Von Ruden Manufacturing, Inc.

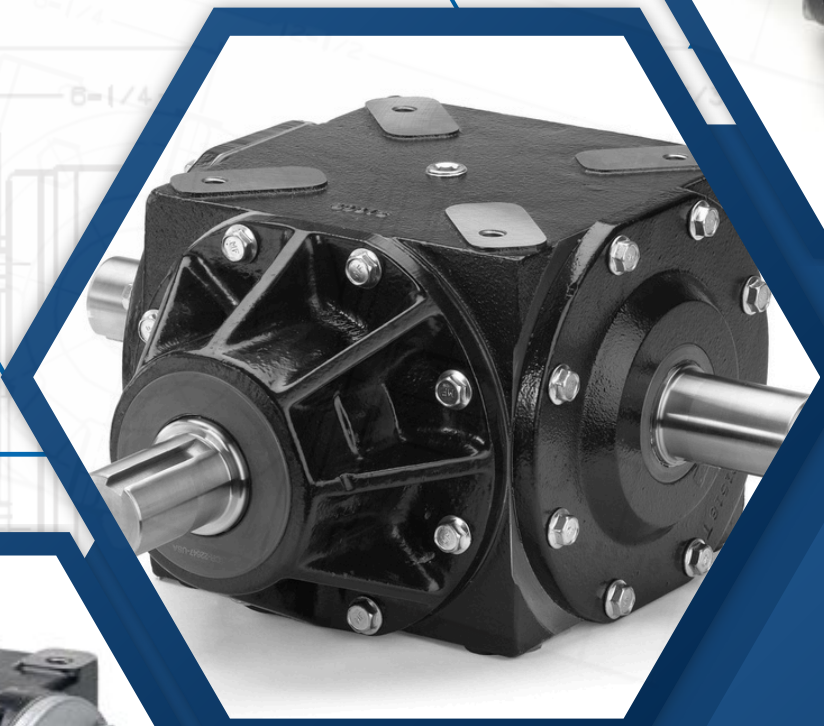
2026-01

MECHANICAL
RIGHT ANGLE BEVEL GEARBOXES

(763) 682-3122

VRM.Sales@vonruden.com

www.vonruden.com



All Von Ruden products are 100% manufactured and repaired in Buffalo, Minnesota

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Right Angle Bevel Gearboxes

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Shaft Diameter	RPM	HP	Ratios	Gears
Model 15				
.625	3000	18	1:1 1:5:1 2:1 1:1.5 1:2	Spiral Straight Cut
Model 25				
.75	3000	36	1:1 1:5:1 2:1 1:1.5 1:2	Spiral Straight Cut
Model 27				
1.0	3000	32	1:1 1:5:1 2:1 3:1 1:1.5 1:2 1:3	Spiral Straight Cut
Model 33				
1.0	3000	69	1:1 1:5:1 2:1 1:1.5 1:2	Spiral Straight Cut
Model 40				
1.0	3000	69	1:1 1:5:1 2:1 1:1.5 1:2	Spiral Straight Cut
Model 90				
1.25	2800	87	1:1 1:5:1 2:1 1:1.5 1:2	Spiral Straight Cut
Model 93				
1.375	2500	149	1:1 1:5:1 2:1 1:1.5 1:2 1:3	Spiral Straight Cut
Model 110				
1.5	1750	175	1:1 1:5:1 2:1	Spiral Straight Cut
Model 113				
1.75 (2.0 opt)	1750	202	1:1 1:5:1 2:1 3:1 1:1.5 1:2 1:3	Spiral Straight Cut

Von Ruden Manufacturing, Inc.

2026-01

FLUID POWER
HYDRAULIC MOTORS

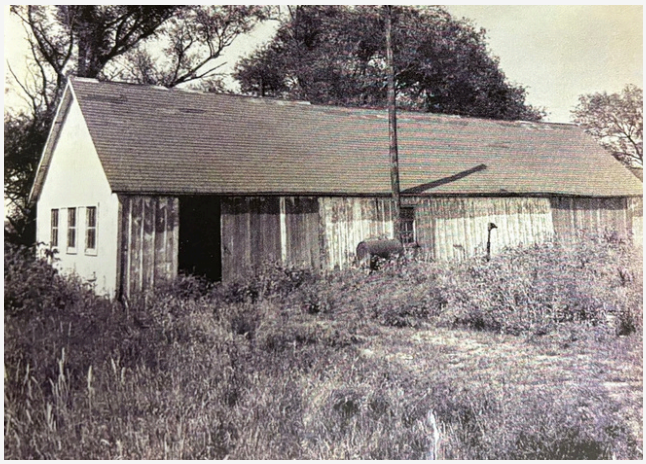
MECHANICAL
BEVEL GEARBOXES

TOOL PRODUCTS
DRIVEN TOOL HOLDERS

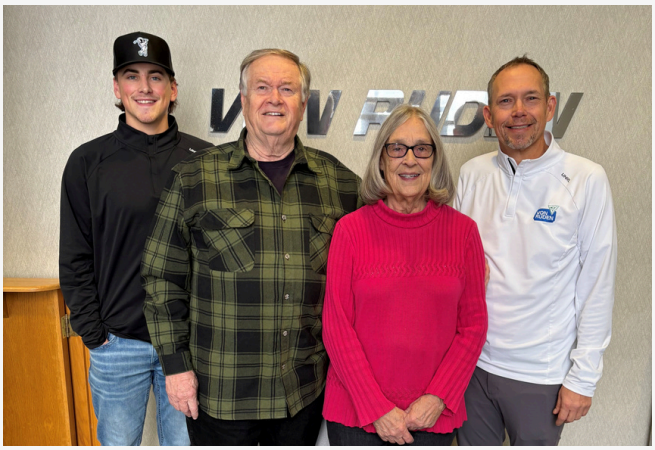
A family-owned, 100% American-made company with 80 years of experience designing, manufacturing, repairing, and distributing high-performance components. Our products include live and static tooling for machine tools, as well as hydraulic motors, brakes, load adaptors, and bevel gearboxes for mobile and industrial markets.

QUALITY THAT DRIVES – SINCE 1946

Founded in southern Minnesota, Von Ruden began as a tractor saw manufacturer and quickly grew into a leader in motion and power transmission. Today, we manufacture premium hydraulic motors, gearboxes, brakes, tooling, and precision accessories, all designed to meet diverse performance, pricing, and delivery needs. For 80 years, our name has stood for quality, reliability, and innovation.



Von Ruden was founded in 1946 in a small shed in Claremount, Minnesota.



Pictured Left to Right: Marketing Bennett Anderson, CEO Al Anderson, Administration Linda Anderson , and President Brandon Anderson.

RETURN TO FAMILY DRIVEN – SINCE 1989

In 1989, Von Ruden returned to family ownership when Al Anderson acquired the Power Components division from WSI. Relocating to Buffalo, MN, we focused on innovation, investing in cutting-edge technology. When market options didn't meet our standards, we engineered our own, launching into the driven tooling market in 1999. What began as an internal solution is now trusted by shops worldwide.

ENGINEERING THE FUTURE

The future of Von Ruden is built on the same core values that shaped our legacy: quality, innovation, and customer-focused solutions.

From factory floors to field applications, you'll find Von Ruden products making a difference.

All Von Ruden products are 100% manufactured and repaired in Buffalo, Minnesota

www.vonruden.com | Buffalo, MN, USA. | (763) 682-3122

Von Ruden Manufacturing, Inc.

MECHANICAL RIGHT-ANGLE BEVEL GEARBOXES

2026-01

Description

- Change the direction of power transmission
- Two or more purposes are accomplished simultaneously
- Transmit torque at an angle (commonly 90°)
- Reduce speed and increase torque/speed
- These functions are combined in a single application often.
- Cast Iron Housing

Customizability

Von Ruden manufactures specials to meet unique application needs.

