

Catalog Series	Material	Ratios	Pages
 <p>S99RD1MBE...-1.</p>	Economy Series Right Angle Bevel Gear Drives AISI 1045 Steel Gears	1:1	12-1
 <p>S99RD1MBE...-2.</p>	Economy Series Right Angle Bevel Gear Drives AISI 1045 Steel Gears	2:1	12-2
 <p>A 2Z20M.C101009</p>	Right Angle Bevel Gear Drives Hardened Steel Gears Steel Ball Bearings	1:1	12-3
 <p>A 2Z2.MC1010</p>	Precision Quality Right Angle Bevel Gear Drives SAE 4340 Steel Miter Gears Sealed Ball Bearings	1:1	12-4
 <p>S991LYM...</p>	Heavy-Duty "L" Gear Drives Case-Hardened Alloy Steel Spiral Bevel Gears	1:1 and 2:1	12-6
 <p>S991TYM...</p>	Heavy-Duty "T" Gear Drives Case-Hardened Alloy Steel Spiral Bevel Gears	1:1 and 2:1	12-7
 <p>A 2Z17ME0...</p>	Worm Gear Speed Reducers Input Speeds up to 6000 rpm	Multiple Ratios	12-8
 <p>A 2Z18ME0...</p>	Worm Gear Speed Reducers Input Speeds up to 6000 rpm	Multiple Ratios	12-9
 <p>A 2Z19ME0...</p>	Worm Gear Speed Reducers Input Speeds up to 6000 rpm	Multiple Ratios	12-10

1:1 RATIO
 RATED SPEEDS UP TO 500 RPM
 ECONOMY SERIES

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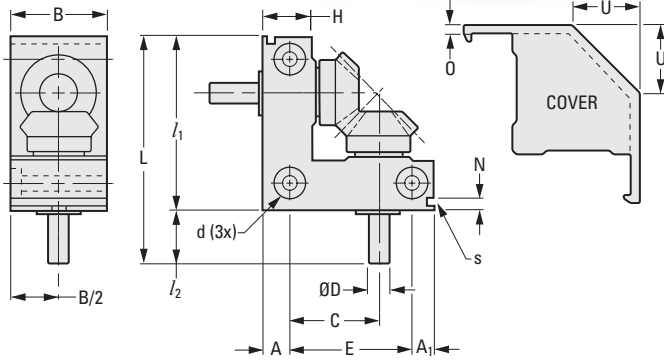
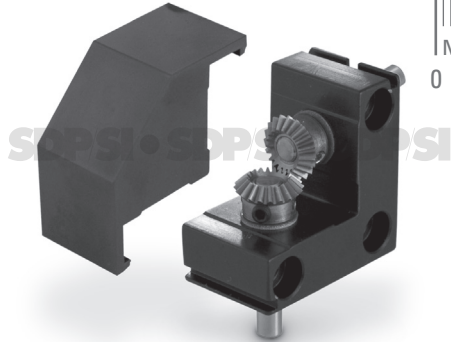


► **MATERIAL:**

- Gears** - AISI 1045 Steel
- Cover** - Plastic, Black
- Shafts** - 303 Stainless Steel
- Housing** - Aluminum, Black Anodized
- Bearings** - Layers of special resin and bronze with steel backing

► **SPECIFICATION:**

- Shaft Tolerance:
- 4, 5 & 6 mm 0/-0.018
- 8 & 10 mm 0/-0.022
- 12 mm 0/-0.027



The projections shown are per ISO convention.

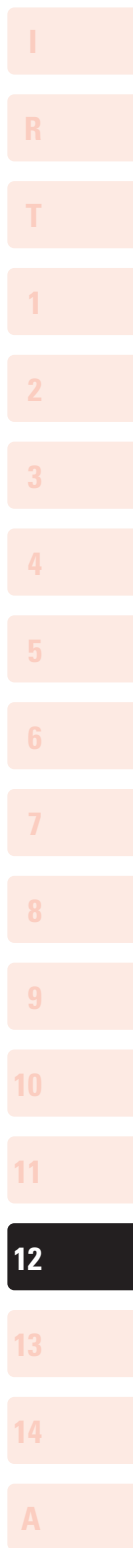
PERFORMANCE DATA

Input (rpm)	Output Torque N • m			
	S99RD1MBE40L-1	S99RD1MBE55L-1	S99RD1MBE70L-1A or B	S99RD1MBE88L-1A or B
50	0.14	0.553	1.035	3.32
100	0.139	0.544	1.017	3.237
250	0.135	0.524	0.968	3.013
500	0.129	0.491	0.896	2.7

