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Descriptions

An **Ultra-lightweight Bevel Gearbox** is a component that uses spiral bevel gears to transmit power at an angle, enclosed in an aluminum housing. These gearboxes are frequently used in applications requiring a change in rotational direction, typically 90 degrees. The following standard transmission ratios are available: **1:1 and 2:1**. Rated power is from **0.02kW to 4.94kW**. Rated torque is from **1.96Nm to 42Nm**. Bevel gearboxes can be configured in 2-way and 3-way arrangements to transmit and distribute rotational motion between intersecting shafts. They are grease lubricated for life to assure trouble free service. Universal mounting type that can be mounted in any direction. When mounting this type gearboxes, use the three mounting holes at the center or the four mounting holes at the flange face.

Key Features:

- **Ultra-lightweight:** The housing is typically constructed from high-quality aluminum alloy, contributing to its light weight.
- **Corrosion resistance:** Aluminum forms a protective oxide layer that provides resistance to corrosion, making them suitable for environments with moisture or chemicals. The input and output shafts material can employ anti-corrosive stainless steel.
- **Compact design:** The use of bevel gears allows for a compact design, making them ideal for applications with limited space.
- **Right-angle design:** Utilizes spiral bevel gears to change the direction of power transmission by 90 degrees.
- **High efficiency and performance:** Offers high transmission efficiency 95% with low backlash and smooth operation.
- **Maintenance-free:** These gearboxes are grease lubricated for life, reducing maintenance needs.
- **Durable construction:** Built with a sturdy aluminum alloy shell and high-quality alloy steel gears for long-lasting performance.
- **Versatile configurations:** Available in different shaft configurations (2-way, 3-way, etc.) and gear ratios (e.g., 1:1, 2:1)

Applications:

The Ultra-lightweight Bevel Gearbox finds applications in a wide range of industries, including:

- **Industrial machinery:** Used for various power transmission purposes.
- **Robotics:** Ideal for applications requiring compact and lightweight components, such as small military robots.
- **Automation:** Suitable for systems needing precise and efficient power transfer.
- **Automotive:** Can be utilized in different parts of vehicles.

Materials

We use the best materials to guarantee the performance and lifetime of the bevel gearboxes that you purchased.

Housing

- High-strength Aluminum Die-casting (resists corrosion, compact, lightweight, fine).

Spiral Bevel Gears

- High purity rugged alloy steel 20CrMnTi, Carburizing and Quenching, Case Hardened and Lapped in Pairs.

Input Shaft and Output Shaft

- Hardened and tempered alloy steel 40Cr as standard. Custom Stainless Steel SUS304 or SUS316 which has excellent corrosion resistance is adopted for the shaft material.

Bearing

- Equipped with Tapered Roller Bearings with heavy load capacity.

Oil Seals

- Double-lip Oil Seal, High Dust-proof and Oil leak proof.

Lubricants

- Standard lubrication with #3 extra-white high-grade lithium grease, suitable for applications with low input speed and low daily duty cycle.

Materials

Selection Guide

Calculation Formulas

(01) Gear Ratio = Input Speed (rpm) / Output Speed (rpm)

(02) Required Output Torque (N.m)

- Calculate the Corrected Output Torque (N.m) = Required Output Torque (N.m) x f1
- Calculate the Corrected Output Power (kW) = Required Output Torque (N.m) x Output Speed (rpm) / 9550.
- Calculate the Input Power (kW) = Output Power (kW) / Efficiency (Gearbox efficiency is 95% after initial running in).

The ratings for bevel gearboxes in this catalogue are based on a service factor of 1.00. For other operating conditions, the application power or torque must be multiplied by the appropriate service factor, to determine the equivalent gear drive power rating. A bevel gearbox should be selected with a rated capacity equal to or greater than the equivalent rating. Below table designates recommended Service Factors for various conditions of load, power source, and duration of service.

● **Service Factors f1**

Driven Machine Load Characteristic	Operating Time per Day		
	≤ 2 hours	2-10 hours	10-24 hours
Uniform (Light Shocks)	1.00 (1.00)	1.00 (1.25)	1.25 (1.50)
Medium Shocks	1.00 (1.25)	1.25 (1.50)	1.50 (1.75)
Heavy Shocks	1.25 (1.50)	1.50 (1.75)	1.75 (2.00)

- **Note:** please use these data inside the brackets when “frequent starts and stops” refers to more than 10 starts per hour.
- **Note:** time specified for intermittent and occasional service refers to total operating time per day.

* **Uniform (Light Shocks) driven machine:** generators, conveyor belts, apron conveyor, ventilators, agitators and mixers for uniform densities, filling and packing stations, gear wheel pumps, feed servos of machine tools, filling machines, elevators, light screw conveyors, light conveyor belts, blowers, small agitators, control machines, assembly lines, auxiliary drives for machine tools, centrifuges, packaging machinery.

