Matex
マテックス株式会社

PLANETARY GEAR

遊星歯車減速機

PRODUCT CATALOG

We Discover Tomorrow

Matex Japan

Table of Contents

■ 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

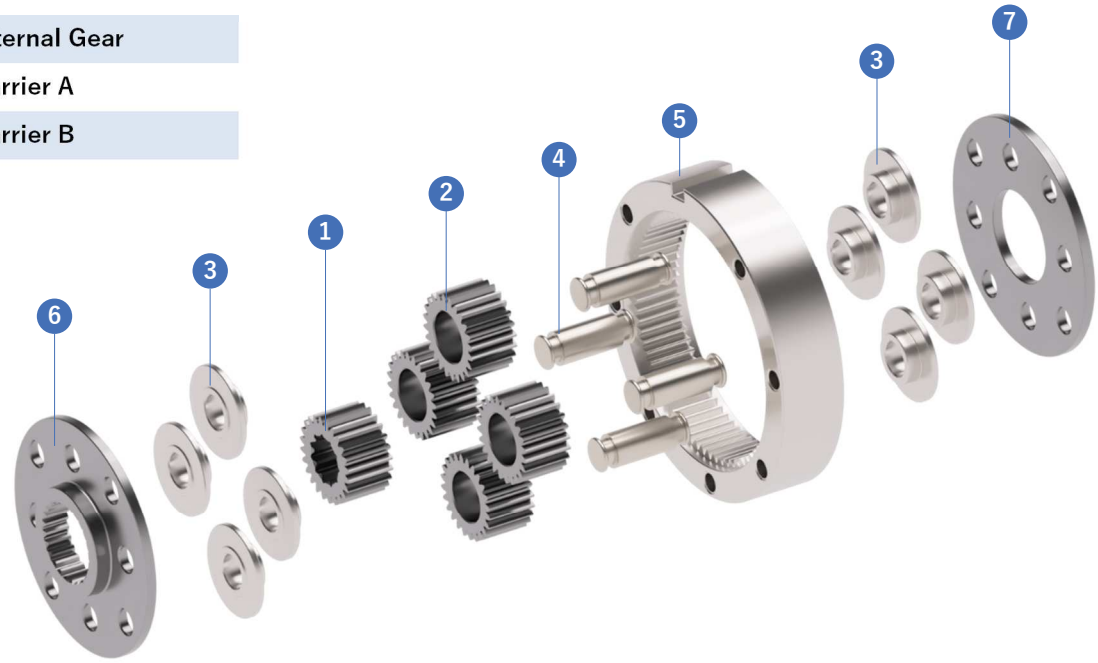
Wide variety of size(Outer Diameter ϕ 26mm～ ϕ 200mm) and speed ratio(3-7) are provided.
Furthermore, a higher speed ratio can be realized by stacking multiple planetary gear units.

• 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

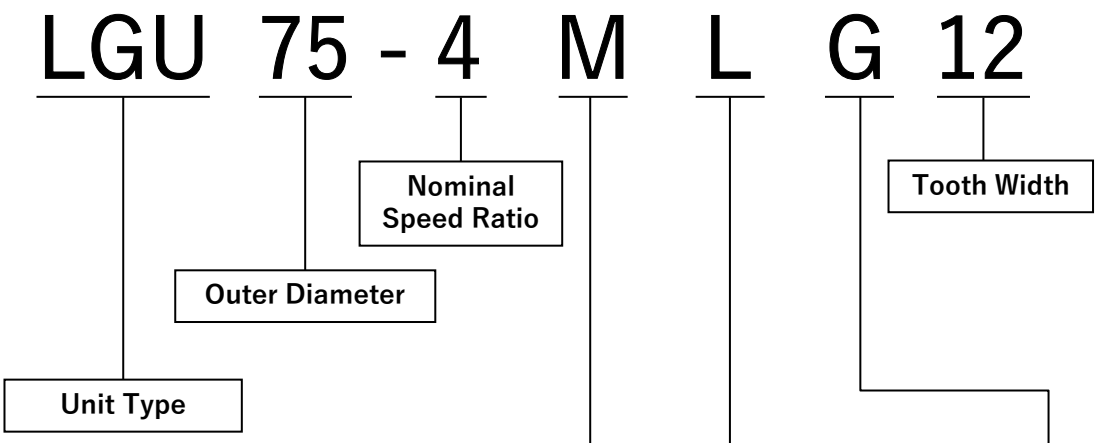
LGH
GEARHEAD TYPE

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



Material of Gear	
M	Metal
S	Sintered Metal
C	Sintered Metal +Plastic
P	Plastic

Input Shape	
Mark	Shape
A, N, R	D Cut Hole
D, J	Serration Hole
E, F, H, I, N, T	Spline Hole
Y	Spur Gear Shaft
L, G	Serration Shaft
B	Hole with Key

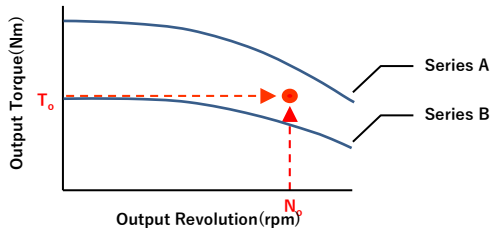
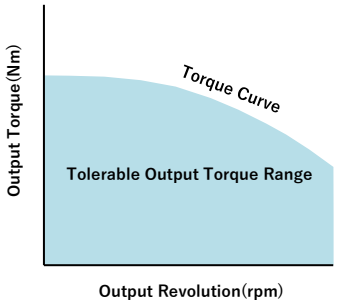
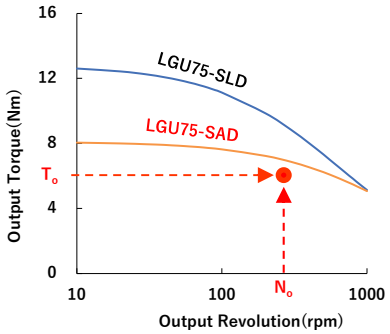
Output Shape	
Mark	Shape
D, G	Serration Hole
E, H, I, N, F, Z	Spline Hole
S	Spur Gear Hole

■ GENERAL SPECIFICATONS

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℃ ※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