METRIC COMPONENT

Catalog Number	Gear Module	No. of Teeth	Gear Ratio	L Overall Length	l ₁ Housing Length	H Housing Width	D Shaft Dia. h8	l ₂ Shaft Length	A	A ₁	E
S99RD1MBE40L-1	0.5	20	1:1	40	30	10	4	10	5	4.5	20.5
S99RD1MBE55L-1	0.8			55	40	13	5	15	6.5	5	28.5
S99RD1MBE70L-1A	1			70	50	16	6	20	8	6	36
S99RD1MBE70L-1B				8							
S99RD1MBE88L-1A	1.5			88	63	20	10	25	10	7	46
S99RD1MBE88L-1B							12				

Catalog Number (Ref.)	C	B Housing Depth	d			N	s Slot		O Cover Thickness	U Chamfer	Wt. g
			Mtg. Hole	Hole C'bore	C'bore Depth		Width	Depth			
S99RD1MBE40L-1	15	18	3.4	6.5	3.5	2.5	1.5	1.7	1.7	13	30
S99RD1MBE55L-1	21.5	25				4	2.5	2	1.9	16	85
S99RD1MBE70L-1A or B	27	30	4.3	8	4.5	4.5	2.5	2.5	2.1	20	170
S99RD1MBE88L-1A or B	33	40	5.2	9.5	5.5	5				27	380



LOW-COST RIGHT ANGLE BEVEL GEAR DRIVES

SDP/SI

2:1 RATIO
 RATED SPEEDS UP TO 500 RPM
 ECONOMY SERIES

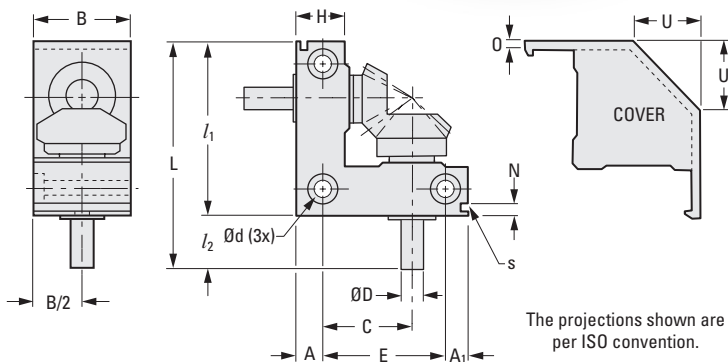
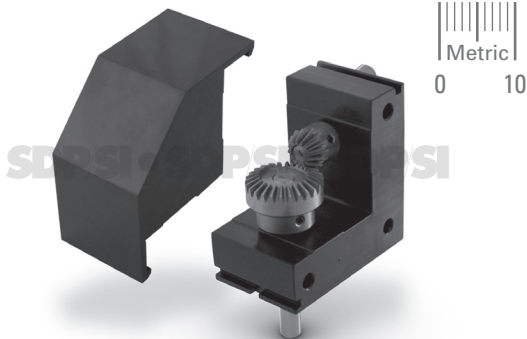
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MATERIAL:

- Gears - AISI 1045 Steel
- Cover - Plastic, Black
- Shafts - 303 Stainless Steel
- Housing - Aluminum, Black Anodized
- Bearings - Layers of special resin and bronze with steel backing

SPECIFICATION:

- Shaft Tolerance:
 5 & 6 mm 0/-0.018
 8 & 10 mm 0/-0.022
 12 mm 0/-0.027



The projections shown are per ISO convention.

