

PLANETARY GEAR

遊星歯車減速機

PRODUCT CATALOG



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■ FEATURES of Matex PLANETARY GEAR

- **High Torque · High Efficiency · Low Noise**

High Torque, High Efficiency, and Low Noise are realized thanks to our unique structure.

- **Wide Variety of Standard Products · Speed Ratio**

Wide variety of size(Outer Diameter ϕ 26mm \sim ϕ 200mm) and speed ratio(3-7) are provided. Furthermore, a higher speed ratio can be realized by stacking multiple planetary gear units.

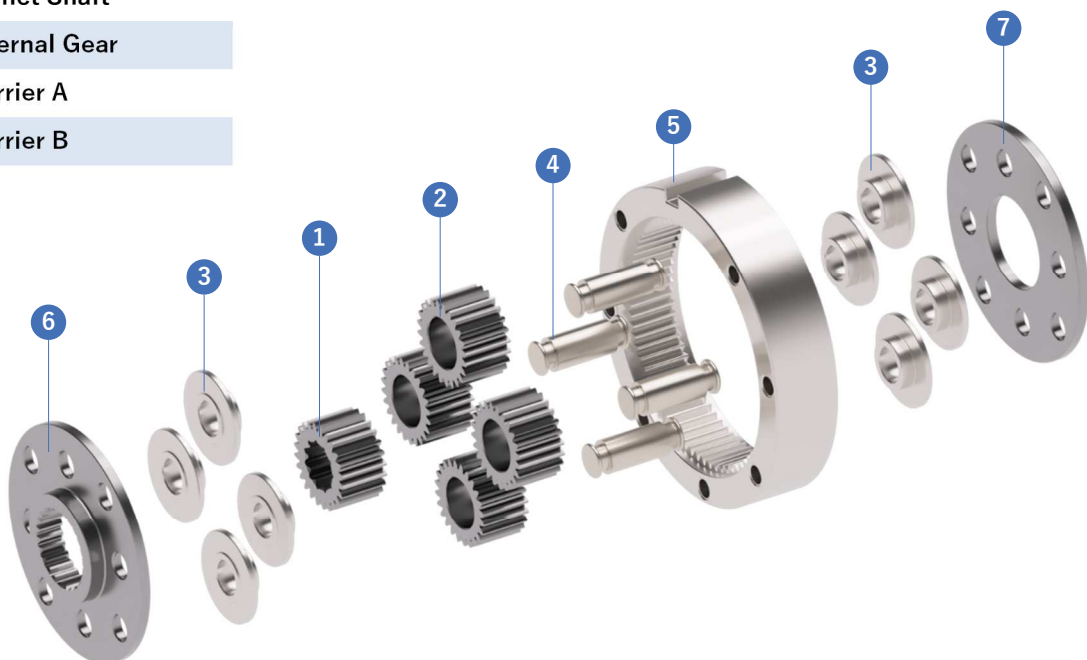
- **Flexible to Your Design due to its Minimal Unit Structure**

Minimal planetary gear unit structure and coaxial setting of input and output enable your product design compact and flexible.



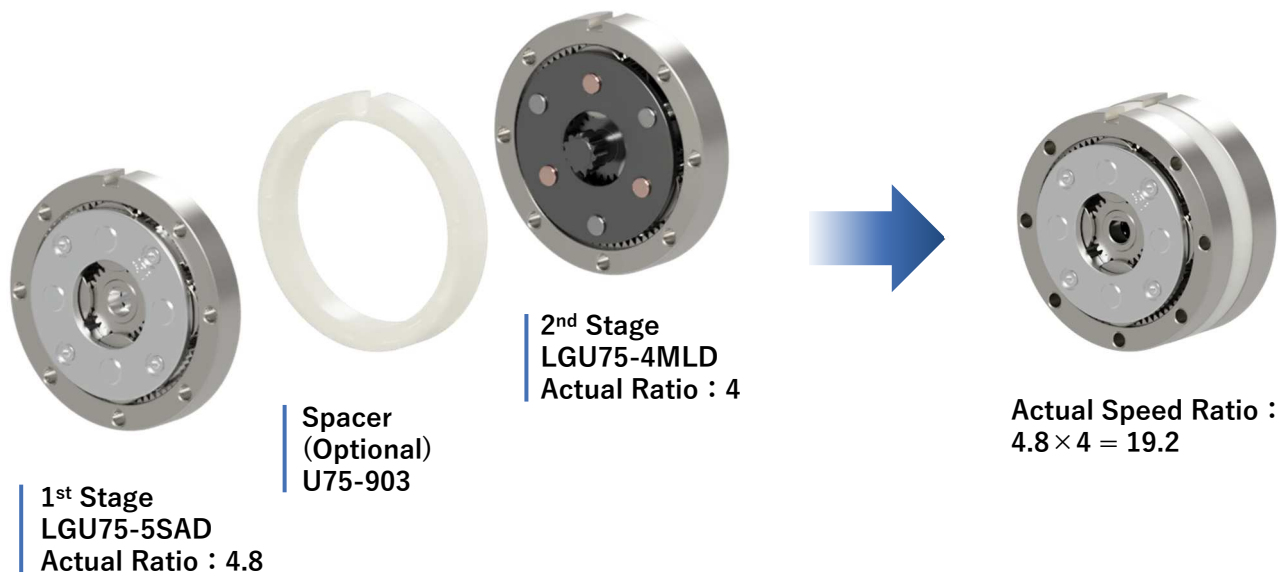
■ LGU (UNIT TYPE) STRUCTURE

- 1 Sun Gear
- 2 Planet Gear
- 3 Planet Roller
- 4 Planet Shaft
- 5 Internal Gear
- 6 Carrier A
- 7 Carrier B



■ MULTIPLE STAGE

By stacking the planetary gear units, wider range of speed ratio is available.
You can choose the right gears from the standard combination table.(See P25~P29)



※The above drawing just illustrates one example of the LGU75 series. Please refer to each product page for other series.

■ PRODUCT TYPES



LGU

UNIT TYPE

LGU series is Matex's mainstream product which is unitized important parts of planetary gear. Wide varieties of gear are available.

Page : P4~31



LGH

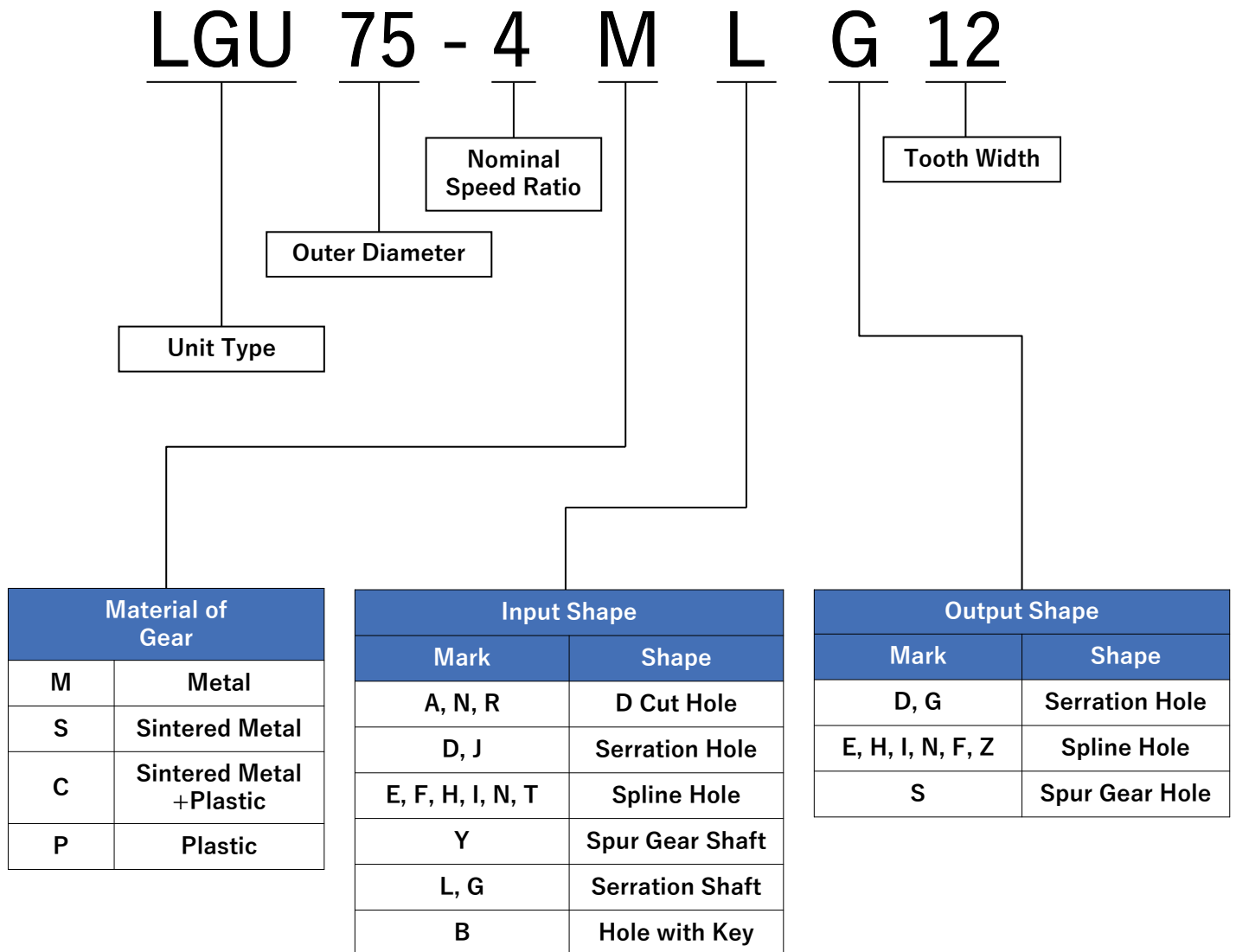
GEARHEAD TYPE

LGH series is a product that is unitized planetary gear unit, shaft, and case. It's connectable to the different motors by preparing a motor flange.

Page : P33, 34

UNIT TYPE NAMING RULE · GENERAL SPECIFICATIONS

■ MODEL NAMING RULE

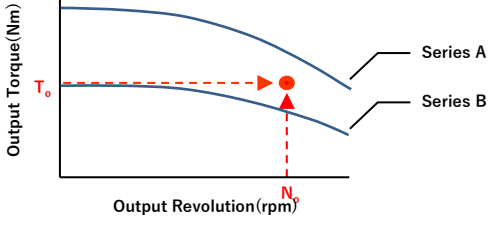
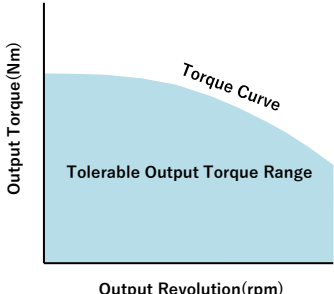
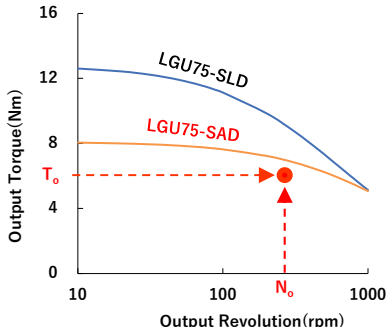


■ GENERAL SPECIFICATIONS

REDUCER TYPE	Planetary Gear
STRUCTURE	Open type (not sealed by case)
OUTPUT DIRECTION	Same Direction of Input Rotation (Sun Gear Input & Carrier Output)
EFFICIENCY	90 % or more (One stage reducer, Continuous Drive)
NOISE LEVEL	Less than 70dB (A Range) 1.0m ※Reference with no lubrication
LUBRICATION	Grease or Oil lubrication ※See P35 for more details
TEMPERATURE	0~40°C ※Please consult us if ambient temperature is out of the range.
SETTING ANGLE	Horizontal setting of input & output shaft is recommended.

GEAR SELECTION PROCEDURE for UNIT TYPE

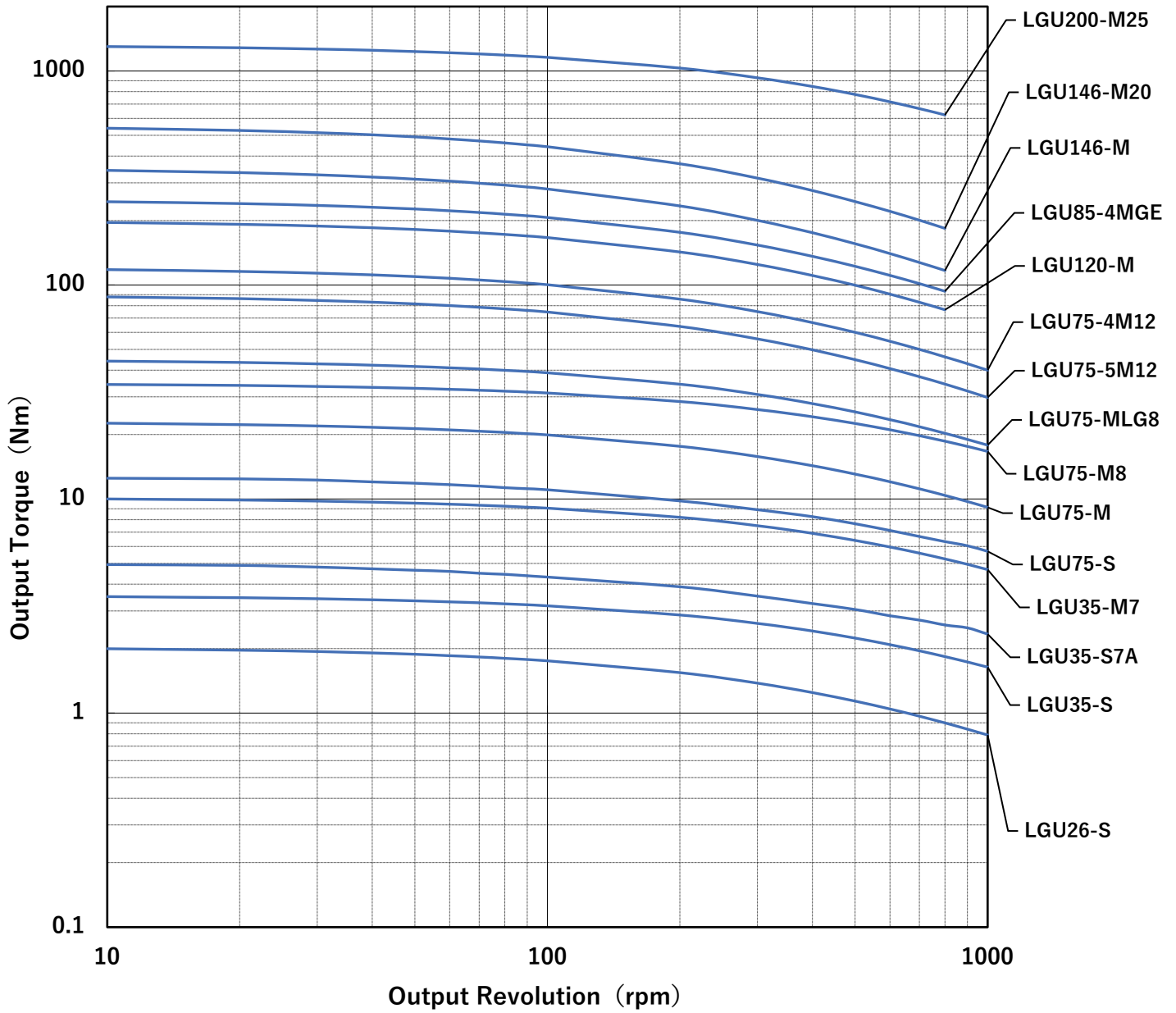
GEAR SELECTION PROCEDURE

Procedure	Notes · Calculation	Example
Step1 Usage Conditions	<ul style="list-style-type: none"> Application Type of drive unit and Acceleration/Deceleration Load Torque T Output Revolution n_o Input Revolution n_i Drive Pattern Driving hours/day, Stop and Go 	<ul style="list-style-type: none"> Application : Conveyor(Unstable Load) 3Phase Induction Motor(300W · 4P) Load Torque T : 4.5Nm Output Revolution n_o : 350rpm Input Revolution n_i : 1750rpm Drive Pattern : 9hours/day, Continuous
Step2 Calculation of Fundamental Parameters and Service Factor	<ul style="list-style-type: none"> Calculation of Speed Ratio R $R = n_i \div n_o$ Choice of Service Factor(SF) Choose appropriate Service Factor(SF) to your application from the table of SF at the bottom of p.6. Calculation of Output Torque T_o $T_o = T \times SF$ 	<ul style="list-style-type: none"> Calculation of Speed Ratio R $R = n_i \div n_o = 1750 \div 350 = 5$ Choice of Service Factor(SF) Drive Characteristic : Moderate Shock Load (M) From the table, SF = 1.25 Calculation of Output Torque T_o $T_o = T \times SF = 4.5 \times 1.25 \approx 5.63\text{Nm}$
Step3 Selection of Series	<ul style="list-style-type: none"> Selection of Series Choose the appropriate series with a torque curve of P.6 which has a torque more than the above calculated output Torque T_o, and Revolution n_o. <p>Series A would be chosen under the below case.</p> 	<ul style="list-style-type: none"> Selection of Series From the above calculations, the given important parameters are Output Torque T_o : 5.63Nm Output Revolution n_o : 350rpm The series which has a torque curve of P.6 more than the above calculated output Torque T_o and Revolution n_o is Selected Series : LGU75-S Series
Step4 Selection of Model	<ul style="list-style-type: none"> Selection of Model Using Torque Curve graph, choose the appropriate model with which the above calculated values are within the tolerable output torque range.  <p>※In case the speed ratio of the selected model is not enough, please consider the multi-stage usage (p.25~). If you can't find a good setting, please consider the good combination of gears in reference to connection examples of each page, or please consult us. Choose the model from the final stage(output side) to the first stage(input side) in order.</p>	<ul style="list-style-type: none"> Selection of Model The model which has a torque curve of P16 which satisfies the above parameters is, Selected Model : LGU75-5SAD 
Step5 Actual Speed Ratio	<ul style="list-style-type: none"> Confirm the Actual Speed Ratio R_A Re-Calculation of Input/Output Torque and Revolution Using the actual speed ratio R_A, Please re-confirm the actual input/output torque and revolution. ※Re-confirm that the actual input/output torque and revolution are within the tolerable output torque range. 	<ul style="list-style-type: none"> Confirm the Actual Speed Ratio R_A The actual speed ratio of the LGU75-5SAD is $R_A = 4.8$ Re-Calculation of Input/Output Torque and Revolution In this example, it is assumed that the output torque and the input are fixed. Input Torque = $5.63 \div 4.8 \approx 1.17\text{Nm}$ Output Revolution = $1750 \div 4.8 \approx 364.6\text{rpm}$ · · · The output torque 5.63Nm at the actual output revolution is within the tolerable output torque range.
Step6 Input/Output Shape	<ul style="list-style-type: none"> Confirm the input/output shape of the model. Confirm other parameters like size, weight, etc. 	<ul style="list-style-type: none"> Input Shape D Cut Hole $\phi 8 \times 7$ Output Shape Serration Hole $12 \times 11 \times 1$
Selection Complete		

Notes Efficiency is ignored to simplify the explanation. If the power of the drive unit is not enough for the power of the load, then Efficiency should be considered in the Step 5 "Actual Torque Calculation".

GEAR SELECTION PROCEDURE for UNIT TYPE

TORQUE CURVES of REPRESENTATIVE MODELs of EACH SERIES



SERVICE FACTOR (SF)

Drive Condition	Characteristic of Load Pattern			
	Uniform Load(U)	Moderate Shock Load(M)	Moderate Heavy Shock Load(MH)	Heavy Shock Load(H)
3Hours or less/Day	1.0	1.0	1.25	1.5
3~10Hours/Day	1.0	1.25	1.50	1.75
10~24Hours/Day	1.25	1.50	1.75	2.00

TABLE OF MODELS –UNIT TYPE- (1/2)

* Nominal Speed Ratio will be described in □ .

Series	Model Name	Nominal Speed Ratio	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape
LGU26-S	LGU26-5SAS4	5	4.5	2.0	D Cut Hole $\Phi 2.3 \times 1.7$	Spur Gear Hole $\phi 7 \times 12z \times 0.5m$
	LGU26-5SAI4					Spline Hole $7.5 \times 8 \times 0.75$
	LGU26-5SYS4				Spur Gear Shaft $\phi 7 \times 12z \times 0.5m$	Spur Gear Hole $\phi 7 \times 12z \times 0.5m$
	LGU26-5SYI4					Spline Hole $7.5 \times 8 \times 0.75$
LGU35-P	LGU35-□PRS	4	3.667	0.8	D Cut Hole $\Phi 4 \times 3$	SpurGearHole $\phi 8.4 \times 12z \times 0.6m$
		5	5			
	LGU35-4PNS	4	3.667		D Cut Hole $\Phi 6.3 \times 5.3$	
	LGU35-□PYS	4	3.667		Spur Gear Shaft $\phi 8.4 \times 12z \times 0.6m$	
5		5				
LGU35-S	LGU35-□SRS	4	3.667	3.5	D Cut Hole $\Phi 4 \times 3$	SpurGearHole $\phi 8.4 \times 12z \times 0.6m$
		5	5			
	LGU35-4SNS	4	3.667		D Cut Hole $\Phi 6.3 \times 5.3$	
	LGU35-□SYS	4	3.667		Spur Gear Shaft $\phi 8.4 \times 12z \times 0.6m$	
5		5				
LGU35-S7A	LGU35-□SYD7-A	4	3.667	5.0	Spur Gear Shaft $\phi 8.4 \times 12z \times 0.6m$	Serration Hole $12 \times 11 \times 1$
		5	5			
LGU35-M7	LGU35-4MLD7	4	3.667	10	Serration Shaft $12 \times 11 \times 1$	Serration Hole $12 \times 11 \times 1$
	LGU35-5MYD7	5	5		Spur Gear Shaft $\phi 8.4 \times 12z \times 0.6m$	
LGU54-P	LGU54-□PAD	4	4	5.9	D Cut Hole $\Phi 8 \times 7$	Serration Hole $12 \times 11 \times 1$
		5	5	3.9	D Cut Hole $\Phi 6 \times 5$	Serration Hole $8.25 \times 10 \times 0.75$
		6	6	2.9	D Cut Hole $\Phi 4.5 \times 3.5$	Serration Hole $12 \times 11 \times 1$
	LGU54-□PLD	4	4	5.9	Serration Shaft $12 \times 11 \times 1$	Serration Hole $12 \times 11 \times 1$
		5	5	3.9	Serration Shaft $8.25 \times 10 \times 0.75$	Serration Hole $8.25 \times 10 \times 0.75$
LGU54-C	LGU54-4CLD	4	4	9.8	Serration Shaft $12 \times 11 \times 1$	Serration Hole $12 \times 11 \times 1$
LGU75-P	LGU75-□PAD	3	3.111	4.5	D Cut Hole $\Phi 8 \times 7$	Serration Hole $12 \times 11 \times 1$
		4	3.714			
		5	4.8			
	LGU75-□PLD	3	3.111		Serration Shaft $12 \times 11 \times 1$	
		4	3.714			
5	4.8					
LGU75-P13	LGU75-5PJD13	5	4.8	8.8	Serration Hole $9 \times 11 \times 0.75$	Serration Hole $12 \times 11 \times 1$
	LGU75-5PAD13	5	4.8		D Cut Hole $\Phi 8 \times 7$	
LGU75-S	LGU75-□SAD	3	3.111	8.0	D Cut Hole $\Phi 8 \times 7$	Serration Hole $12 \times 11 \times 1$
		4	3.714			
		5	4.8			
	LGU75-□SLD	3	3.111	12.4	Serration Shaft $12 \times 11 \times 1$	
		4	3.714			
5	4.8					

TABLE OF MODELS -UNIT TYPE- (2/2)

* Nominal Speed Ratio will be described in □ .

