimum backlash and smooth operation.



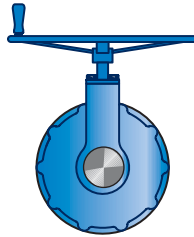
B320 features: built for reliable valve control— whether manual or motorized

The B320 offers torque ranges up to 8,000 ft-lbs (10,856 Nm) and thrust capacities to 325,000 lbs (1445 kN), for any application demanding a bevel gear operator with superior strength and accuracy. It is most commonly used with sluice/slide gates, gate valves, and globe valves.

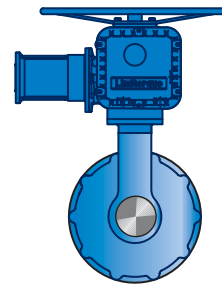
Available options for the B320 unit include:



Spur gear attachments
for reduction
of input torque



Handwheels and
chainwheels



Direct mounting
to an electric
valve actuator



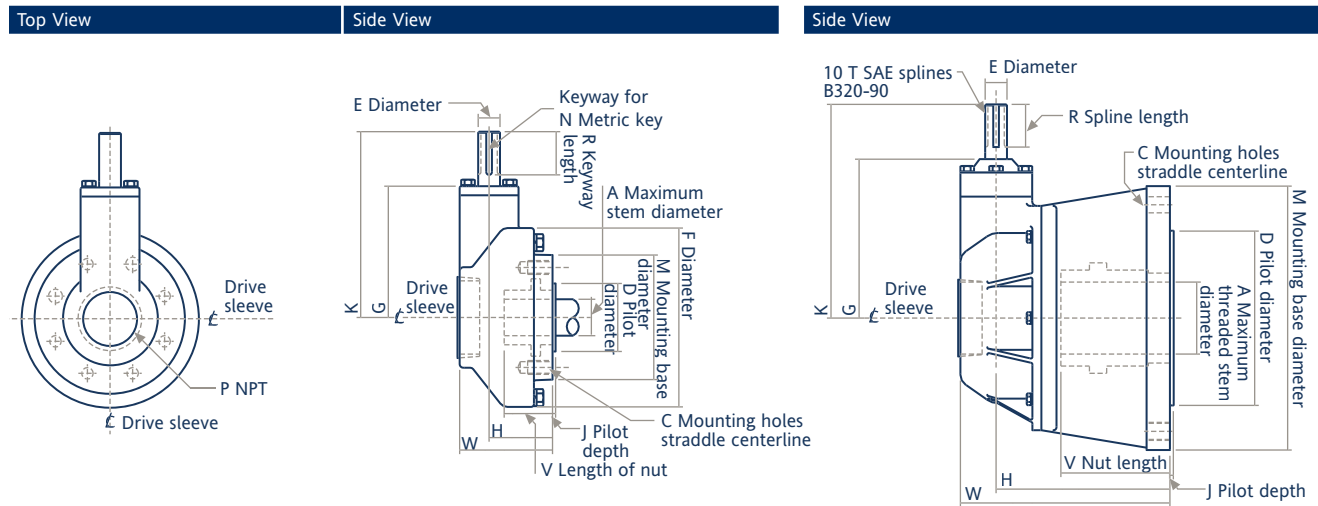
Easily adaptable for other applications

Limatorque has designed the B320 to be configured to each customer's needs. Choose an optional handwheel for manual actuation. Add a spur gear attachment for greater mechanical advantage. And when manual operation simply isn't practical, just couple the B320 with one of Limatorque's electric actuators for an economical, motorized, multi-turn package.

Physical Dimensions for B320 Series Bevel Gear Operator with MSS and ISO Mounting Base