PERFORMANCE DATA

Input (rpm)	Output Torque N • m		
	S99RD1MBE55L-2	S99RD1MBE70L-2A or B	S99RD1MBE88L-2A or B
50	0.152	0.298	1.061
100	0.15	0.296	1.047
250	0.147	0.288	1.005
500	0.142	0.276	0.942

METRIC COMPONENT

Catalog Number	Gear Module	No. of Teeth	Gear Ratio	L Overall Length	l ₁ Housing Length	H Housing Width	D Shaft Dia. h8	l ₂ Shaft Length	A	A ₁	E
S99RD1MBE55L-2	0.6	28/14	2:1	55	40	13	5	15	6.5	5	28.5
S99RD1MBE70L-2A	0.8	26/13	2:1	70	50	16	6	20	8	6	36
S99RD1MBE70L-2B				8							
S99RD1MBE88L-2A	1.25			88	63	20	10	25	10	7	46
S99RD1MBE88L-2B							12				

Catalog Number (Ref.)	C	B Housing Depth	d			N	s Slot		O Cover Thickness	U Chamfer	Wt. g
			Mtg. Hole	Hole C'bore	C'bore Depth		Width	Depth			
S99RD1MBE55L-2	21.5	25	3.4	6.5	3.5	4	2.5	2	1.9	16	80
S99RD1MBE70L-2A or B	27	30	4.3	8	4.5	4.5	2.5	2.5	2.1	20	165
S99RD1MBE88L-2A or B	33	40	5.2	9.5	5.5	5				27	375

12-2
D815

1:1 RATIO
 INPUT SPEEDS UP TO 3000 RPM
 METAL GEARS
 BALL BEARINGS
 LARGE

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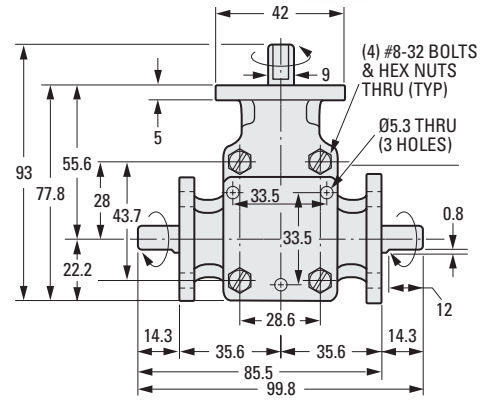
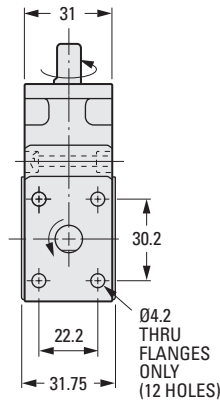
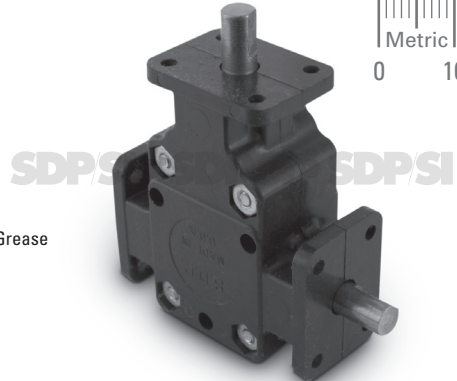


› **MATERIAL:**

- Housing** - Fiberglass reinforced plastic
- Gears** - Steel, Hardened – Coniflex Type
- Shafts** - High Tensile Steel
- Bearings** - Steel Ball
- Lubrication** - Permanently Lubricated with Lithium-Base Grease

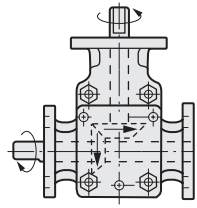
› **SPECIFICATIONS:**

Rated at 249W (1/3 HP) at 1800 rpm.
 Maximum speed is 3000 rpm.

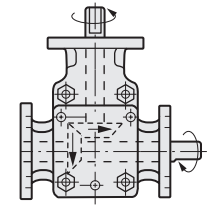


“U” Series

The projections shown are per ISO convention.