Series	Model Name	Nominal Speed Ratio	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape
LGU75-M	LGU75-□MAD	3	3	6.9	D Cut Hole $\Phi 8 \times 7$	Serration Hole $12 \times 11 \times 1$
		4	4			
		5	5			
	LGU75-□MDD	3	3	7.9	Serration Hole $12 \times 11 \times 1$	
		4	4			
	LGU75-5MID	5	5		Spline Hole $8 \times 9 \times 0.75$	
	LGU75-□MLD	3	3	22.6	Serration Shaft $12 \times 11 \times 1$	
		4	4			
		5	5			
		6	5.8			
7		7	17.7			
LGU75-M8	LGU75-□MLD8	3	3	34.3	Serration Shaft $12 \times 11 \times 1$	Serration Hole $12 \times 11 \times 1$
		4	4			
		5	5			
		6	5.8			
	LGU75-□MLG8	3	3	44.1		Serration Hole $19.5 \times 25 \times 0.75$
		4	4			
5		5				
LGU75-M12	LGU75-4MDG12	4	4	118	Serration Hole $12 \times 11 \times 1$	Serration Hole $19.5 \times 25 \times 0.75$
	LGU75-□MLG12	4	4	88	Serration Shaft $12 \times 11 \times 1$	
		5	5			
LGU85-M	LGU85-4MGE	4	4	245	Serration Shaft $19.5 \times 25 \times 0.75$	Spline Hole $21 \times 10 \times 1.75$
LGU120-M	LGU120-□MHH	3	3	137	Spline Hole $17 \times 15 \times 1$	Spline Hole $17 \times 15 \times 1$
		4	4			
		5	5			
	LGU120-□MHN	3	3	196		Spline Hole $30 \times 16 \times 1.667$
		4	4			
		5	5			
LGU146-M	LGU146-□MBE	3	3	196	Hole with Key $\phi 14-5 \times 16.3$	Spline Hole $21 \times 10 \times 1.75$
		4	4			
		5	5			
	LGU146-□MEE	3	3	343	Spline Hole $21 \times 10 \times 1.75$	
		4	4			
		5	5			
	LGU146-□MEF	3	3	343	Spline Hole $38 \times 17 \times 2$	
		4	4			
		5	5			
LGU146-M20	LGU146-□MEF20	3	3	540	Spline Hole $21 \times 10 \times 1.75$	Spline Hole $38 \times 17 \times 2$
		4	4			
		5	5			
	LGU146-3MFF20	3	3	Spline Hole $38 \times 17 \times 2$		
LGU200-M	LGU200-□MTZ25	3	3	1300	Spline Hole $25 \times 13 \times 1.667$	Spline Hole $48.333 \times 27 \times 1.667$
		4	4			
	LGU200-5MTZ25N	5	5			

LGU26-S Series

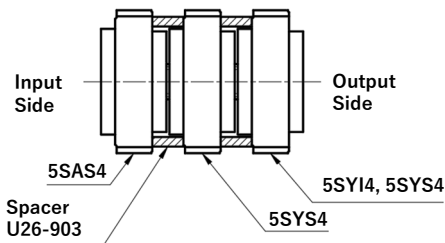
UNIT TYPE

φ26

2.0 Nm

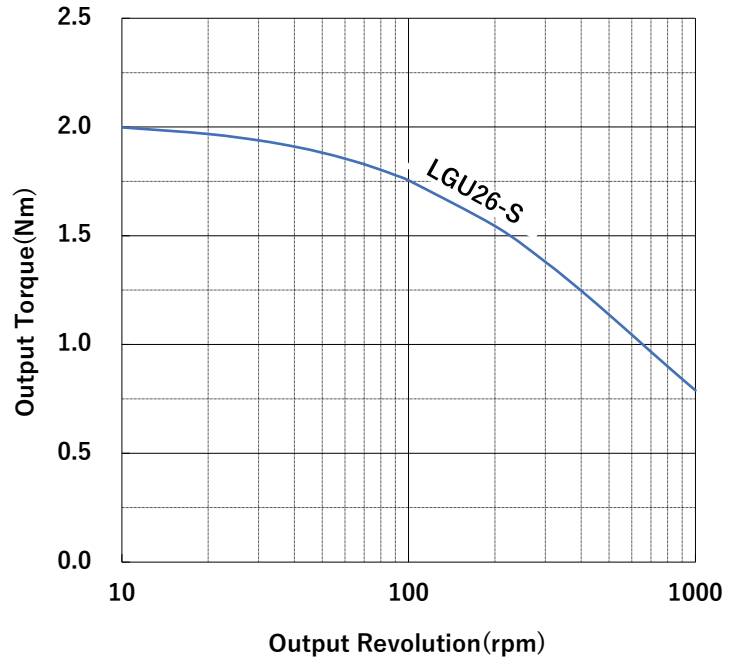


EXAMPLE of STACKING



- See P26 for Multi-Stage Usage
- See P32 for the Optional Parts

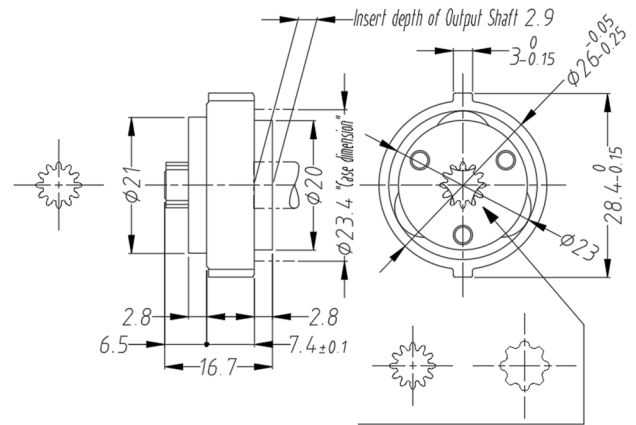
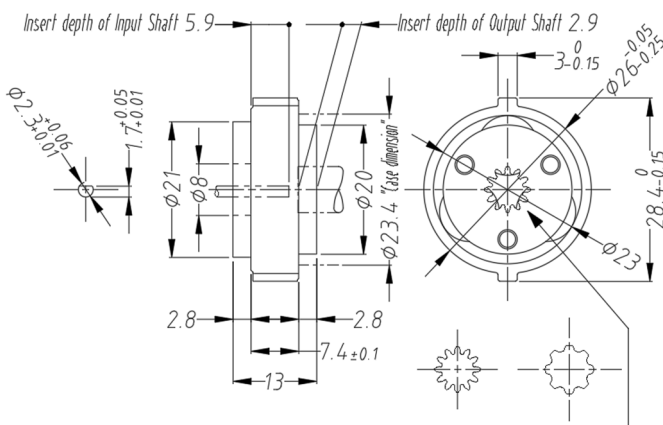
OUTPUT TORQUE CURVE



DIMENSIONS (mm)

LGU26-SAS4,SAI4

LGU26-SYS4,SYI4



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU26-S	LGU26-5SAS4	4.5	2.0	D Cut Hole φ2.3×1.7	Spur Gear Hole φ7.0×12z×0.5m	21
	LGU26-5SAI4				Spline Hole 7.5×8×0.75	21
	LGU26-5SYS4			Spur Gear Shaft φ7.0×12z×0.5m	Spur Gear Hole φ7.0×12z×0.5m	22
	LGU26-5SYI4				Spline Hole 7.5×8×0.75	22

LGU35-P Series

UNIT TYPE

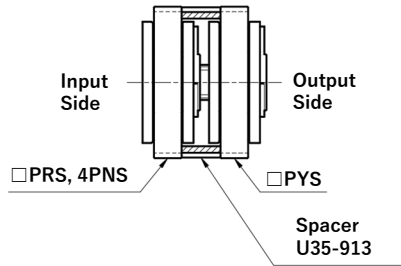
φ 35

0.8 Nm

Made-to-Order on Lot

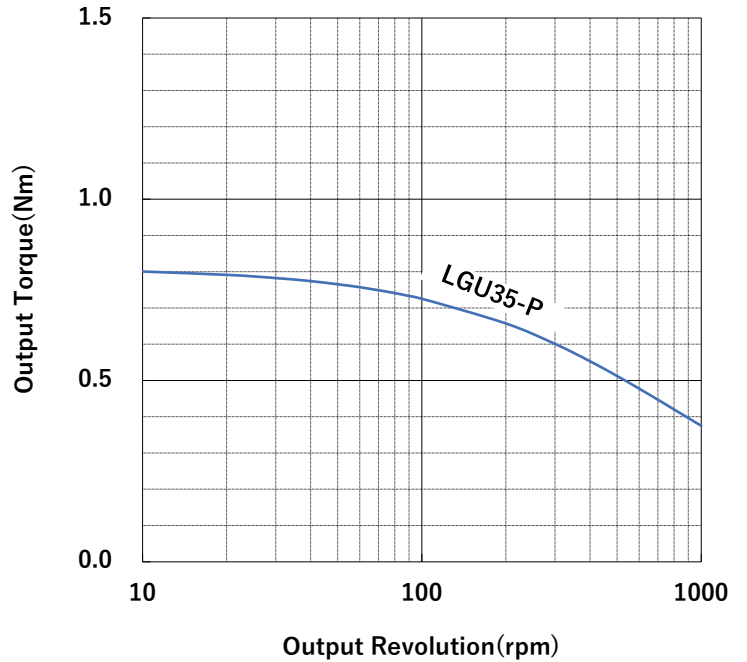


EXAMPLE of STACKING



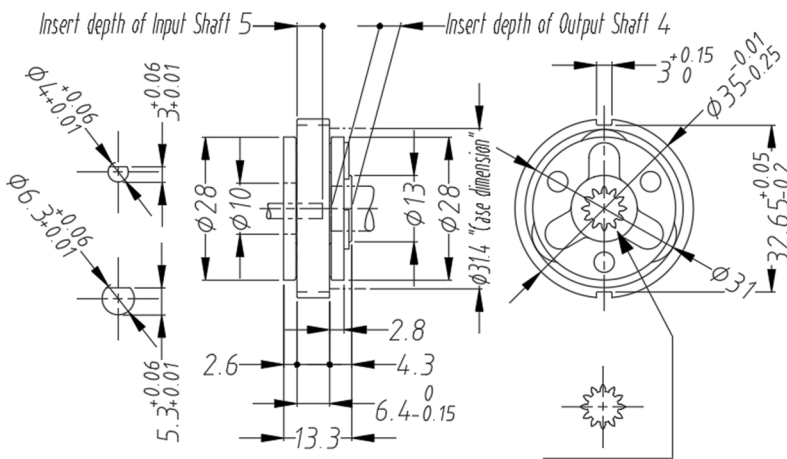
➤ See P32 for the Optional Parts

OUTPUT TORQUE CURVE

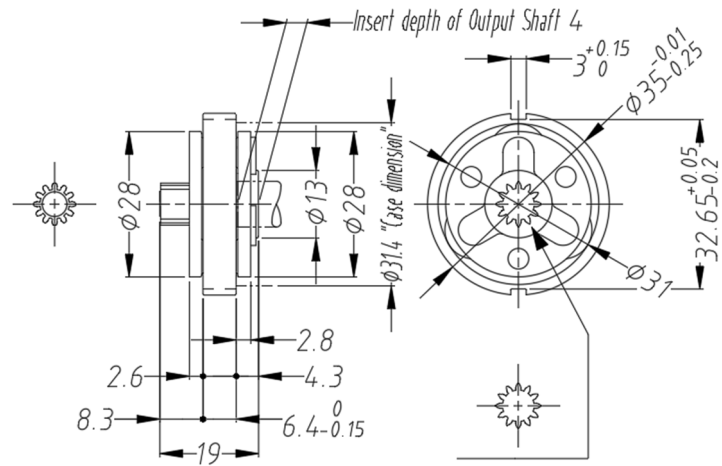


DIMENSIONS (mm)

LGU35-PRS,PNS



LGU35-PYS



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU35-P	LGU35-4PRS	3.667	0.8	D Cut Hole $\phi 4 \times 3$	Spur Gear Hole $\phi 8.4 \times 12z \times 0.6m$	18
	LGU35-5PRS	5				19
	LGU35-4PNS	3.667		Spur Gear Shaft $\phi 8.4 \times 12z \times 0.6m$		17
	LGU35-4PYS	3.667				20
	LGU35-5PYS	5				21

LGU35-S Series

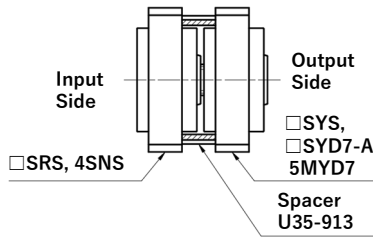
UNIT TYPE

φ 35

3.5 Nm

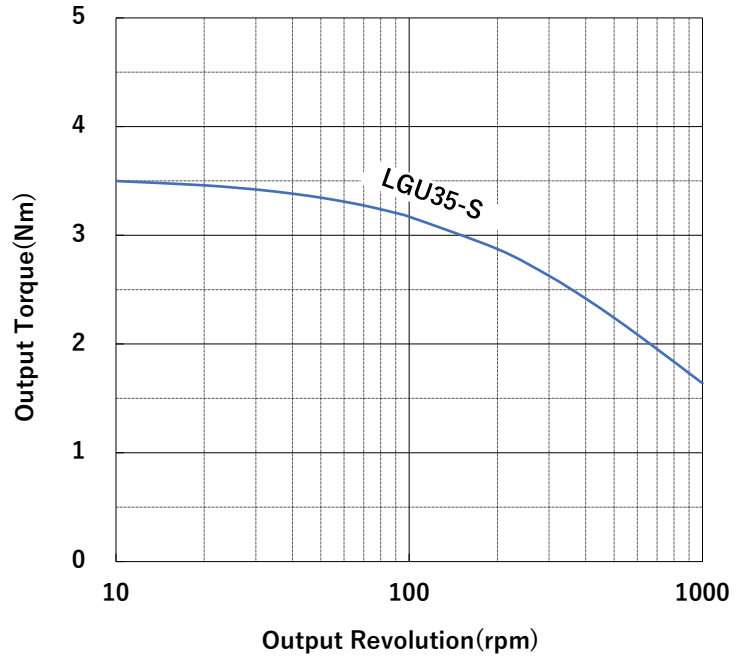


EXAMPLE of STACKING



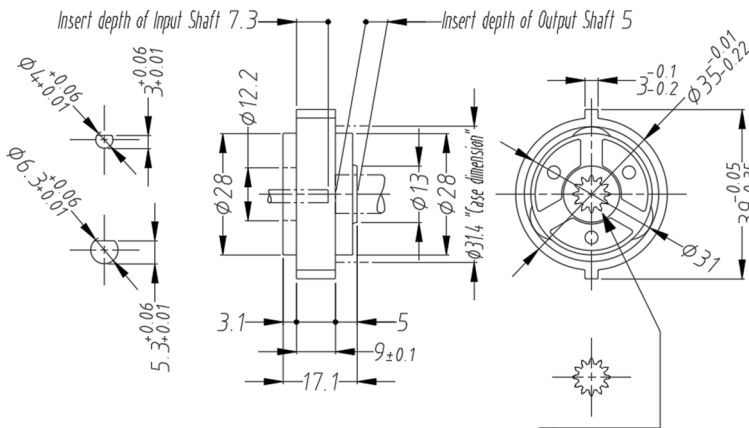
- See P27 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

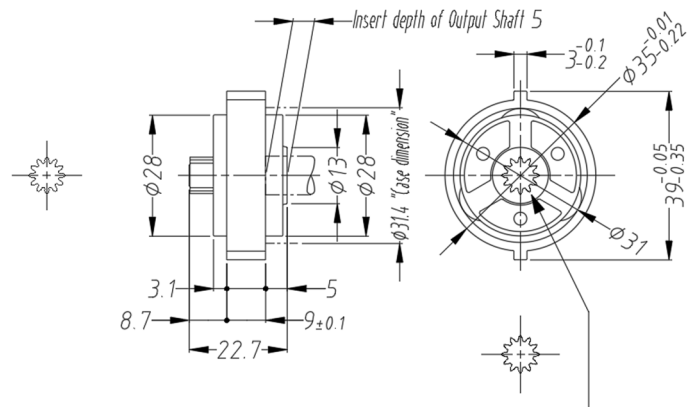


DIMENSIONS (mm)

LGU35-SRS,SNS



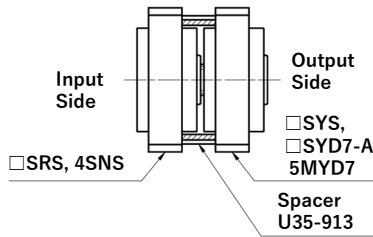
LGU35-SYS



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU35-S	LGU35-4SRS	3.667	3.5	D Cut Hole φ4×3	Spur Gear Hole φ8.4×12z×0.6m	61
	LGU35-5SRS	5				63
	LGU35-4SNS	3.667		Spur Gear Shaft φ8.4×12z×0.6m		61
	LGU35-4SYS	3.667				64
	LGU35-5SYS	5				66

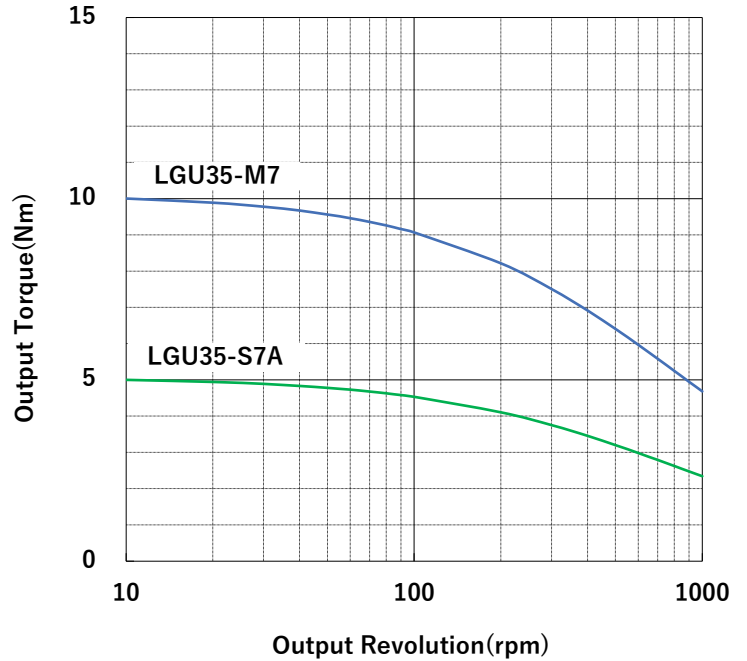


EXAMPLE of STACKING



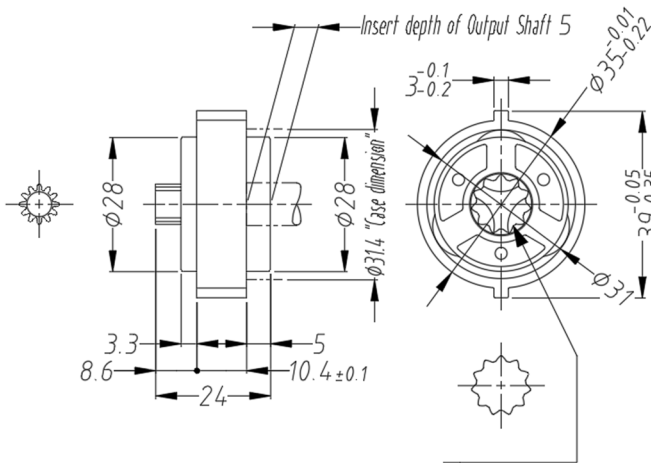
- See P27 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

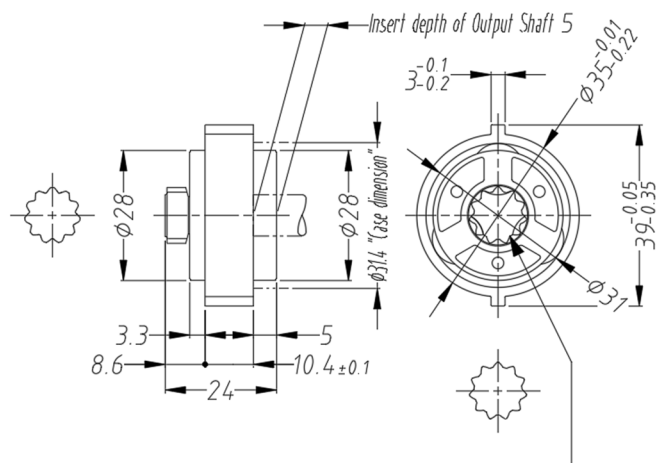


DIMENSIONS (mm)

LGU35-SYD7-A, 5MYD7



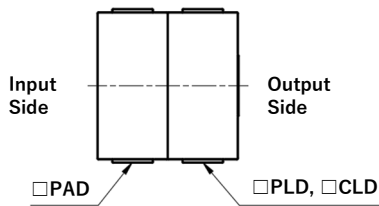
LGU35-4MLD7



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU35-S7A	LGU35-4SYD7-A	3.667	5.0	Spur Gear Shaft φ8.4×12z×0.6m	Serration Hole 12×11×1	78
	LGU35-5SYD7-A	5				79
LGU35-M7	LGU35-4MLD7	3.667	10	Serration Shaft12×11×1		83
	LGU35-5MYD7	5		Spur Gear Shaft φ8.4×12z×0.6m		81