B320-20 through 80 Operators

B320-90 Operators



B320 Series-20 through 90 Bevel Gear Operator Dimensions

MSS Standard Mounting Configuration in Inches

Unit	A	C	D	E	F	G	H	J	K	M	N	P	R	V	W
B320-20	2.36	(4) .625-11 x 1.38 DP, 5.500 BC (FA14)	3.750	0.982	7.6	5.6	3.6	.12	8.7	6.9	8 x 7	2.5	2.4	2.70	5.1
B320-40	2.87	(4) .75-10 x 1.77 DP, 6.496 BC (FA16)	5.000	1.180	9.4	7.3	4.2	.12	10.4	8.3	8 x 7	3	2.4	3.29	5.8
B320-50	3.54	(8) .625-11 x 1.38 DP, 10.000 BC (FA25)	6.000	1.378	14.0	9.1	5.0	.20	13.1	11.8	10 x 8	5	2.6	4.09	7.1
B320-70	4.02	(8) .75-10 x 1.77 DP, 11.750 BC (FA30)	7.000	1.378	16.8	11.1	5.7	.20	15.1	13.8	10 x 8	5	2.6	4.76	7.8
B320-80	5.12	(8) 1.25-7 x 2.76 DP, 14.000 BC (FA35)	8.500	1.769	19.7	13.4	6.5	.20	18.8	16.1	14 x 9	6	3.9	5.90	9.1
1p B320-90	6.00	(8) 1.25-7 x 1.95 DP, 16.000 BC (FA40)	9.000	1.498	18.8	11.9	13.4	.375	15.68	18.8	10 T SAE spl.	6	2.3	8.00	16.4
2p ¹ B320-90	5.50	(8) 1.25-7 x 1.95 DP, 16.000 BC (FA40)	9.000	1.498	18.8	11.9	13.4	.375	15.68	18.8	10 T SAE spl.	6	2.3	8.00	16.4

ISO Standard Mounting Configuration in Millimeters

Unit	A	C	D	E	F	G	H	J	K	M	N	P	R	V	W
B320-20	60	(4) M16-2 x 35 DP, 140 BC (F14)	99.96	24.95	192	142	90.5	3	220	175	8 x 7	2.5	60	68.5	131
B320-40	73	(4) M20-2.5 x 45 DP, 165 BC (F16)	129.96	29.95	240	185	106	3	263	210	8 x 7	3	60	83.5	147
B320-50	90	(8) M16-2 x 35 DP, 254 BC (F25)	199.95	34.95	356	230	128	5	332	300	10 x 8	5	65	104	180
B320-70	102	(8) M20-2.5 x 45 DP, 298 BC (F30)	229.95	34.95	426	282	145	5	384	350	10 x 8	5	65	121	198
B320-80	130	(8) M30-3.5 x 70 DP, 356 BC (F35)	259.94	44.95	500	340	166	5	478	410	14 x 9	6	100	150	230
1p B320-90	152	(8) 1.5"-6 x 50 DP, 15.98" BC	300.00	38.05	-	302	340	9.5	398	478	10 T SAE spl.	6	57	203	416
2p ¹ B320-90	140	(8) 1.5"-6 x 50 DP, 15.98" BC	300.00	38.05	-	302	340	9.5	398	478	10 T SAE spl.	6	57	203	416

Note 1: Two-piece drive sleeve standard. Optional one-piece drive sleeve available.

Note: • Dimensions for "P" are always shown in inches.

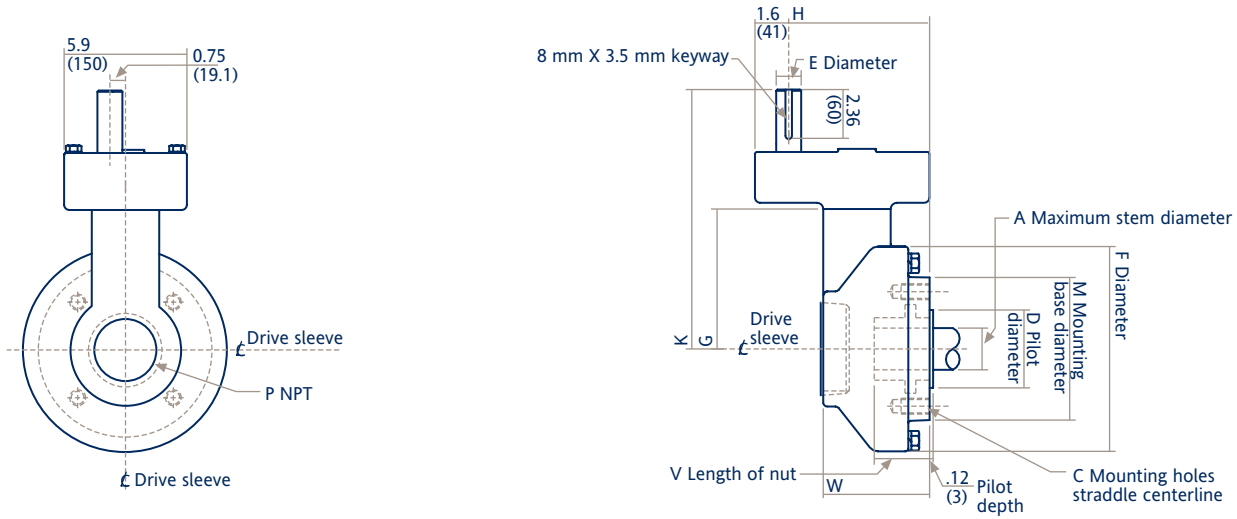
• Dimensions for "N" are always shown in millimeters.