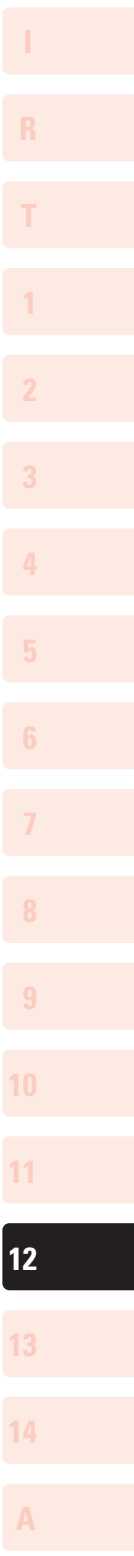
“L” Series



“R” Series

METRIC COMPONENT

Catalog Number	Shaft Dia. 0 -0.025	Gear Ratio	Approx. Weight grams
A 2Z20MUC101009	9	1:1	340
A 2Z20MLC101009			
A 2Z20MRC101009			



RIGHT ANGLE BEVEL GEAR DRIVES



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PRECISION 1:1 RATIO
 INPUT SPEEDS UP TO 3000 RPM
 UP TO 1 HP
 MEDIUM-DUTY



QUALITY CLASS

MATERIAL:

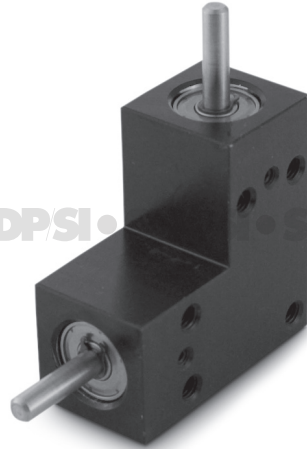
- Housing** - Aluminum Alloy, Black Anodized
 All Surfaces Machined
- Gears** - Miter, SAE 4340 Steel
- Shafts** - Type 18-8 Stainless Steel
- Bearings** - Ball, Sealed
- Lubrication** - Grease-Packed for Life

OPERATING TEMPERATURE:

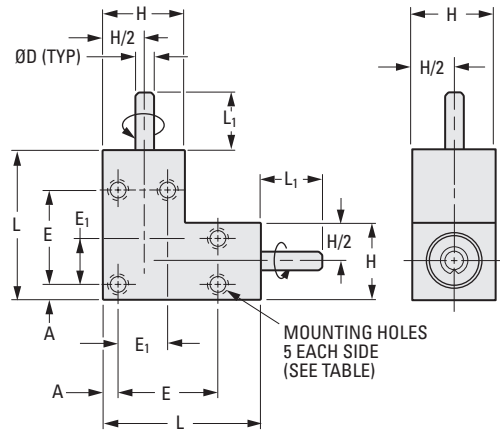
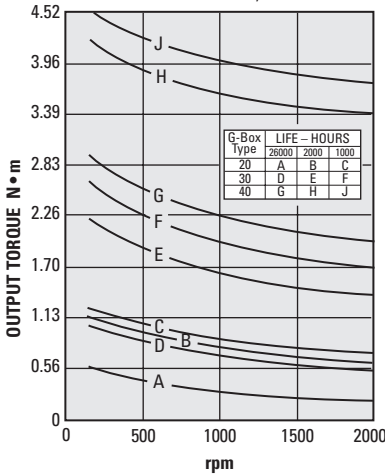
-20°C to +150°C

SPECIFICATIONS:

- Gear Ratio:** 1:1
- Backlash:** 1° Max.
- Input Speed:** Max. recommended 3000 rpm



TORQUE/SPEED DATA
 Gearbox Sizes 20, 30 & 40



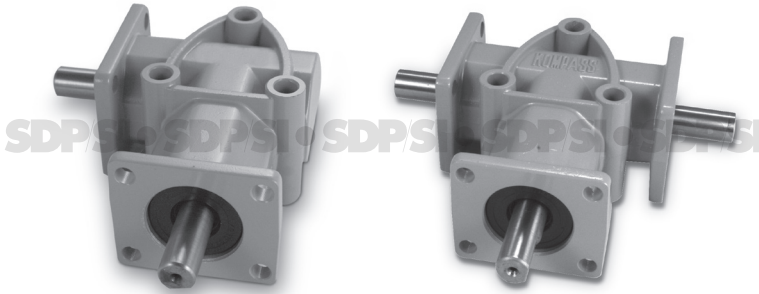
The projections shown are per ISO convention.