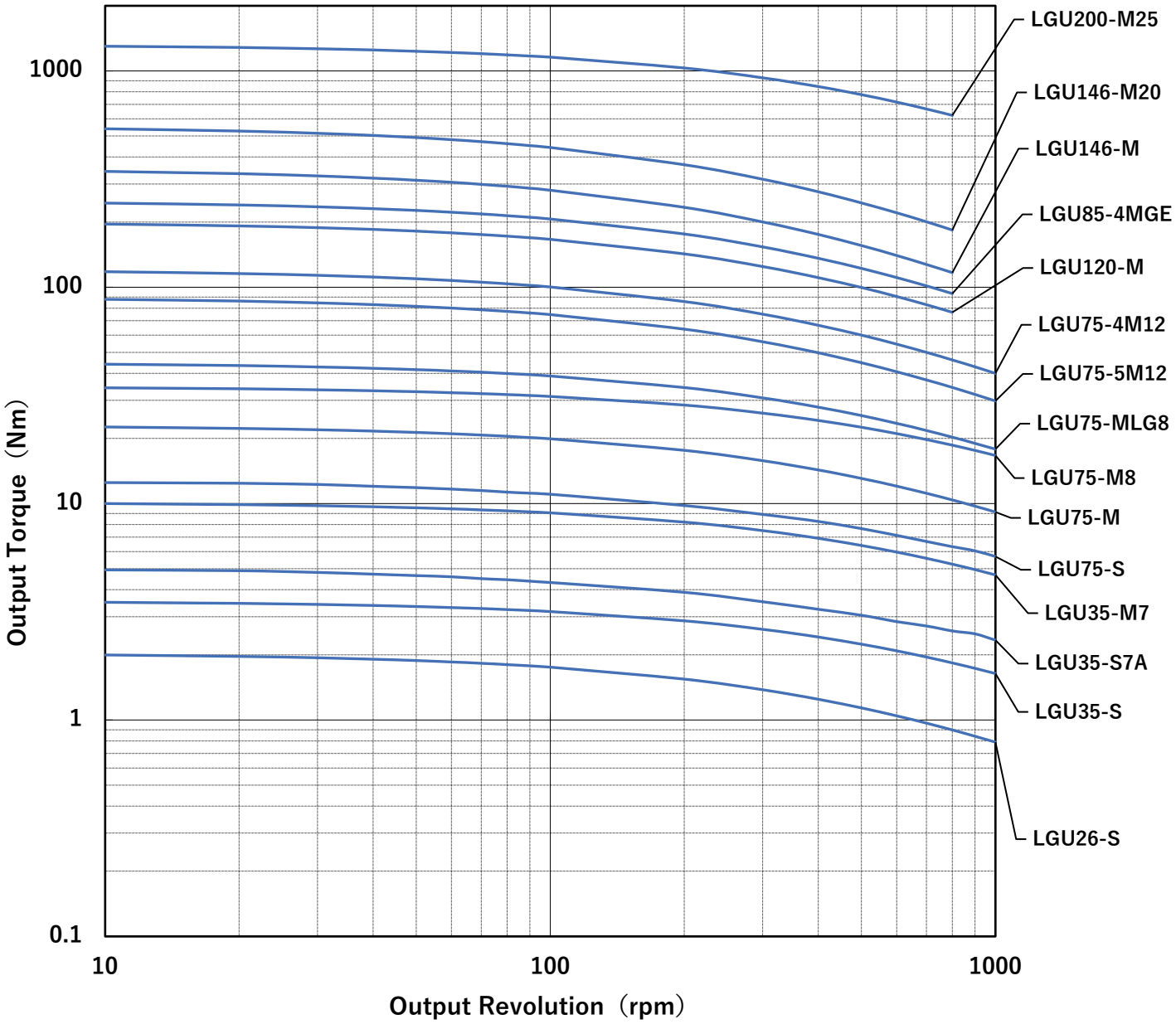
■ GEAR SELECTION PROCEDURE

Procedure	Notes・Calculation	Example
Step1 Usage Conditions	・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	・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	・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 $T_o=T\times SF$	・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 $T_o=T\times SF=4.5\times 1.25\fallingdotseq 5.63$Nm
Step3 Selection of Series	・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. Series A would be chosen under the below case.  	・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	・Selection of Model Using Torque Curve graph, choose the appropriate model with which the above calculated values are within the tolerable output torque range.  ※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.	・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	・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.	・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÷4.8≒1.17Nm Output Revolution＝1750÷4.8≒364.6rpm ・・・The output torque 5.63Nm at the actual output revolution is within the tolerable output torque range.
Step6 Input/Output Shape	・Confirm the input/output shape of the model. ・Confirm other parameters like size, weight, etc.	・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 Φ2.3×1.7	Spur Gear Hole ϕ7×12z×0.5m
	LGU26-5SAI4					Spline Hole 7.5×8×0.75
	LGU26-5SYS4				Spur Gear Shaft ϕ7×12z×0.5m	Spur Gear Hole ϕ7×12z×0.5m
	LGU26-5SYI4					Spline Hole 7.5×8×0.75
LGU35-P	LGU35-□PRS	4	3.667	0.8	D Cut Hole Φ4×3	SpurGearHole ϕ8.4×12z×0.6m
		5	5			
	LGU35-4PNS	4	3.667		D Cut Hole Φ6.3×5.3	
	LGU35-□PYS	4	3.667		Spur Gear Shaft ϕ8.4×12z×0.6m	
		5	5			
LGU35-S	LGU35-□SRS	4	3.667	3.5	D Cut Hole Φ4×3	SpurGearHole ϕ8.4×12z×0.6m
		5	5			
	LGU35-4SNS	4	3.667		D Cut Hole Φ6.3×5.3	
	LGU35-□SYS	4	3.667		Spur Gear Shaft ϕ8.4×12z×0.6m	
		5	5			
LGU35-S7A	LGU35-□SYD7-A	4	3.667	5.0	Spur Gear Shaft ϕ8.4×12z×0.6m	Serration Hole 12×11×1
		5	5			
LGU35-M7	LGU35-4MLD7	4	3.667	10	Serration Shaft 12×11×1	Serration Hole 12×11×1
	LGU35-5MYD7	5	5		Spur Gear Shaft ϕ8.4×12z×0.6m	
LGU54-P	LGU54-□PAD	4	4	5.9	D Cut Hole Φ8×7	Serration Hole 12×11×1
		5	5	3.9	D Cut Hole Φ6×5	Serration Hole 8.25×10×0.75
		6	6	2.9	D Cut Hole Φ4.5×3.5	Serration Hole 12×11×1
	LGU54-□PLD	4	4	5.9	Serration Shaft 12×11×1	Serration Hole 12×11×1
		5	5	3.9	Serration Shaft 8.25×10×0.75	Serration Hole 8.25×10×0.75
LGU54-C	LGU54-4CLD	4	4	9.8	Serration Shaft 12×11×1	Serration Hole 12×11×1
LGU75-P	LGU75-□PAD	3	3.111	4.5	D Cut Hole Φ8×7	Serration Hole 12×11×1
		4	3.714			
		5	4.8			
	LGU75-□PLD	3	3.111		Serration Shaft 12×11×1	
		4	3.714			
		5	4.8			
LGU75-P13	LGU75-5PJD13	5	4.8	8.8	Serration Hole 9×11×0.75	Serration Hole 12×11×1
	LGU75-5PAD13	5	4.8		D Cut Hole Φ8×7	
LGU75-S	LGU75-□SAD	3	3.111	8.0	D Cut Hole Φ8×7	Serration Hole 12×11×1
		4	3.714			
		5	4.8			
	LGU75-□SLD	3	3.111	12.4	Serration Shaft 12×11×1	
		4	3.714			
		5	4.8			

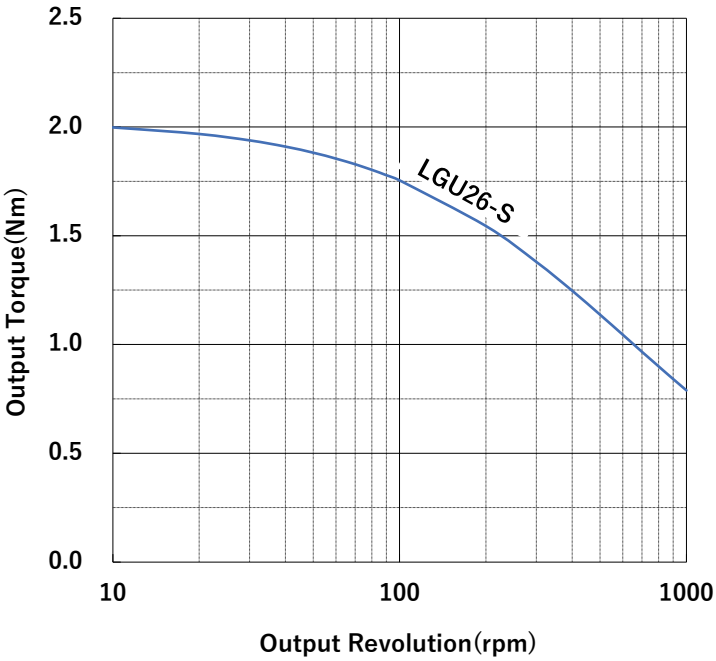
TABLE OF MODELS -UNIT TYPE- (2/2)

* Nominal Speed Ratio will be described in □ .

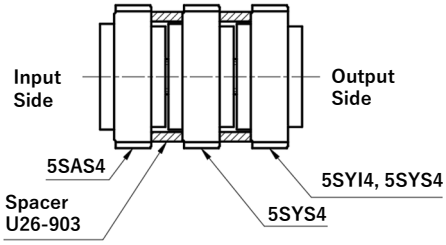
Series	Model Name	Nominal Speed Ratio	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape
LGU75-M	LGU75-□MAD	3	3	6.9	D Cut Hole Φ8×7	Serration Hole 12×11×1
		4	4			
		5	5			
	LGU75-□MDD	3	3	7.9	Serration Hole 12×11×1	
		4	4			
	LGU75-5MID	5	5		Spline Hole 8×9×0.75	
	LGU75-□MLD	3	3	22.6	Serration Shaft 12×11×1	
		4	4			
		5	5			
		6	5.8			
		7	7	17.7		
LGU75-M8	LGU75-□MLD8	3	3	34.3	Serration Shaft 12×11×1	Serration Hole 12×11×1
		4	4			
		5	5			
		6	5.8			
	LGU75-□MLG8	3	3	44.1		Serration Hole 19.5×25×0.75
		4	4			
		5	5			
LGU75-M12	LGU75-4MDG12	4	4	118	Serration Hole 12×11×1	Serration Hole 19.5×25×0.75
	LGU75-□MLG12	4	4		Serration Shaft 12×11×1	
		5	5	88		
LGU85-M	LGU85-4MGE	4	4	245	Serration Shaft 19.5×25×0.75	Spline Hole 21×10×1.75
LGU120-M	LGU120-□MHH	3	3	137	Spline Hole 17×15×1	Spline Hole 17×15×1
		4	4			
		5	5			
	LGU120-□MHN	3	3	196		Spline Hole 30×16×1.667
		4	4			
		5	5			
LGU146-M	LGU146-□MBE	3	3	196	Hole with Key ϕ14-5×16.3	Spline Hole 21×10×1.75
		4	4			
		5	5			
	LGU146-□MEE	3	3		Spline Hole 21×10×1.75	
		4	4			
		5	5			
	LGU146-□MEF	3	3	343		Spline Hole 38×17×2
		4	4			
		5	5			
LGU146-M20	LGU146-□MEF20	3	3	540	Spline Hole 21×10×1.75	Spline Hole 38×17×2
		4	4			
		5	5			
	LGU146-3MFF20	3	3		Spline Hole 38×17×2	
LGU200-M	LGU200-□MTZ25	3	3	1300	Spline Hole 25×13×1.667	Spline Hole48.333×27×1.667
		4	4			
	LGU200-5MTZ25N	5	5			