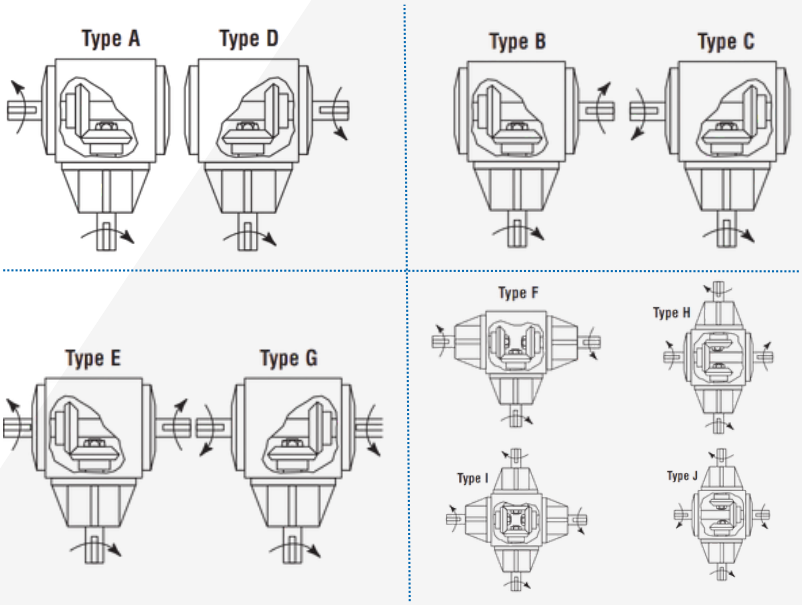
Options:

- Custom shaft lengths and features
- Spiral or straight gears
- Modified housing configurations

Capabilities

- Reversible rotation configurations
- Tapered roller bearings standard
- Hydraulic motor input flange available
- Flexible shaft and mounting configurations
- Press-fit gears & bearings for max rigidity
- Metal shims only – no paper or plastic
- Speed-reducing and speed-increasing options
- Aluminum end caps & housings for better heat dissipation
- Gears made from carburized 8620 steel
- Double-lip, spring-loaded shaft seals
- One lip seals in oil, One lip keeps dirt out
- Models available up to 200 HP

CONFIGURATIONS



STANDARD BEVEL GEARBOX OVERVIEW

Model	Pinion Shaft Dia. (Inches)	Max Input Speed (RPM)	Max Input Horsepower	Gear Reduction Ratios	Speed Up Ratios	Gear Types
15	.625	3000	18	1:1 1.5:1 2:1	1:1.5 1:2	Straight Spiral
25	.75	3000	36	1:1 1.5:1 2:1	1:1.5 1:2	Straight Spiral
27	1.0	3000	32	1:1 1.5:1 2:1 3:1	1:1.5 1:2 1:3	Straight Spiral
33	1.0	3000	69	1:1 1.5:1 2:1	1:1.5 1:2	Straight Spiral
40	1.0	3000	69	1:1 1.5:1 2:1	1:1.5 1:2	Straight Spiral
90	1.25	2800	87	1:1 1.5:1 2:1	1:1.5 1:2	Straight Spiral
93	1.375	2500	149	1:1 1.5:1 2:1	1:1.5 1:2 1:3	Straight Spiral
110	1.5	1750	175	1:1 1.5:1 2:1		Straight Spiral
113	1.75 (2.0 opt.)	1750	202	1:1 2.5:1 2:1 3:1	1:1.5 1:2 1:3	Straight Spiral

MODELS

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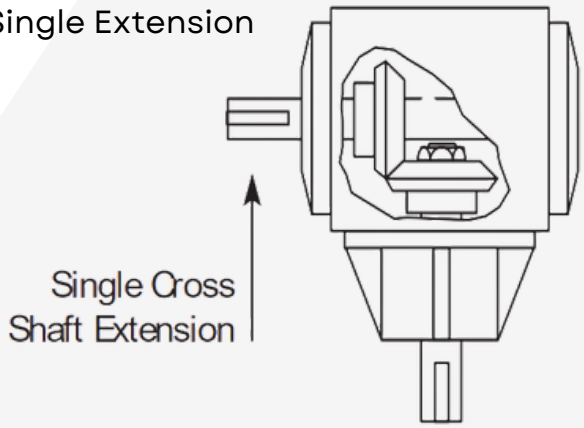
Gearbox Configurations

Right Angle Bevel Gearboxes

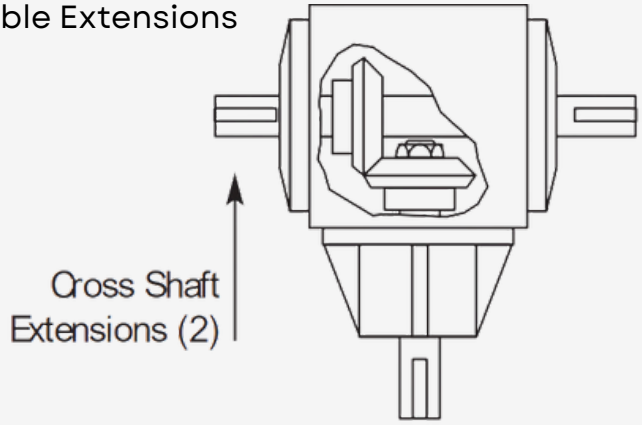
2026-01

Cross Shaft Extensions

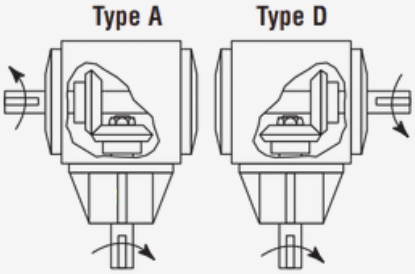
Single Extension



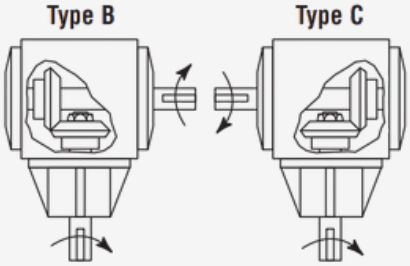
Double Extensions



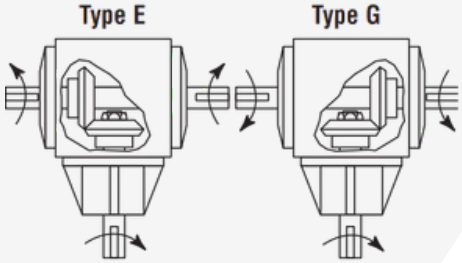
Cross Shaft Direction of Rotation



Types A and D are the same gearbox turned over. Note the gear is **next** to the cross shaft extension (causing CCW rotation of the cross shaft).

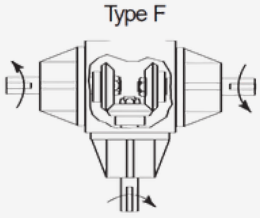


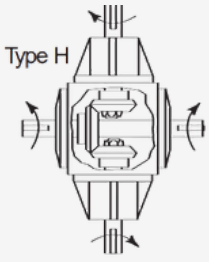
Types B and C are the same gearbox turned over. Note the gear is **opposite** the cross shaft extension (causing CW rotation of the cross shaft).

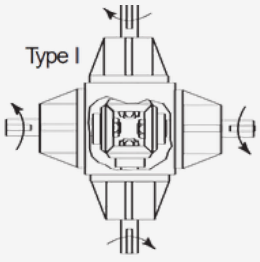


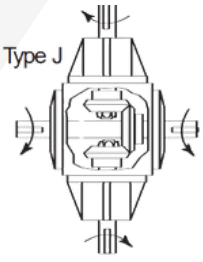
Types E and G are the same gearbox turned over. In some cases (for higher reduction ratios) the cross shaft extension nearest the gear will be smaller in diamter than the other extension to accommodate gear installation

Other Configurations (Non-Catalogued)









Gear Reduction Ratio

Gear Reduction ratio applies to speed. A 2:1 reduction means that the speed will be reduced by a factor of two or to 50%.

If the gear reduction reduces speed by 50%, the resulting torque will be doubled.

Example:

Gear Ratio	2:1
Input Speed	150 rpm
Output Speed	150/2 = 75 rpm
Input Torque	1000 lb. - inches
Output Torque	1000 x 2 = 2000 lb. inches

In all current Von Ruden bulletins, the ratio is deterined from the pinion shaft ot the cross shaft.

The cross shaft can be used as the input shaft. The ratio would be reversed. A 2:1 reducer would become a 1:2 increaser.

Types of Bevel Gears

Right Angle Bevel Gearboxes

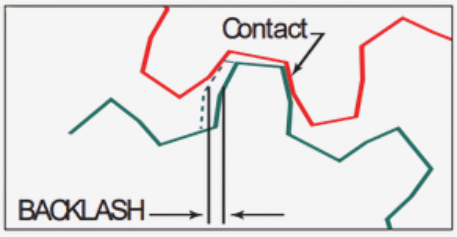
2026-01

	SPIRAL	STRAIGHT
HORSEPOWER	More teeth in continuous contact and increased tooth beam strength. Thrust load imposed reduces bearing life.	Standard
SPEED	Highest - due to better lubrication/contact.	Standard
NOISE LEVEL	Best - more continuous tooth contact	Standard
COST PER GEAR	Highest - extra machining required.	Moderate - cost influenced by set-up in quantities less than 100.
TOOLING EXPENSE	Low - primarily a gear cutter.	Low - primarily a gear cutter.
ECONOMICAL PRODUCTION LOT SIZE	Low - cost influenced by set-up.	Low - cost influenced by set-up in quantities less than 100.

Backlash

Standard backlash: 0.004" minimum
0.012" to 0.015" maximum

*Other backlash provided on special order.



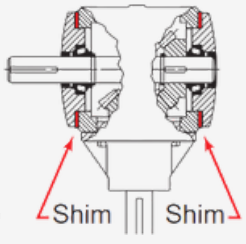
Backlash = the shortest distance between the non-contacting surfaces of adjacent gear teeth.