METRIC COMPONENT

Catalog Number	Size	D Shaft Dia. 0 -0.013	L ± 0.25	H ± 0.25	A	E	E ₁
A 2Z27MC1010	20	4	40	20	4	25	12
A 2Z28MC1010	30	8	60	30	5	40	20
A 2Z29MC1010	40	12	80	40	5	55	30

Catalog Number (Ref.)	L ₁	Mounting Holes		1800 rpm Input		Weight grams
		Size	Depth	Max. Output Torque N·m	Max. Output Power	
A 2Z27MC1010	15	M4	5	0.3	149W (0.2 HP)	80
A 2Z28MC1010	20	M5	7	1.3	336W (0.45 HP)	265
A 2Z29MC1010	25	M6	9	3.8	746W (1 HP)	665

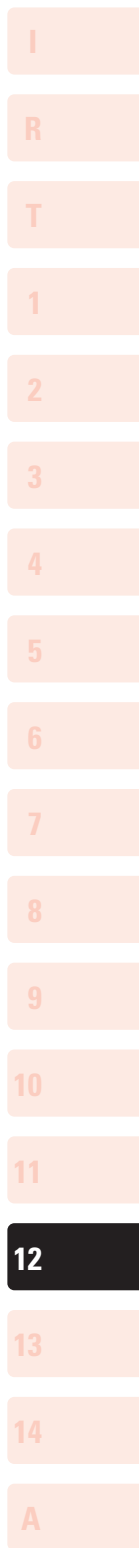
12-4
 D815



► PERFORMANCE DATA FOR FOLLOWING PAGES:

Catalog Number	Ratio	Specification	X-Axis (rpm)												Allowable Thrust Load N (lbf)		
			50	100	200	300	400	600	900	1200	1500	1800	2500	3600	X-Axis	Y-Axis	
1:1 RATIO																	
S991TYM10A S991LYM10A	1:1	Allowable Power kW	0.01	0.02	0.05	0.07	0.09	0.14	0.20	0.26	0.31	0.35	0.38	0.44	59 (13.3)	69 (15.5)	
		X-Y Axis Torque N • m (kgf • m) [lb • ft]	2.35 (0.24) [1.73]	2.35 (0.24) [1.73]	2.25 (0.23) [1.66]	2.25 (0.23) [1.66]	2.16 (0.22) [1.59]	2.16 (0.22) [1.59]	2.06 (0.21) [1.52]	2.06 (0.21) [1.52]	1.96 (0.20) [1.45]	1.86 (0.19) [1.37]	1.47 (0.15) [1.08]	1.18 (0.12) [0.87]			
S991TYM15A S991LYM15A		Allowable Power kW	0.05	0.09	0.18	0.27	0.35	0.51	0.75	0.96	1.16	1.30	1.44	1.66	98 (22.0)	118 (26.5)	
		X-Y Axis Torque N • m (kgf • m) [lb • ft]	8.82 (0.90) [6.51]	8.82 (0.90) [6.51]	8.62 (0.88) [6.36]	8.53 (0.87) [6.29]	8.33 (0.85) [6.14]	8.13 (0.83) [6.00]	7.94 (0.81) [5.86]	7.64 (0.78) [5.63]	7.35 (0.75) [5.42]	6.86 (0.70) [5.06]	5.49 (0.56) [4.05]	4.41 (0.45) [3.25]			
S991TYM20A S991LYM20A		Allowable Power kW	0.09	0.18	0.36	0.52	0.68	0.95	1.38	1.78	2.15	2.50	2.55	2.95	196 (44.1)	274 (61.6)	
		X-Y Axis Torque N • m (kgf • m) [lb • ft]	17.6 (1.80) [13.0]	17.6 (1.80) [13.0]	17.2 (1.75) [12.7]	16.7 (1.70) [12.3]	16.2 (1.65) [11.9]	15.2 (1.55) [11.2]	14.7 (1.50) [10.8]	14.2 (1.45) [10.4]	13.7 (1.40) [10.1]	13.2 (1.35) [9.7]	9.80 (1.00) [7.2]	7.84 (0.80) [5.8]			
2:1 RATIO																	
S991TYM10B S991LYM10B		2:1	Allowable Power kW	0.005	0.01	0.02	0.03	0.04	0.06	0.09	0.12	0.14	0.16	0.17	0.20	59 (13.3)	69 (15.5)
			Y-Axis Torque N • m (kgf • m) [lb • ft]	2.06 (0.21) [1.52]	2.06 (0.21) [1.52]	2.06 (0.21) [1.52]	1.96 (0.20) [1.45]	1.96 (0.20) [1.45]	1.96 (0.20) [1.45]	1.86 (0.19) [1.37]	1.86 (0.19) [1.37]	1.76 (0.18) [1.30]	1.67 (0.17) [1.23]	1.27 (0.13) [0.94]	1.08 (0.11) [0.80]		
S991TYM15B S991LYM15B	Allowable Power kW		0.02	0.04	0.08	0.13	0.17	0.25	0.36	0.46	0.55	0.62	0.69	0.80	98 (22.0)	118 (26.5)	
	Y-Axis Torque N • m (kgf • m) [lb • ft]		8.43 (0.86) [6.22]	8.43 (0.86) [6.22]	8.23 (0.84) [6.07]	8.13 (0.83) [6.00]	8.04 (0.82) [5.93]	7.84 (0.80) [5.78]	7.55 (0.77) [5.57]	7.25 (0.74) [5.35]	7.06 (0.72) [5.21]	6.57 (0.67) [4.85]	5.29 (0.54) [3.90]	4.21 (0.43) [3.11]			
S991TYM20B S991LYM20B	Allowable Power kW		0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40	1.57	196 (44.1)	274 (61.6)	
	Y-Axis Torque N • m (kgf • m) [lb • ft]		19.6 (2.00) [14.5]	19.6 (2.00) [14.5]	18.6 (1.90) [13.7]	18.1 (1.85) [13.3]	17.6 (1.80) [13.0]	17.0 (1.73) [12.5]	16.4 (1.67) [12.1]	15.7 (1.60) [11.6]	14.7 (1.50) [10.8]	13.9 (1.42) [10.3]	10.8 (1.10) [7.97]	8.33 (0.85) [6.14]			