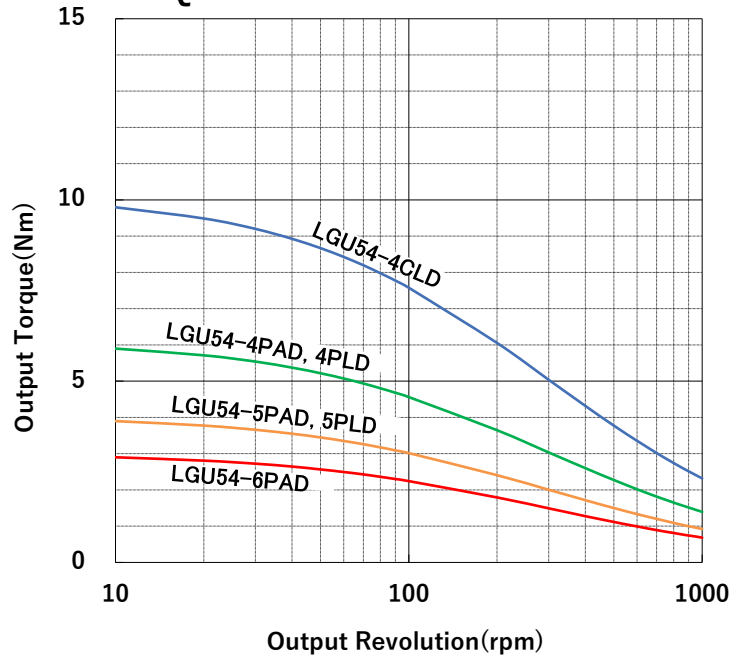


EXAMPLE of STACKING



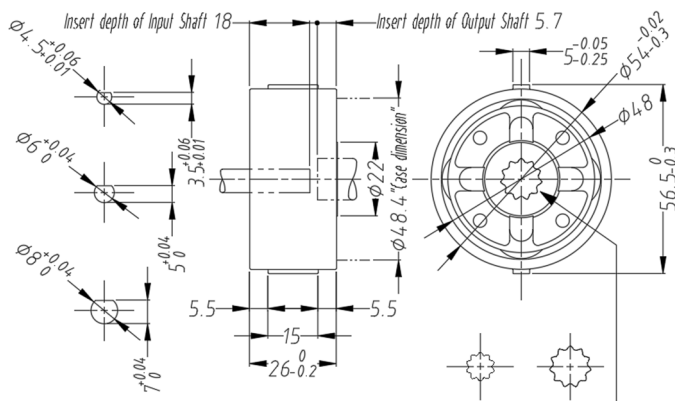
See P28 for Multi-Stage Usage

OUTPUT TORQUE CURVE

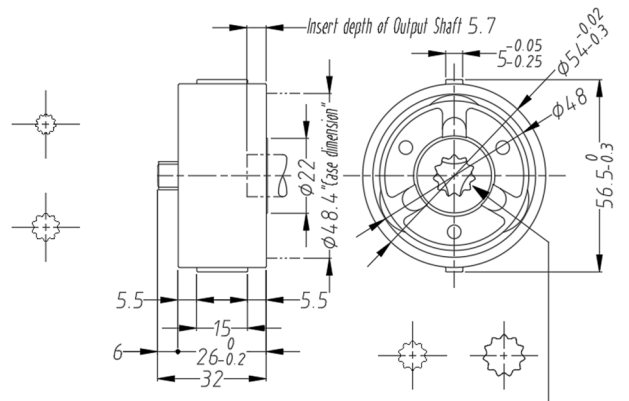


DIMENSIONS (mm)

LGU54-PAD



LGU54-PLD, CLD



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU54-P	LGU54-4PAD	4	5.9	D Cut Hole φ8×7	Serration Hole 12×11×1	100
	LGU54-5PAD	5	3.9	D Cut Hole φ6×5	Serration Hole 8.25×10×0.75	100
	LGU54-6PAD	6	2.9	D Cut Hole φ4.5×3.5	Serration Hole 12×11×1	110
	LGU54-4PLD	4	5.9	Serration Shaft 12×11×1	Serration Hole 12×11×1	110
	LGU54-5PLD	5	3.9	Serration Shaft 8.25×10×0.75	Serration Hole 8.25×10×0.75	110
LGU54-C	LGU54-4CLD	4	9.8	Serration Shaft 12×11×1	Serration Hole 12×11×1	130

LGU75-P Series

UNIT TYPE

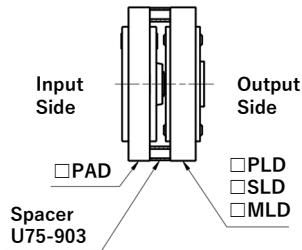
φ 75

4.5 Nm

Made-to-Order on Lot

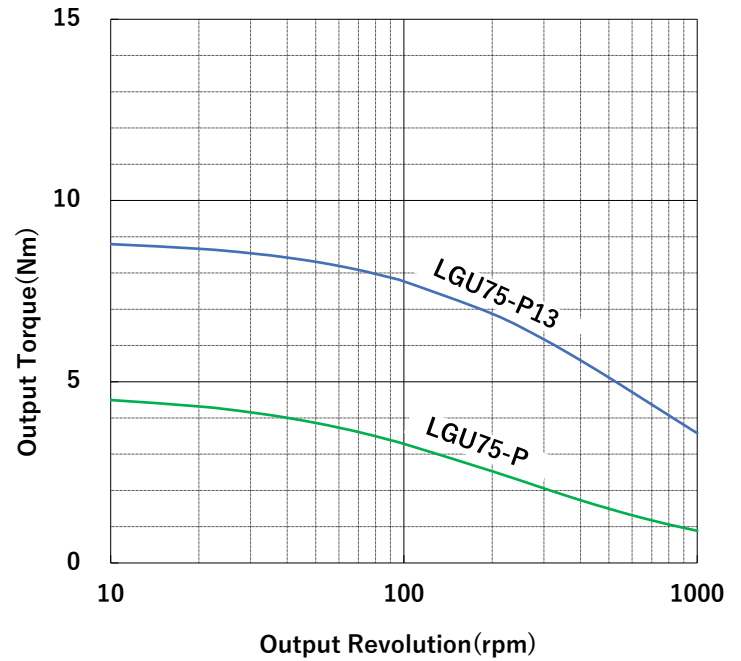


EXAMPLE of STACKING



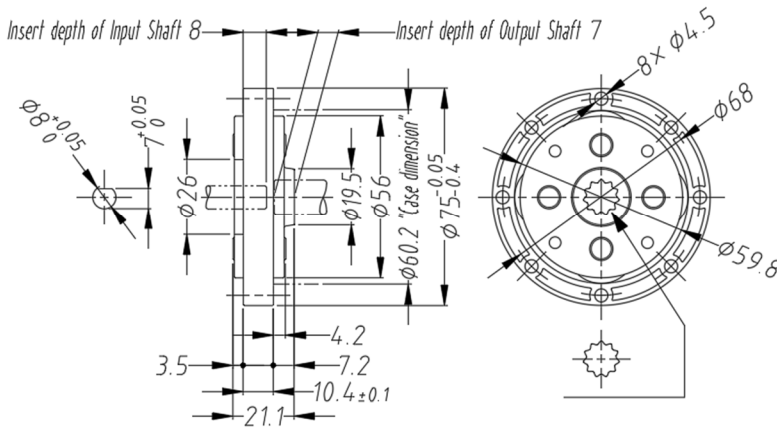
➤ See P32 for the Optional Parts

OUTPUT TORQUE CURVE

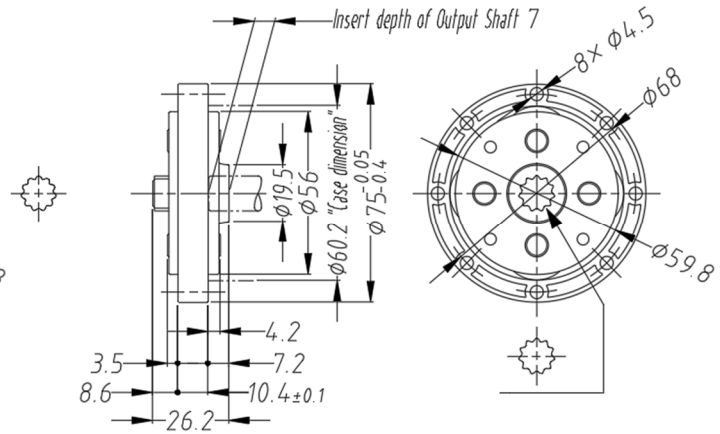


DIMENSIONS (mm)

LGU75-PAD



LGU75-PLD



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-P	LGU75-3PAD	3.111	4.5	D Cut Hole φ8×7	Serration Hole 12×11×1	130
	LGU75-4PAD	3.714				130
	LGU75-5PAD	4.8				140
	LGU75-3PLD	3.111		Serration Shaft 12×11×1		130
	LGU75-4PLD	3.714				140
	LGU75-5PLD	4.8				150

LGU75-P13 Series

UNIT TYPE

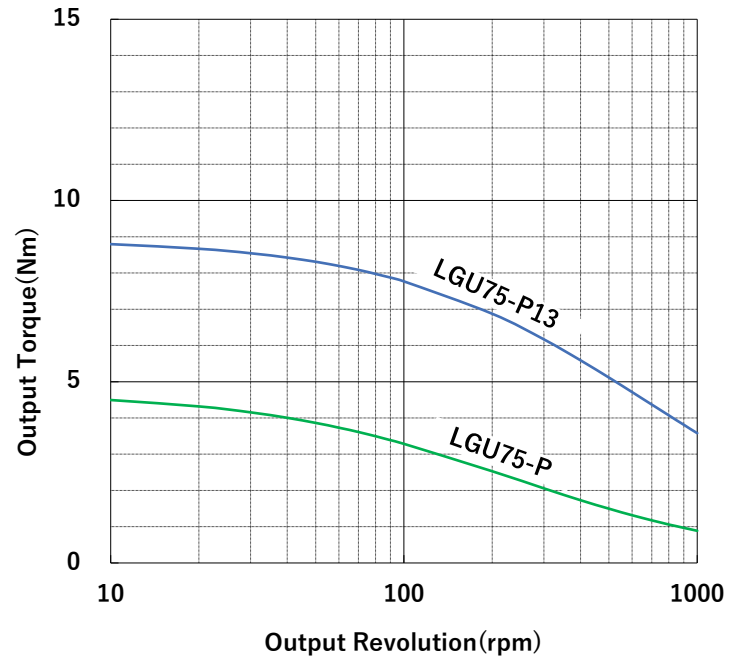
φ 75

8.8 Nm

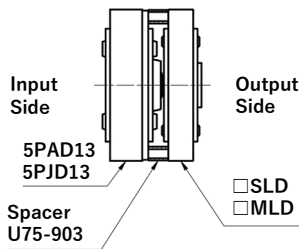
Made-to-Order on Lot



■ OUTPUT TORQUE CURVE



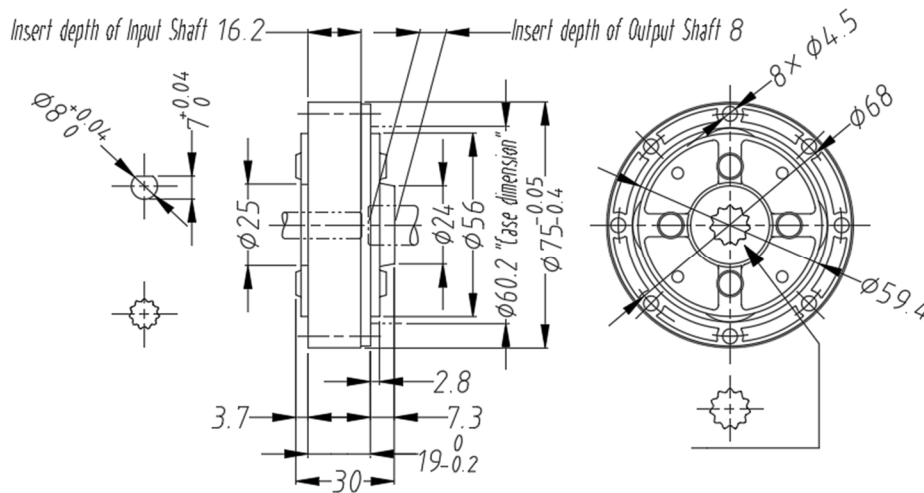
■ EXAMPLE of STACKING



➤ See P32 for the Optional Parts

■ DIMENSIONS (mm)

LGU75-5PAD13, 5PJD13



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-P13	LGU75-5PAD13	4.8	8.8	Serration Hole 9×11×0.75	Serration Hole 12×11×1	190
	LGU75-5PJD13	4.8				190

LGU75-S Series

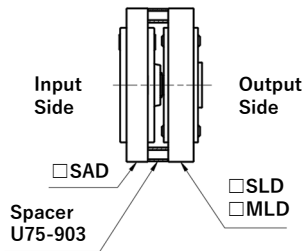
UNIT TYPE

φ75

8.0 - 12.4 Nm

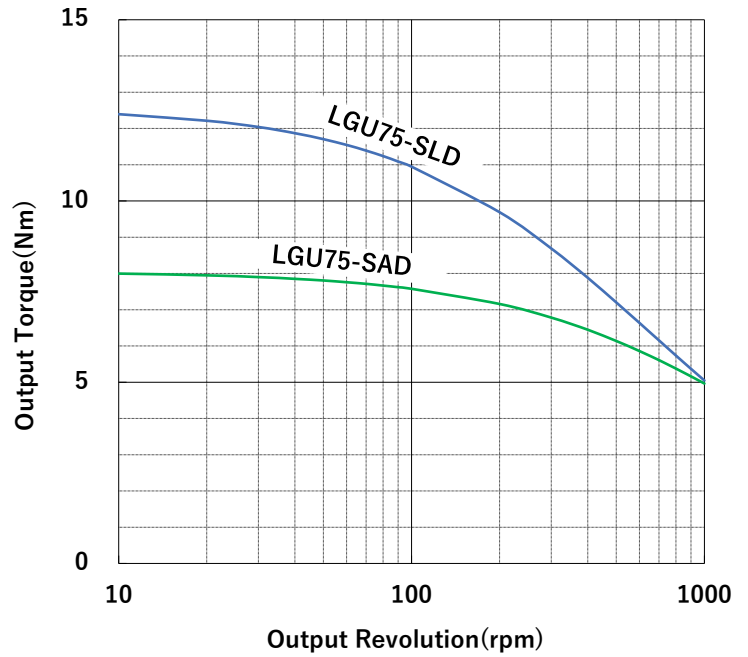


EXAMPLE of STACKING



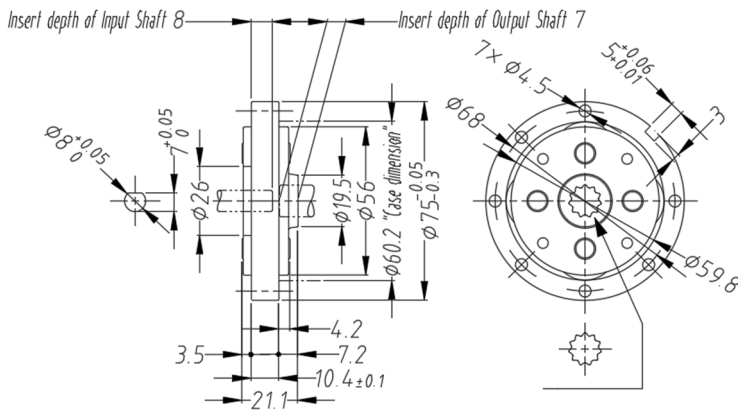
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

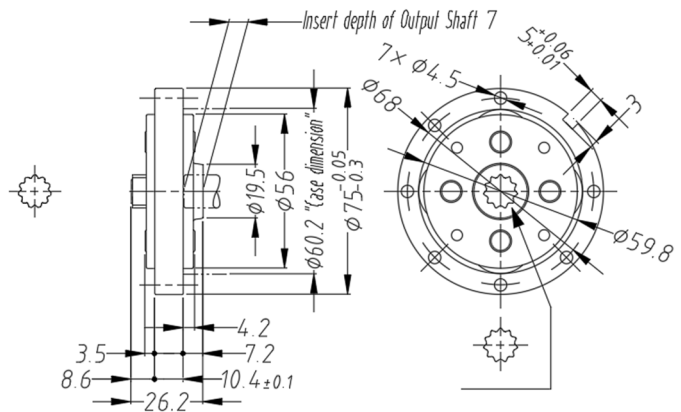


DIMENSIONS (mm)

LGU75-SAD



LGU75-SLD



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-S	LGU75-3SAD	3.111	8.0	D Cut Hole φ8×7	Serration Hole 12×11×1	230
	LGU75-4SAD	3.714				240
	LGU75-5SAD	4.8				260
	LGU75-3SLD	3.111	12.4	Serration Shaft 12×11×1		240
	LGU75-4SLD	3.714				250
	LGU75-5SLD	4.8				260

LGU75-M Series

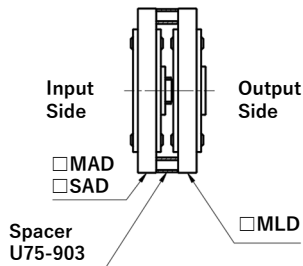
UNIT TYPE

φ75

6.9 - 22.6 Nm

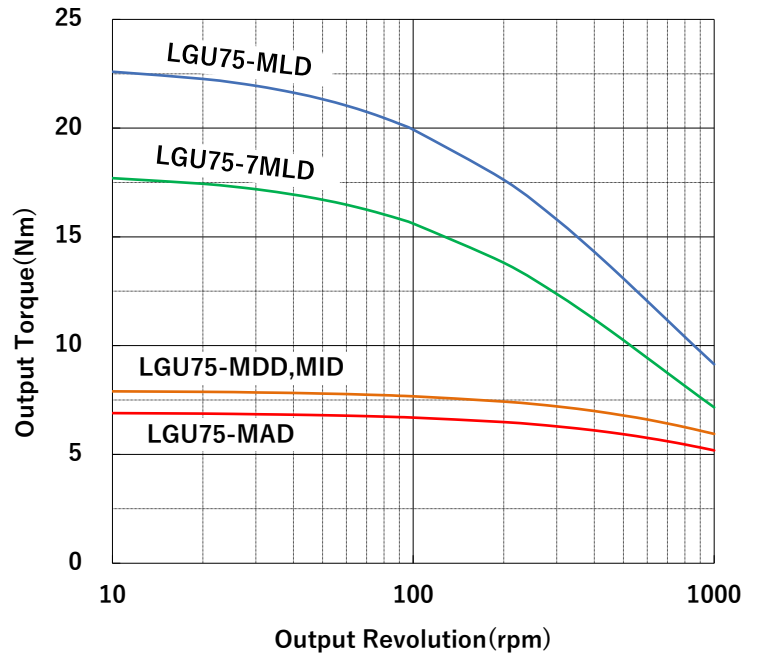


EXAMPLE of STACKING



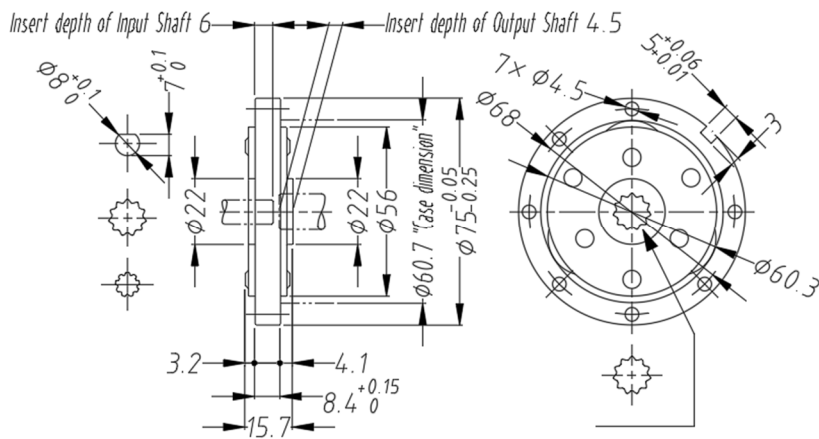
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

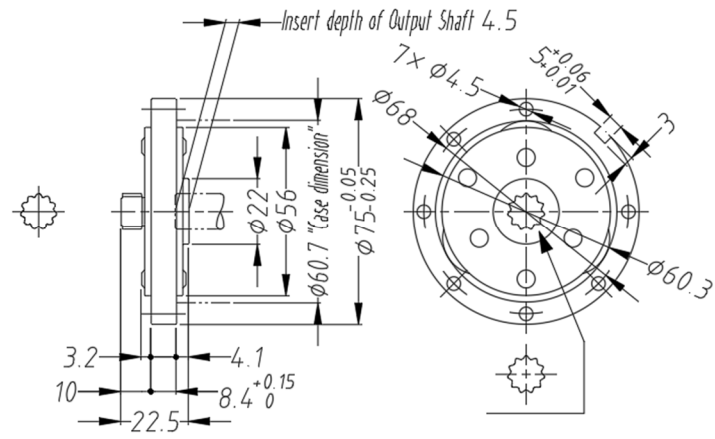


DIMENSIONS (mm)

LGU75-MAD, MDD, MID



LGU75-MLD



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-M	LGU75-3MAD	3	6.9	D Cut Hole φ8×7	Serration Hole 12×11×1	230
	LGU75-4MAD	4				240
	LGU75-5MAD	5				250
	LGU75-3MDD	3	7.9	Spline Hole 8×9×0.75		230
	LGU75-4MDD	4				240
	LGU75-5MID	5				250
	LGU75-3MLD	3	22.6	Serration Shaft 12×11×1		240
	LGU75-4MLD	4				250
	LGU75-5MLD	5				260
	LGU75-6MLD	5.8				260
	LGU75-7MLD	7	17.7			270