Shimming Procedure

Gear boxes are shimmed for consistent backlash using the process below.

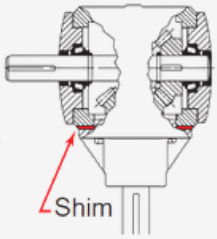
STEP 1:

Shim bearings on cross shaft to acceptable end play of 0.003" to 0.001"



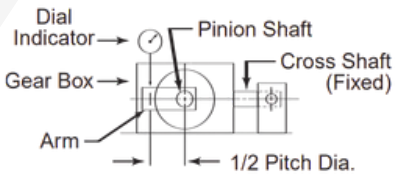
STEP 2:

Shim pinion housing to achieve proper backlash and gear tooth contact



STEP 3:

Measure backlash



Why Choose Von Ruden?

Right Angle Bevel Gearboxes ✓

2026-01

Built for Engineering Needs

- Models up to 200 hp.
- Choices of gear types and ratios.
- Speed reducing and increasing models.
- Direction of rotation options.
- Hydraulic motor input flange option.
- Configuration options.

Ease of Repair

- Designed for serviceability with readily available parts and in-house repair support.
- End caps and pinon housings remove easily. (No need for a special access cover.) Only locking nuts or locking tab washers used internally. Threads are not staked.
- Expert factory support provides repair assistance when needed.

100% American-Made & Family-Owned

- Proudly designed, manufactured, and assembled in Buffalo, Minnesota.
- Over 80 years of craftsmanship and reliability.
- 100% American made.
- Supporting American jobs with every gearbox we produce.

Features

- Wide range of ratios and shaft arrangements to fit diverse applications.
- Compact design delivers high torque in a space-saving package.
- Flexible mounting options allow easy integration into existing systems.

Competitive Delivery

- Efficient production and U.S.-based manufacturing mean shorter lead times.
- Responsive team ensures your order is delivered when you need it.

Extended Working Life

- Press-fit gears and bearings for superior rigidity and maximum performance.
- Properly shimmed gears and bearings for consistent backlash.
- No paper or plastic shims. Metal shims used throughout.
- Tapered roller (not ball) bearings throughout.
- Aluminum end caps and pinion housings on most models for improved heat dissipation.
- High strength steel alloys – gears cut from 8620 steel, the carburized and hardened.
- Improved shaft seals – spring loaded double lip design. One lip seals in the oil, the other seals out dirt. All shafts are specially ground/burnished at the seal area for extended life.

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APPLICATIONS

Right Angle Bevel Gearboxes

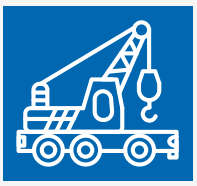
2025-11

Agricultural

Augers/Elevators
Fans
Feed Mills/Blenders
Fertilizer Spreaders
Food Handling
Forage
Harvesters/Blowers
Grain Bin Augers
Grain Dryers
Grain Wagons
Grinders/Mixers
Harvesters
Hay Balers
Manure Spreaders
Power Rakes
Rock Pickers
Rotary
Mowers/Cutters
Tillers
Tub Grinders

Industrial

Antennas
Bonding Equipment
Bottling Equipment
Business Form Presses
Collating Machinery
Conveyors & Drives
Feed Screw Drives
Film Processors
Food Processing
Gate Valve Actuators
Lifts/Hoists/Jacks
Material Handling
Metering Augers
Mixing Equipment
Newspaper Conveyors
Paper Conveying
Plastic Extruders
Printing Presses
Robotics
Rubber Processing
Sewage Agitators
Sewage Conveyors
Solar Panels
Feed Screw Drives
Scissors Lifts
Snow Blowers
Street Sweepers
Mowers
Pump Drives
Wrapping Machines



Mobile & Other

Bulkhead Door Openers
Car Wash Curtains
Cranes
Dual Steering
Fan/Blower Drives
Misc. Conveyors
Mining Equipment
Commercial Mowers
Pump Drives
Residential Mowers
Sand Spreaders
Scissors Lifts
Snow Blowers
Street Sweepers

Specials

Current gearbox specials featuring customizable ratios, mounting options, and shaft configurations designed to fit exact applications. Contact factory for more information.

- **Tailored Solutions** – Gearboxes engineered to meet unique torque, speed, and mounting requirements.
- **Flexible Configurations** – Custom shaft arrangements, ratios, and housings available.
- **Application-Specific Design** – Built to integrate seamlessly into your equipment or machinery.
- **Collaborative Engineering** – Work directly with our team to design a gearbox that matches your specifications.
- **Scalable Production** – From one-off prototypes to production runs.
- **Responsive Lead Times** – Efficient processes ensure timely delivery on customs.

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MODEL 15

Right Angle Bevel Gearboxes

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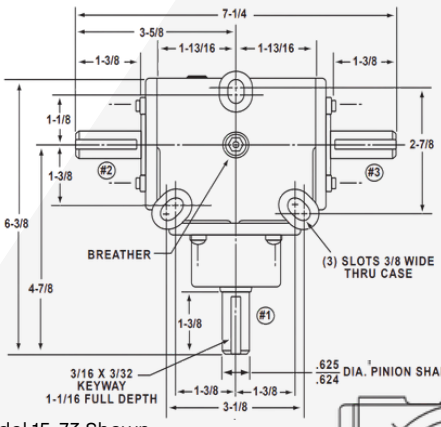
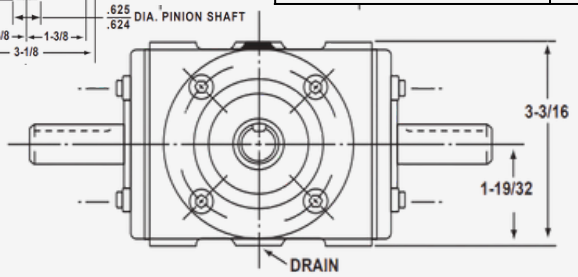


*Model 15-73 Shown Above



Weight = 5 lbs. (approx.)

Oil Capacity = 4 oz. (approx.)

Lightweight, High Strength Cast Aluminum Housing

*Model 15-16 Shown Below

KEYWAYS

.500/.498 Dia. Shafts	.625/.624 Dia. Shafts
1/8" x 1/16 " 1-1/16" Full Depth	3/16" x 3/32 " 1-1/16" Full Depth

CROSS SHAFT

Type E 1:2 RATIO ONLY	Type G 1:2 RATIO ONLY
Shaft #2 .500/.498 Dia.	Shaft #3 .500/.498 Dia.
All Other Types & Ratios .625/.624 Dia.	

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	500	700	1000	1200	1750	2500	3000
Spiral 1:1 Reduction	Gear Strength	.05	.50	1.6	2.6	3.7	5.2	6.3	9.2	13.1	15.7
	1000 hr L10	*	*	*	*	3.6	4.5	5.2	7.0	9.0	10.0
	5000 hr L10	*	*	1.2	1.7	2.2	2.8	3.2	4.2	5.4	6.0
Spiral 1.5:1 Reduction	Gear Strength	.10	.30	1.0	1.7	2.3	3.4	4.0	5.9	8.4	10.0
	1000 hr L10	*	*	*	*	*	*	*	5.2	6.6	7.6
	5000 hr L10	*	*	.90	1.3	1.7	2.2	2.5	3.2	4.1	4.7
Spiral 2:1 Reduction	Gear Strength	.02	.20	.50	1.0	1.2	2.0	2.2	3.2	4.6	5.5
	1000 hr L10	*	*	*	*	*	*	*	*	*	5.3
	5000 hr L10	*	*	*	*	*	1.5	1.7	2.2	3.0	3.3
Straight 1:1 Reduction	Gear Strength	.10	.60	1.8	3.0	4.1	5.9	7.1	10.4	14.8	17.8
	1000 hr L10	*	*	*	3.0	4.1	5.9	7.1	10.4	14.4	16.4
	5000 hr L10	*	*	*	2.9	3.6	4.7	5.3	6.9	8.9	10.1
Straight 1.5:1 Reduction	Gear Strength	.06	.20	.70	1.2	1.7	2.5	3.0	4.3	6.2	7.4
	1000 hr L10	*	*	*	*	*	*	*	*	*	*
	5000 hr L10	*	*	*	*	*	*	*	*	*	*
Straight 2:1 Reduction	Gear Strength	.02	.20	.60	1.0	1.3	2.0	2.3	3.4	5.0	6.0
	1000 hr L10	*	*	*	*	*	*	*	*	*	*
	5000 hr L10	*	*	*	*	*	*	*	*	*	*
Straight 1:1.5 Speed Up	Gear Strength	.04	.40	1.2	2.0	2.7	3.9	4.7	6.9	9.8	**
	1000 hr L10	*	*	*	*	*	*	*	*	*	**
	5000 hr L10	*	*	*	*	*	*	*	*	*	**
Straight 1:2 Speed Up	Gear Strength	.03	.30	.90	1.5	2.1	3.1	3.7	5.4	7.7	**
	1000 hr L10	*	*	*	*	*	*	*	*	*	**
	5000 hr L10	*	*	*	*	*	*	*	*	*	**