LGU26-S Series UNIT TYPE ϕ26 2.0 Nm

OUTPUT TORQUE CURVE



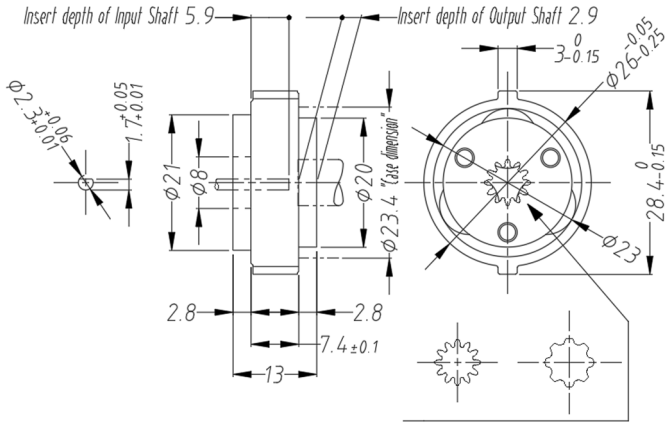
EXAMPLE of STACKING



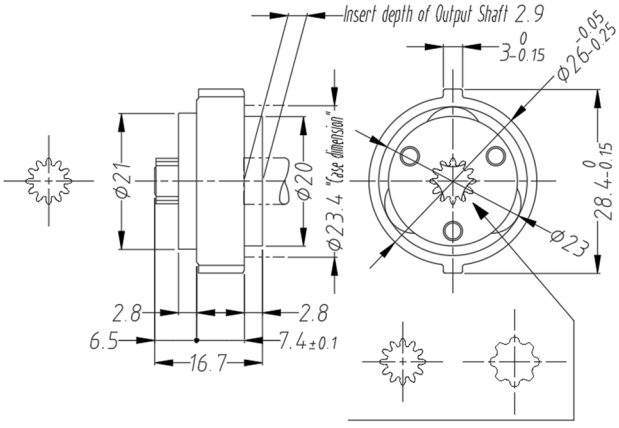
- See P26 for Multi-Stage Usage
- See P32 for the Optional Parts

DIMENSIONS (mm)

LGU26-SAS4,SAI4



LGU26-SYS4,SYI4



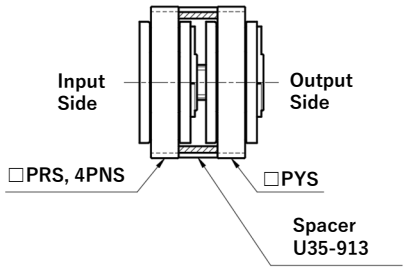
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU26-S	LGU26-5SAS4	4.5	2.0	D Cut Hole ϕ2.3×1.7	Spur Gear Hole ϕ7.0×12z×0.5m	21
	LGU26-5SAI4				Spline Hole 7.5×8×0.75	21
	LGU26-5SYS4			Spur Gear Shaft ϕ7.0×12z×0.5m	Spur Gear Hole ϕ7.0×12z×0.5m	22
	LGU26-5SYI4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

LGU35-P Series

UNIT TYPE　φ35　0.8 Nm

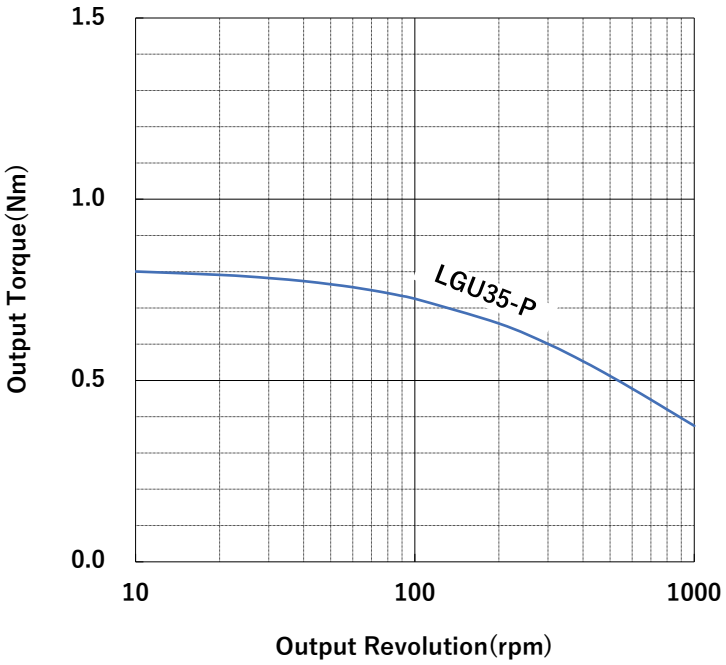
Made-to-Order on Lot

EXAMPLE of STACKING



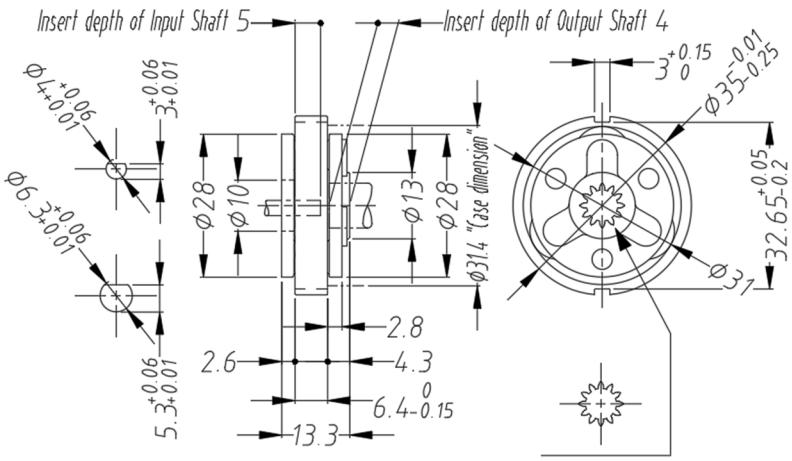
➢ See P32 for the Optional Parts

OUTPUT TORQUE CURVE

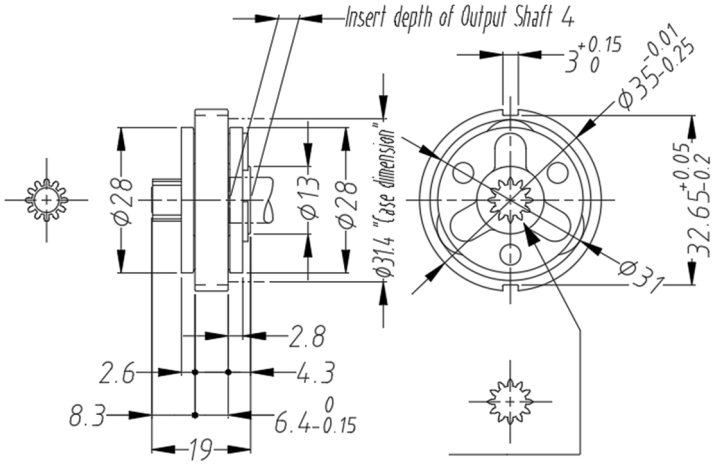


DIMENSIONS (mm)

LGU35-PRS,PNS



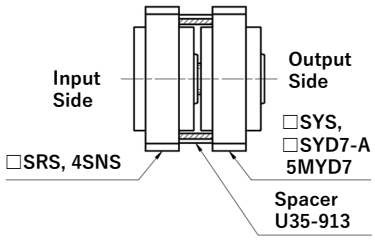
LGU35-PYS



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 φ4×3	Spur Gear Hole φ8.4×12z×0.6m	18
	LGU35-5PRS	5				19
	LGU35-4PNS	3.667		D Cut Hole φ6.3×5.3		17
	LGU35-4PYS	3.667		Spur Gear Shaft φ8.4×12z×0.6m		20
	LGU35-5PYS	5				21

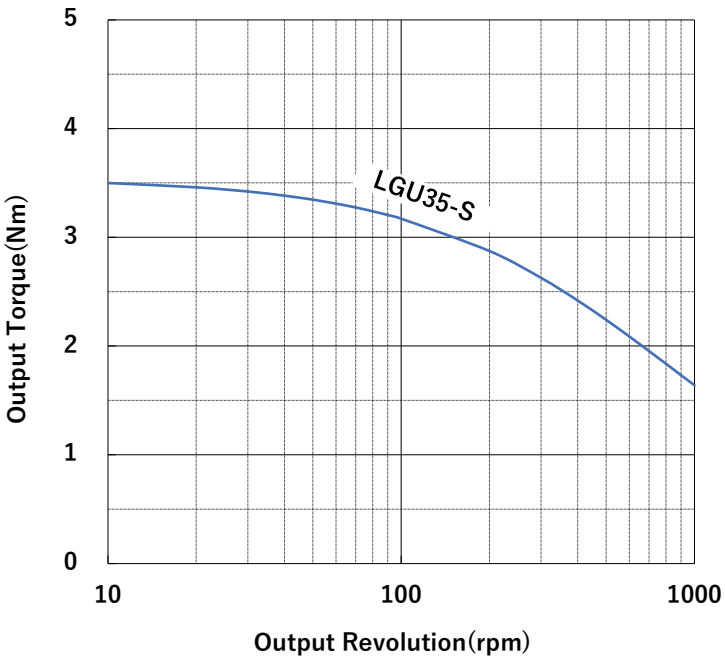
LGU35-S Series UNIT TYPE ϕ35 3.5 Nm

EXAMPLE of STACKING



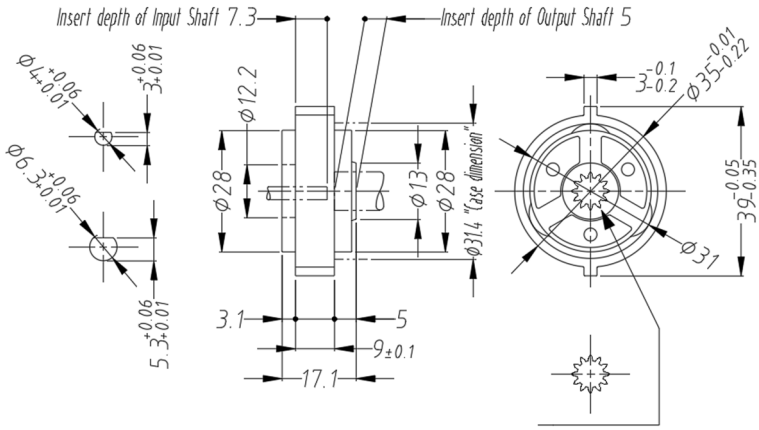
- See P27 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