LGU75-M8 Series

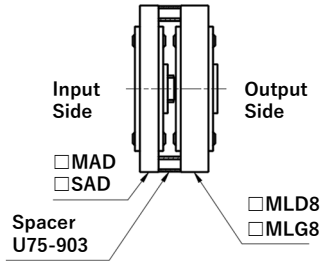
UNIT TYPE

φ75

34.3 – 44.1 Nm

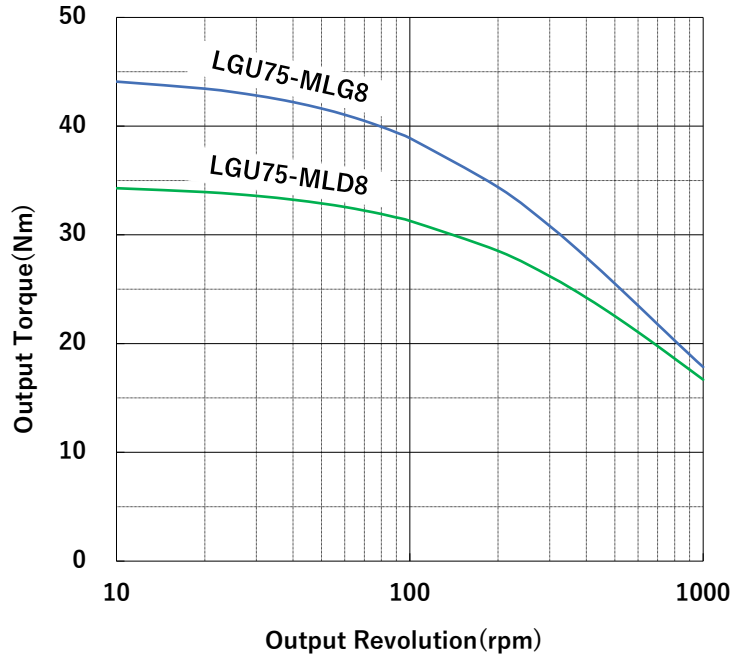


EXAMPLE of STACKING



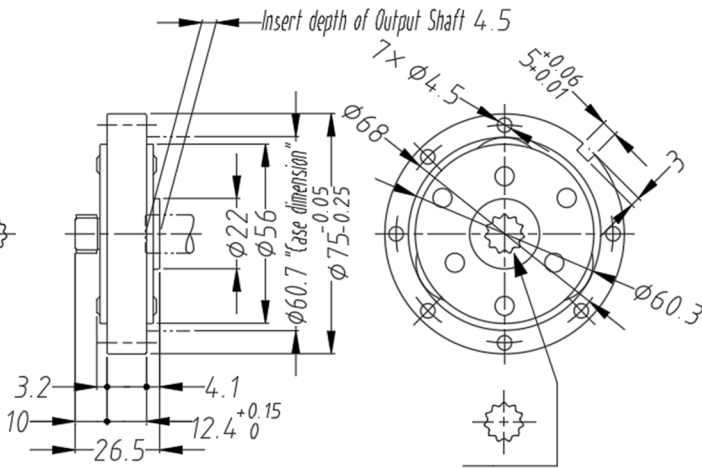
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

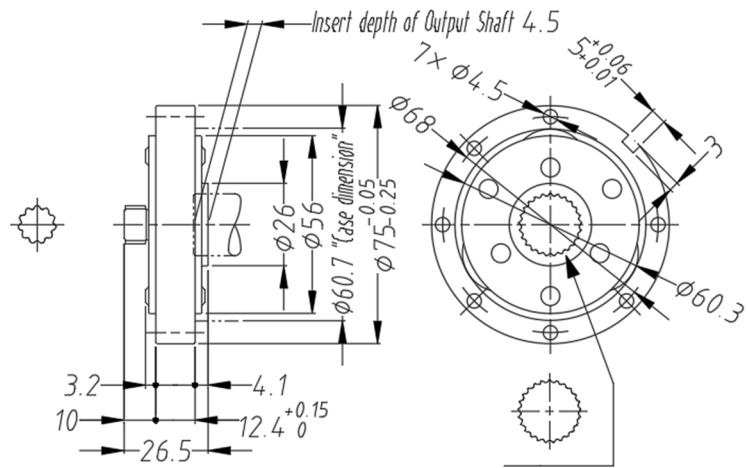


DIMENSIONS (mm)

LGU75-MLD8



LGU75-MLG8



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-M8	LGU75-3MLD8	3	34.3	Serration Shaft 12×11×1	Serration Hole 12×11×1	320
	LGU75-4MLD8	4				330
	LGU75-5MLD8	5				340
	LGU75-6MLD8	5.8	44.1		Serration Hole 19.5×25×0.75	340
	LGU75-3MLG8	3				320
	LGU75-4MLG8	4				320
	LGU75-5MLG8	5				330

LGU75-M12 Series

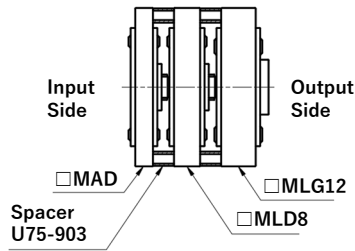
UNIT TYPE

φ75

88 - 118 Nm

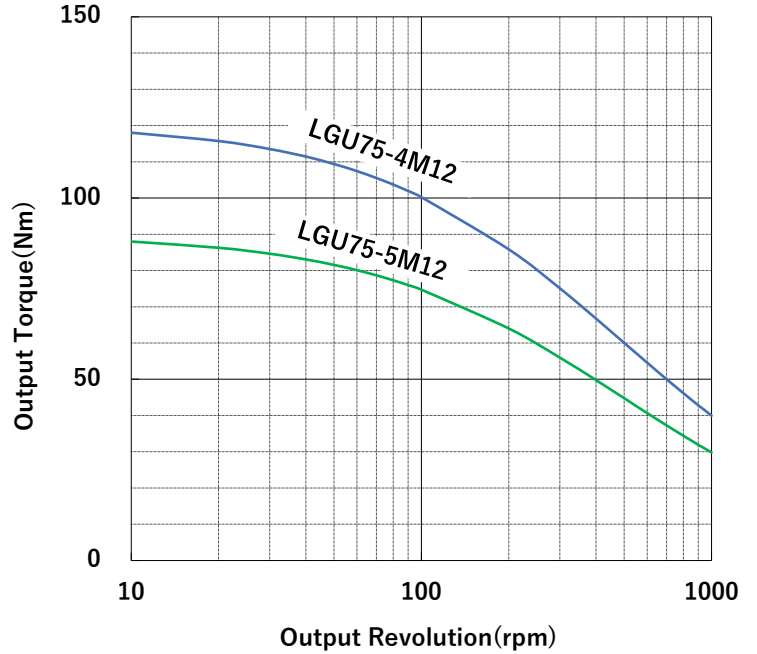


EXAMPLE of STACKING



See P32 for the Optional Parts

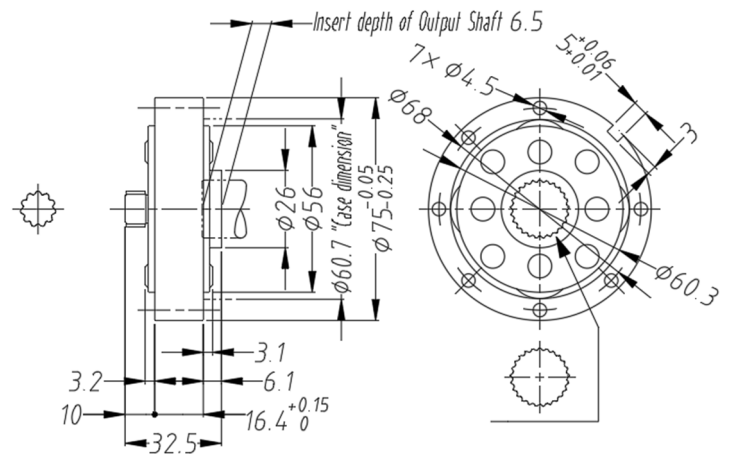
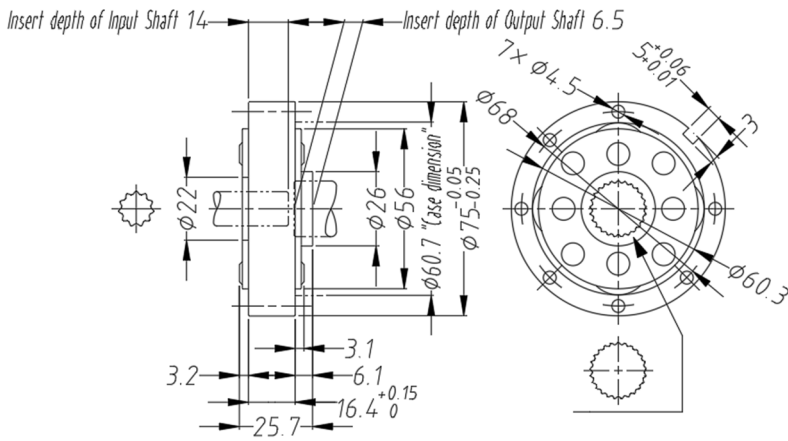
OUTPUT TORQUE CURVE



DIMENSIONS (mm)

LGU75-MDG12

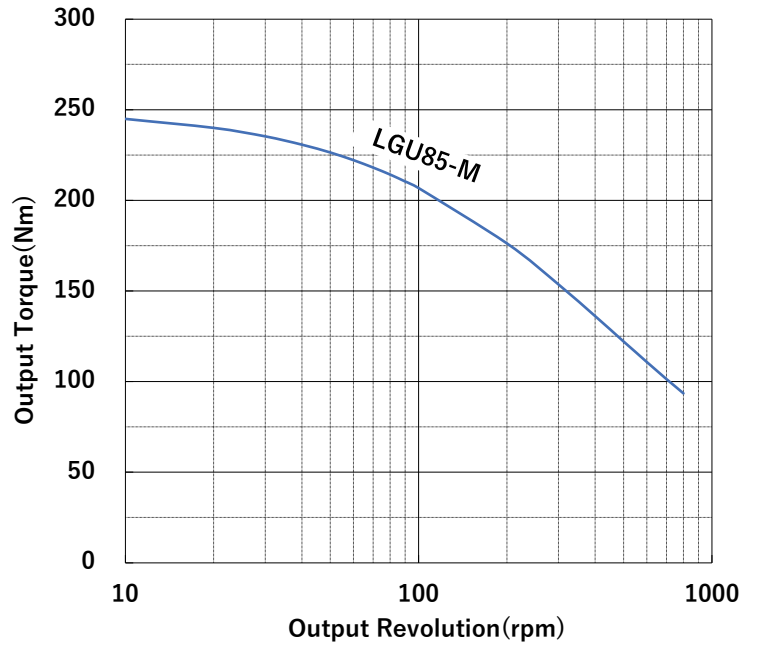
LGU75-MLG12



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-M12	LGU75-4MDG12	4	118	Serration Hole 12×11×1	Serration Hole 19.5×25×0.75	450
	LGU75-4MLG12			470		
	LGU75-5MLG12	5	88	Serration Shaft 12×11×1		430

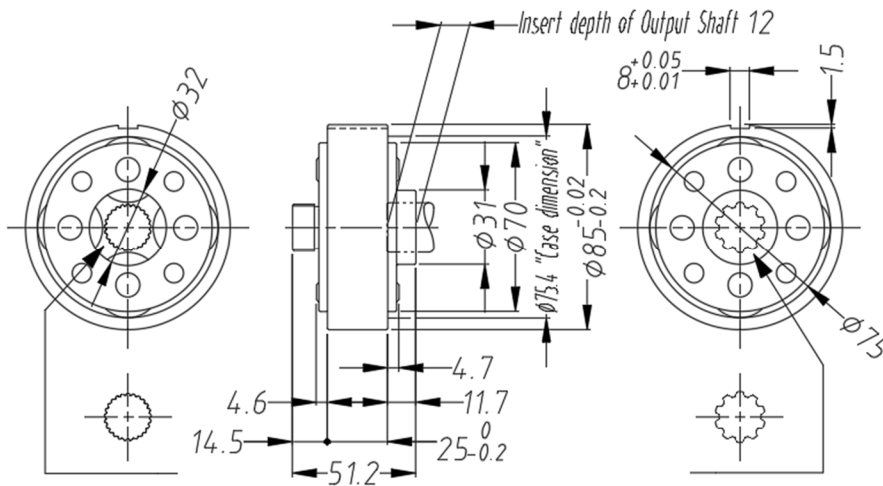


■ OUTPUT TORQUE CURVE



■ DIMENSIONS (mm)

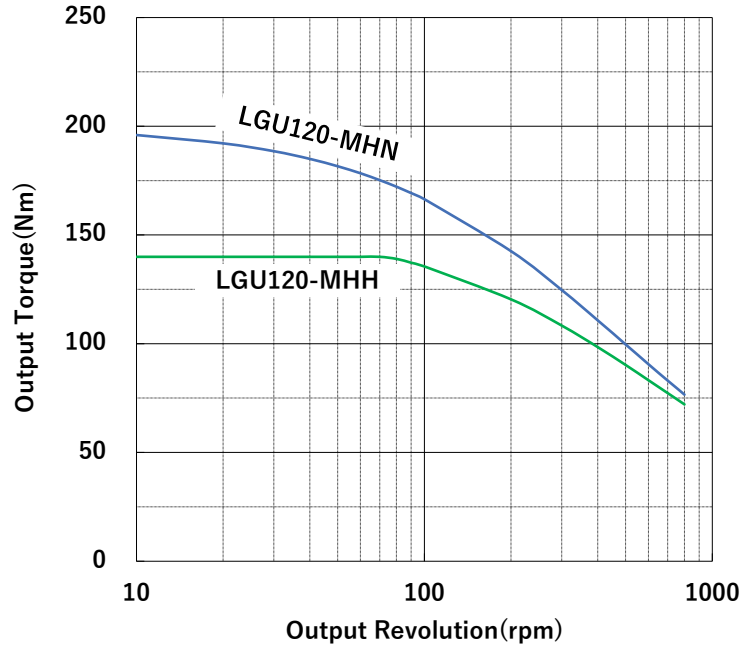
LGU85-MGE



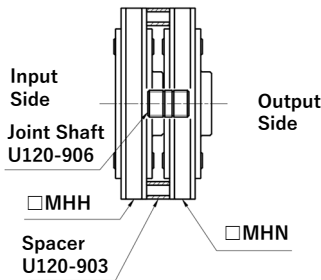
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU85-M	LGU85-4MGE	4	245	Serration Shaft 19.5×25×0.75	Spline Hole 21×10×1.75	1.0



■ OUTPUT TORQUE CURVE



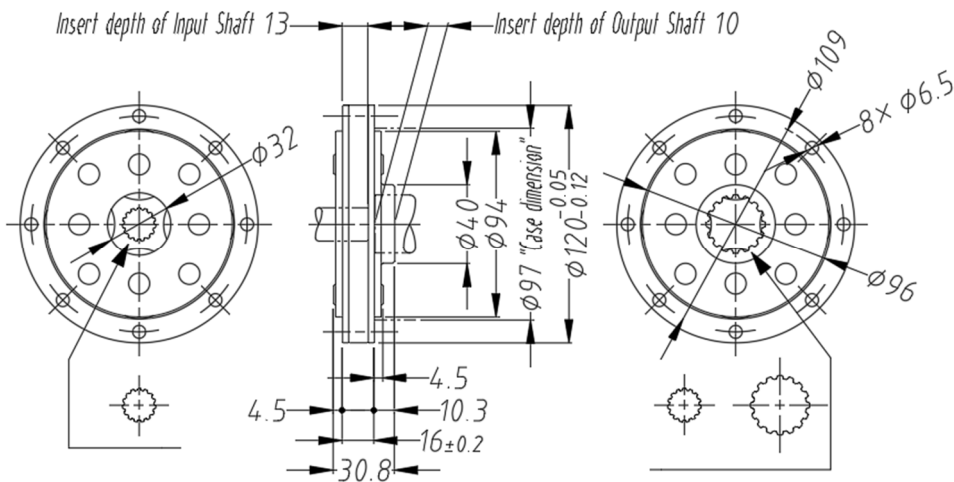
■ EXAMPLE of STACKING



- See P30 for Multi-Stage Usage
- See P32 for the Optional Parts

■ DIMENSIONS (mm)

LGU120-MHH, MHN



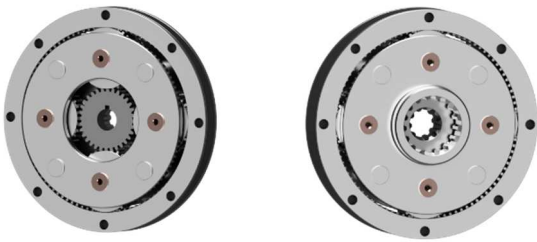
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU120-M	LGU120-3MHH	3	137	Spline Hole 17×15×1	Spline Hole 17×15×1	1.3
	LGU120-4MHH	4				1.3
	LGU120-5MHH	5				1.4
	LGU120-3MHN	3	196		Spline Hole 30×16×1.667	1.2
	LGU120-4MHN	4				1.3
	LGU120-5MHN	5				1.4

LGU146-M Series

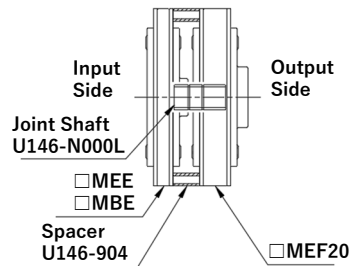
UNIT TYPE

φ146

196 - 343 Nm



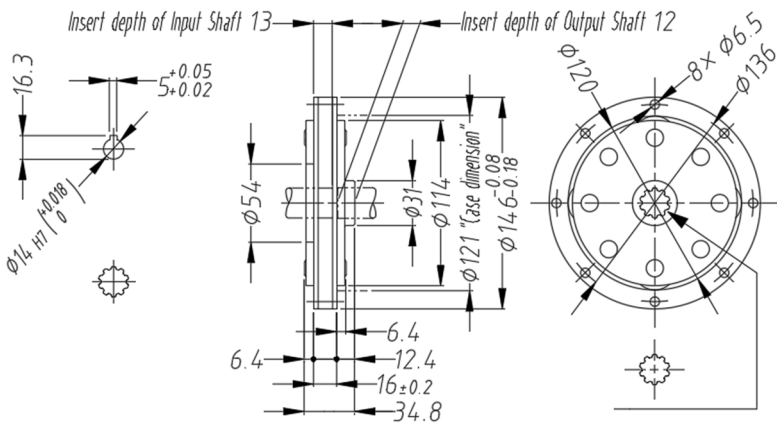
EXAMPLE of STACKING



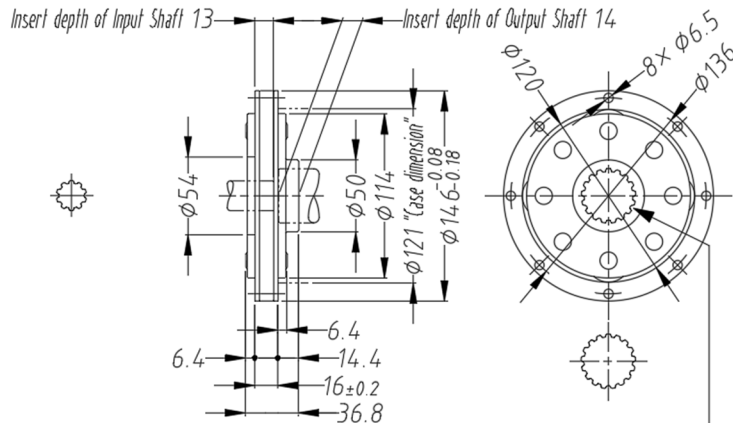
- See P31 for Multi-Stage Usage
- See P32 for the Optional Parts

DIMENSIONS (mm)

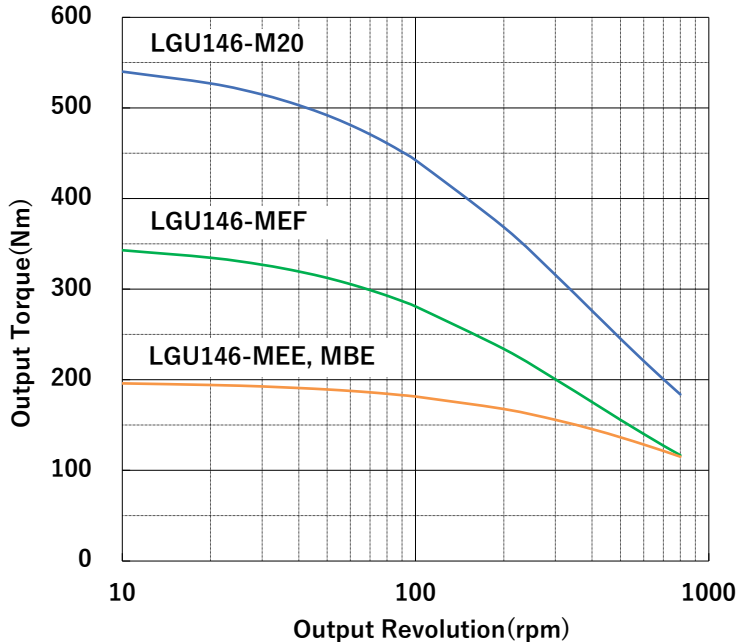
LGU146-MBE, MEE



LGU146-MEF



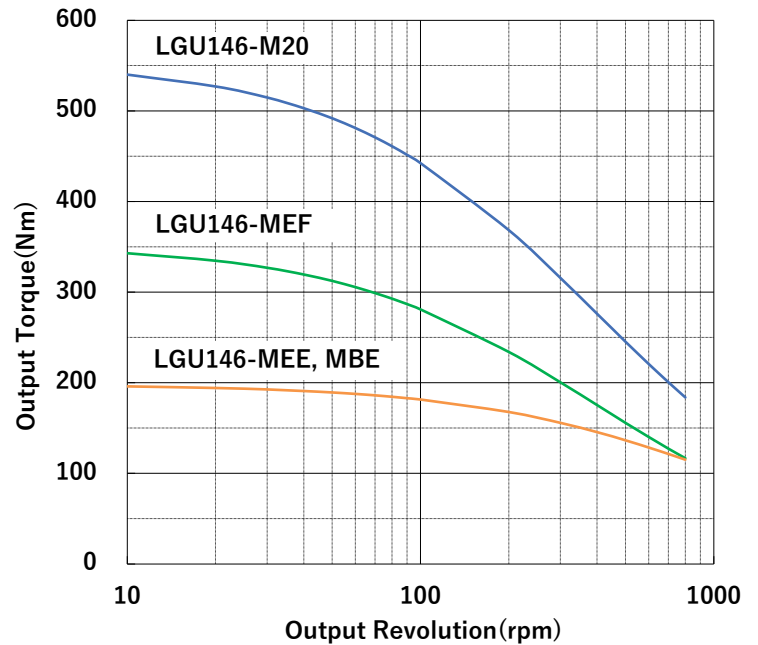
OUTPUT TORQUE CURVE



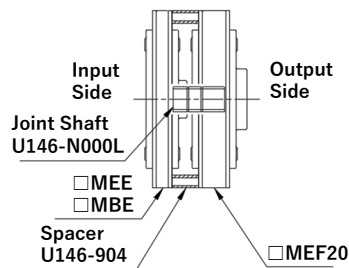
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU146-M	LGU146-3MBE	3	196	Hole with Key φ14-5×16.3	Spline Hole 21×10×1.75	2.0
	LGU146-4MBE	4				2.1
	LGU146-5MBE	5				2.2
	LGU146-3MEE	3				2.0
	LGU146-4MEE	4				2.1
	LGU146-5MEE	5				2.2
	LGU146-3MEF	3	343	Spline Hole 21×10×1.75	Spline Hole 38×17×2	2.0
	LGU146-4MEF	4				2.2
	LGU146-5MEF	5				2.2