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

MODEL NUMBERS

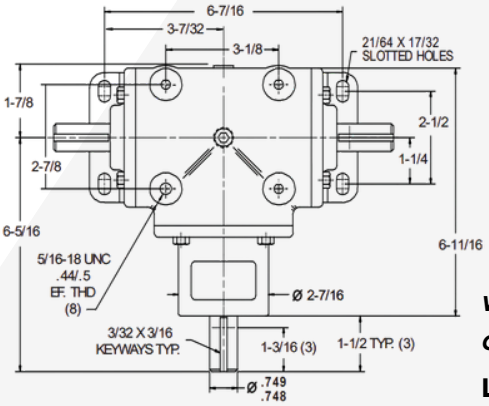
SHAFT ARRANGEMENT & ROTATION

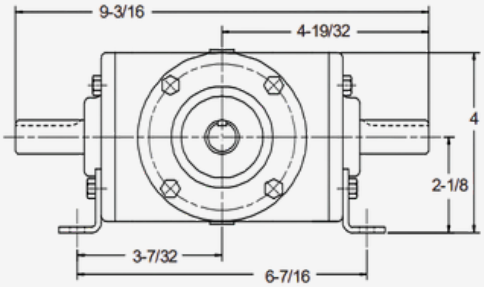
GEARS	RATIO	Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	15-69 15-218 15-225	15-69 15-218 15-225	15-70 15-219 15-226	15-70 15-219 15-226	15-73 15-222 15-229	15-73 15-222 15-229
Straight Cut	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	15-00 15-01 15-03	15-00 15-01 15-03	15-04 15-05 15-07	15-04 15-05 15-07	15-16 15-17 15-19	15-16 15-17 15-19
Straight Cut	1:1.5 Speed Up 1:2 Speed Up	15-02 15-33	15-02 15-33	15-06 15-54	15-06 15-54	15-18 15-56	15-18 15-56

MODEL 25

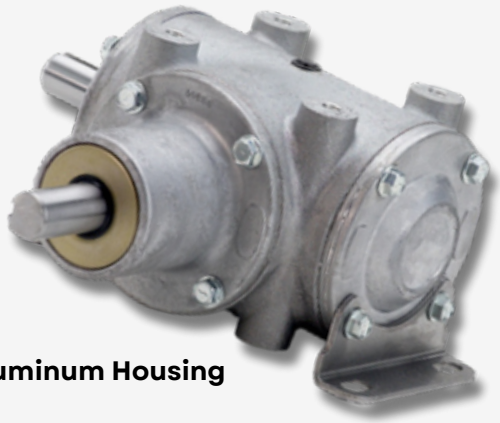
Right Angle Bevel Gearboxes

2026-01





*Model 25-00 Shown Below



Weight = 9 lbs. (approx.)

Oil Capacity = 8 oz. (approx.)

Lightweight, High Strength Cast Aluminum Housing

*Model 25-144 Shown Above

CROSS SHAFT

ALL TYPES 1:2 RATIO ONLY	ALL OTHER TYPES AND RATIOS
.625/.624" Dia	.749/.748" Dia

KEYWAYS

3/16 x 3/32" 1-3/16" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	500	700	1000	1200	1750	2500	3000
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.2 * 1.1	3.6 * 2.3	6.0 5.3 3.3	8.4 6.8 4.2	12.0 8.7 5.4	14.4 10.0 6.2	20.3 13.1 8.1	30.0 16.7 10.3	36.0 19.0 11.7
Straight 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.2 * *	3.7 * *	6.2 * 5.4	8.7 * 6.9	12.5 * 8.8	15.0 * 10.1	21.9 21.2 13.1	** ** **	** ** **
Straight 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.80 * *	2.6 * *	4.3 * 3.8	6.0 * 4.8	8.5 * 6.2	10.2 * 7.0	15.0 14.7 9.1	21.3 19.0 11.7	25.6 21.5 13.3
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.50 * *	1.4 * *	2.4 * *	3.4 * *	4.8 * *	5.8 * 5.4	8.5 * 7.1	12.1 * 9.0	14.6 * 10.3
Straight 1:1.5 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.0 * *	3.2 * *	5.3 * 5.2	7.5 * 6.6	10.7 * 8.4	12.8 * 9.6	18.7 * 12.5	** ** **	** ** **
Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.70 * *	2.2 * *	3.7 * *	5.2 * *	7.4 * *	8.9 * *	13.0 * 12.2	** ** **	** ** **

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

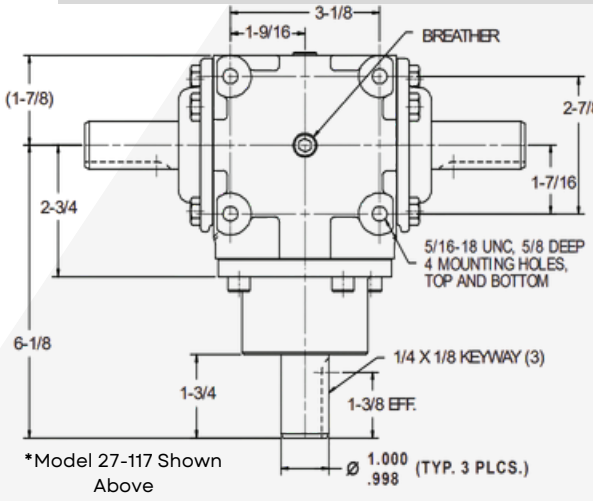
MODEL NUMBERS

GEARS	RATIO	SHAFT ARRANGEMENT & ROTATION Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction	25-138	25-141	25-139	25-140	25-142	25-144
Straight Cut	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	25-00 25-01 25-68	25-09 25-10 25-71	25-03 25-04 25-69	25-06 25-07 25-70	25-12 25-13 25-72	25-16 25-17 25-74
Straight Cut	1:1.5 Speed Up 1:2 Speed Up	25-02 25-126	25-11 25-131	25-05 25-127	25-08 25-130	25-14 25-115	25-18 25-132

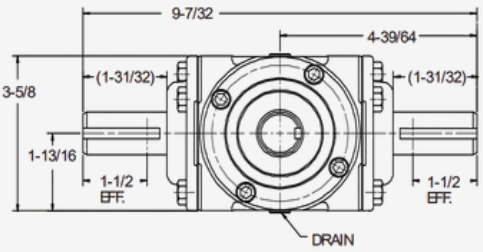
MODEL 27

Right Angle Bevel Gearboxes

2026-01



*Model 27-117 Shown Above



Weight = 12 lbs. (approx.)

Oil Capacity = 6 oz. (approx.)

Rugged Cast Iron Housing

*Model 27 CUT Shown Below

CROSSHAFT

3:1 Ratio Only	.750/.748" Diameter

KEYWAYS

3:1 Ratio Only	3/16" x 3/32" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	540	700	1000	1200	1750	2500	3000
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.11 * *	1.1 * *	3.3 * *	5.9 * 5.6	7.7 * 7.1	10.9 * 9.1	13.1 * 9.1	19.0 * 14.0	27.0 * 14.0	32.0 * 20.0
Spiral 3:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.02 * *	.20 * *	.50 * *	1.0 * .90	1.3 * 1.1	1.8 * 1.4	2.1 * 1.6	3.0 * 2.0	4.0 * 2.5	5.0 * 3.0
Straight 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.12 * *	1.2 * *	3.6 * *	5.9 * *	8.3 * *	11.8 * *	14.1 * *	20 * *	** ** **	** ** **
Straight 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.08 * *	.80 * *	2.5 * *	4.2 * *	5.9 * *	8.3 * *	10.0 * 8.6	15.0 * 12.0	21.0 * 16.0	25.0 * 18.0
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.05 * *	.50 * *	1.4 * *	2.4 * *	3.4 * *	4.8 * *	5.7 * *	8.0 * *	12.0 * *	14.0 * 13.0
Straight 1:1.5 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.11 * *	1.1 * *	3.2 * *	5.4 * *	7.5 * *	10.7 * *	12.8 * *	19.0 * *	** ** **	** ** **
Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.07 * *	.70 * *	2.2 * *	3.7 * *	5.1 * *	7.4 * *	8.9 * *	13.0 * *	** ** **	** ** **

**Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle.* *See Rating Explanation on Page 19 & installation/lubrication information on Page 20.*