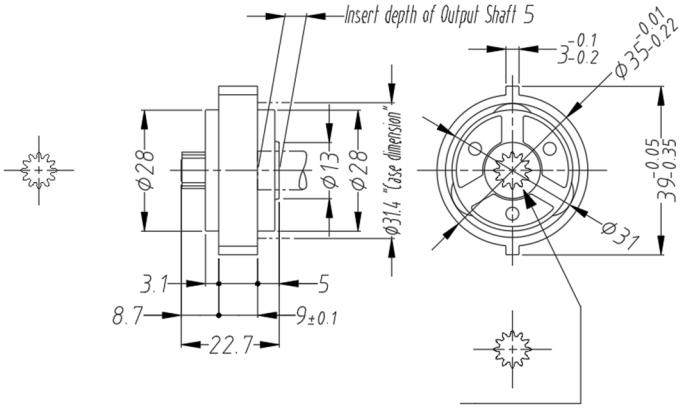


DIMENSIONS (mm)

LGU35-SRS,SNS



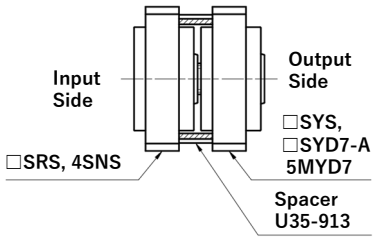
LGU35-SYS



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		D Cut Hole ϕ6.3×5.3		61
	LGU35-4SYS	3.667		Spur Gear Shaft ϕ8.4×12z×0.6m		64
	LGU35-5SYS	5				66

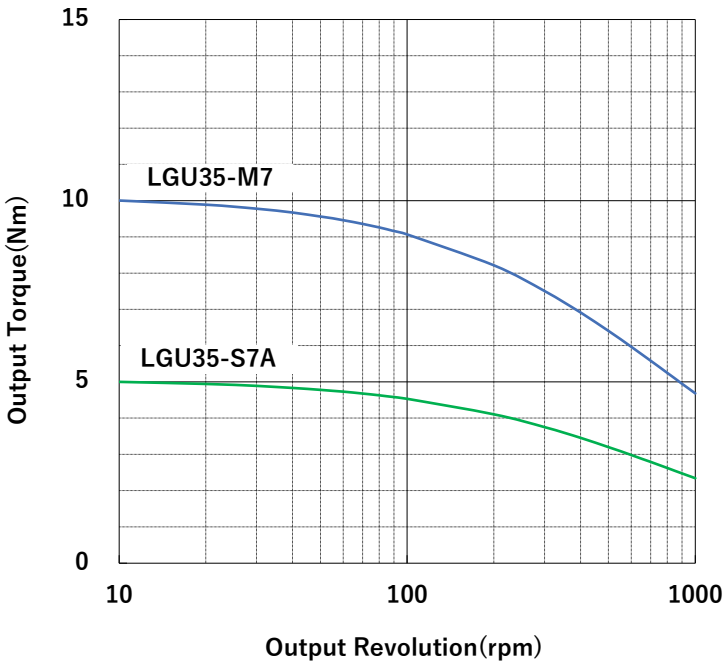
LGU35-S7A, M7 Series UNIT TYPE ϕ35 5.0 - 10 Nm

EXAMPLE of STACKING



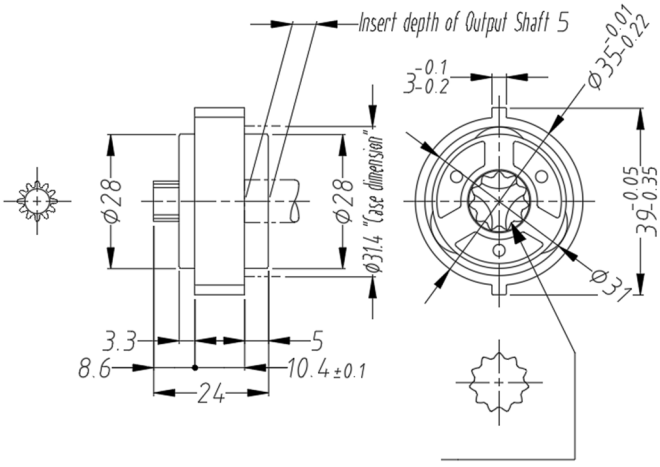
- See P27 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

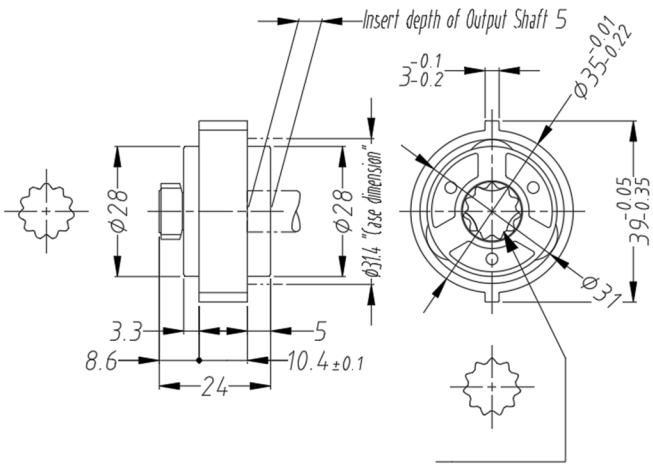


DIMENSIONS (mm)

LGU35-SYD7-A, 5MYD7



LGU35-4MLD7

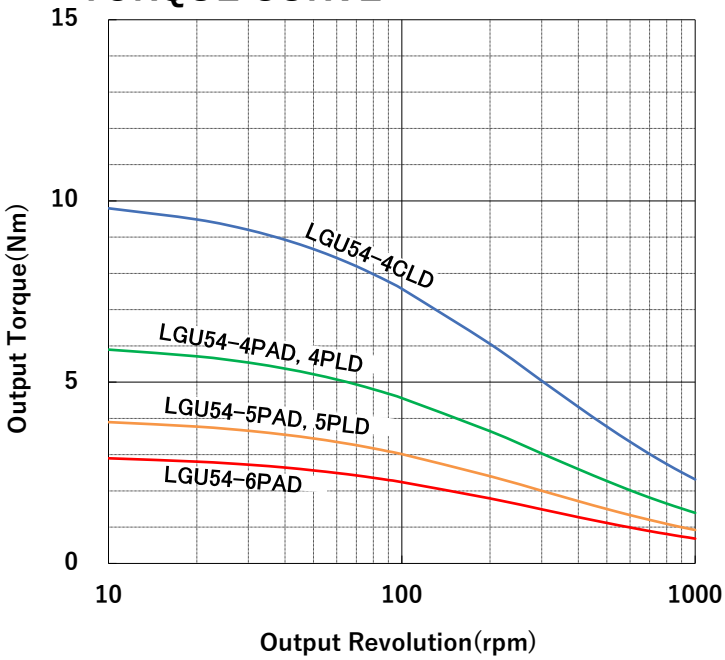


Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU35-S7A	LGU35-4SYD7-A	3.667	5.0	Spur Gear Shaft ϕ8.4×12z×0.6m	Serration Hole 12×11×1	78
	LGU35-5SYD7-A	5				79
LGU35-M7	LGU35-4MLD7	3.667	10	Serration Shaft12×11×1		83
	LGU35-5MYD7	5		Spur Gear Shaft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

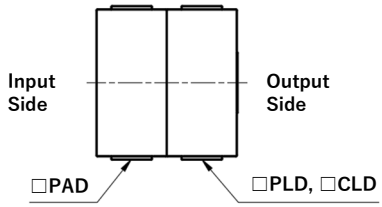
LGU54-P, C Series UNIT TYPE φ54 2.9 - 9.8 Nm

Made-to-Order on Lot

OUTPUT TORQUE CURVE



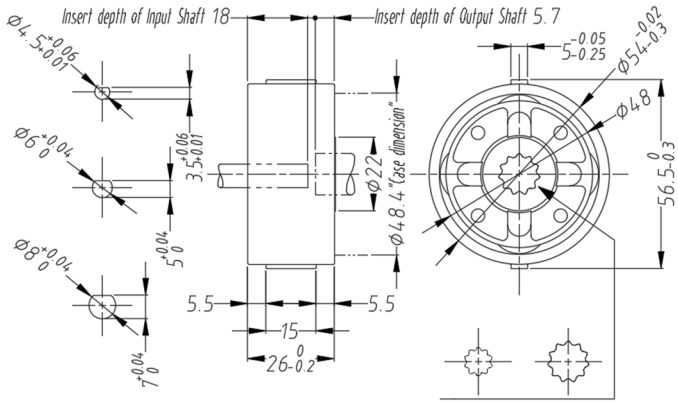
EXAMPLE of STACKING



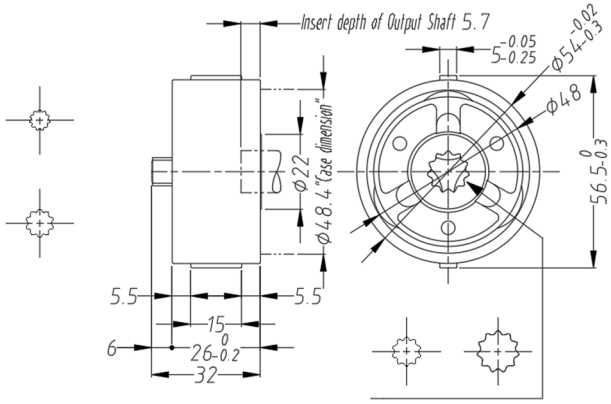
➢ See P28 for Multi-Stage Usage

DIMENSIONS (mm)