■ OUTPUT TORQUE CURVE



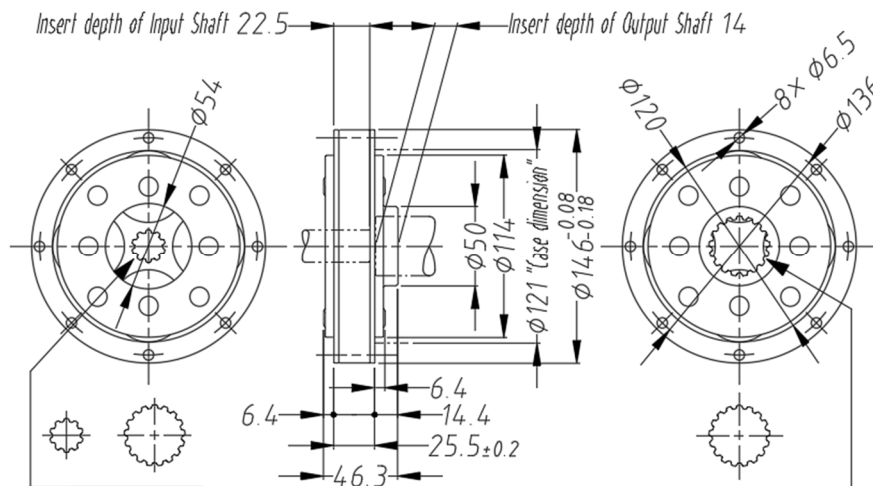
■ EXAMPLE of STACKING



- See P31 for Multi-Stage Usage
- See P32 for the Optional Parts

■ DIMENSIONS (mm)

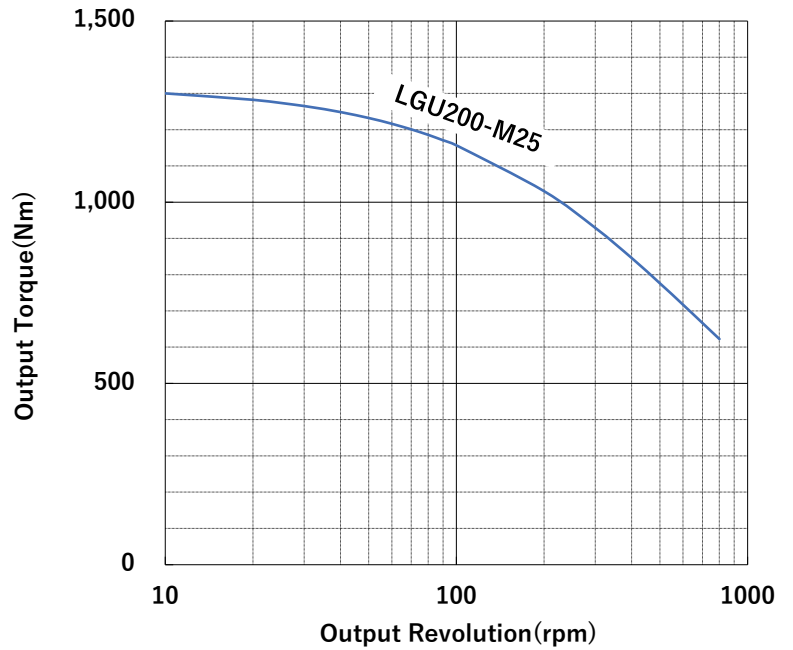
LGU146-MEF20, MFF20



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU146-M20	LGU146-3MEF20	3	540	Spline Hole 21×10×1.75	Spline Hole 38×17×2	2.7
	LGU146-4MEF20	4				2.9
	LGU146-5MEF20	5				3.0
	LGU146-3MFF20	3		Spline Hole 38×17×2		2.6

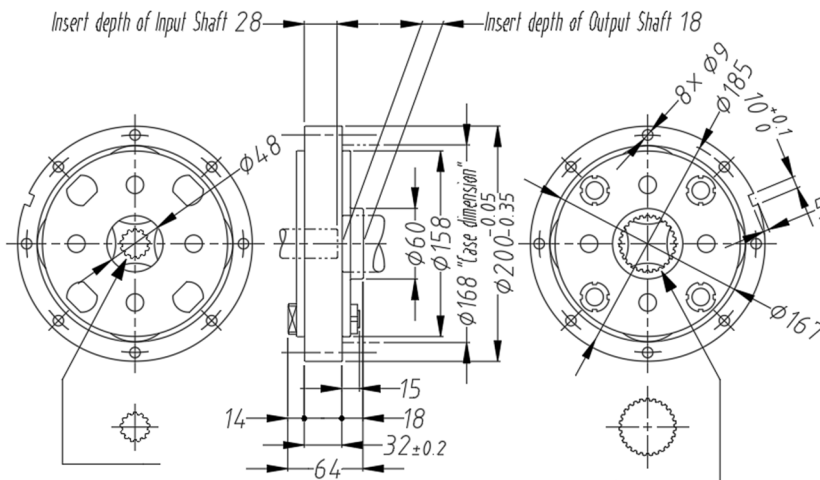


■ OUTPUT TORQUE CURVE



■ DIMENSIONS (mm)

LGU200-MTZ25



Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU200-M25	LGU200-3MTZ25	3	1300	Spline Hole 25×13×1.667	Spline Hole 48.333×27×1.667	7.2
	LGU200-4MTZ25	4.3				7.6
	LGU200-5MTZ25N	5				8.1

TABLE OF COMBINATIONS (MULTI-STAGE)

MULTI-STAGE USAGE of PLANETARY GEAR UNIT

In case, the Speed Ratio of one unit is not sufficient, Please consider multi-stage usage (=stacking the multiple gears). See the below table for the standard combination of multiple gears.

Please feel free to ask us, if you need other combinations aside from the below table.

Series	Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option Part)	Maximum Output Torque(Nm)	
LGU26	20.25	LGU26-5SAS4	LGU26-5SYI4	-	U26-903×1	2.0	
	91.13	LGU26-5SAS4	LGU26-5SYS4	LGU26-5SYI4	U26-903×2		
LGU35	13.4	LGU35-4SRS	LGU35-4SYD7-A	-	U35-913×1	5.0	
	18.3	LGU35-4SRS	LGU35-5SYD7-A				
			LGU35-5MYD7				
	25	LGU35-5SRS	LGU35-5SYD7-A			5.0	
	LGU35-5MYD7	10					
	49.3		LGU35-4SRS	LGU35-4SYS	LGU35-4SYD7-A	U35-913×2	5.0
	67.2	LGU35-4SRS	LGU35-4SYS	LGU35-5SYD7-A			
	91.7	LGU35-4SRS	LGU35-5SYS	LGU35-5MYD7	5.0		
				LGU35-5SYD7-A		10	
	125	LGU35-5SRS	LGU35-5SYS	LGU35-5SYD7-A	5.0		
LGU35-5MYD7	10						
LGU54		16	LGU54-4PAD	LGU54-4CLD	-	-	9.8
	24	LGU54-6PAD					
	64	LGU54-4PAD	LGU54-4PLD	LGU54-4CLD	-		
	96	LGU54-6PAD					
LGU75	9.33	LGU75-3SAD	LGU75-3MLD	-	U75-903×1	22.6	
	12.44	LGU75-3SAD	LGU75-4MLD				
	14.86	LGU75-4SAD	LGU75-4MLD				
	18.57	LGU75-4SAD	LGU75-5MLD				
	24	LGU75-5SAD	LGU75-5MLD	LGU75-3MLG8	U75-903×2	44.1	
	44.57	LGU75-4SAD	LGU75-4MLD				
	59.42	LGU75-4SAD	LGU75-4MLD				LGU75-4MLG8
	74.28	LGU75-4SAD	LGU75-5MLD				LGU75-4MLG8
	96	LGU75-5SAD	LGU75-5MLD				LGU75-4MLG8
120	LGU75-5SAD	LGU75-5MLD	LGU75-5MLG8				

Series	Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	Spacer (Option Part)	Joint Shaft (Option Part)	Maximum Output Torque(Nm)
LGU120	9	LGU120-3MHH	LGU120-3MHN	U120-903×1	U120-906×1	196
	12	LGU120-4MHH	LGU120-3MHN			
	16	LGU120-4MHH	LGU120-4MHN			
	20	LGU120-5MHH	LGU120-4MHN			
	25	LGU120-5MHH	LGU120-5MHN			
LGU146	9	LGU146-3MEE	LGU146-3MEF20	U146-904×1	U146-N000L×1	540
	12	LGU146-4MEE	LGU146-3MEF20			
	16	LGU146-4MEE	LGU146-4MEF20			
	20	LGU146-5MEE	LGU146-4MEF20			
	25	LGU146-5MEE	LGU146-5MEF20			

LGU26 Multi-Stage

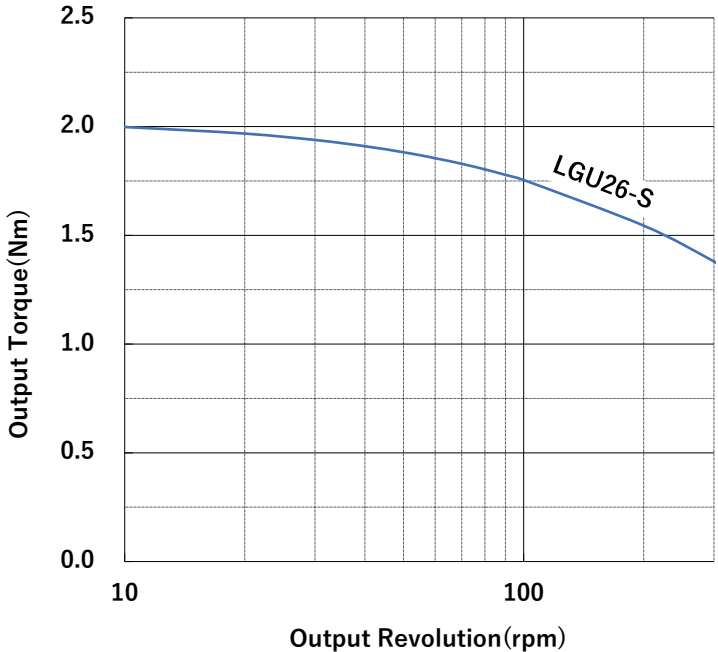
UNIT TYPE COMBINATION $\phi 26$

2.0 Nm



※The units will not be stacked at shipment.

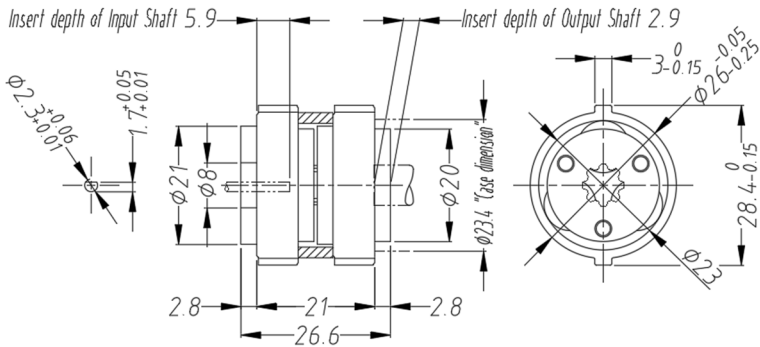
■ OUTPUT TORQUE CURVE



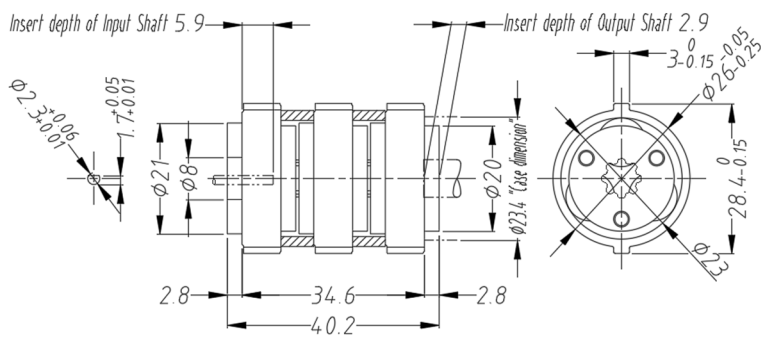
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS (STACKED) (mm)

2 STAGES



3 STAGES

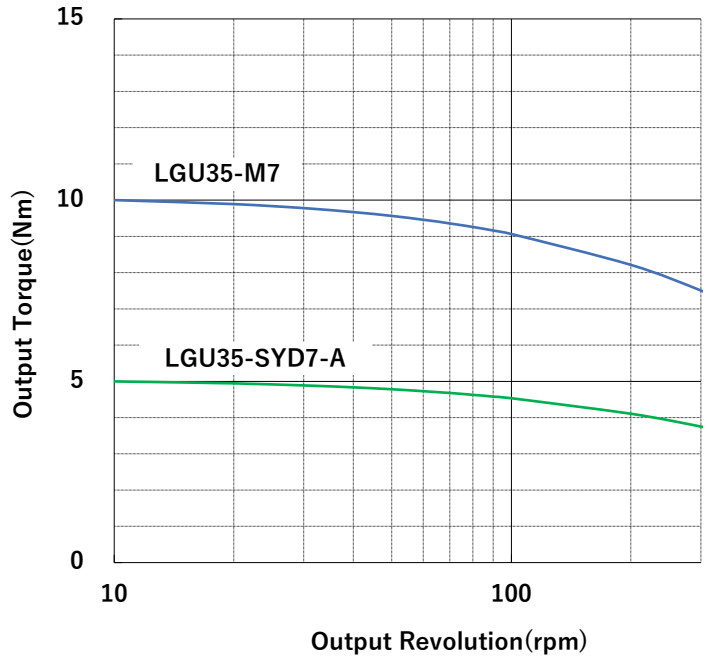


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
20.25	LGU26-5SAS4	LGU26-5SYI4	-	U26-903×1	2.0	D Cut Hole $\phi 2.3 \times 1.7$	Spline Hole $7.5 \times 8 \times 0.75$
91.13	LGU26-5SAS4	LGU26-5SYS4	LGU26-5SYI4	U26-903×2			



※The units will not be stacked at shipment.

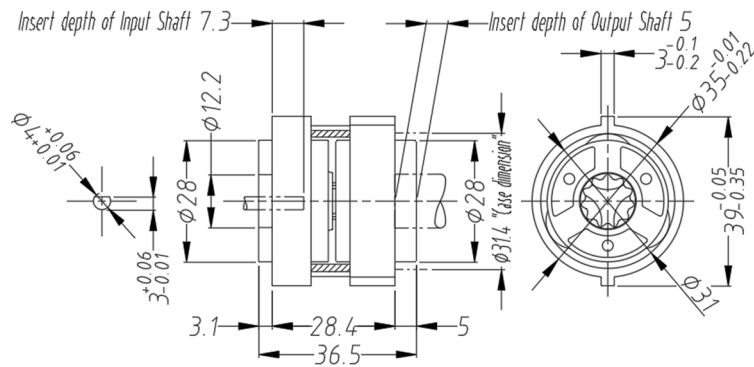
■ OUTPUT TORQUE CURVE



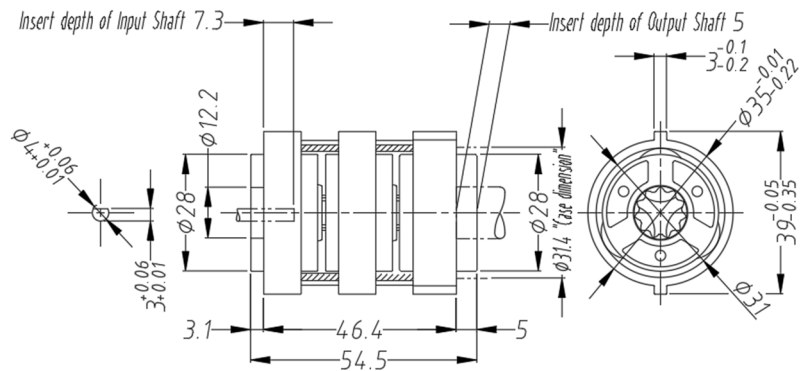
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS (STACKED) (mm)

2 STAGES



3 STAGES

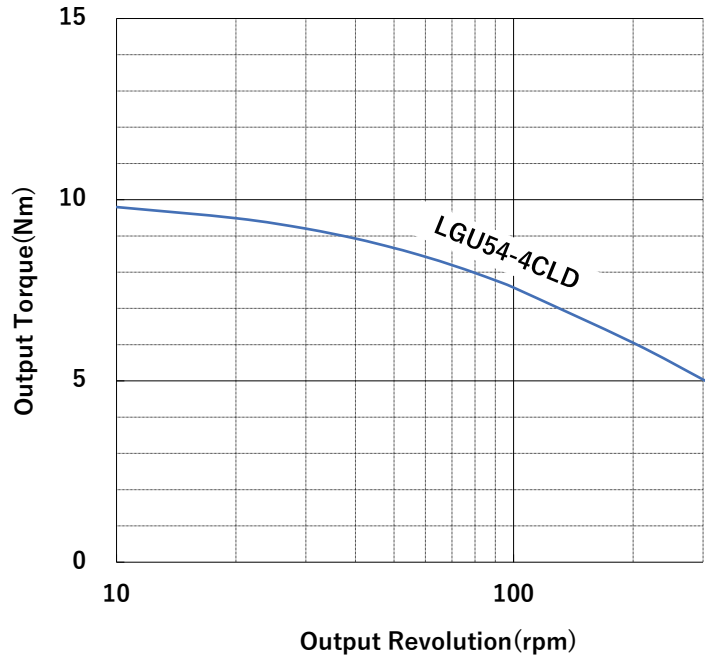


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
13.4	LGU35-4SRS	LGU35-4SYD7-A	-	U35-913×1	5.0	D Cut Hole φ4×3	Serration Hole12×11×1
18.3	LGU35-4SRS	LGU35-5SYD7-A			10		
		LGU35-5MYD7			5.0		
25	LGU35-5SRS	LGU35-5SYD7-A			10		
		LGU35-5MYD7	5.0				
49.3	LGU35-4SRS	LGU35-4SYS	LGU35-4SYD7-A	U35-913×2	5.0		
67.2	LGU35-4SRS	LGU35-4SYS	LGU35-5SYD7-A		10		
			LGU35-5MYD7		5.0		
91.7	LGU35-4SRS	LGU35-5SYS	LGU35-5SYD7-A		5.0		
125	LGU35-5SRS	LGU35-5SYS	LGU35-5SYD7-A	5.0			
			LGU35-5MYD7	10			



※The units are not stacked at shipment.

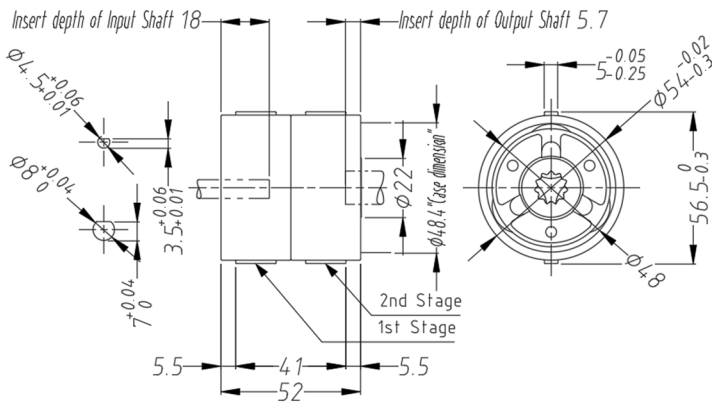
■ OUTPUT TORQUE CURVE



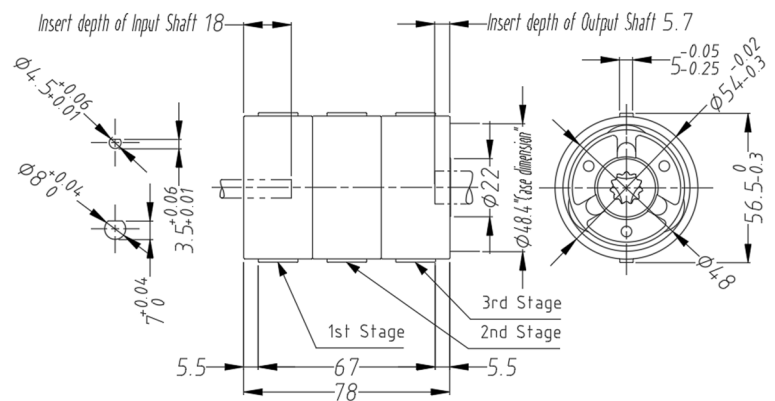
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS (STACKED) (mm)

2 STAGES



3 STAGES



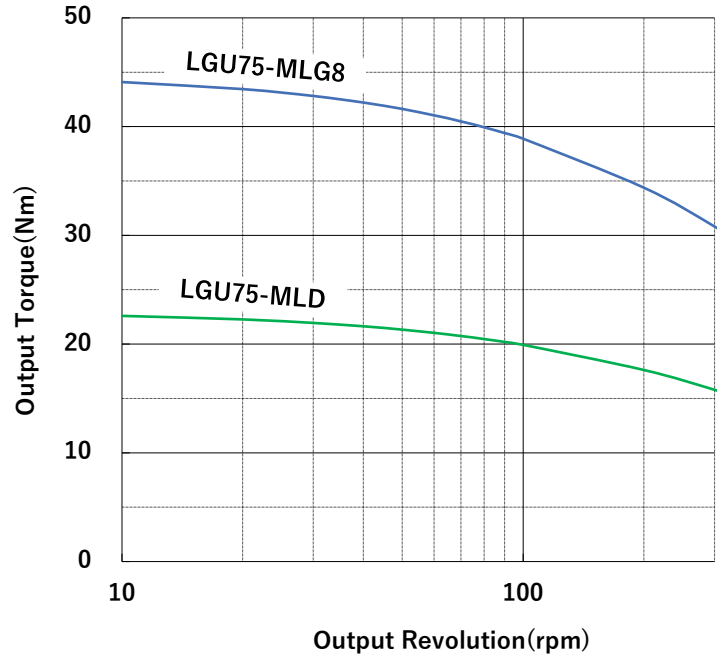
Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Maximum Output Torque(Nm)	Input Shape	Output Shape
16	LGU54-4PAD	LGU54-4CLD	-	9.8	D Cut Hole $\phi 8 \times 7$	Serration Hole $12 \times 11 \times 1$
24	LGU54-6PAD				D Cut Hole $\phi 4.5 \times 3.5$	
64	LGU54-4PAD	LGU54-4PLD	LGU54-4CLD		D Cut Hole $\phi 8 \times 7$	
96	LGU54-6PAD				D Cut Hole $\phi 4.5 \times 3.5$	

LGU75 Multi-Stage UNIT TYPE COMBINATION $\phi 75$ 22.6 – 44.1 Nm



※The units will not be stacked at shipment.