MODEL NUMBERS

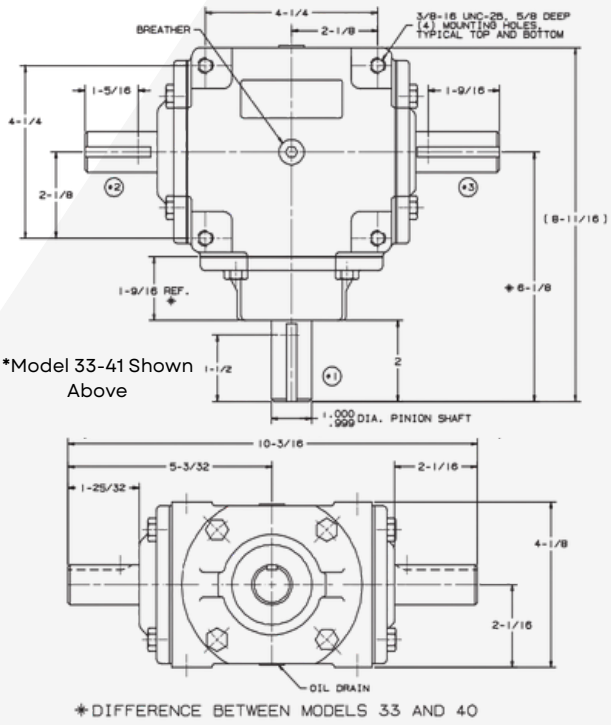
GEARS	RATIO	SHAFT ARRANGEMENT & ROTATION Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction 3:1 Reduction	27-115 27-118	27-115 27-118	27-116 27-119	27-116 27-119	27-117 27-120	27-117 27-120
Straight Cut	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	27-100 27-103 27-106	27-100 27-103 27-106	27-101 27-104 27-107	27-101 27-104 27-107	27-102 27-105 27-108	27-102 27-105 27-108
Straight Cut	1:1.5 Speed Up 1:2 Speed Up	27-109 27-112	27-109 27-112	27-110 27-113	27-110 27-113	27-111 27-114	27-111 27-114

www.vonruden.com Buffalo, MN, USA. (763) 682-3122

MODEL 33

Right Angle Bevel Gearboxes

2026-01



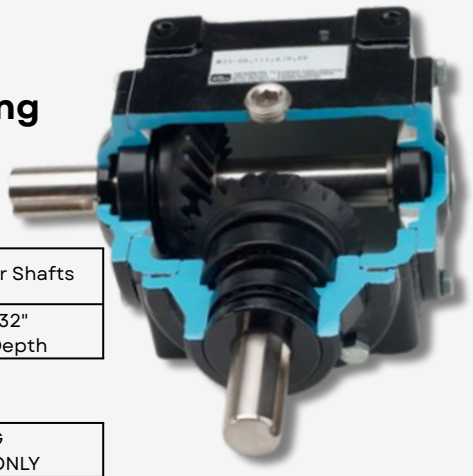
*Model 33-41 Shown Above

*DIFFERENCE BETWEEN MODELS 33 AND 40

Weight = 16 lbs. (approx.)

Oil Capacity = 16 oz. (approx.)

*Model 33-08 CUT Shown Below



Rugged Cast Iron Housing

KEYWAYS

1.000" Diameter Shafts	.688" Diameter Shafts
1/4" x 1/8" Full Depth	3/16" x 3/32" 1-3/8" Full Depth

CROSS SHAFT

TYPE E 1:2 RATIO ONLY	TYPE G 1:2 RATIO ONLY
Shaft #2 .688 / .686" Diameter	Shaft #2 1.000 / .999" Diameter
Shaft #3 1.000 / .999" Diameter	Shaft #3 .688 / .686" Diameter
ALL OTHER TYPES & SHAFTS 1.000 / .999" Diameter	

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	500	700	1000	1200	1750	2500	3000
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	2.3 * *	6.9 * *	11.6 11.3 7.0	16.2 14.3 8.8	23.1 18.4 11.3	27.7 20.9 12.9	40.5 27.2 16.8	57.8 34.9 21.5	69.3 39.6 24.5
Spiral 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.0 * *	3.1 * *	5.1 10.0 *	7.2 11.8 5.0	10.3 15.2 6.4	12.3 22.5 7.2	18.0 24.8 9.4	25.7 28.0 12.1	30.8 31.3 13.7
Spiral 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.80 * *	2.4 * *	4.3 * *	5.6 * 3.9	7.9 * 5.0	9.5 * 5.6	13.9 * 7.3	19.9 * 9.4	23.8 * 10.7
Straight 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.27 * *	2.73 * *	8.18 * *	13.63 * *	19.08 * 16.2	27.26 * 20.7	32.71 * 23.6	47.71 * 30.62	** ** **	** * **
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.80 * *	2.4 * *	4.1 * *	5.7 * *	8.2 * *	9.8 * *	14.3 * *	20.4 * *	24.4 * *
Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.3 * *	3.9 * *	6.5 * *	9.1 * *	12.9 * *	15.5 * *	22.6 * *	** ** **	** ** **

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

MODEL NUMBERS

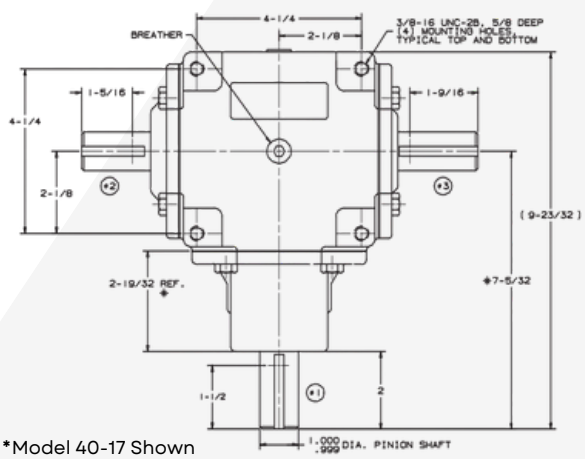
SHAFT ARRANGEMENT & ROTATION

GEARS	RATIO	Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	33-08 33-13 33-14	33-08 33-13 33-14	33-40 33-42 44-44	33-40 33-42 44-44	33-41 33-43 33-45	33-41 33-43 33-45
Straight Cut	1:1 Reduction 2:1 Reduction	33-66 33-03	33-66 33-03	33-67 33-36	33-67 33-36	33-68 33-37	33-68 33-37
Straight Cut	1:2 Speed Up	33-06	33-06	33-38	33-38	33-39	33-39

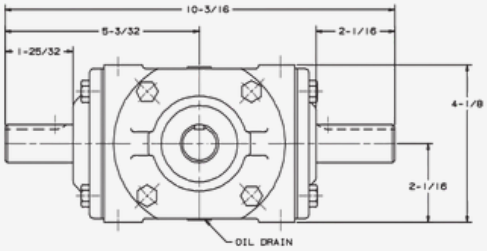
MODEL 40

Right Angle Bevel Gearboxes

2026-01



*Model 40-17 Shown Above



*DIFFERENCE BETWEEN MODELS 33 AND 40

Weight = 17 lbs. (approx.)

Oil Capacity = 16 oz. (approx.)

Rugged Cast Iron Housing

*Model 40-21 Shown Below

CROSS SHAFT

TYPE E 1:2 RATIO ONLY	TYPE G 1:2 RATIO ONLY
Shaft #2 .688 / .686" Diameter	Shaft #2 1.000 / .999" Diameter
Shaft #3 1.000 / .999" Diameter	Shaft #3 .688 / .686" Diameter
ALL OTHER TYPES & SHAFTS 1.000 / .999" Diameter	

KEYWAYS

1.000" Diameter Shafts	.688" Diameter Shafts
1/4" x 1/8" Full Depth	3/16" x 3/32" 1-3/8" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	500	700	1000	1200	1750	2500	3000
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.02 * *	2.3 * *	6.9 * *	11.6 11.3 7.0	16.2 14.3 8.8	23.1 18.4 11.3	27.7 20.9 12.9	40.5 27.2 16.8	57.8 34.9 21.5	69.3 39.6 24.5
Spiral 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.0 * *	3.1 * *	5.1 10.0 *	7.2 11.8 5.0	10.3 15.2 6.4	12.3 22.5 7.2	18.0 22.5 7.2	25.7 28.0 12.1	30.8 31.3 13.7
Spiral 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.80 * *	2.4 * *	4.3 * *	5.6 * 3.9	7.9 * 5.0	9.5 * 5.6	13.9 * 7.3	19.9 * 9.4	23.8 * 10.7
Straight 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.27 * *	2.73 * *	8.18 * *	13.63 * *	19.08 * 16.12	27.26 * 20.7	32.71 * 23.6	47.71 * 30.62	** ** **	** * **
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	.80 * *	2.4 * *	4.1 * *	5.7 * *	8.2 * *	9.8 * *	14.3 * *	20.4 * *	24.4 * *
Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.3 * *	3.9 * *	6.5 * *	9.1 * *	12.9 * *	15.5 * *	22.6 * *	** ** **	** ** **