LGU54-PAD



LGU54-PLD, CLD



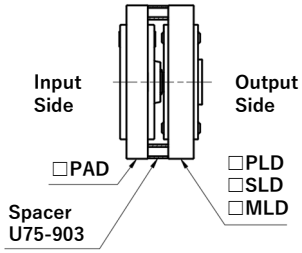
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU54-P	LGU54-4PAD	4	5.9	D Cut Hole φ8×7	Serration Hole 12×11×1	100
	LGU54-5PAD	5	3.9	D Cut Hole φ6×5	Serration Hole 8.25×10×0.75	100
	LGU54-6PAD	6	2.9	D Cut Hole φ4.5×3.5	Serration Hole 12×11×1	110
	LGU54-4PLD	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　φ75　4.5 Nm

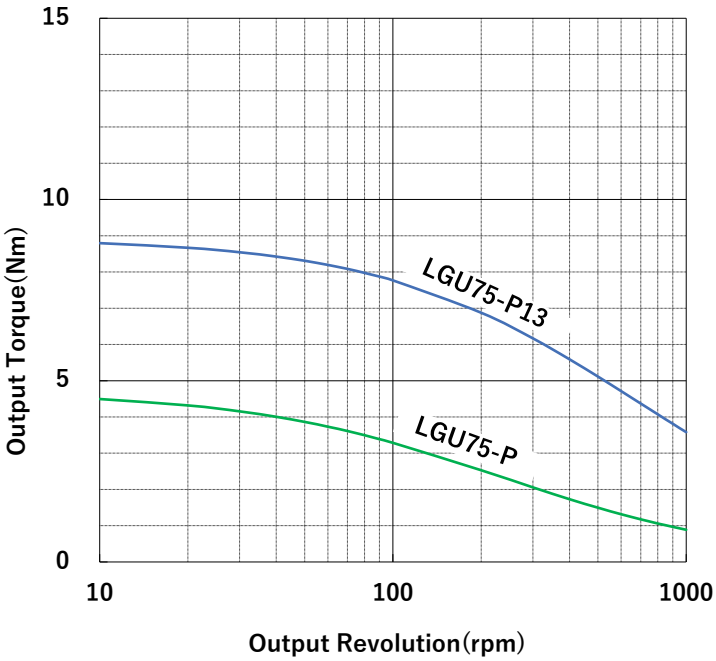
Made-to-Order on Lot

EXAMPLE of STACKING



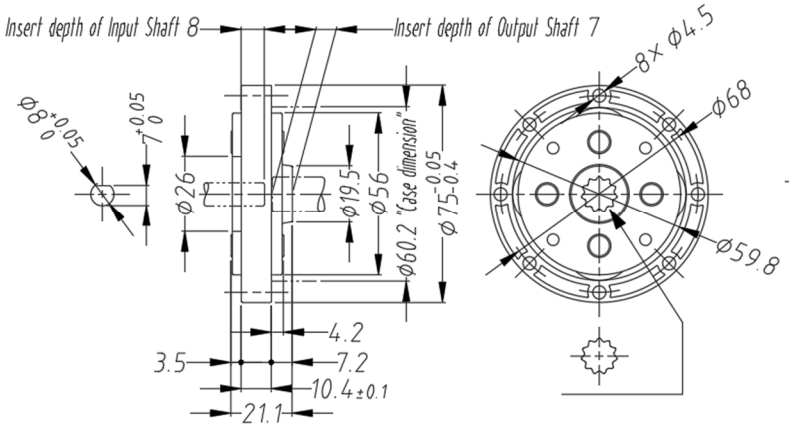
➢ See P32 for the Optional Parts

OUTPUT TORQUE CURVE

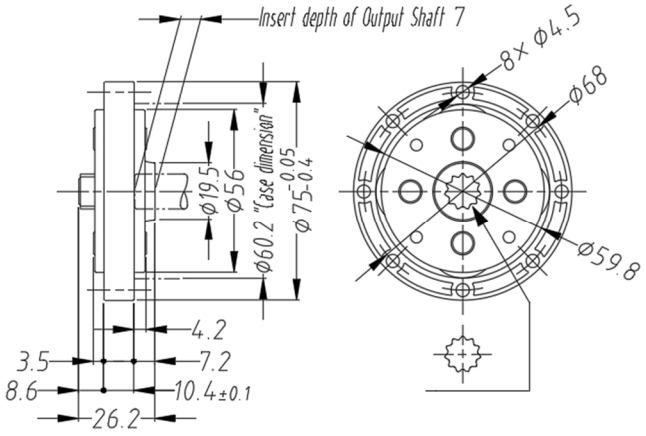


DIMENSIONS (mm)

LGU75-PAD



LGU75-PLD



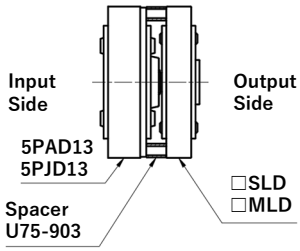
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-P	LGU75-3PAD	3.111	4.5	D Cut Hole φ8×7	Serration Hole 12×11×1	130
	LGU75-4PAD	3.714				130
	LGU75-5PAD	4.8				140
	LGU75-3PLD	3.111		Serration Shaft 12×11×1		130
	LGU75-4PLD	3.714				140
	LGU75-5PLD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

LGU75-P13 Series

UNIT TYPE ϕ75 8.8 Nm

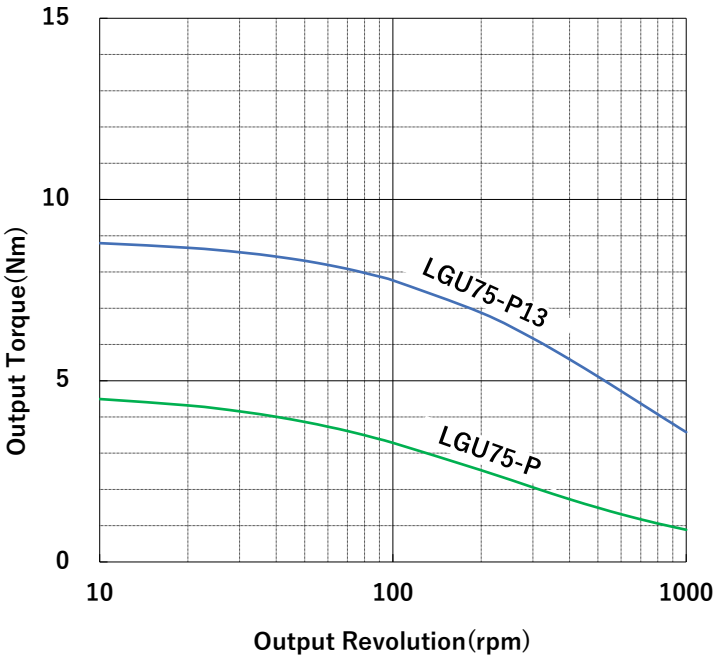
Made-to-Order on Lot

EXAMPLE of STACKING



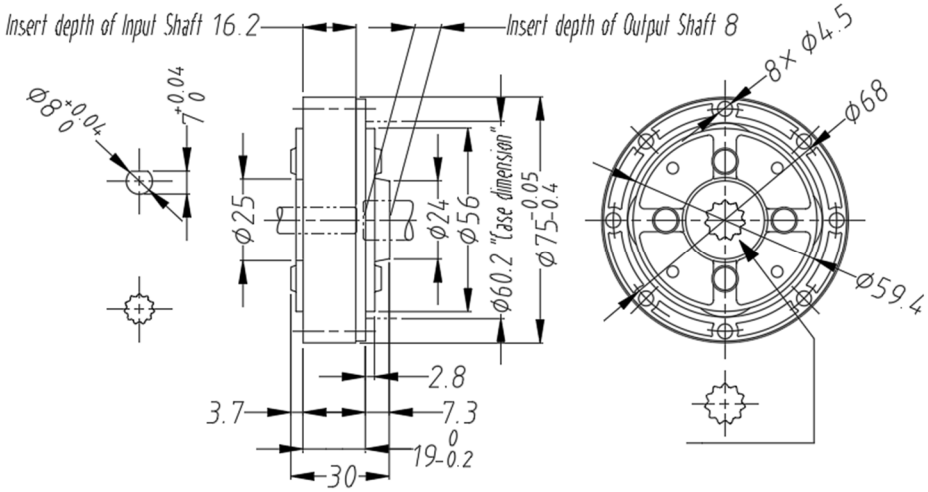
➢ See P32 for the Optional Parts

OUTPUT TORQUE CURVE



DIMENSIONS (mm)