NOTE: When the 2:1 ratio is used as a speed increaser (from the Y-Axis to the X-Axis), the X-Axis torque becomes one half of the Y-Axis torque shown in the table.

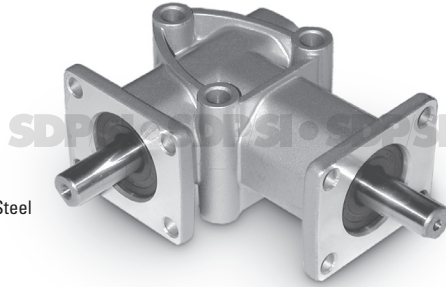


HEAVY-DUTY "L" GEAR DRIVES

SDP/SI

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1:1 OR 2:1 RATIOS
 RATED SPEEDS UP TO 3600 RPM
 LOW NOISE & HIGH EFFICIENCY
 EASY INSTALLATION
 COMPACT DESIGN
 MAINTENANCE-FREE
 REVERSIBLE

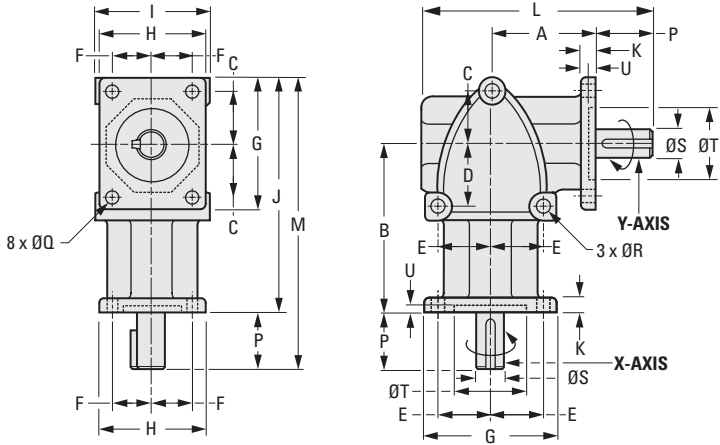


> MATERIAL:

Gears - Spiral Bevel, Case-Hardened Alloy Steel
Case - Aluminum Die-Cast
Shafts - Alloy Steel

> OPERATING TEMPERATURE:

-10°C to +40°C



The projections shown are per ISO convention.