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

MODEL NUMBERS

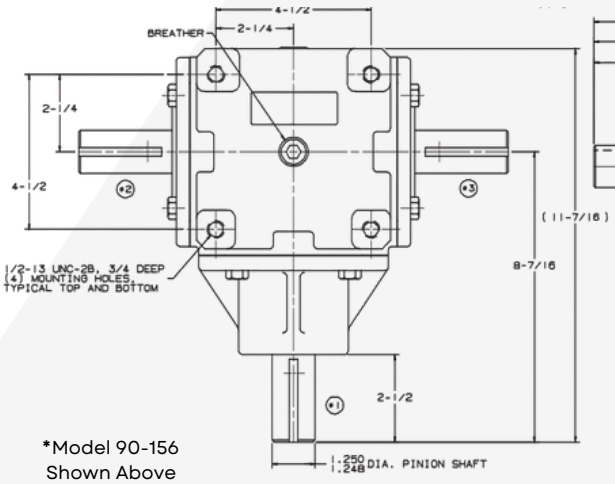
SHAFT ARRANGEMENT & ROTATION

GEARS	RATIO	Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	40-15 40-18 40-21	40-15 40-18 40-21	40-16 40-19 40-22	40-16 40-19 40-22	40-17 40-20 40-23	40-17 40-20 40-23
Straight Cut	1:1 Reduction 2:1 Reduction	40-152 40-06	40-152 40-06	40-153 40-07	40-153 40-07	40-154 40-08	40-154 40-08
Straight Cut	1:2 Speed Up	40-12	40-12	40-13	40-13	40-14	40-14

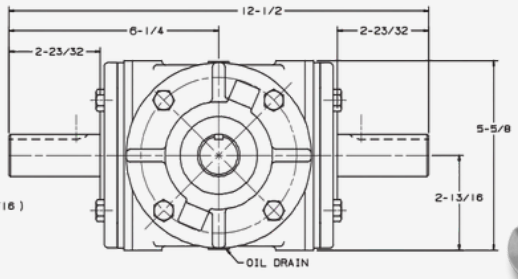
MODEL 90

Right Angle Bevel Gearboxes

2026-01



*Model 90-156 Shown Above



Weight = 35 lbs. (approx.)

Oil Capacity = 24 oz. (approx.)

Rugged Cast Iron Housing

*Model 90-58 Shown Below

CROSS SHAFT

TYPE E 1:2 RATIO ONLY	TYPE G 1:2 RATIO ONLY
Shaft #2 .875 / .874" Diameter	Shaft #3 .875 / .874" Diameter
ALL OTHER TYPES & SHAFTS 1.250 / 1.248" Diameter	

KEYWAYS

1/4" x 1/8"	2" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	540	700	1000	1750	2000	2400	2800
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	.30 * 2.4	9.3 8.3 5.1	11.3 12.5 7.7	13.6 15.0 9.3	17.4 19.3 11.9	54.1 28.5 17.6	61.9 31.3 19.3	74.2 35.6 22.0	86.6 39.7 24.5
Spiral 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	2.0 * 1.9	6.0 * 4.0	10.7 10.0 6.1	14.0 11.8 7.3	19.9 15.2 9.4	34.8 22.5 13.9	39.8 24.8 15.3	47.7 28.0 17.3	55.7 31.3 19.3
Straight 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.40 * *	4.0 * *	12.01 * *	21.62 * 15.71	28.03 * 18.84	40.06 39.17 24.18	** ** **	** ** **	** ** **	** ** **
Straight 1:5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	2.1 * *	6.3 * *	11.4 * 6.3	14.8 * 7.5	21.1 ** 9.6	** ** **	** ** **	** ** **	** ** **
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.10 * *	1.4 * *	4.2 * *	7.6 * 6.8	9.8 * 8.1	14.0 * 11.2	24.5 * 15.4	28.1 27.0 16.9	33.7 31.0 19.2	39.3 34.6 21.4
Straight 1:1.5 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	2.2 * *	6,6 * *	11.8 * 10.8	15.3 * 13.0	22.0 ** 16.7	** ** **	** ** **	** ** **	** ** **
Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	.21 * *	6.4 * *	11.5 * 11.3	14.9 * 13.6	21.3 ** 17.4	** ** *	** ** *	** ** *	** **

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

MODEL NUMBERS

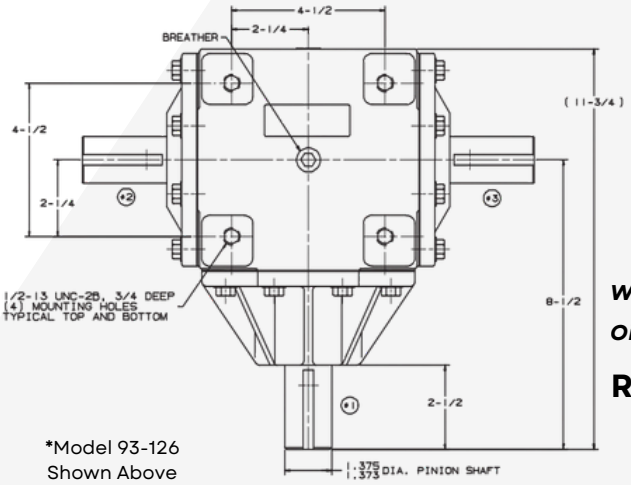
SHAFT ARRANGEMENT & ROTATION

GEARS	RATIO	Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction 1.5:1 Reduction	90-153 90-202	90-153 90-202	90-142 90-203	90-142 90-203	90-156 90-206	90-156 90-206
Straight Cut	1:1 Reduction 1.5:1 Reduction 2:1 Reduction	90-694 90-38 90-19	90-694 90-38 90-19	90-695 90-41 90-60	90-695 90-41 90-60	90-696 90-50 90-63	90-696 90-50 90-63
Straight Cut	1:1.5 Speed Up 1:2 Speed Up	90-37 90-161	90-37 90-161	90-40 90-108	90-40 90-108	90-156 90-206	90-156 90-206

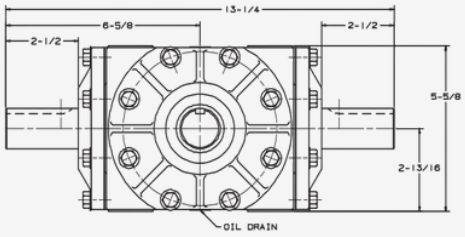
MODEL 93

Right Angle Bevel Gearboxes

2026-01



*Model 93-126
Shown Above

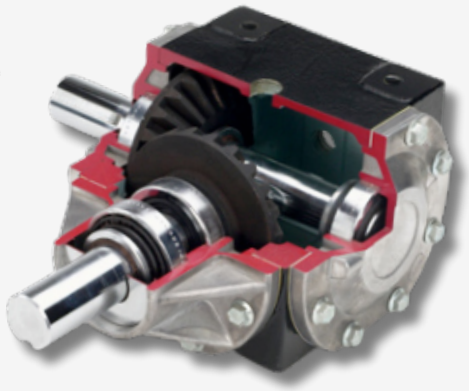


Weight = 41 lbs. (approx.)

Oil Capacity = 32 oz. (approx.)

Rugged Cast Iron Housing

*Model 93-100 Shown Below



SHAFTS (3)

1.375/1.373" Diameter	For increased horsepower, 1.5" shafts and longer pinion cap housing are available for special order

KEYWAYS

5/16" x 5/32"	1-7/8" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	540	700	1000	1750	2000	2500
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.75 * *	7.46 6.79 4.19	22.3 20.3 12.5	40.2 22.0 13.6	52.2 26.4 16.3	74.6 34.0 20.9	130.5 50.4 31.1	149 55.5 34.2	** ** **
Straight 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.40 * *	4.2 * 3.8	12.6 * 8.2	22.8 22.0 12.3	29.5 24.0 14.8	42.2 30.9 19.0	73.8 45.7 28.2	** ** **	** ** **
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.20 * *	2.1 * *	6.4 * *	11.6 * 10.9	15.0 * 13.2	21.4 * 17.0	37.6 * 25.0	42.9 * 27.0	53.7 52.0 32.1
Straight 3:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.17 * *	1.7 * *	5.1 * *	9.1 * *	11.8 * *	16.8 * *	29.5 * *	33.7 * *	42.1 38.7 29.3
Straight 1:1.5 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.50 * *	5.5 * *	16.7 * *	30.0 * *	38.9 37.3 23.0	55.6 47.9 29.5	** ** **	** ** **	** ** **
^Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.40 * *	4.0 * *	11.8 * 11.9	21.2 * 18.0	27.5 * 21.6	39.3 * 27.5	** ** **	** ** **	** ** **
^Straight 1:3 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.36 * *	3.6 * *	10.8 * *	19.4 * *	25.1 * *	35.8 * 32.6	** ** **	** ** **	** ** **

^Cross shaft used as input

**Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle.* *See Rating Explanation on Page 19 & installation/lubrication information on Page 20.*