* **Medium Shocks driven machine:** lifts, swing gear on cranes, pit ventilators, agitators and mixers for unequal densities, piston pumps, timber processing machines, paper processing machines, winches, auxiliary drives in ships, textile machines, reel winders, plate conveyors, calenders, balancing machines, heavy-duty conveyor belts, sheet metal bending machines, road-building machinery, planing machines, shears, extruders, main drives for machine tools, kneading machines, weaving looms, light table rollers.

* **Heavy Shocks driven machine:** punches, shears, rolling and smelting machines, heavy-duty centrifuges, heavy-duty supply pumps, edge runners, vibrating machines, cutting machines, brick works machines, heavy-duty lifts, excavators, heavy-duty mixers, presses, muller mixers, rolling mills, heavy-duty table rollers, cold reduction mills, stone crushers, eccentric presses, cutter heads, folding machines, rubber belt conveyors (batch loads), bark peeling drums, run ning gears, punching presses, piston pumps, rotary furnaces, mills, plate filters.

(03) Duty Cycle per Hour (% Running time) = working time (minutes) ÷ 60 minutes

Selection Guide

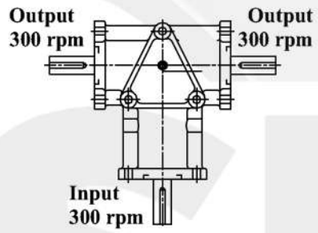
Sample Part Number (Example):

KML0R1ILRHM

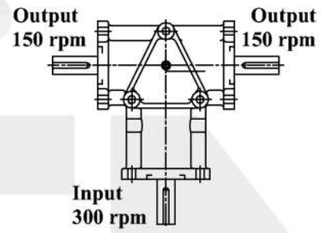
(1) Models and Gear Ratios

Model	KML0	KML1	KML2	KML3
Input & Output Shafts Dia.(mm)	10	15	20	24
Gear Ratios	1:1	1:1, 2:1	1:1, 2:1	1:1, 2:1
Max. Torque (N.m)	3.72	7.15	17.74	46.8
Max. Power (kW)	0.31	1.11	1.92	4.94
N.W(kg)	0.45	1.5	3.5	5.5

(2) Input Speed and Output Speed, Below is Sample

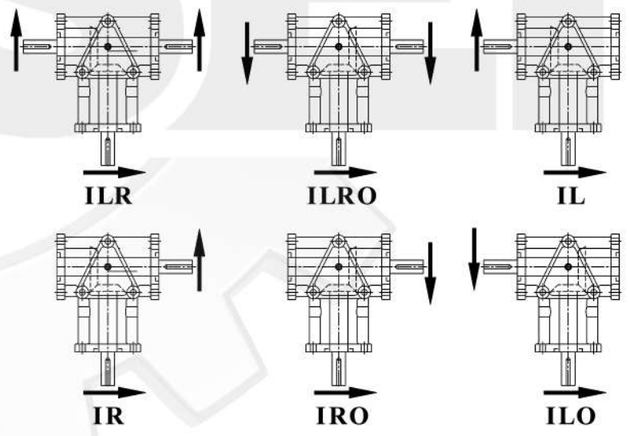


1 : 1

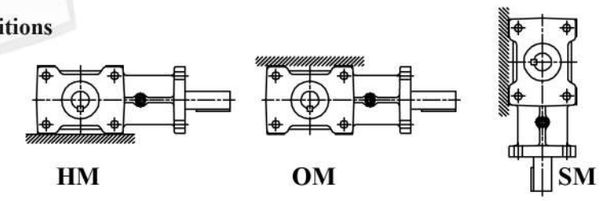


2 : 1 Reducer

(3) Shaft Arrangements And Rotation Directions



(4) Mounting Positions



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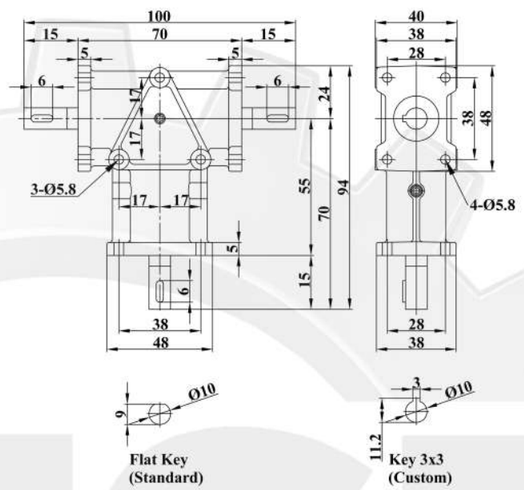
Specifications