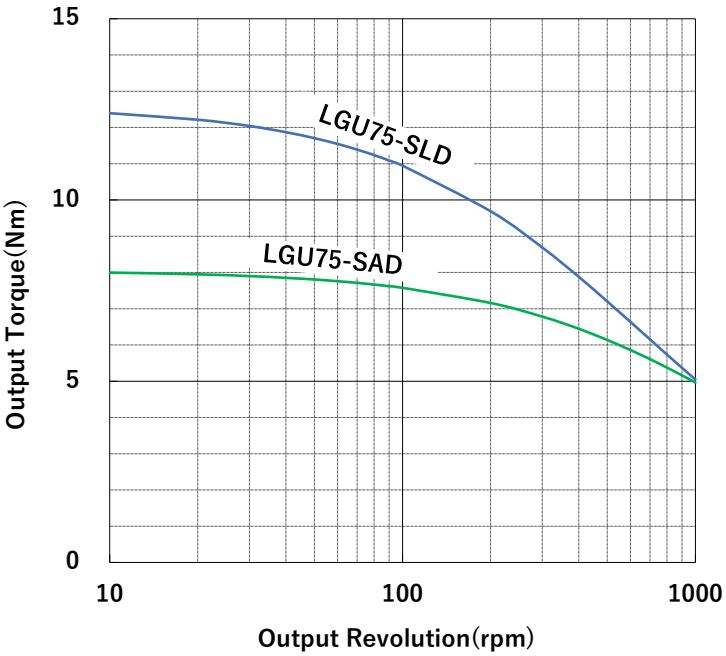
LGU75-5PAD13, 5PJD13



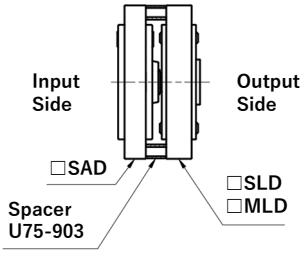
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-P13	LGU75-5PAD13	4.8	8.8	D Cut Hole ϕ8×7	Serration Hole 12×11×1	190
	LGU75-5PJD13	4.8		Serration Hole 9×11×0.75		190

LGU75-S Series UNIT TYPE ϕ75 8.0 - 12.4 Nm

OUTPUT TORQUE CURVE



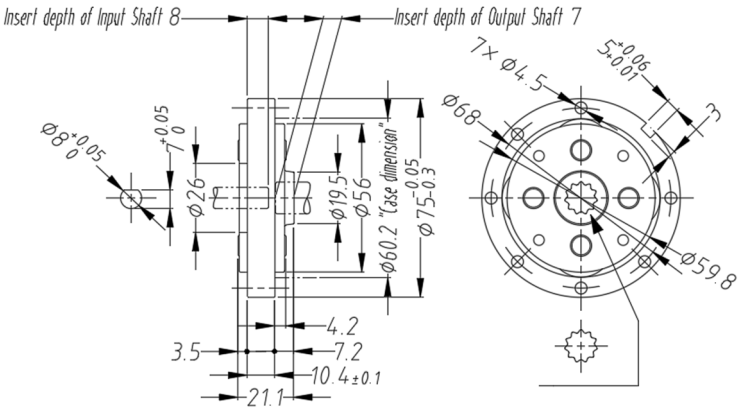
EXAMPLE of STACKING



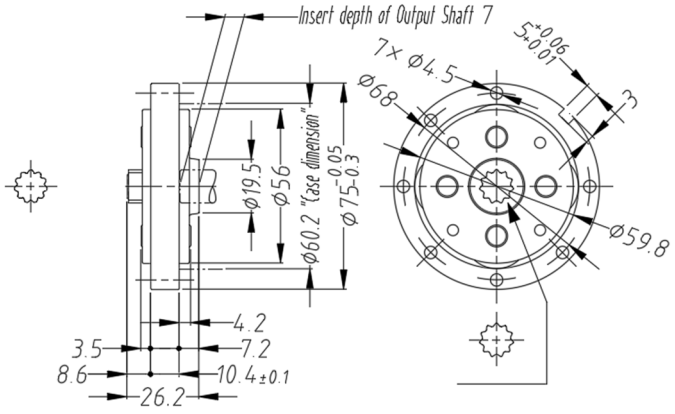
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

DIMENSIONS (mm)

LGU75-SAD



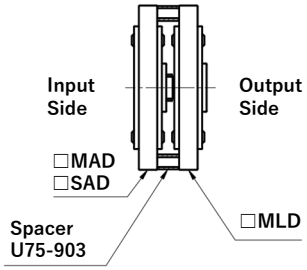
LGU75-SLD



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

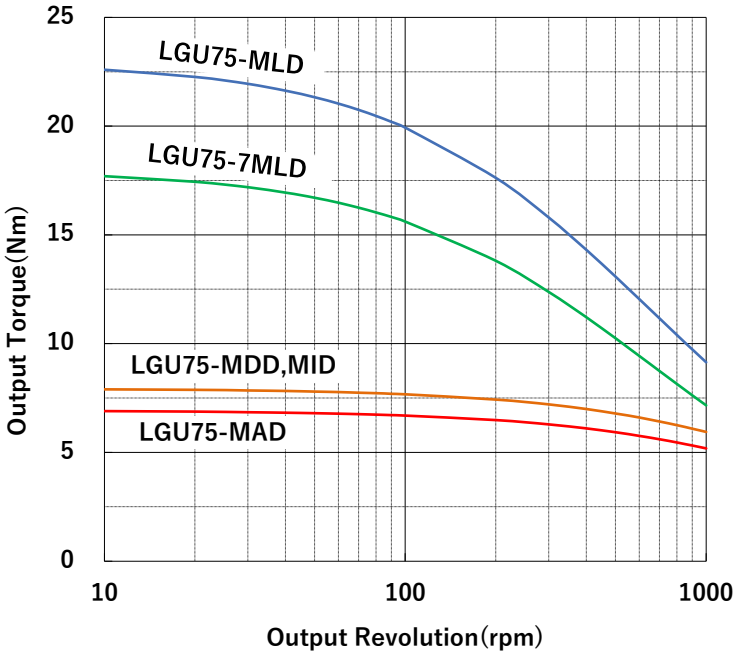
LGU75-M Series UNIT TYPE ϕ75 6.9 - 22.6 Nm

EXAMPLE of STACKING



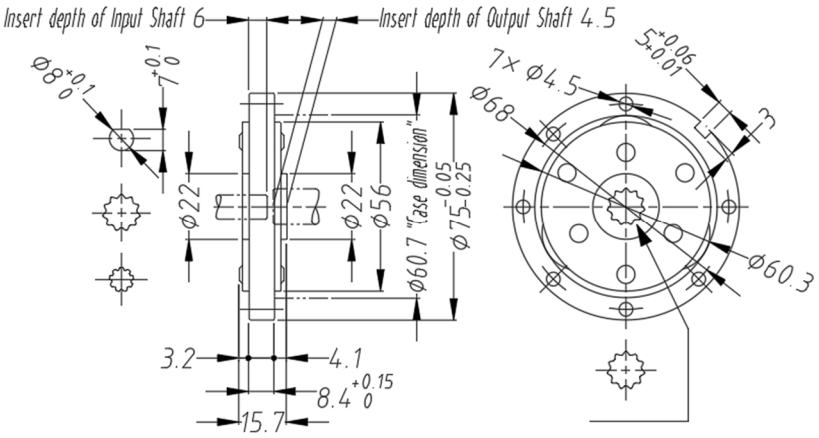
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

OUTPUT TORQUE CURVE

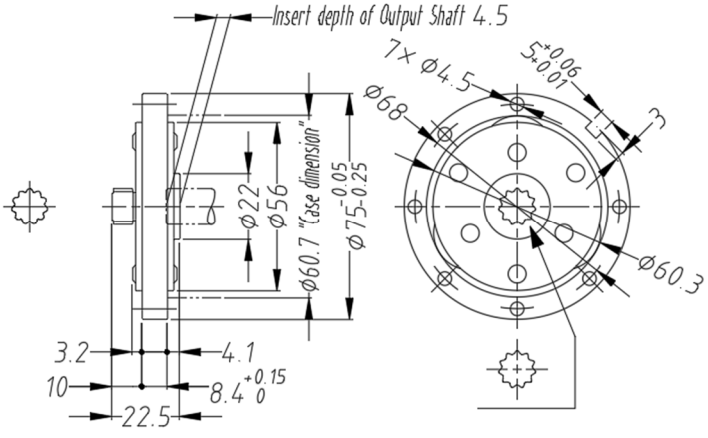


DIMENSIONS (mm)