• DP = deep; BC = bolt circle

Physical Dimensions for B320 Series Bevel Gear Operator with 3:1 Spur Gear Attachment and MSS and ISO Mounting Bases

Front View

Side View



B320-20 and 40 Series Bevel Gear Operator with Spur Gear Attachment Dimensions

MSS Standard Mounting Configuration in Inches

Unit	A	C		D	E	F	G	H	K	M	P	V	W
B320-20	2.36	(4) .625-11 x 1.38 DP, 5.500 BC (FA14)		3.750	0.982	7.6	5.2	6.9	10.9	6.9	2.5	2.70	5.1
B320-40	2.87	(4) .75-10 x 1.77 DP, 6.496 BC (FA16)		5.000	1.180	9.4	6.9	7.5	12.6	8.3	3	3.29	5.8

ISO Standard Mounting Configuration in Millimeters

Unit	A	C		D	E	F	G	H	K	M	P	V	W
B320-20	60	(4) M16-2 x 35 DP, 140 BC (F14)		99.96	24.95	192	132	90.5	278	175	2.5	68.5	131
B320-40	73	(4) M20-2.5 x 45 DP, 165 BC (F16)		129.96	29.96	240	175	106	321	210	3	83.5	147

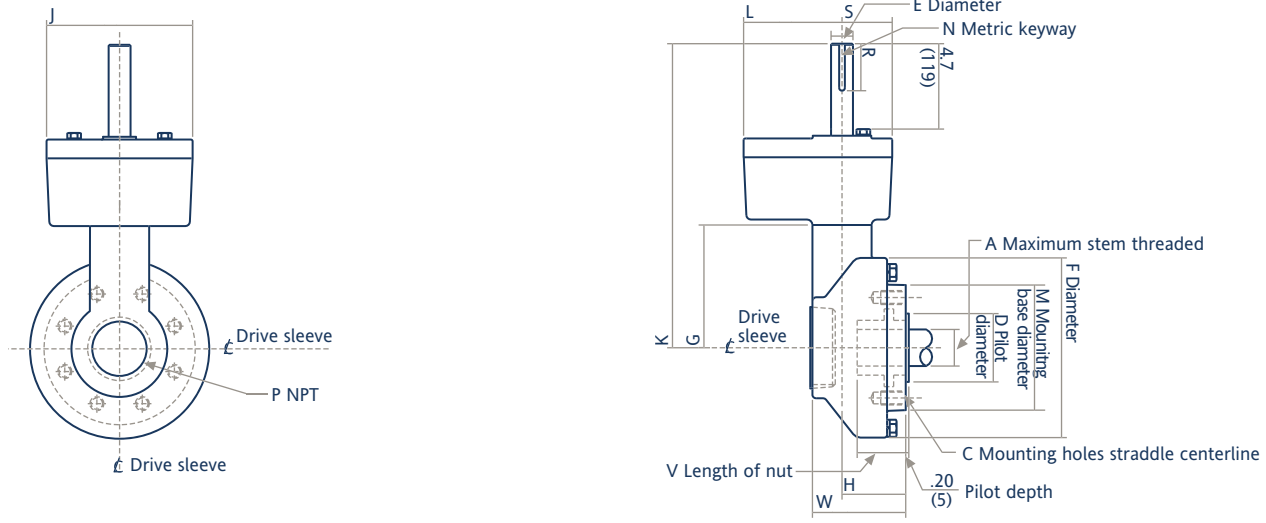
Note: • Dimensions for "P" are always shown in inches.