Ratio	Input Speed (rpm)	Output Speed (rpm)	KML0		KML1		KML2		KML3	
			Power (KW)	Torque (Nm)	Power (KW)	Torque (Nm)	Power (KW)	Torque (Nm)	Power (KW)	Torque (Nm)
1:1	1450	1450	0.31	1.96	1.11	7.02	1.92	12.14	4.94	31.23
	1150	1150	0.28	2.23	0.88	7.02	1.73	13.79	4.19	33.40
	870	870	0.24	2.53	0.66	6.96	1.47	15.49	3.46	36.46
	580	580	0.18	2.85	0.44	6.96	1.10	17.39	2.45	38.73
	400	400	0.14	3.21	0.30	6.88	0.76	17.42	1.72	39.42
	300	300	0.12	3.67	0.23	7.03	0.57	17.42	1.30	39.73
	200	200	0.08	3.67	0.15	6.88	0.38	17.42	0.88	40.34
	150	150	0.06	3.67	0.11	6.72	0.28	17.11	0.67	40.95
	100	100	0.04	3.67	0.08	7.15	0.19	17.42	0.45	41.07
	50	50	0.02	3.67	0.04	7.15	0.10	17.42	0.23	42.36
2:1	1450	725			0.55	6.96	0.94	11.89	3.32	41.98
	1150	575			0.43	6.86	0.74	11.80	2.67	42.57
	870	435			0.33	6.96	0.56	11.80	2.04	42.99
	580	290			0.22	6.96	0.37	11.70	1.38	43.63
	400	200			0.15	6.88	0.26	11.92	0.96	44.19
	300	150			0.11	6.72	0.19	11.61	0.73	44.56
	200	100			0.08	6.88	0.13	11.92	0.49	45.11
	150	75			0.06	6.85	0.10	11.96	0.37	45.47
	100	50			0.04	6.97	0.06	11.74	0.25	45.66
	50	25			0.02	6.60	0.03	11.74	0.13	45.84

Overall Dimensions

KML0



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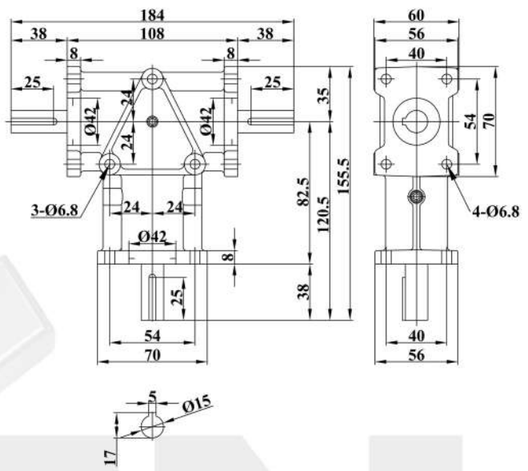
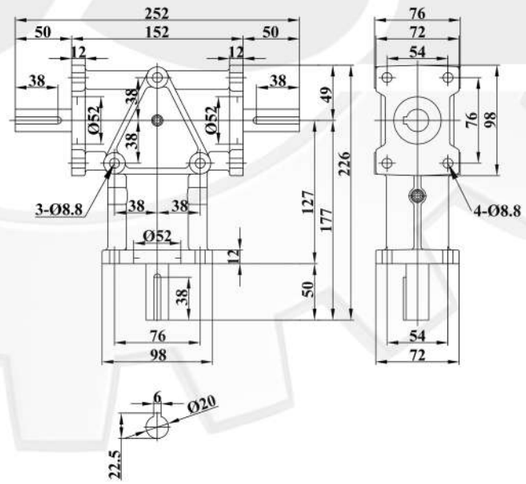
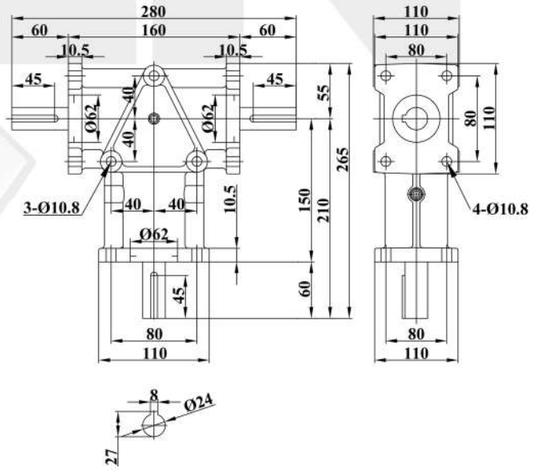


KML2



KML3



*. Dimensions are subject to change without notice