LGU75-MAD, MDD, MID



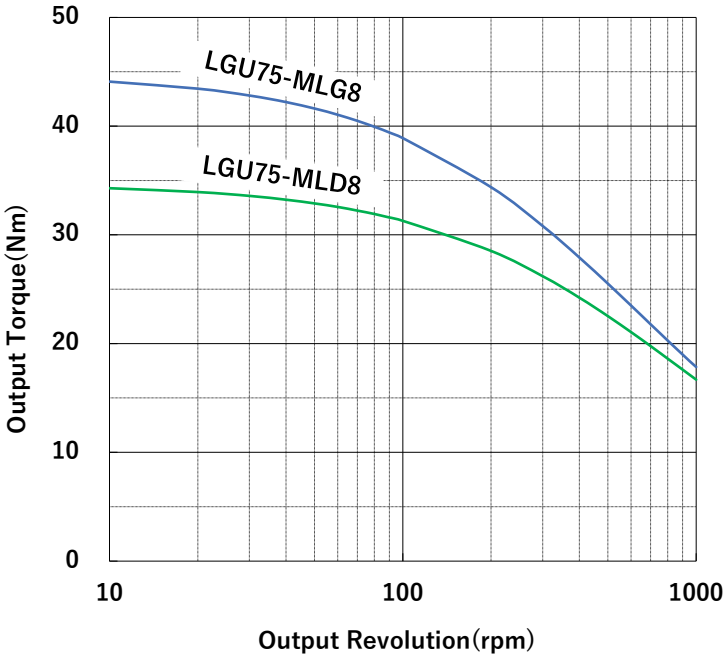
LGU75-MLD



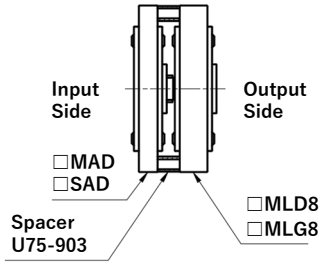
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (g)
LGU75-M	LGU75-3MAD	3	6.9	D Cut Hole ϕ8×7	Serration Hole 12×11×1	230
	LGU75-4MAD	4				240
	LGU75-5MAD	5				250
	LGU75-3MDD	3	7.9	Serration Hole 12×11×1		230
	LGU75-4MDD	4				240
	LGU75-5MID	5		Spline Hole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


OUTPUT TORQUE CURVE



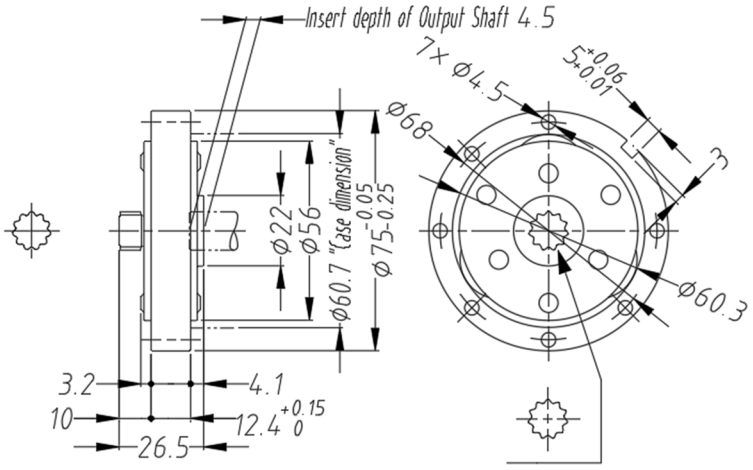
EXAMPLE of STACKING



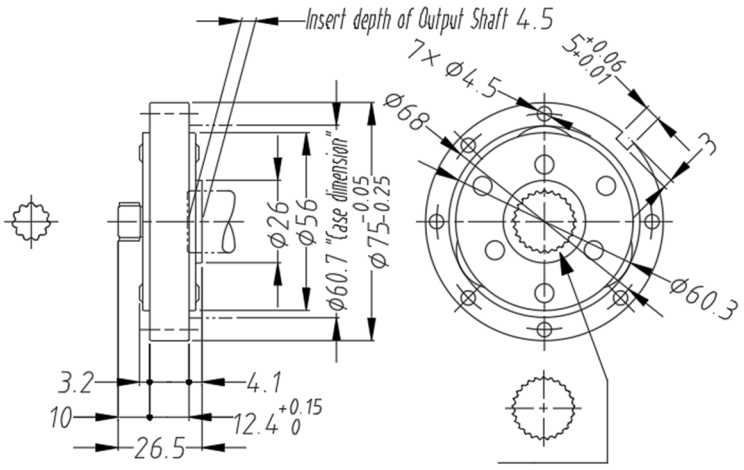
- See P29 for Multi-Stage Usage
- See P32 for the Optional Parts

DIMENSIONS (mm)

LGU75-MLD8



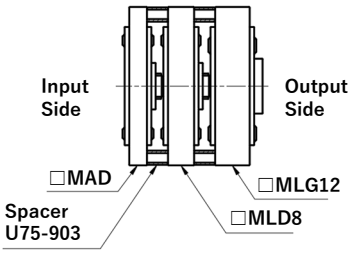
LGU75-MLG8



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				340
	LGU75-3MLG8	3	44.1		Serration Hole 19.5×25×0.75	320
	LGU75-4MLG8	4				320
	LGU75-5MLG8	5				330

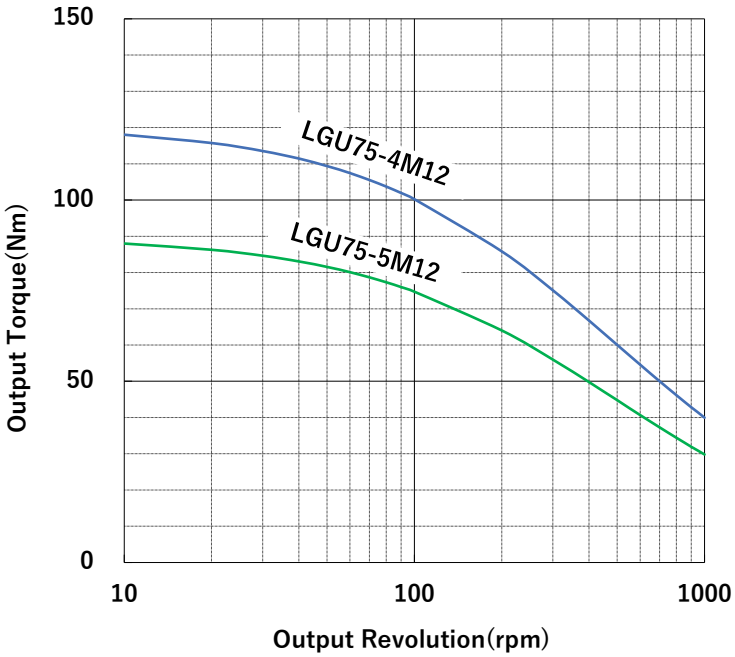
LGU75-M12 Series UNIT TYPE ϕ75 88 - 118 Nm

EXAMPLE of STACKING



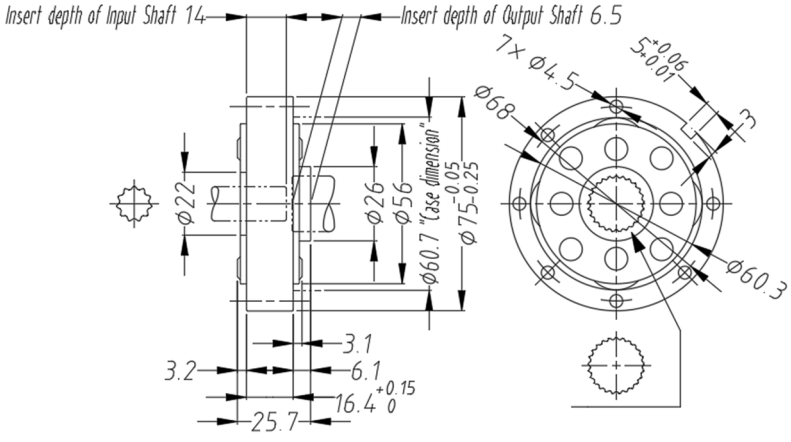
➢ See P32 for the Optional Parts

OUTPUT TORQUE CURVE

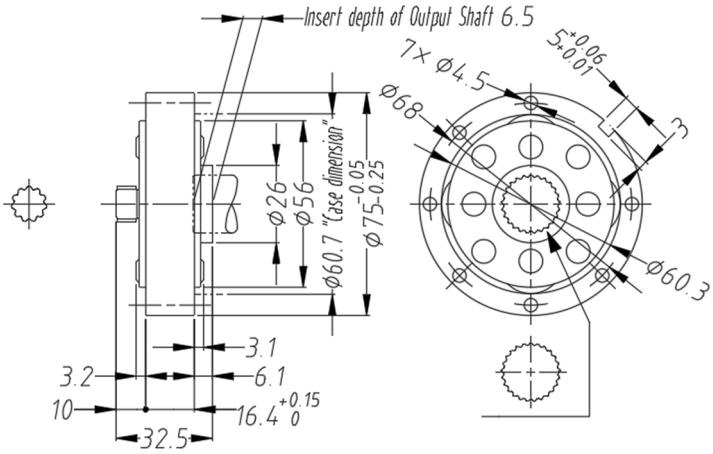


DIMENSIONS (mm)