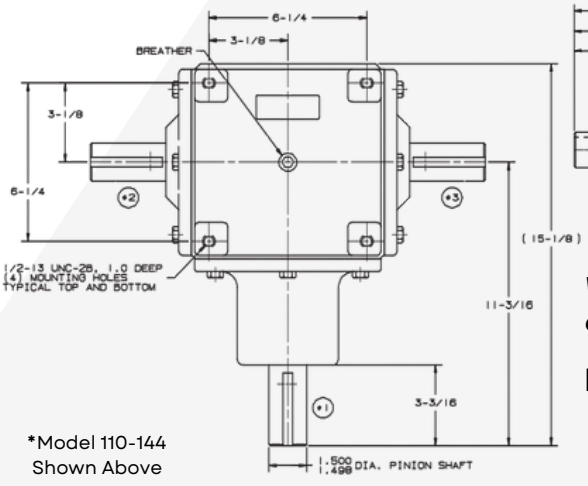
MODEL NUMBERS		SHAFT ARRANGEMENT & ROTATION					
		Type A	Type D	Type B	Type C	Type E	Type G
GEARS	**RATIO**						
Spiral	1:1 Reduction	93-124	93-124	93-125	93-125	93-126	93-126
Straight Cut	1.5:1 Reduction 1:1 Reduction 3:1 Reduction	93-106 93-109 93-129	93-106 93-109 93-129	93-107 93-110 93-130	93-107 93-110 93-130	93-108 93-111 93-131	93-108 93-111 93-131
Straight Cut	1:1.5 Speed Up 1:2 Speed Up^ 1:3 Speed Up^	93-115 93-109 93-129	93-115 93-109 93-129	93-116 93-110 93-130	93-116 93-110 93-130	93-117 93-111 93-131	93-117 93-111 93-131

^Cross shaft used as input

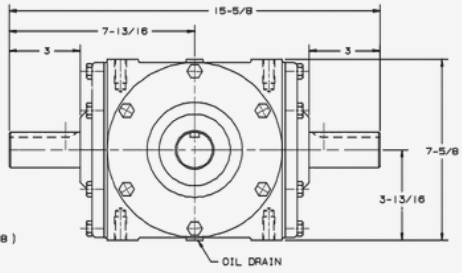
MODEL 110

Right Angle Bevel Gearboxes

2026-01



*Model 110-144 Shown Above



Weight = 85 lbs. (approx.)

Oil Capacity = 60 oz. (approx.)

Rugged Cast Iron Housing

*Model 110-03 Shown Below

SHAFTS (3)

1.500 / 1.498" Diameter

KEYWAYS

3/8" x 3/16"
2 - ½" Pinion Shaft (Effective Depth)
2 - 3/8" Pinion Shaft (Effective Depth)

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

GEARS/RATIO	INPUT RPM	10	100	300	540	700	1000	1200	1400	1600	1750
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	1.31 * *	13.13 * 9.55	39.4 33.4 20.62	70.92 50.41 31.12	91.94 60.49 37.34	131.34 77.55 47.87	157.61 88.09 54.38	183.88 98.27 60.66	210.15 107.73 66.5	229.85 114.79 70.86
Spiral 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.49 * *	4.88 * *	14.63 * 11.46	26.33 * 17.29	34.13 33.58 20.73	48.76 42.75 26.39	58.51 49.0 30.25	68.26 54.56 33.68	78.02 59.90 36.98	85.33 63.83 39.40
Straight 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.66 * *	6.62 * *	19.87 * *	35.77 * *	46.37 * 44.16	66.24 * 56.68	79.49 * 64.4	92.74 * 71.74	105.98 * 78.77	** ** **
Straight 21 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.36 * *	3.58 * *	10.73 * *	19.32 * *	25.05 * *	35.78 * *	42.94 * *	50.09 * *	57.25 * *	52.62 * *

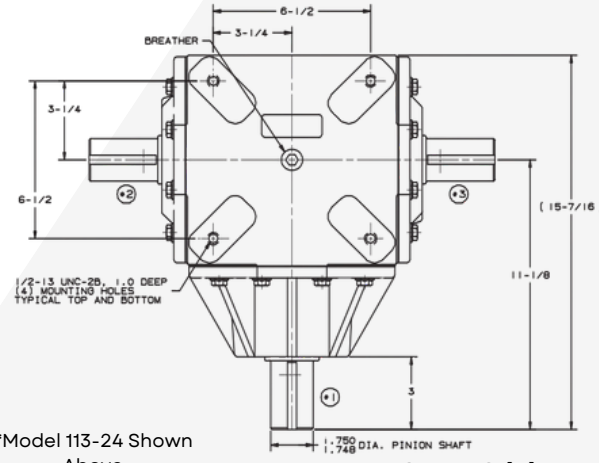
**Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle.* *See Rating Explanation on Page 19 & installation/lubrication information on Page 20.*

MODEL NUMBERS		SHAFT ARRANGEMENT & ROTATION					
		Type A	Type D	Type B	Type C	Type E	Type G
GEARS	RATIO						
Spiral	1:1 Reduction 2:1 Reduction	110-133 110-458	110-133 110-458	110-36 110-459	110-36 110-459	110-144 110-162	110-144 110-162
Straight Cut	1.5:1 Reduction 2:1 Reduction	110-06 110-85	110-06 110-85	110-10 110-86	110-10 110-86	110-04 110-89	110-04 110-89

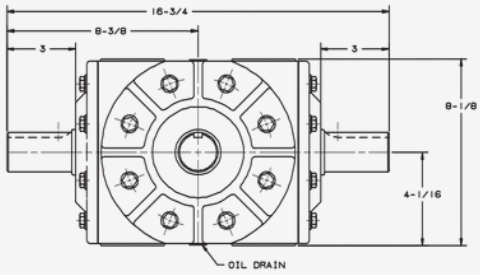
MODEL 113

Right Angle Bevel Gearboxes

2026-01



*Model 113-24 Shown Above

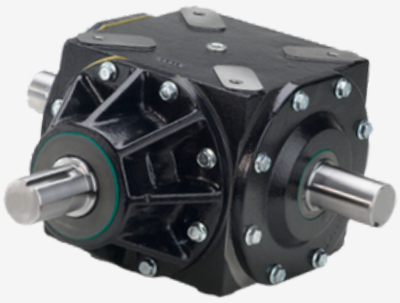


Weight = 120 lbs. (approx.)

Oil Capacity = 80 oz. (approx.)

Optional SAE C Hydraulic motor input flange available

*Model 113-02 Shown Below



Rugged Cast Iron Housing

SHAFTS (3)

1.750 / 1.748" Diameter	Shafts are 2" in diameter internally - turned down to 1.75" externally 2" diameter shafts are available for special order

KEYWAYS

3/8" x 3/16"	2 - 1/4" Full Depth

MAX HORSEPOWER RATINGS (1.0 SERVICE FACTOR)

^Cross shaft used as input

GEARS/RATIO	INPUT RPM	10	100	300	540	700	1000	1200	1750
Spiral 1:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	1.69 * *	16.8 * 13.8	50.6 48.5 29.9	91.1 73.2 45.2	118.2 87.8 54.2	168.8 112.6 69.5	202.6 128.0 79.0	* * *
Straight 1.35:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	1.3 * *	12.6 * *	37.7 * 37.3	67.9 * 56.3	88.0 * 67.5	125.7 * 86.6	150.8 * 98.4	** ** **
Straight 1.5:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	1.0 * *	10.0 * *	30.1 * *	54.2 * 51.3	70.3 * 61.5	100.4 * 79.0	120.5 * 89.7	** ** **
Straight 2:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.70 * *	7.0 * *	21.0 * *	37.7 * 34.9	48.9 * 41.8	69.9 * 53.7	83.9 *	122.3 * 79.4
Straight 3:1 Reduction	Gear Strength 1000 hr L10 5000 hr L10	.40 * *	3.8 * *	11.4 * *	20.5 * *	26.5 * *	37.9 * *	45.5 * *	66.3 * *
^Straight 1:1.35 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	1.5 * *	14.9 * *	44.6 * *	80.3 * 69.3	104.1 * 83.1	148.7 * 106.7	** ** **	** ** **
^Straight 1:1.5 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	1.43 * *	14.3 * *	42.9 * *	77.2 * 68.1	100.0 * 81.7	143.0 * 105.0	** ** **	** ** **
^Straight 1:2 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	1.16 * *	11.6 * *	34.8 * *	62.6 * 56.7	81.1 * 68.0	116.0 * 87.2	** ** **	** ** **
^Straight 1:3 Speed Up	Gear Strength 1000 hr L10 5000 hr L10	.8 * *	8.1 * *	24.2 * *	43.6 * *	56.5 * *	80.8 * *	** ** **	** ** **

*Use gear strength ratings only. **Pitch line velocity is too fast for proper gear lubrication depending on duty cycle. See Rating Explanation on Page 19 & installation/lubrication information on Page 20.