METRIC COMPONENT

Catalog Number	Ratio	A	B	C	D	E	F	G	H	I	J	K	L
S991LYM10A	1:1	37	58	18	18	18	14	46	38	40	82	5	82
S991LYM10B	2:1												
S991LYM15A	1:1	66	100	31	36	31	22	80	62	66	140	8	137
S991LYM15B	2:1												
S991LYM20A	1:1	80	120	36	36	36	26	92	72	76	166	10	168
S991LYM20B	2:1												

Catalog Number (Ref.)	M	P	Q Dia.	R Dia.	S Dia. h7	T Dia. H7	U	Key	Backlash of Shaft Rotation	Weight kg
S991LYM10A	102	20	5.5	6.5	10	26	2	1 mm deep Flat 15 /	16'...44'	0.4
S991LYM10B									30'...1°23'	
S991LYM15A	170	30	8.5	8.5	15	42	3	5 x 5 x 27 /	10'...37'	1.8
S991LYM15B									19'...1°09'	
S991LYM20A	206	40	8.5	8.5	20	52	4	6 x 6 x 35 /	8'...33'	3.1
S991LYM20B									15'...60'	

See page 12-5 for performance data.

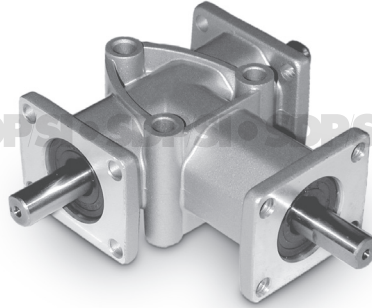
12-6
D815

HEAVY-DUTY "T" GEAR DRIVES

SDP/SI

1:1 OR 2:1 RATIOS
 RATED SPEEDS UP TO 3600 RPM
 LOW NOISE & HIGH EFFICIENCY
 EASY INSTALLATION
 COMPACT DESIGN
 MAINTENANCE-FREE
 REVERSIBLE

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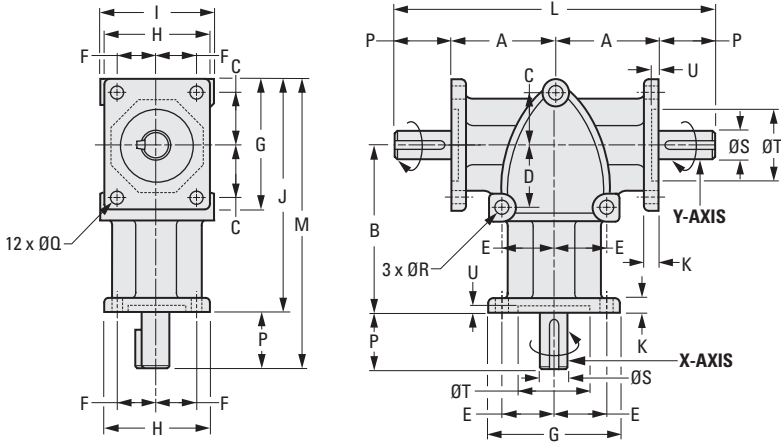


› MATERIAL:

Gears - Spiral Bevel, Case-Hardened Alloy Steel
Case - Aluminum Die-Cast
Shafts - Alloy Steel

› OPERATING TEMPERATURE:

-10°C to +40°C



The projections shown are per ISO convention

METRIC COMPONENT

Catalog Number	Ratio	A	B	C	D	E	F	G	H	I	J	K	L
S991TYM10A	1:1	37	58	18	18	18	14	46	38	40	82	5	114
S991TYM10B	2:1												
S991TYM15A	1:1	66	100	31	36	31	22	80	62	66	140	8	192
S991TYM15B	2:1												
S991TYM20A	1:1	80	120	36	36	36	26	92	72	76	166	10	240
S991TYM20B	2:1												

Catalog Number (Ref.)	M	P	Q Dia.	R Dia.	S Dia. h7	T Dia. H7	U	Key	Backlash of Shaft Rotation	Weight kg
S991TYM10A	102	20	5.5	6.5	10	26	2	1 mm deep Flat 15 /	16'...44'	0.5
30'...1°23'										
S991TYM15A	170	30	8.5	8.5	15	42	3	5 x 5 x 27 /	10'...37'	2.2
19'...1°09'										
S991TYM20A	206	40	8.5	8.5	20	52	4	6 x 6 x 35 /	8'...33'	3.4
15'...60'										

See page 12-5 for performance data.