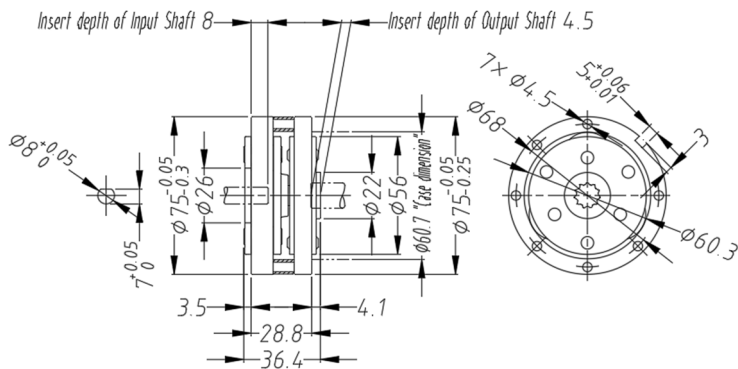
■ OUTPUT TORQUE CURVE



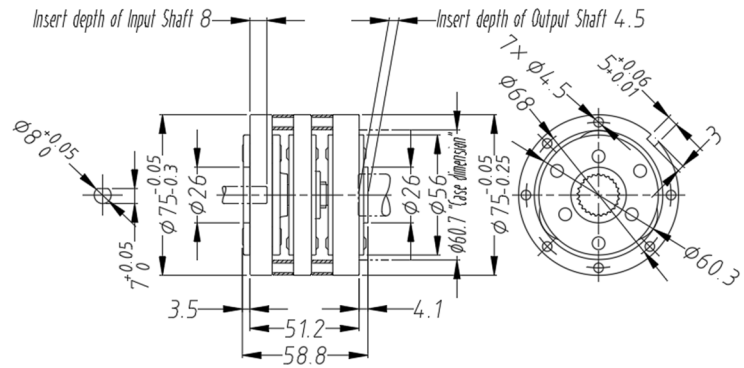
※The torque curve of the final stage (output side) is described.

■ DIMENSIONS (STACKED) (mm)

2 STAGES



3 STAGES

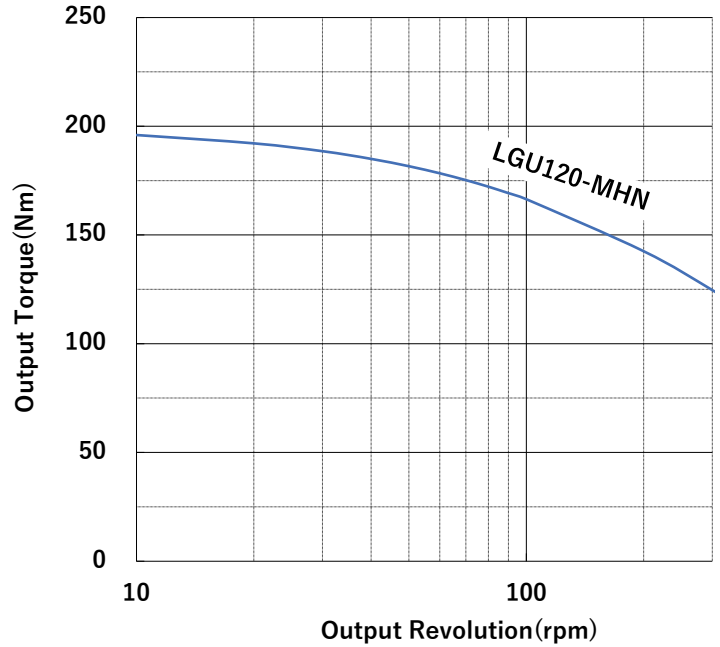


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9.33	LGU75-3SAD	LGU75-3MLD					
12.44	LGU75-3SAD	LGU75-4MLD					
14.86	LGU75-4SAD	LGU75-4MLD	-	U75-903×1	22.6		Serration Hole 12×11×1
18.57	LGU75-4SAD	LGU75-5MLD					
24	LGU75-5SAD	LGU75-5MLD					
44.57	LGU75-4SAD	LGU75-4MLD	LGU75-3MLG8				
59.42	LGU75-4SAD	LGU75-4MLD	LGU75-4MLG8				
74.28	LGU75-4SAD	LGU75-5MLD	LGU75-4MLG8	U75-903×2	44.1	D Cut Hole $\phi 8 \times 7$	
96	LGU75-5SAD	LGU75-5MLD	LGU75-4MLG8				
120	LGU75-5SAD	LGU75-5MLD	LGU75-5MLG8				Serration Hole 19.5×25×0.75



※The units will not be stacked at shipment.

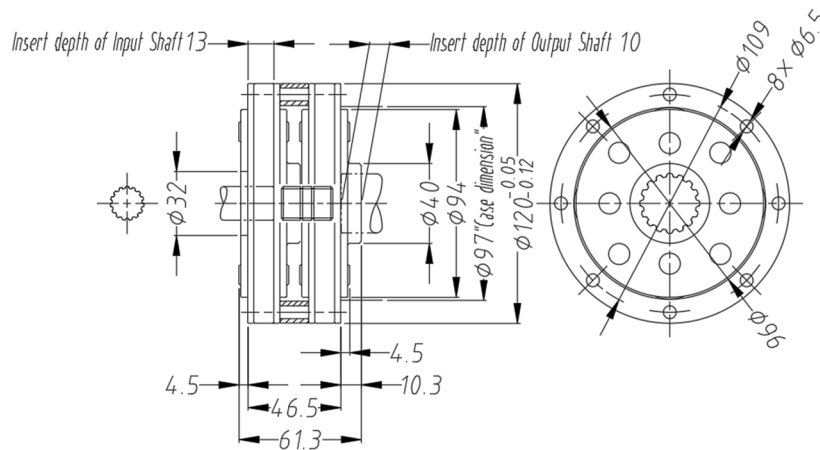
■ OUTPUT TORQUE CURVE



※The torque curve of the final stage (output side) is described.

■ DIMENSIONS (STACKED)

2 Stages



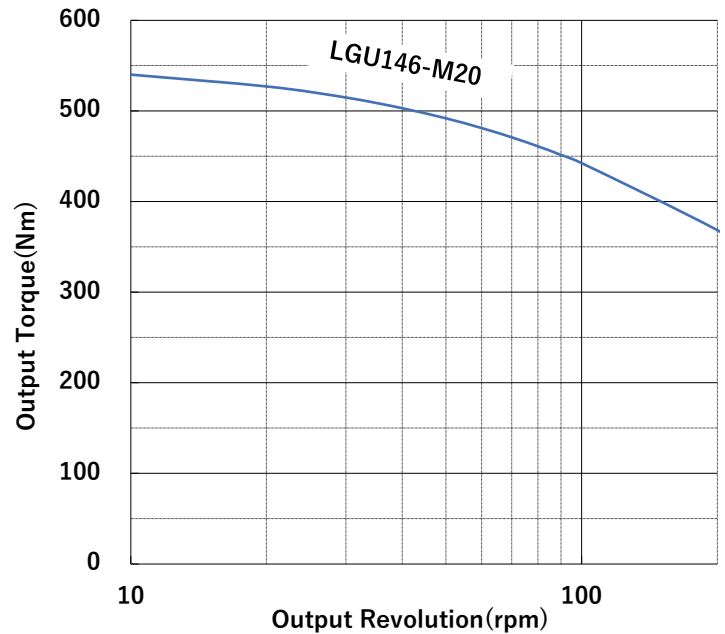
Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	Spacer (Option)	Joint Shaft (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9	LGU120-3MHH	LGU120-3MHN	U120-903×1	U120-906×1	196	Spline Hole 17×15×1	Spline Hole 30×16×1.667
12	LGU120-4MHH	LGU120-3MHN					
16	LGU120-4MHH	LGU120-4MHN					
20	LGU120-5MHH	LGU120-4MHN					
25	LGU120-5MHH	LGU120-5MHN					

※To fix the joint shaft on the axial direction, 2pcs of C-rings(JIS B 2804)STW-16 would be required. Please note that these are NOT included in the optional part.



※The units will not be stacked at shipment.

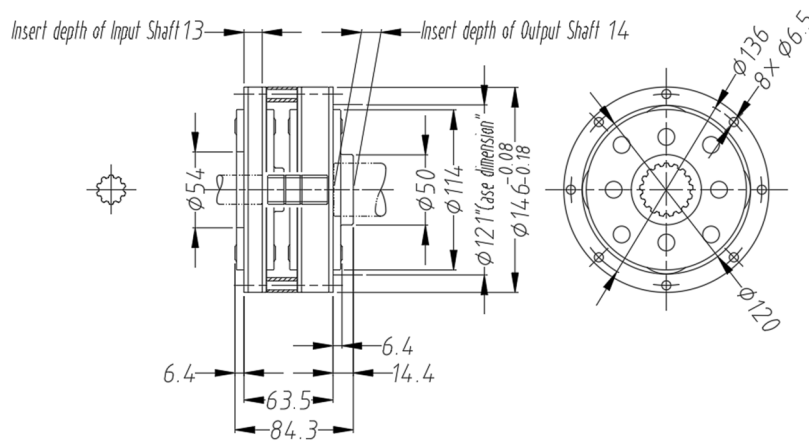
■ OUTPUT TORQUE CURVE



■ DIMENSIONS (STACKED)

※The torque curve of the final stage(output side) is described.

2 Stages



Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	Spacer (Option)	Joint Shaft (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9	LGU146-3MEE	LGU146-3MEF20	U146-904 × 1	U146-N000L × 1	540	Spline Hole 21 × 10 × 1.75	Spline Hole 38 × 17 × 2
12	LGU146-4MEE	LGU146-3MEF20					
16	LGU146-4MEE	LGU146-4MEF20					
20	LGU146-5MEE	LGU146-4MEF20					
25	LGU146-5MEE	LGU146-5MEF20					

※To fix the joint shaft on the axial direction, 2pcs of C-rings(JIS B 2804)STW-16 would be required. Please note that these are NOT included in the optional part.

Option Parts For UNIT TYPE

● **Spacer** (for LGU26, 35, 75, 120, 146)

A spacer in-between the planetary gear units. Please employ this option part in case multi-stage usage is used.

Part Name	Spacer				
DIMENSIONS (mm)					
Gear	LGU26	LGU35	LGU75	LGU120	LGU146
Model Name	U26-903	U35-913	U75-903	U120-903	U146-904
Material	PBT	POM	PA-G	STKM	STKM
Weight (g)	1.2	3.4	14	390	690

● **Fitting Plate** (for LGU26, 35)

A fitting plate to reduce a play of axial direction. Please use this option if required.

● **Coupling · Joint Shaft** (for LGU75, 120, 146)

A coupling or joint shaft to connect input and output of the planetary gear unit. Please employ this option part in case multi-stage usage is used.

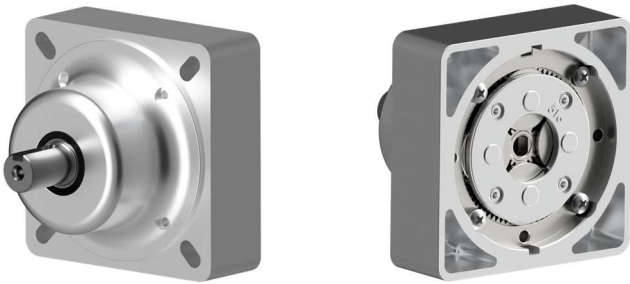
Part Name	Fitting Plate		Coupling	Joint Shaft	
DIMENSIONS (mm)					
Gear	LGU26	LGU35	LGU75 (Input L)	LGU120 (Output H)	LGU146 (Output E)
Model Name	U26-905	U35-905	U75-902	U120-906	U146-N000L
Material	SK	SK	S45C	SCM415	SCM415
Weight (g)	0.4	0.7	220	40	96

※ Please use C snap ring (JIS B 2804) to fix the Joint Shaft. STW-16 for U120-906 and STW-21 for U146-N000L should be used. Please notice that C snap ring is not included in the option. (2 C snap rings will be needed for one Joint Shaft)

● **Output Shaft** (for LGU35, 75, 146)

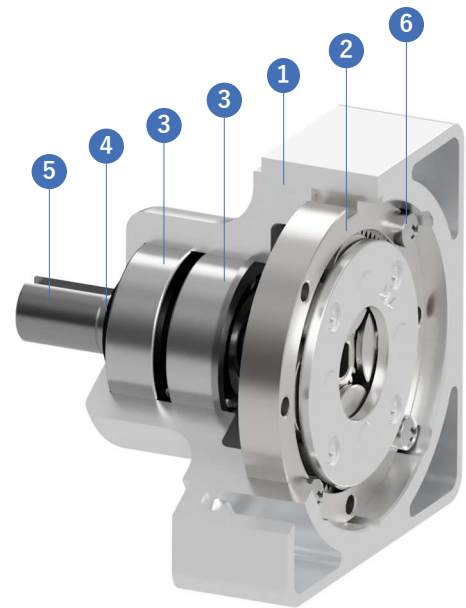
An output shaft which is connectable to carrier A of the gear unit.

Part Name	Output Shaft				
DIMENSIONS (mm)					
Gear	LGU35 (Output S)	LGU75 (Output G)	LGU75 (Output D)	LGU146 (Output E)	LGU146 (Output F)
Model Name	U35-907	U75-906S	U75-907	U146-907	U146-908
Material	S45C	S45C	SCM435	S45C	S45C
Weight (g)	21	720	50	660	1450



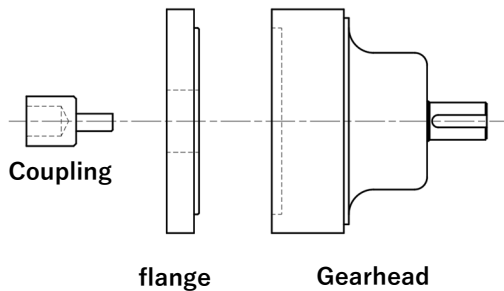
■ STRUCTURE of GEARHEAD

- 1 Gear Case
- 2 Planetary Gear Unit
- 3 Ball Bearing
- 4 Oil Sealing
- 5 Output Shaft
- 6 Fixing Screw



■ SETTING TO USE

Please prepare a flange and a coupling to connect to a motor by yourself.



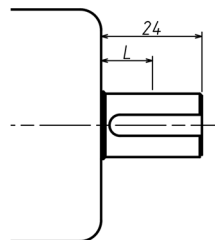
■ LIFE OF OUTPUT SHAFT BEARING

Please confirm the life of the output shaft bearing in the procedure below, in case radial load is applied to the output shaft of the gearhead.

$$\text{Equivalent Dynamic Load (N)} \quad P = F_r \cdot \frac{25.5 + L}{15}$$

$$\text{BEARING LIFE (h)} \quad L_{10h} = \frac{10^6}{60 \cdot N} \left(\frac{9600}{C_f \cdot F_s \cdot P} \right)^3$$

- P : Equivalent Dynamic Load(N)
- F_r : Equivalent Radial Load(N)
- L : Radial Load Position(mm)
- N : Output Revolution(rpm)
- C_f : Drive Coefficient
- F_s : Impact Coefficient



Radial Load Position : L

Impact Coefficient F_s

Level of Impact	F_s
almost Zero	1.0
slight Impact	1.0~1.2
with Hard Impact	1.4~1.6

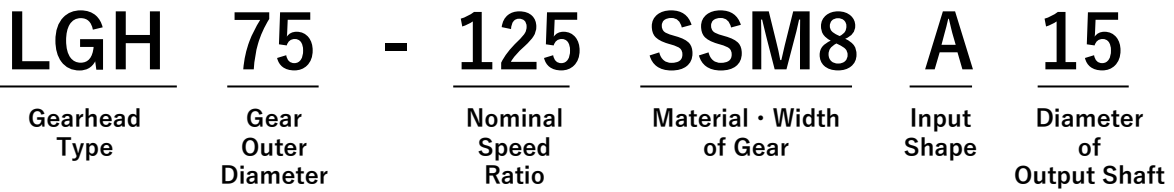
Drive Coefficient C_f

Connection	C_f
Chain	1.00
Gear	1.25
Belt	1.50

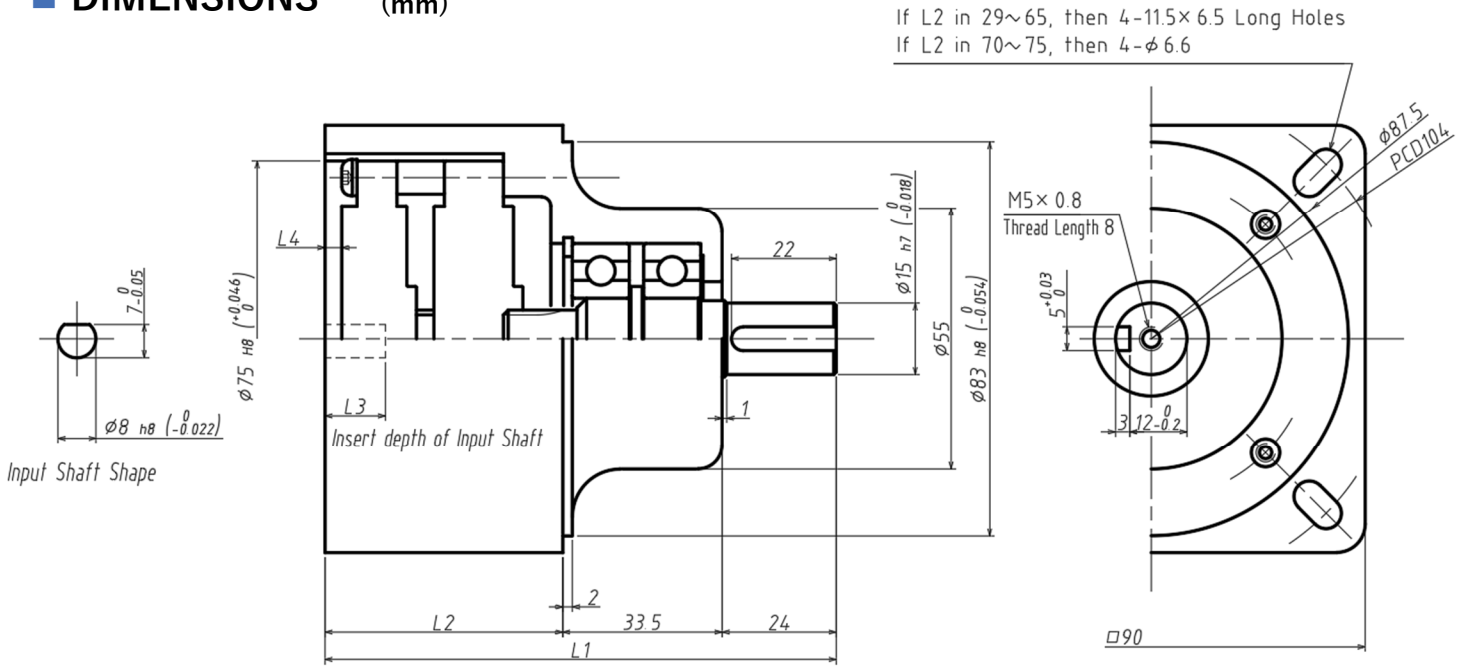
■ LUBRICATION

Grease is injected at manufacturing.

■ MODEL NAMING RULE



■ DIMENSIONS (mm)

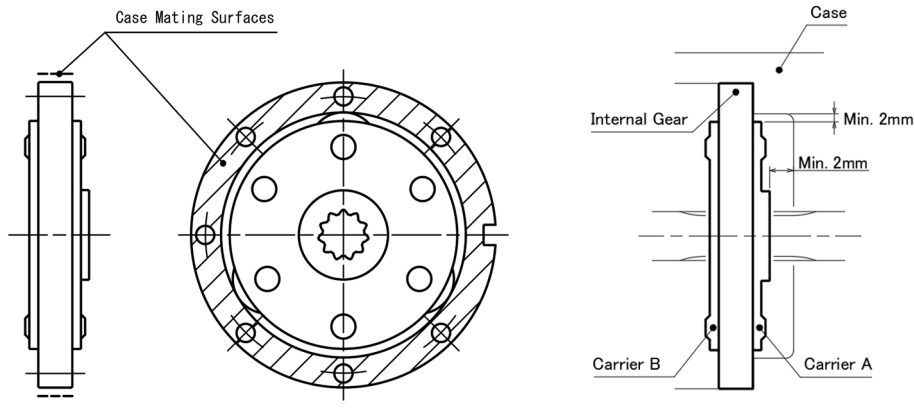


* Nominal Speed Ratio will be described in □ .

Model Name	Nominal Speed Ratio	Actual Speed Ratio	Maximum Output Torque(Nm)	Dimension Mark				Weight (kg)
				L1	L2	L3	L4	
LGH75-□PA15	3 4 5	3.1 3.7 4.8	1.8	86.5	29	14.1	2.6	0.73
LGH75-□SA15			6.4					0.83
LGH75-□MA15			5.9					4.9
LGH75-□PPA15	9 12 15 20 25	9.7 11.6 14.9 17.8 23	2.9	107.5	50	14.7	3.2	1.12
LGH75-□PSA15			8.8					1.22
LGH75-□SSA15			9.8					1.32
LGH75-□SMA15	9 12 16 20 25	9.3 11.1 14.9 19.2 24	16.7	116.5	59	21.7	10.2	1.36
LGH75-□SM8A15			27.5					1.51
LGH75-□PPPA15			3.9					127.5
LGH75-□PPSA15	30.1 36 46.5 42.9 55.5 51.2 71.7 66.2 85.6 110.6	10.8	1.53					
LGH75-□PSSA15	27 36 45 48 60 64 75 80 100 125	12.3	1.64					
LGH75-□SSMA15	29 34.7 44.8 41.4 53.5	22.6	1.78					
LGH75-□SSM8A15		55.2 69.1 71.3 92.2 115.2	39.2	132.5	75	17.3	5.8	2.04

DESIGN GUIDE

■ CASE DESIGN



【Case Size】

The inner surface of the case which is fitted to the outer surface of the internal gear should be designed with fitting tolerance class H7~H8(JIS).

【Reference Surface】

The Inner surfaces of the case which are fitted to the outer surface of the internal gear of both circumferential and side surfaces should be flat and uniform. (See the above left fig.)

【Clearance】

To avoid mechanical interference, the clearance between the case and Carrier A and B should be 2mm or more. (See the above right fig.)