MODEL NUMBERS

SHAFT ARRANGEMENT & ROTATION

GEARS	RATIO	Type A	Type D	Type B	Type C	Type E	Type G
Spiral	1:1 Reduction	113-22	113-22	113-23	113-23	113-24	113-24
Straight Cut	1.35:1 Reduction	113-03	113-03	113-04	113-04	113-05	113-05
	1.5:1 Reduction	113-06	113-06	113-07	113-07	113-08	113-08
	2:1 Reduction	113-09	113-09	113-10	113-10	113-11	113-11
	3:1 Reduction	113-36	113-36	113-35	113-35	113-37	113-37
Straight Cut	1:1.35 Speed Up^	113-03	113-03	113-04	113-04	113-05	113-05
	1:1.5 Speed Up^	113-06	113-06	113-07	113-07	113-08	113-08
	1:2 Speed Up^	113-09	113-09	113-10	113-10	113-11	113-11
	1:3 Speed Up^	113-36	113-36	113-35	113-35	113-37	113-37

^ Crossshaft used as input

Service Ratings

Right Angle Bevel Gearboxes

2026-01

Strength and durability ratings are based on AGMA suggested guidelines. engineering calculations, and our own experience. These ratings should only be used as initial selection guides.

We cannot guarantee that these ratings will prove satisfactory for all applications. Complete suitability can be determined only through prototyping and field testing.

AGMA Ratings

Apply to gear material, heat treatment, design, tooth finish, tooth profile, and allowable tolerances

Our straight cut and spiral gears are manufactured to AGMA Class 9. Other AGMA classes can be provided.

Class of Service

Our ratings are based on AGMA Class 1 service conditions. A 1.00 service factor is used when the application is free from recurrent shock loading and is continuous but does not exceed 10 hours per day. For other operating conditions, the rated horsepower can be increased or decreased by dividing the rated horsepower by the proper service factor from this table.

Prime Mover	*Duration of Service*	**Driven Machine Load Classifications**		
		Uniform	*Moderate Shock*	*Heavy Shock*
Electric Motor	Occasional .5 hr/day	0.50	0.80	1.25
	Intermittent 3 hrs/day	0.80	0.80	1.50
	Up to 10 hrs/day	1.00	1.20	1.75
	24 hrs/day	1.25	1.55	2.00
Multi-Cylinder Internal Combustion Engine	Occasional .5 hr/day	0.80	1.00	1.50
	Intermittent 3 hrs/day	1.00	1.25	1.75
	Up to 10 hrs/day	1.25	1.50	2.00
	24 hrs/day	1.50	1.75	2.25
Single Cylinder Internal Combustion Engine	Occasional .5 hr/day	1.00	1.25	1.75
	Intermittent 3 hrs/day	1.25	1.50	2.00
	Up to 10 hrs/day	1.50	1.75	2.25
	24 hrs/day	1.75	2.00	2.50

Catalog Rating System

RPM	⟶	700
HP based on gear strength	⟶	57.5
HP based on 1000 hours L_{10} bearing life	⟶	41.6
HP based on 5000 hours L_{10} bearing life	⟶	25.7

Bearing Life Ratings

Based on L_{10} life calculations which are an expression of reliability. There is a 90% reliability that the bearing life will equal or exceed the calculated hours listed.

We tabulate bearing ratings for both 1000 and 5000 hours of L_{10} life.

Bearing life can be calculated when external loads are applied, but our engineers need to know the location and direction of the external load as well as its magnitude.

Torque Ratings

Horsepower ratings are provided in these reference section. To determine torque, use this calculation.

$$T = 63.025 \frac{HP}{N}$$

T = Torque (Lb/Inch)
HP = Horsepower
N = RPM

Starting Torque

Momentary or starting torque should be limited to 200% of gear strength rated capacity.

Max Speeds

The maximum speeds listed in our catalog can be exceeded in some applications. Consult factory.

*Gearbox users must shield all moving parts and fill each unit with proper lubricant.

Thermal & Lubrication

Right Angle Bevel Gearboxes

2026-01

Thermal Capacity

The thermal capacity of a gear box (Its ability to dissipate heat) may be somewhat less than the mechanical horsepower ratings included in this documentation. The thermal capacity is dependent on load conditions (duty cycle) and cooling air circulation. Additional cooling or a larger gear box may be required if the continuous operating temperature exceeds 200°F. Prototype testing is recommended.

Approximate Oil Capacities

Models	**15**	**25**	**27**	**33**	**40**	**90**	**93**	**110**	**113**
Ounces (oz.)	4	8	6	16	16	24	32	56	80
Liters (L)	.1	.2	.15	.5	.5	.7	.9	1.7	2.4

Recommended Lubricants

Ambient Temp.	***Lubricant***
-20° to 0° F	SAE 10W or 10W-40 Automotive Oil
0° to 40° F	SAE 80 Gear Oil with Anti-Foaming Agent
40° to 100° F	SAE 90 Gear Oil with Anti-Foaming Agent
100° to 150° F	SAE 140 Gear Oil with Anti-foaming Agent

Lubrication Change Intervals

The lubricant in a new gear box should be changed after 100 hours of operation or four (4) weeks by draining at operating temperature, thoroughly cleaning with a flushing oil to remove any particles, and refilling with clean oil. Thereafter, under normal operating conditions, the lubricant should be changed every 2500 hours of operation or every six (6) months. Under severe operating conditions such as dust or rapid temperature changes, the lubricant should be changed more frequently.

Lubrication Specifications

All Standard Bevel Boxes are splash lubricated and splash cooled. Shafts must be mounted horizontally (+/-15°). When shafts are mounted vertically, an external grease fitting may be required. Please specify when ordering. The input speed rating must not exceed the gear box's specification. Maximum continuous operating temperature for standard units is 180° F (82° C). The maximum intermittent operating temperature should not exceed 225° F (107° C) with a rest period at least five times the running period. (Consult Factory on applications with operating parameters exceeding these requirements).

- All standard bevel boxes are ***shipped without lubrication.*** Box must be filled at least to the oil check plug before operating.
- The oil level should be established according to the gearbox's speed and mounting position.
- Boxes running below 500 RPM require a slightly higher oil level. In very low RPM applications the oil may be replaced with grease (Consult Factory).
- Overheating can be caused by too little or too much oil in the box.
- Use ISO VG150 EP antifoaming oil for normal operations. Use ISO VG100EP or ISO VG150EP antifoaming oil for high RPM applications.
- Fill, check and drain plugs are located for applications where all shafts are in a horizontal position, unless otherwise specified.
- Breather and drain plug positions meet most mounting requirements, however end users are responsible for relocating the breather and drain plugs to meet Von Ruden's specifications.
- Special units equipped with grease fittings should be serviced regularly with a multi-purpose NLGI Grade No. 2 grease.

Note

Von Ruden reminds users of these products that their safe operation depends on use in compliance with engineering information provided by Von Ruden Manufacturing. Users are also reminded that safe operation depends on proper installation, operation, and routine maintenance and inspection under prevailing conditions. It is the responsibility of users (and not Von Ruden) to provide and install guards or safety devices which may be required by recognized safety standards or by the Occupational Safety and health Act of 1970 and its subsequent provisions.

**All Information is subject to change without notice.*

Von Ruden Manufacturing, Inc.

2026-01

FLUID POWER HYDRAULIC MOTORS

ROL-SEAL®

- Displacements: 2-10 in^3
- Motor Series: SAE “A” “B” “C”
- Rotary Abutment Advantage
- Integral Brake/Planetary Gearbox

AXIAL VANE

- Displacements: 1-7 in^3
- 97% Efficiency
- Mechanically Stiff Rotor/Shaft
- Integral Brake/Planetary Gearbox

OVERHUNG LOAD ADAPTOR

- 7 Model Series
- SAE “A” “B” “C”
- 2 or 4 Bolt Mounting
- Standard/Heavy Duty Bearings

MECHANICAL RIGHT ANGLE BEVEL GEARBOXES

MODELS

- 9 Model Series
- 2-4 Shaft Configurations
- SAE Motor Mount Flange

OPTIONS

- Up to 200 Horsepower
- Ratio Options: 1:1-3/3-1:1
- Spiral or Straight Cut Gears

DESIGN

- All Components Machined
- Press Fit Internal Components
- Shimmed for Backlash

TOOL PRODUCTS DRIVEN TOOL HOLDERS

BRANDS

DMG MORI

DN SOLUTIONS

HAAS

MAZAK

OKUMA

OPTIONS

- BMT & VDI Mounting
- Face/OD Machining
- Ratio Options: 1:1 / 1:2 / 2:1
- 500/1500 PSI Through Coolant
- Multiple Spindle Options

DESIGN

- Machine Specific Designs
- ER Recessed Spindles
- Industry leading Bearing Capacity
- ABEC 7/9 Spindle Bearings
- ICL Mechanical Sealing Systems

All Von Ruden products are 100% manufactured and repaired in Buffalo, Minnesota