• DP = deep; BC= bolt circle

Physical Dimensions for B320 Series Bevel Gear Operator with Spur Gear Attachment and MSS and ISO Mounting Bases

Front View

Side View



B320-50 through 80 Series Bevel Gear Operator with Spur Gear Attachment Dimensions

MSS Standard Mounting Configuration in Inches

Unit	SGA Ratio	A	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	W
B320-50	10.8:1	3.54	(8) .625-11 x 1.38 DP, 10.000 BC (FA25)	6.000	1.180	14.0	9.1	5.0	6.1	18.6	5.4	11.8	8x3.5	5	2.6	2.8	4.09	7.1
B320-70	10.8:1	4.02	(8) .75-10 x 1.77 DP, 11.750 BC (FA30)	7.000	1.180	16.8	11.1	5.7	6.1	20.7	5.4	13.8	8x3.5	5	2.6	2.8	4.76	7.8
B320-80	10.8:1	5.12	(8) 1.25-7 x 2.76 DP, 14.000 BC (FA35)	8.500	1.180	19.7	13.4	6.5	7.9	23.8	7.2	16.1	8x3.5	6	3.9	3.9	5.90	9.1

ISO Standard Mounting Configuration in Millimeters

Unit	SGA Ratio	A	C	D	E	F	G	H	J	K	L	M	N	P	R	S	V	W
B320-50	10.8:1	90	(8) M16-2 x 35 DP, 254 BC (F25)	199.95	29.97	356	230	128	154	473	137	300	8x3.5	5	65	70	104	180
B320-70	10.8:1	102	(8) M20-2.5 x 45 DP, 298 BC (F30)	229.95	29.97	426	282	145	154	525	137	350	8x3.5	5	65	70	121	198
B320-80	10.8:1	130	(8) M30-3.5 x 70 DP, 356 BC (F35)	259.94	29.97	500	340	166	200	604	184	410	8x3.5	6	100	96	150	230

Note: • Dimensions for "P" are always shown in inches.

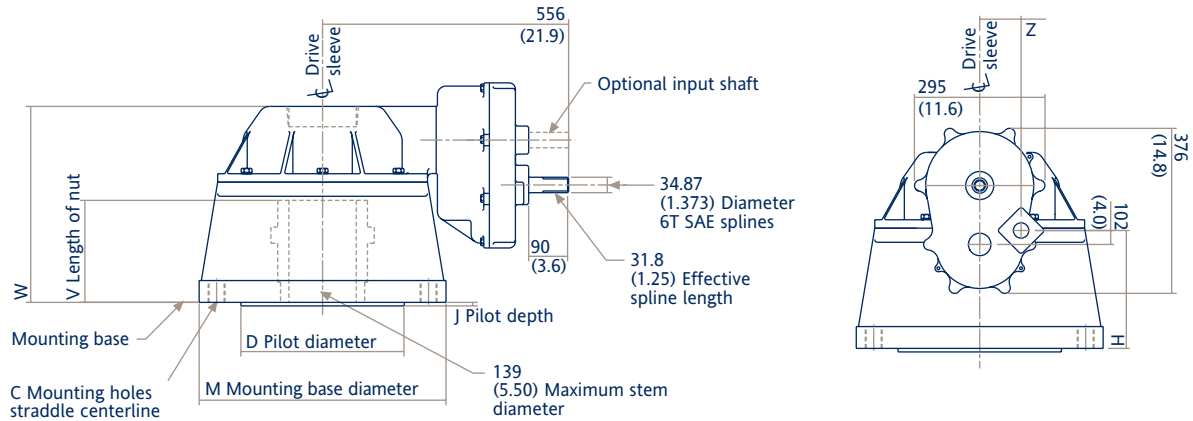
• Dimensions for "N" are always shown in millimeters.