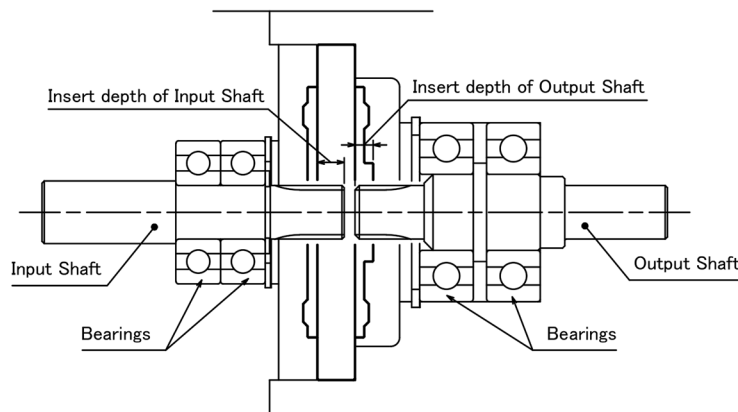
【Fixing the internal gear】

LGU26, LGU35, LGU54, LGU85 Series : Fix the internal gear using the key groove/key.

Fitting plate (Option Part) would be used if necessary.

Other Series : Fix the internal gear by fastening bolts with same torque for all holes.

■ INPUT/OUTPUT SHAFT DESIGN



【Input/Output Shaft Support】

To avoid the direct radial and thrust load to the gear, input/output shafts require to be supported by bearings of the case shown as the above figure.

【Radial Alignment】

Radial alignment errors should be 0.15mm or less after the input and output shafts have been fixed.

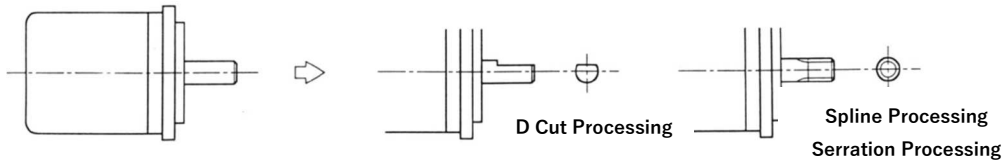
■ PRECAUTIONS

- Avoid rapid temperature change not to generate unwanted moisture or dew.
- Keep gears under circumstances of 40°C or less temperature and dark indoors not to contaminate foreign substances, dust, and moisture.
- Improper setting may cause excessive noise and/or vibration.

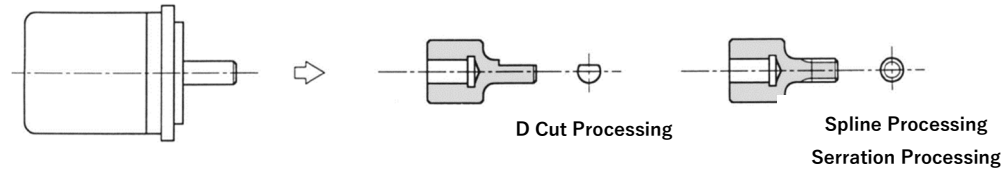
DESIGN GUIDE

CONNECTION to MOTOR

1. Direct connection, Inserting the motor shaft directly to the gear unit

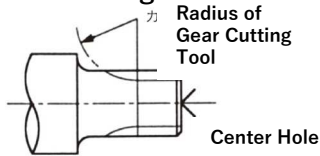


2. Indirect connection to the gear unit via a coupling or a joint shaft

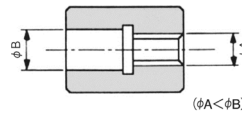


GEAR CUTTING(Serration · Spline)

1. Shaft Processing



2. Hole Processing



Note that a step near gear may interfere with the gear cutting tool on its cutting.

Make the work space for cutting tool like the above figure for the hole processing.

TABLE of SERRATION · SPLINE

Important Parameters Table of Involute Serration JIS B 1602(mm)

BASIC PROFILES						HOLE						SHAFT					
Nominal Diameter	No. of Teeth	Module	Pressure Angle	Basic Pitch Circle Diameter	Shift Factor	Root Diameter	Tip Diameter		Over Pin Diameter			Root Diameter		Tip Diameter	Over Pin Diameter		
							Basic Dimension	Deviation	Basic Dimension	Deviation	Measuring Pin Diameter	Basic Dimension	Deviation		Basic Dimension	Deviation	Measuring Pin Diameter
9	11	0.75	45°	8.25	+0.1	9.3	7.8	+0.058	5.831	+0.091	φ 1.5	9	0	7.5	10.693	-0.018	φ 1.5
							0	+0.045		-0.075			-0.054				
12	11	1	45°	11	+0.1	12.4	10.4	+0.07	7.775	+0.091	φ 2.0	12	0	10	14.257	-0.018	φ 2.0
							0	+0.045		-0.1			-0.054				
19.5	25	0.75	45°	18.75	+0.1	19.8	18.3	+0.084	16.403	+0.088	φ 1.5	19.5	0	18	21.276	-0.023	φ 1.5
							0	+0.046		-0.075			-0.061				

Important Parameters Table of Involute Spline JIS D 2001(mm)

BASIC PROFILES						HOLE						SHAFT								
Nominal Diameter	No. of Teeth	Module	Pressure Angle	Basic Pitch Circle Diameter	Shift Factor	Root Diameter		Tip Diameter		Over Pin Diameter			Root Diameter	Tip Diameter	Over Pin Diameter					
						Centralizing by tooth flank		Basic Dims.	Deviation	Basic Dims.	Deviation	Basic Dims.			Deviation	Measuring Pin Diameter	Basic Dims.	Basic Dims.	Basic Dimension	Deviation
						Basic Dims.	Deviation						Class a	Class b						
8	9	0.75	20°	6.75	+0.633	8	-0.013	6.5	+0.015	4.916	+0.108	V=1.50	7.85	6.2	9.202	-0.097	-0.011	φ 1.4		
							-0.028		0		V=1.20					-0.162	-0.076			
17	15	1	20°	15	+0.8	17	-0.016	15	+0.018	12.984	+0.07	V=2.00	16.8	14.6	18.598	-0.108	-0.013	φ 1.8		
							-0.034		0		V=1.68					-0.18	-0.085			
21	10	1.75	20°	17.5	+0.8	21	-0.02	17.5	+0.018	14.12	+0.083	V=3.50	20.65	16.8	24.913	-0.111	-0.016	φ 3.6		
							-0.041		0		V=2.94					-0.187	-0.092			
25	13	1.667	20°	21.667	+0.8	25	-0.02	21.7	+0.021	18.286	+0.084	V=3.333	24.667	21	27.563	-0.122	-0.017	φ 3.0		
							-0.041		0		V=2.80					-0.206	-0.101			
30	16	1.667	20°	26.667	+0.8	30	-0.02	26.7	+0.021	23.445	+0.085	V=3.333	29.667	26	32.851	-0.129	-0.018	φ 3.0		
							-0.041		0		V=2.80					-0.217	-0.107			
38	17	2	20°	34	+0.8	38	-0.025	34	+0.025	29.989	+0.085	V=4.00	37.6	33.2	41.297	-0.13	-0.019	φ 3.6		
							-0.05		0		V=3.36					-0.219	-0.108			
38.333	21	1.667	20°	35	+0.8	38.333	-0.025	35	+0.025	31.681	+0.085	V=3.333	38	34.333	41.214	-0.136	-0.019	φ 3.0		
							-0.05		0		V=2.80					-0.229	-0.113			
48.333	27	1.667	20°	45	+0.8	48.333	-0.025	45	+0.025	41.703	+0.086	V=3.333	48	44.333	51.36	-0.143	-0.02	φ 3.0		
							-0.05		0		V=2.80					-0.241	-0.119			

※ Module 1.75 is our original spec. based on the JIS standard.

DESIGN GUIDE

LUBRICATION

[with or without Lubrication]

- Both with and without pre-lubricated gear units are existing. Please see the below table G-1.
- For non-pre-lubricated gears, Please use the gear by putting lubrication and sealing before embedding the gear into your product.
- Depending on the gear series, Greaseless can be provided. Please consult us.

Table G-1 with or without Lubrication and its type

Series	LGU26-S	LGU35-S	LGU35-M	LGU35-P	LGU54-P	LGU54-C	LGU75-P	LGU75-S	LGU75-M	LGU85-M	LGU120-M	LGU146-M	LGU200-M
Type	DYNAMAX EP No.1			DYNAMAX No.1					Without Lubrication				

[Volume of Lubrication]

- Please see the Table G-2 for the volume of lubrication for the LGU75-M Series.
- In case the gear case has enough space or clearance, inject the grease into the case as 50-80% of the case volume
- For oil lubrication, 30-50% of the volume of the case should be filled by the oil.

Table G-2 Volume of Grease

Series	LGU75-M	LGU75-M8	LGU75-M12
Grease(g)	8	13	15

[How to Inject Grease]

Inject grease to the gear from the gap between the internal gear and the carrier or the hole of the center of the carrier, and make grease reach equally to the whole planetary gear unit.

[Recommended Lubricants]

LGU75-M : Grease or Oil is recommended.

LGU85, 120, 146, 200 : Oil is recommended.

Grease Lubrication : 『JIS K 2220 NLGI. No.1(Cone Penetration) equivalent』

Oil Lubrication : 『JIS K 2219 for Industry』 Class 1 or Class 2

Some of the recommended products are shown in the below table G-3.

Table G-3 Table of Lubrication (Partially Selected)

Lubrication		Surrounding Temperature	IDEMITSU	COSMO OIL LUBRICANTS	SHELL LUBRICANTS	ENEOS	EMG LUBRICANTS (MOBIL)
Oil	Class 1	0~40°C	Daphne Mechanic Oil 150	ALLPUS150	Morlina S2B 150	FBK Oil RO 150	Unipower SHT150
	Class 2		Daphne Super Gear Oil 150	COSMO GEAR SE 150	Omala S2G 150	BONNOC M 150	Mobil Gear 600XP 150
Grease	Multi Purpose	0~40°C	Daphne Eponex Grease SR No.1	DYNAMAX No.1	Alvania S No.1	MULTINOC GREASE No.1	-
	Extreme Pressure		Daphne Grease MPNo.1	DYNAMAX EP No.1	Alvania EP No.1	EPNOC GREASE No.1	Mobilux EP No.1

※ In case the lubricant with extreme pressure additive is used for plastic parts, damage to the parts may occur. Consultation to the lubrication maker would be needed.

APPLICATION EXAMPLES

[Home Appliances]	Nut Runner(Screw Fixing etc.)	Nursing Toilet
Tree Branch Cutter	Agricultural Machine(rice planting)	Stair Mover
Grinder(Meat, Coffee Beans, etc.)	Explosive Ordnance Disposal Robot	Lift Helper
Slicer(for cooking, etc.)	Electric Generator	Power Assisted Wheel Chair
Ice Maker	Wind Electric Generator	Electric Three Wheeler
Washing Machine(Full Auto, Twin Tub)	Copier	Electric Four Wheeler
Vacuum Cleaner(Rotating Nozzle Brush)	Horning Machine(Shaving Machine etc.)	
Tea Grinder	Boring Machine	[Health-Care Equipment]
Garbage Disposal Machine	Drilling Machine	Training Machine
Bread Kneading Machine	Pump(Several Types)	Hand Massager
Food Processor	Welding Machine	Foot Massager
Polisher	Radio Controlled Machine	Massage Chair
Mixer	Winder	
Juicer		[Medical Equipment]
Rice Cake Maker	[Opener/Closer]	Medical Bed
	Greenhouse Sheet Opener/Closer	Blood Filtration Pump
	Water Gate	Cardiopulmonary Assisting Machine
[Industrial Machines]	Opener/Closer of Sheet of Truck Bed	X-ray
Actuator	Skylight	
Crimping Machine	Door Mirror	[Automotive]
Antenna	Door	Go-cart
Printer		Golf Cart
Fish Scale Remover(for fishery)	[Winches]	Concrete Pump Car
Rotator	Winch	Door Mirror
Agitator(Mixer, etc.)	Fishing Net/Line Winch	Door Opener/Closer for Mini Bus
Swaging Machine	Crane	Snow Remover
Dryer	Paper Roller(Papermaking Machine)	Steering
Geared Motor	Chain Block	Snow Mobile
Grinder	Hoist	Electric Bicycle
Conveyor	Packager(for Differential Machines)	Electric Power Assisted Bicycle
Differential Gear Machine		Electric Jack Tool
Industrial Compact Robot	[Housing Equipment]	Electric Powered Window
Injection Molding Machine	Stair Lift	Electric Powered Seat
Crossing Gate	Curtain	Agricultural Vehicle
Jack up(for Car, etc.)	Kitchen Lifter	Forklift
Dust Collector	Shutter	Electric Bike
Filler(for Food Machine, etc.)	Door	Electric Brake
Wire Extender	Toilet Seat Opener/Closer	Hybrid Car
Picking Robot	Window Blind	Monorail
Cutting Machine(Steel Pipe, Food etc.)	Window Opener/Closer	Linear Motor Car
Textile Machine	Home Elevator	Wiper
Hole Punching Machine	Multi-Story Car Parking	
Car Washer		[Ship(Equipment)]
Crushing Machine	[Carrier Equipment]	Underwater Scooter
Hanger(for Food Machine etc.)	Carrier Cart	Outboard Motor
Electric Breaker	Battery Carrier	Wiper
Several Electric Handy Tools		Electric Generator for Ship
Electric Cylinder	[Nursing Equipment]	Rudder Steering
Painting Robot(for Ship, etc.)	Nursing Lifter	
	Nursing Bed	
	Nursing Chair(for Bathing etc.)	

DESIGN EXAMPLES

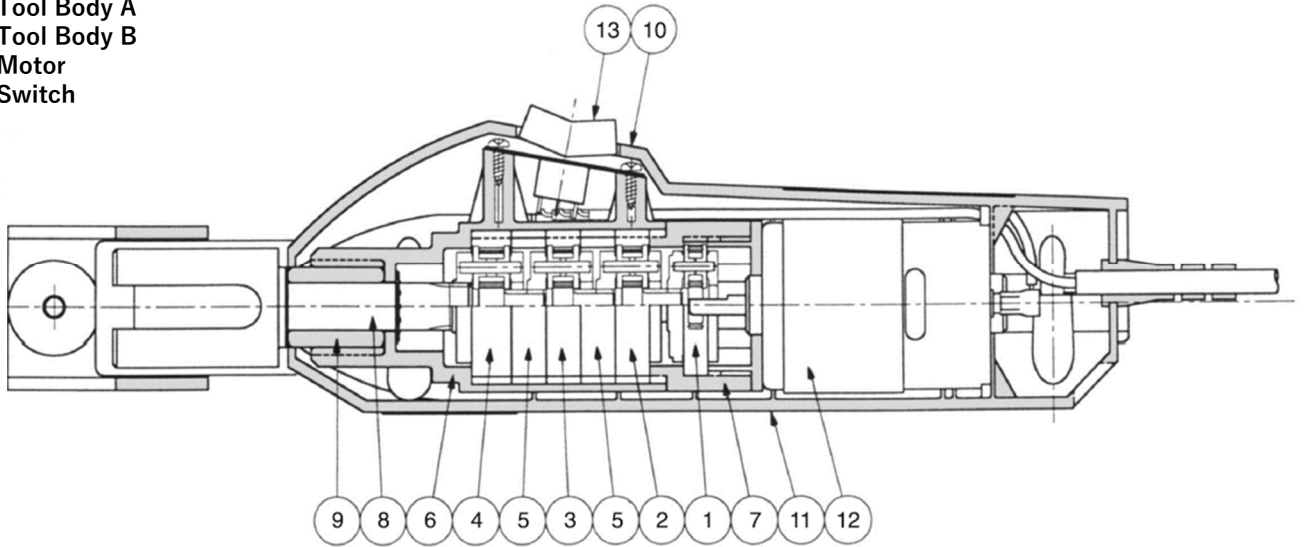
■ ELECTRIC TOOL

1. Planetary Gear Unit
2. Planetary Gear Unit
3. Planetary Gear Unit
4. Planetary Gear Unit
5. Spacer
6. Gear Case
7. Motor Flange
8. Output Shaft
9. Bearing
10. Tool Body A
11. Tool Body B
12. Motor
13. Switch

Examples : Electric Screwdriver Handy Drill etc.

Features :

Compact Body can be realized thank to coaxial setting of the input and output.
A wide variety of reduction ratio is available by combining multiple gear units.



■ DIFFERENTIAL GEARS

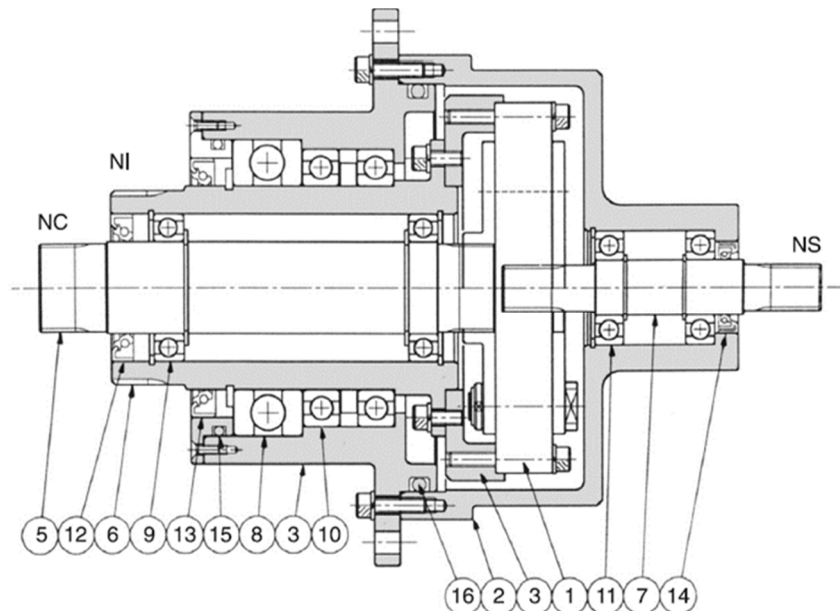
1. Planetary Gear Unit
2. Gear Case A
3. Gear Case B
4. Flange
5. Shaft N1
6. Shaft N2
7. Shaft N3
8. Thrust Bearing
9. Ball Bearing
10. Ball Bearing
11. Ball Bearing
12. Oil Seal
13. Oil Seal
14. Oil Seal
15. O Ring
16. O Ring

Examples : Wind Power Generator, etc.

Features :

This figure shows the gear increaser unit for a wind power generator.

Planetary Gear Unit can be utilized not only for speed reducer but also speed increaser. Slow yet high torque rotation of wind mil is given to the gear, and the gear gives high speed and low torque output to the electric generator. Higher rotation can be gotten by giving two different inputs to the gear.



DESIGN EXAMPLES

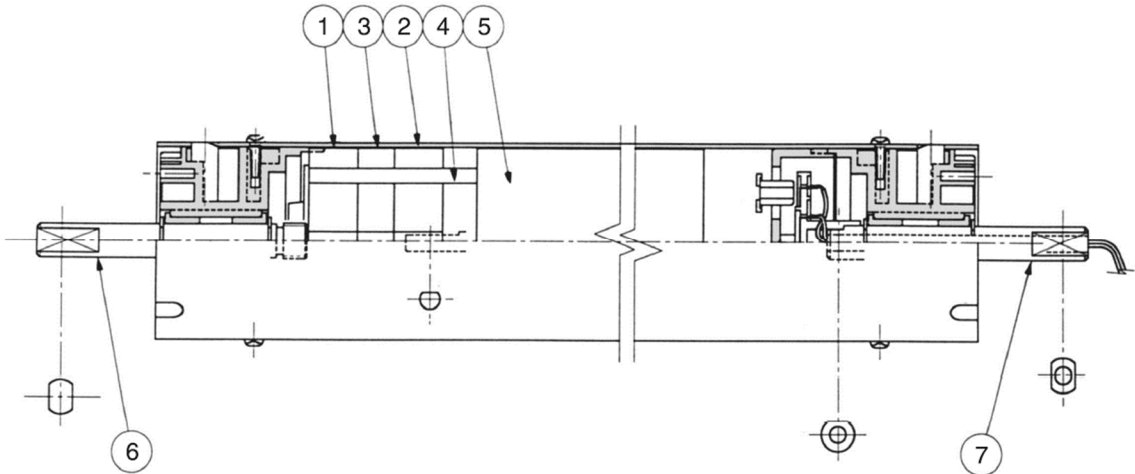
■ MOTOR ROLLER

1. Planetary Gear Unit
2. Planetary Gear Unit
3. Spacer
4. Rotation Stopper
5. Motor
6. Fixed Shaft A
7. Fixed Shaft B

Examples : Health-Care Equipment(Foot Massager, Roller Massager)
Electric Shutter, Window Blind, Vacuum Cleaner Brush, etc.

Features :

Compact Powered Roller can be realized by embedding a motor and planetary gear units into its rotating body. Lesser vibration is also obtained thanks to the coaxial setting of all driving parts.

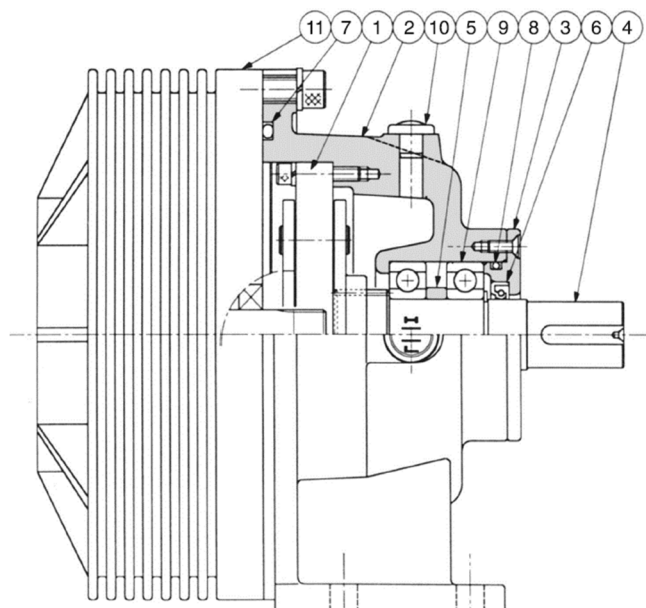


■ GEARED MOTOR

1. Planetary Gear Unit
2. Gear Case
3. Oil Seal Retainer
4. Output Shaft
5. Bearing Spacer
6. Oil Seal
7. O Ring
8. O Ring
9. Ball Bearing
10. Oil Cap
11. Motor

Features :

It is easy to realize a gear head with a proper reduction ratio for its purpose by using one gear unit or by combining multiple gear units.



DESIGN EXAMPLES

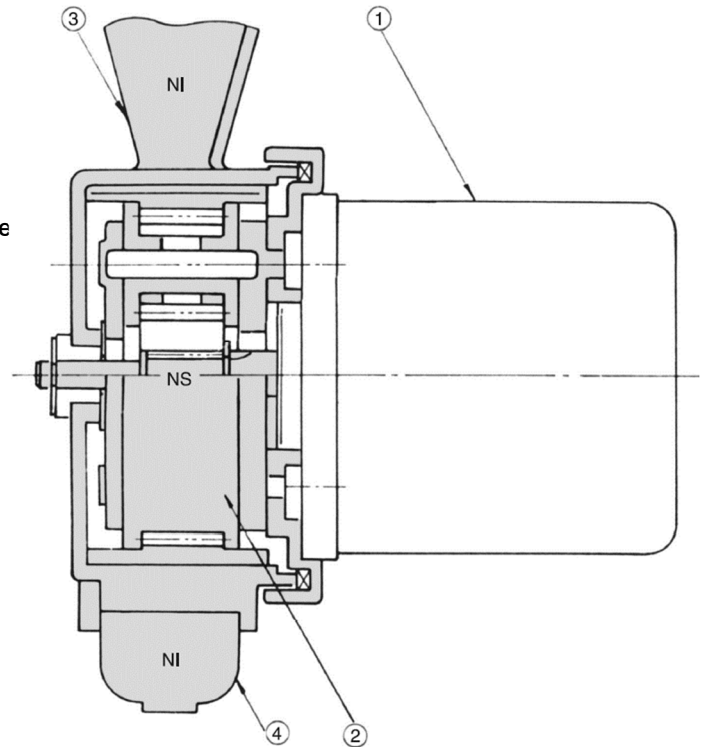
INDUSTRIAL MACHINE DRIVE

1. Motor
2. Planetary Gear Unit
3. Fan
4. Tire

Examples : Carrier Cart, Winch, Automatic Door etc.

Features :

Motor axle and wheel axle are designed in one same axis. Compact design can be easily available by putting the gear(s) in the wheel. Furthermore, individual control of each wheel can be realized.



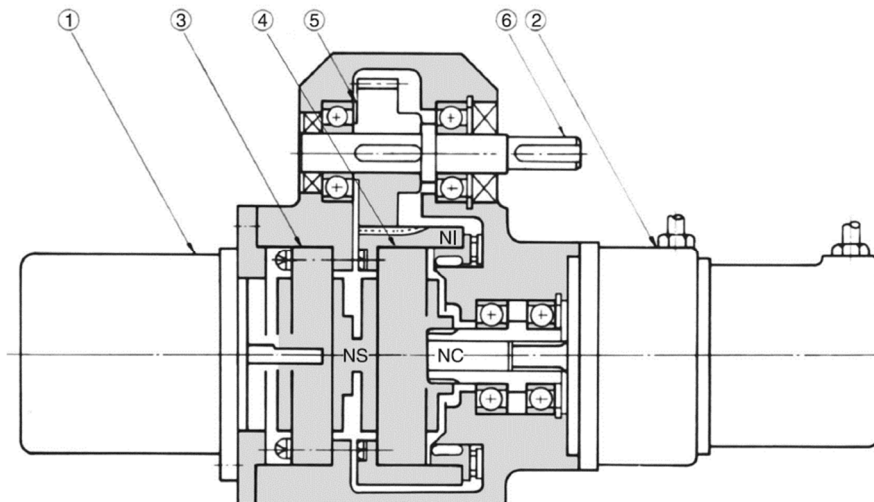
STEPLESS REDUCTION GEAR

1. Motor
2. Servo Motor
3. Planetary Gear Unit
4. Planetary Gear Unit
5. Spur Gear
6. Output Shaft

Examples : Conveyor Drive etc.

Features :

Two different motors for drive and control give inputs to the planetary gear unit. By changing the speed of the control motor, smooth and stepless gear reduction is realized. All control of output rotation direction, output speed and output axle are also realized by changing its input speed and input axle.



DESIGN EXAMPLES

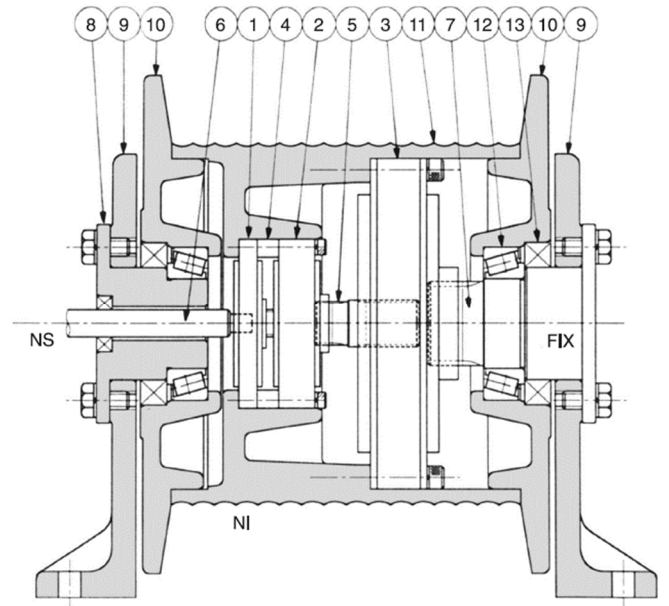
WINCH

1. Planetary Gear Unit
2. Planetary Gear Unit
3. Planetary Gear Unit
4. Spacer
5. Joint Shaft
6. Input Shaft
7. Fixed Shaft
8. Input Bush
9. Side Plate
10. Flange
11. Winch Drum
12. Cone Roller Bearing
13. Oil Seal

Examples : Winch etc.

Features :

Super high reduction ratio can be realized with one motor or one power source by using the differential gear structure. Compact body is realized thanks to its coaxial settings of all parts.



BUILT-IN SPEED REDUCTION UNIT

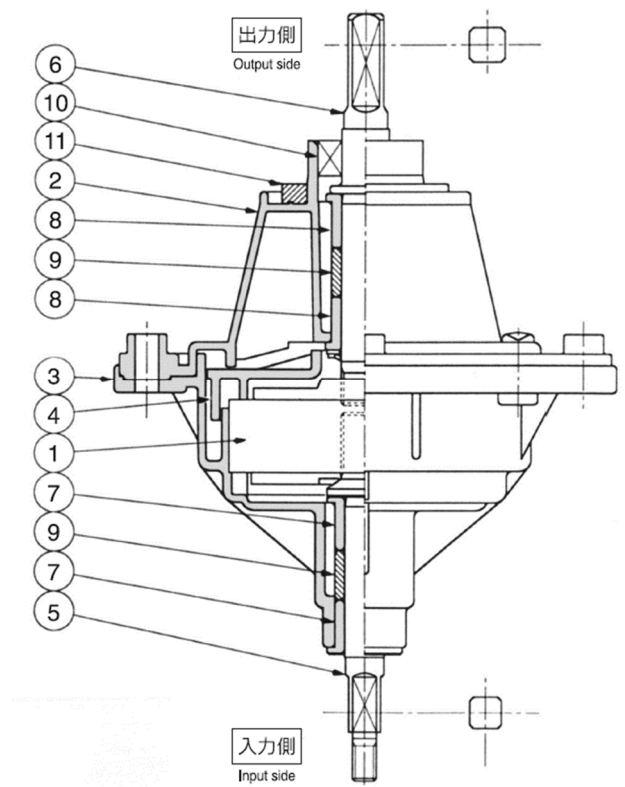
1. Planetary Gear Unit
2. Upper Gear Case
3. Lower Gear Case
4. Noise Insulation Cover
5. Input Shaft
6. Output Shaft
7. Input Shaft Support
8. Output Shaft Support
9. Felt
10. Seal
11. Rubber Seal

Examples : Driving Unit for Washing Machine etc.

Features :

Lesser noise is realized by covering the whole planetary gear unit with the plastic gear case. Since this unit is used for a washing machine, close sealing is well-considered.

Furthermore, this structure will be able to be utilized in a direct-drive system by using the gear case as a shaft.



DESIGN EXAMPLES

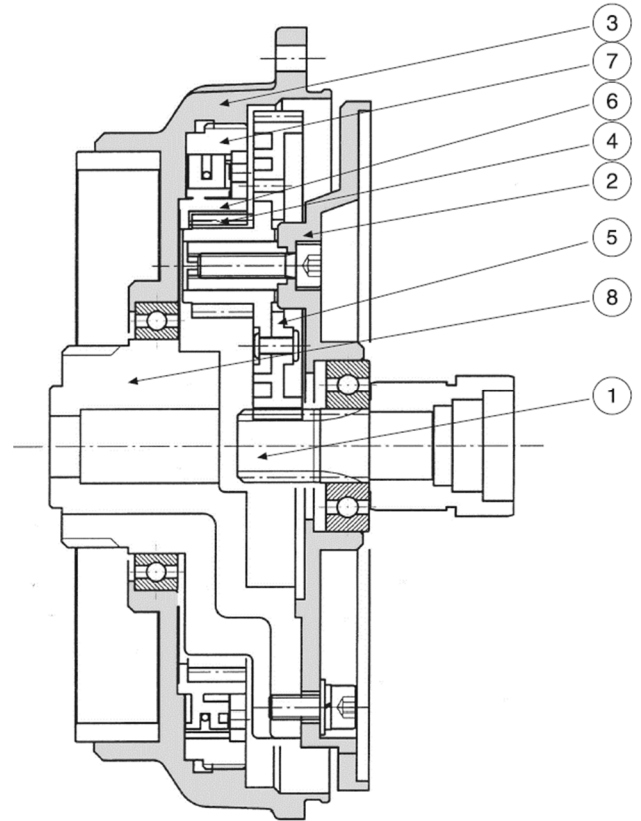
■ BUILT-IN TYPE SPEED REDUCTION UNIT

1. Small Input Gear
2. Flange
3. Drum
4. Planetary Gear
5. Large Input Gear
6. Internal Gear
7. Ratchet Gear
8. Fixed Flange

Examples : Drive Unit of power assisted bicycle etc.

Features :

This unit is a drive gear unit for a power assisted bicycle. A ratchet mechanism can be applied to the planetary gear by adding some structures to the internal gear.



■ LINEAR MOTION ACTUATOR

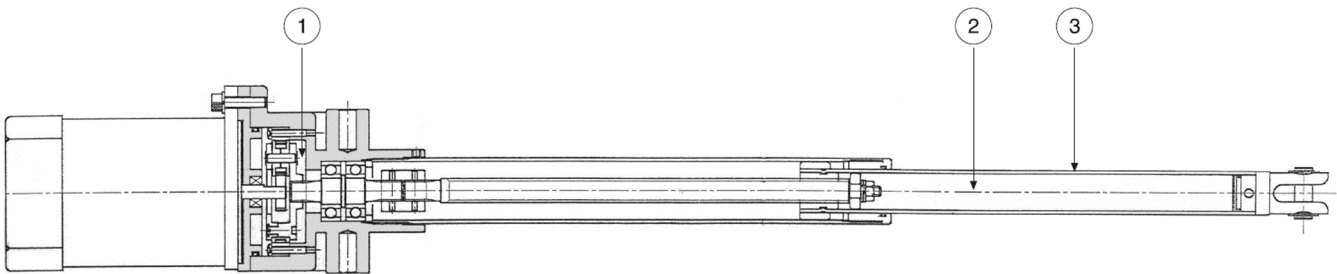
1. Planetary Gear Unit
2. Lead Screw
3. Cylinder

Examples : Nursing bed, Electric reclining chair etc.

Features :

Linear back-and-forth motion is realized by transforming the speed reduced rotation via the lead screw.

This actuator structure is very useful and versatile, since required thrust power can be made easily by combining several planetary gear units.



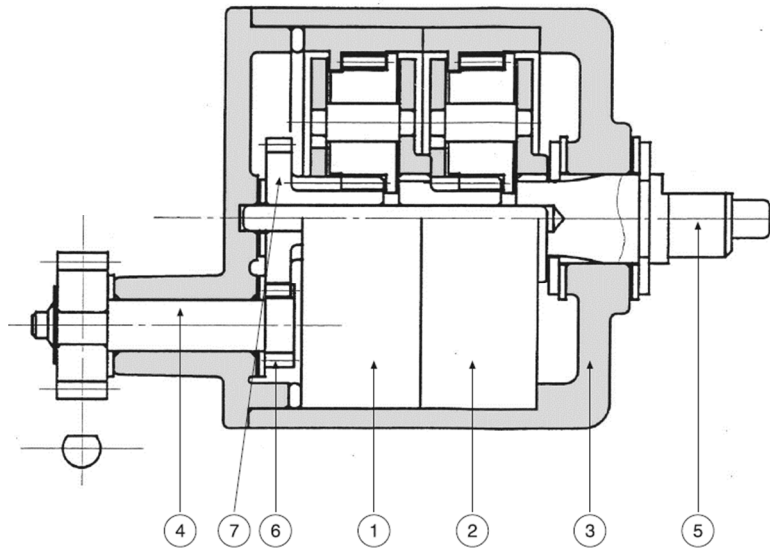
DESIGN EXAMPLES

■ SHIFTED AXIS TYPE GEAR HEAD

1. Planetary Gear Unit
2. Planetary Gear Unit
3. Gear Case
4. Input Shaft
5. Output Shaft
6. Small Gear
7. Large Gear

Features :

Shifted axis can be realized by combining spur gears to the planetary gear unit. This structure is applicable in case the coaxial setting of the planetary gear is unpreferable.

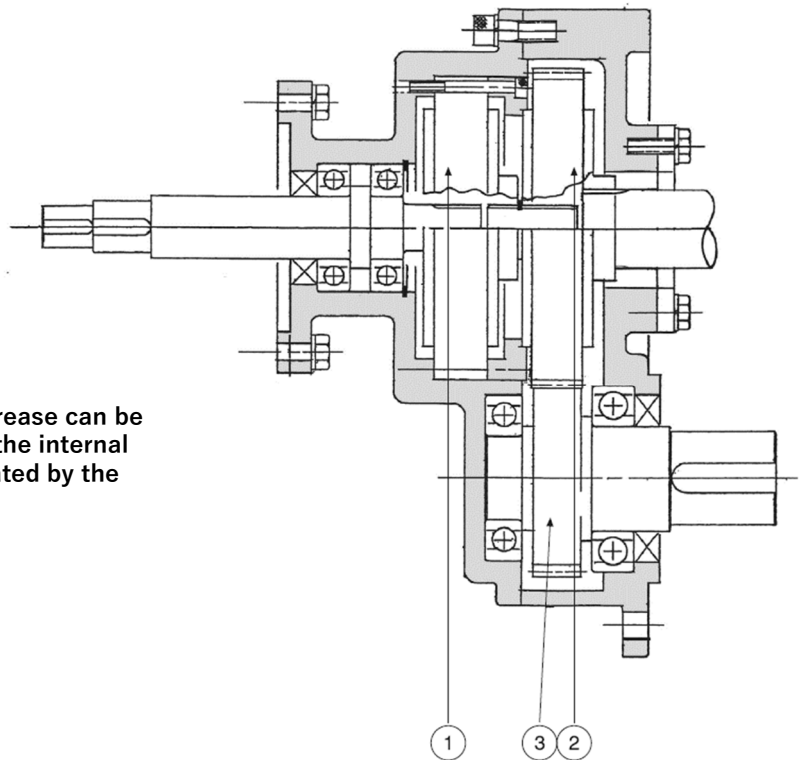


■ HIGH SPEED-UP GEAR/HIGH REDUCTION GEAR

1. Planetary Gear Unit
2. Planetary Gear Unit
3. Spur Gear

Features :

Higher reduction ratio or Higher speed increase can be realized by giving an additional input from the internal gear which has outer gears on it and is rotated by the spur gear.



DESIGN EXAMPLES

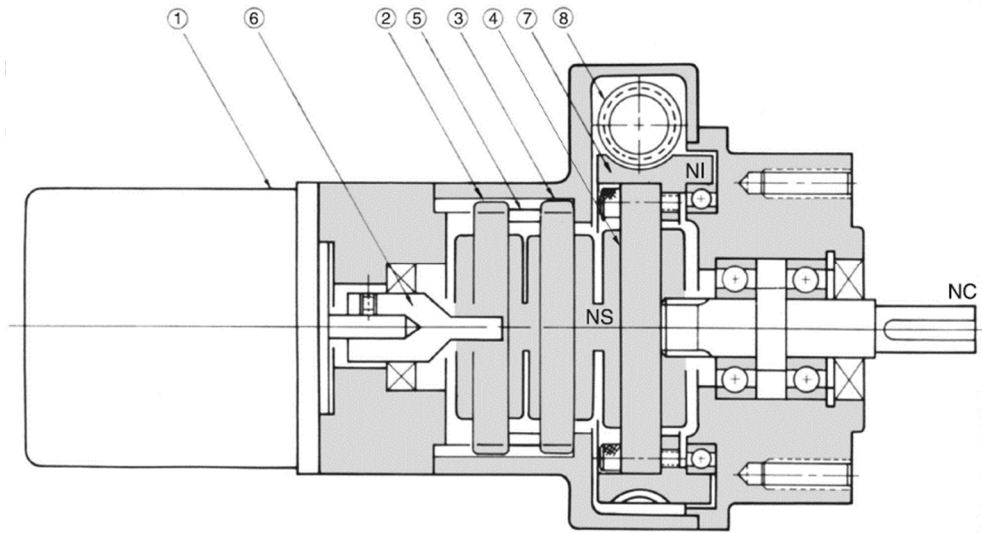
DIFFERENTIAL GEAR

1. Motor
2. Planetary Gear Unit
3. Planetary Gear Unit
4. Planetary Gear Unit
5. Spacer
6. Joint
7. Worm Wheel
8. Worm Gear

Examples : Winch, Paper Manufacturing Machine etc.

Features :

Higher speed ratio than the usual usage of planetary gear can be realized by giving two different inputs to the planetary gear. This usage is useful if the system requires lower speed and/or higher torque.



Specifications/Requirements Sheet

year /month /day

Company Name		Department	Contact Person
Address		Zip Code	Country
TEL	FAX	E-mail	

A. Motor Specifications

1. Power (a) Motor/Hydraulic/Engine (b)Other _____

2. Output Capacity (a) W (b)AC V (c)DC V _____

3. Speed (a) Rating rpm/Continuous Drive Period h (b) Maximum rpm/Continuous Drive Period h _____

4. Torque (a) Rating Nm / (b) Starting Nm / (c) Stopping Nm _____

5. Overload %Usage _____

6. Direction (a) One way only (b) back-and-forth _____

7. Temp. Raise °C _____

B. Gear Reducer Specifications

1. Speed Ratio 1 : _____

2. Gear Series _____

3. Speed-Torque _____

	Motor	1st Stage Unit Model Name :	2nd Stage Unit Model Name :	3rd Stage Unit Model Name :
Output Speed[rpm]				
Rating Torque[Nm]				
Service Factor				

4. Gear Installation (a)Output Shaft Upward (b)Output Shaft Downward (c)Output Shaft Horizontal _____

5. Environmental Temperature (a) Indoor Max. °C/Min. °C (b) Outdoor Max. °C/Min. °C _____

6. Application _____

7. Noise Level dB(A) or less _____

8. Life Time (a) Hours (b) Cycle Times _____

C. Requirements for Quotation

1. Prototype (a) Qty you need unit(s) (b) Expecting Delivery Date Year /Month /Day _____

2. Mass Production (a) Year Total unit(s) (b) Qty. per lot(order) unit(s) _____

3. Production Start (a) Year /Month Day/ (b) Life Total Qty. unit(s) × year(s) _____

4. Price Target (a) JPY/USD (b) Expecting Due Date for the Quotation Year /Month Day/ _____

D. Notes

Torque Formula : $Power[kW] = Torque[Nm] \times Speed[rpm] \times 2\pi \div 60 \div 1000$

COMPANY PROFILE

JAPAN

Company Name	Matex Co., Ltd. (マテックス株式会社)
Address	TOKYO BRANCH Kiuch Building 3F, 3-2-2, Iwamoto-Cho, Chiyoda-ku, 101-0032 Tokyo TEL : +81-3-5825-1535 HEAD OFFICE (Osaka) 1-125, Mizukoshi, Yao city, Osaka, 581-0856, Japan TEL : +81-72-941-8652
Founded	1921
President・CEO	Toshiaki MATOBA
Capital	(Individual) 8.88million yen (Matex Group) 1.03billion yen
Site Area	(Japan) 6,425㎡ (Group) 31,416㎡
Business	<ul style="list-style-type: none"> ・ Developing, producing, selling of planetary gears ・ Developing, producing, selling of actuators ・ Precision injection molding parts and Mold ・ Developing new products and businesses

OVERSEAS NETWORK

Philippines

Company Name	Matex International, Inc. Matex Planetary Drive International, Inc.
Address	Light Industry & Science Park II , Calamba, Laguna, Philippines TEL : +63-49-545-6805(Rep) FAX : +63-49-545-6809
Site Area	7,823㎡ No.1 Factory: 1,750㎡、 No.2: 1,000㎡、 No.3: 4,300㎡
Business	<ul style="list-style-type: none"> ・ Precision injection molding parts and assembly ・ Developing, producing, selling of actuators ・ Designing, manufacturing and selling mold.

China

Company Name	Wuxi Matex Precision Co.,Ltd. (無錫麻德克斯精機有限公司)
Address	Furongzhong 2road 294, Xishan Economic Development Zone Wuxi Jiangsu 214101, China TEL : +86-510-8826-7015(Rep) FAX : +86-510-8826-7148
Site Area	16,500㎡
Business	<ul style="list-style-type: none"> ・ Precision injection molding parts and assembly ・ Developing, producing, selling of actuators ・ Developing, producing, selling of planetary gears ・ Designing, manufacturing and selling mold

HISTORY

1921	Matoba Shokai Ltd. founded by the founder, Jinjiro Matoba. Production of celluloid bicycle frame pumps started
1926	Production system for frame pumps revised for exclusive export around the world
1937	Sales of steel balls started
1948	Company trademark registered as "MATEX"
1955	Plastic injection molding machines installed Production and sales of commercial precision parts and household goods made of nylon resin started From then on till the present date, all kinds of hearable and malleable resins handled
1972	R&D into planetary gear module systems started. From then on, various industrial patents acquired
1973	Company renamed "MATEX Co., Ltd." Yao Factory (Current Osaka 1st Factory) opened
1976	Sales of planetary gear module systems started
1983	Tokyo Branch opened
1990	Matex built an additional reinforced two-story warehouse with fireproof cabinets for molds with a storage capacity of 1,000 molds in the site of Yao factory.
1996	Philippines Plant (in Laguna) inaugurated as Matex's first mass-production base abroad.
1997	Headquarters moved and centralized in Yao Plant.
2001	ISO9001 obtained
2002	Toshiaki MATOBA assumed the position of the 5th president.
2004	Philippines No.3 Plant completed. WUXI MATEX PRECISION CO., LTD. started in Jiangsu Province as the second overseas production base. Precision Part Development Dept. initiated
2010	ISO14001 obtained
2016	IATF16949:2016 obtained in Wuxi plant in China.
2020	100th anniversary of company's founding. Expanded Osaka Second Factory to the adjacent land.



To Download CAD Data(2D・3D)of Products

Inquiry for Products

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TEL +81-72-941-8652

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