• DP = deep; BC = bolt circle

Physical Dimensions for B320 Series Bevel Gear Operator with 17.5:1 Spur Gear Attachment and MSS and ISO Mounting Bases

Front View

Side View



B320-90 Series Bevel Gear Operator with Spur Gear Attachment Dimensions

MSS Standard Mounting Configuration in Inches

Unit	SGA Ratio	C	D	H	J	M	V	W	Z
B320-90	17.5:1	(8) 1.25-7 x 1.95 DP, 16.00 BC (FA40)	9.000 (+.000/-0.002)	17.4	.375	18.8	8.00	16.4	3.7

ISO Standard Mounting Configuration in Millimeters

Unit	SGA Ratio	C	D	H	J	M	V	W	Z
B320-90	17.5:1	(8) 1.25-7 x 50 DP, 15.98" BC*	228.60 (+.00/-0.05)	442	9.5	476	203	416	94

- Note:
- Inch tap only available.
 - DP = deep; *BC = bolt circle

General Specifications

Input torque can be calculated by dividing required output torque by ratio x efficiency.

Example: B320-20 at full manual rating

Input torque: $750 / (3 \times 0.90) = 277 \text{ ft-lbs}$

$1017 / (3 \times 0.90) = 376 \text{ Nm}$

Unit	Unit	Unit	Maximum Output Torque				Maximum		Max. Threaded		Spur Gear	
	Ratio	Efficiency	Manual		Motorized		Thrust		Stem Capacity		Attachment (SGA)	
			ft-lbs	Nm	ft-lbs	Nm	lbs	kN	in.	mm	Ratio	Eff.
B320-20	3:1/4:1	0.90	750	1017	600	813	40000	178	2.36	60	3:1	0.90
B320-40	4:1	0.90	1800	2443	1500	2035	80000	356	2.87	73	3:1	0.90
B320-40	6:1	0.90	1250	1696	1000	1357	80000	356	2.87	73	3:1	0.90
B320-50	4:1/6:1	0.90	3750	5088	3000	4071	100000	444	3.54	90	10.8:1	0.80
B320-70	6:1/8:1	0.90	6000	8142	4500	6106	150000	667	4.02	102	10.8:1	0.80
B320-80	6:1/8:1	0.90	8000	10856	6500	8820	200000	890	5.12	130	10.3:1	0.80
1p B320-90	6.2:1	0.90	8000	10856	8000	10856	325000	1446	6.00	152	17.5:1	0.80
2p ¹ B320-90	6.2:1	0.90	8000	10856	8000	10856	325000	1446	5.50	140	17.5:1	0.80

Unit	HSG Cover Tap N.P.T.	Approximate Weights			
		lbs		kg	
		Unit	With SGA	Unit	With SGA
B320-20	2.5	51	80	23	36
B320-40	3	68	97	31	44
B320-50	5	143	198	65	90
B320-70	5	254	309	115	140
B320-80	6	418	474	190	215
B320-90	6	745	875	339	398

Unit	Maximum Bore with		Maximum Bore with	
	Rectangular Key (Inches)	Square Key (Inches)	Square Key (Inches)	Metric Key
B320-20	2.00 Diameter with .5 x .375 Key	1.88 Diameter with .5 Key	1.88 Diameter with .5 Key	50 mm with 14 x 9
B320-40	2.52 Diameter with .625 x .4375 Key	2.38 Diameter with .625 Key	2.38 Diameter with .625 Key	64 mm with 18 x 11
B320-50	3.00 Diameter with .75 x .5 Key	2.88 Diameter with .75 Key	2.88 Diameter with .75 Key	76 mm with 22 x 14
B320-70	3.70 Diameter with .875 x .625 Key	3.50 Diameter with .875 Key	3.50 Diameter with .875 Key	94 mm with 25 x 14
B320-80	4.88 Diameter with 1.25 x .875 Key	4.50 Diameter with 1.00 Key	4.50 Diameter with 1.00 Key	123 mm with 32 x 18
1p B320-90	5.50 Diameter with 1.25 x .875 Key	5.44 Diameter with 1.25 Key	5.44 Diameter with 1.25 Key	140 mm with 36 x 20
2p ¹ B320-90	5.00 Diameter with 1.25 x .875 Key	4.94 Diameter with 1.25 Key	4.94 Diameter with 1.25 Key	130 mm with 32 x 18

Note 1: Two-piece drive sleeve standard. Optional one-piece drive sleeve available.



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