LGU75-MDG12



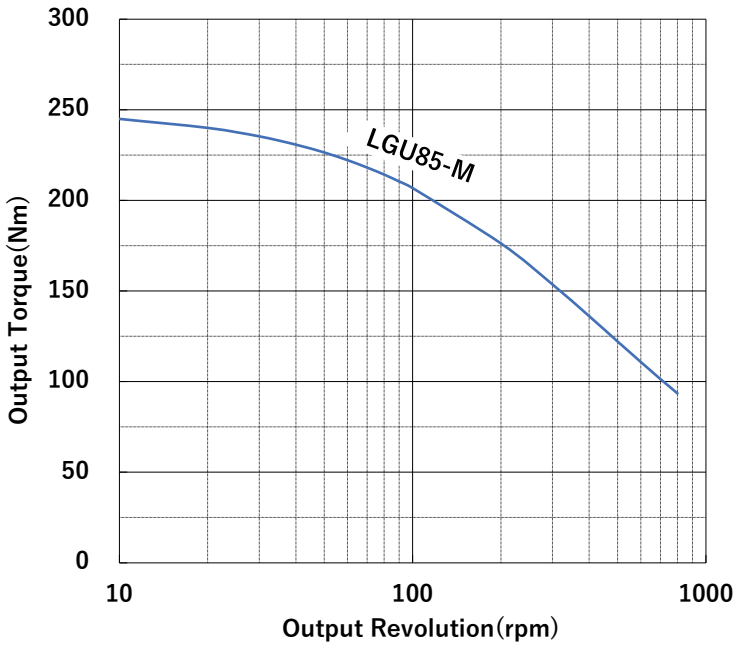
LGU75-MLG12



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			Serration Shaft 12×11×1		470
	LGU75-5MLG12	5	88			430

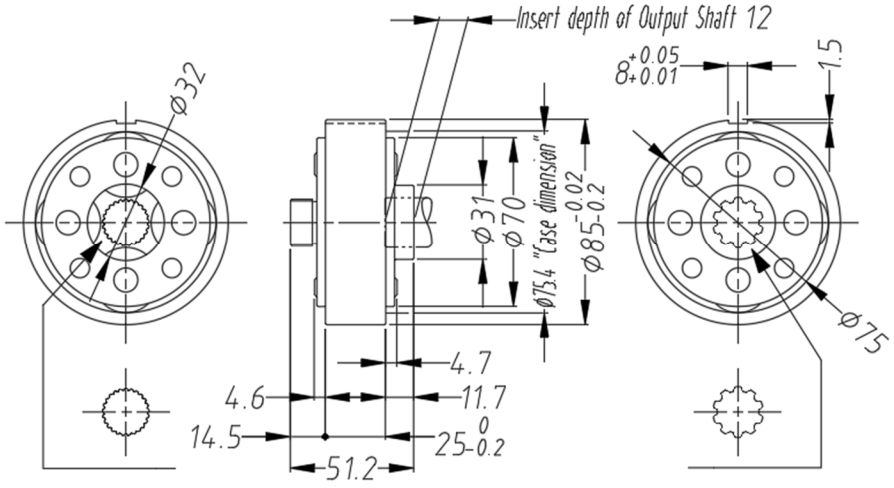
LGU85-M Series UNIT TYPE ϕ85 245 Nm

OUTPUT TORQUE CURVE



DIMENSIONS (mm)

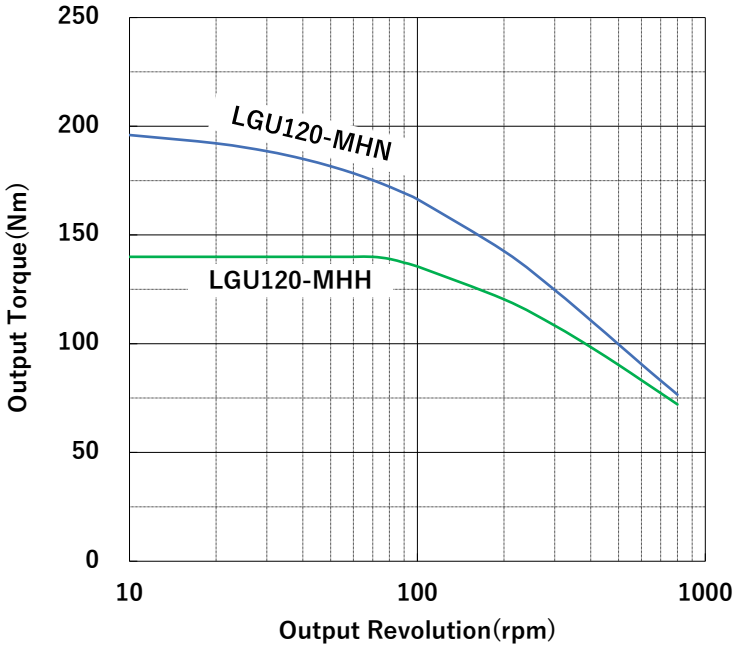
LGU85-MGE



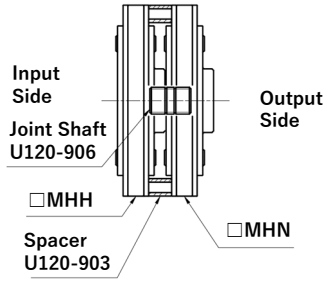
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU85-M	LGU85-4MGE	4	245	Serration Shaft 19.5×25×0.75	Spline Hole 21×10×1.75	1.0

LGU120-M Series UNIT TYPE ϕ120 137 - 196 Nm

OUTPUT TORQUE CURVE



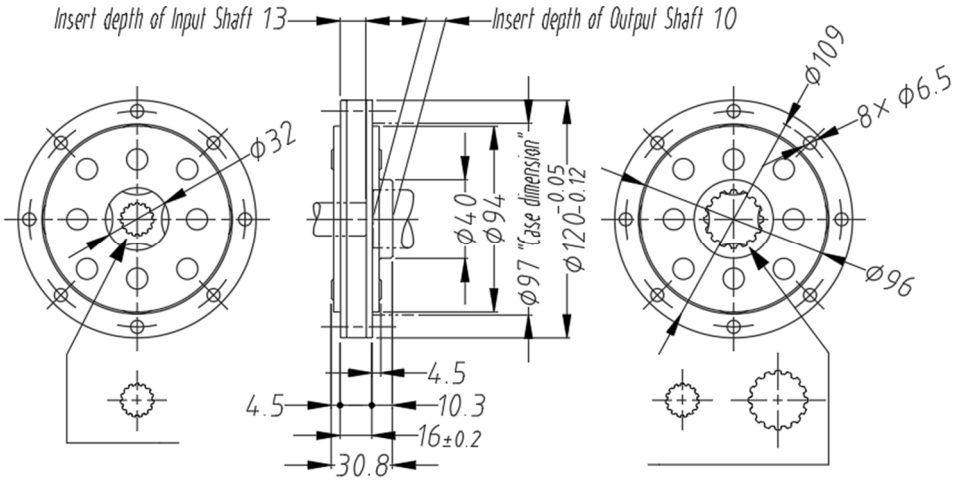
EXAMPLE of STACKING



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

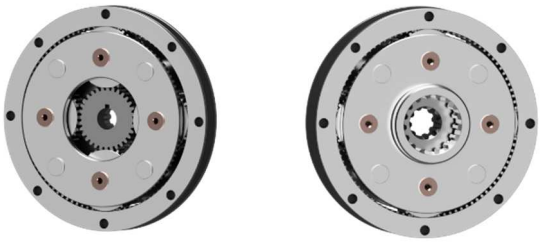
DIMENSIONS (mm)

LGU120-MHH, MHN

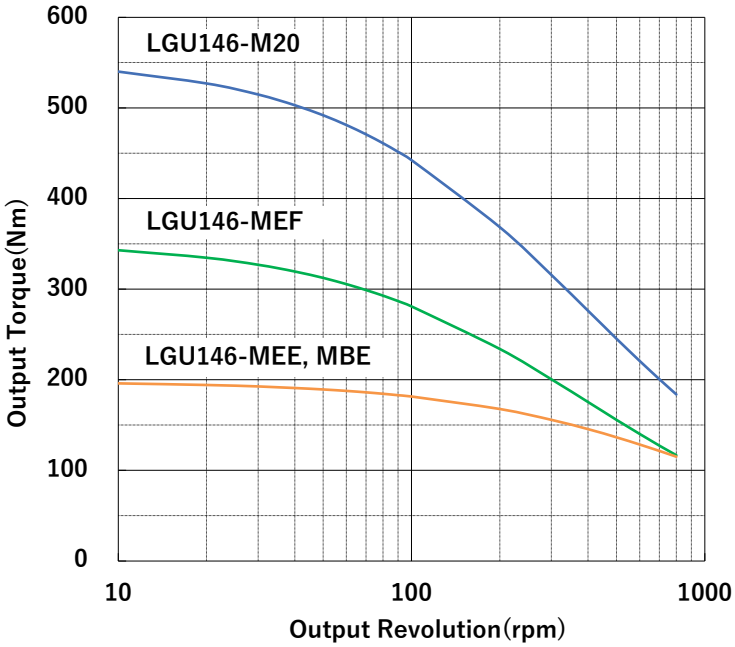


Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU120-M	LGU120-3MHH	3	137	Spline Hole 17×15×1	Spline Hole 17×15×1	1.3
	LGU120-4MHH	4				1.3
	LGU120-5MHH	5				1.4
	LGU120-3MHN	3	196		Spline Hole 30×16×1.667	1.2
	LGU120-4MHN	4				1.3
	LGU120-5MHN	5	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

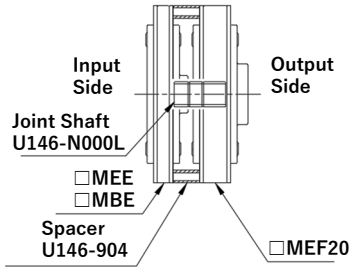
LGU146-M Series UNIT TYPE ϕ146 196 - 343 Nm



OUTPUT TORQUE CURVE



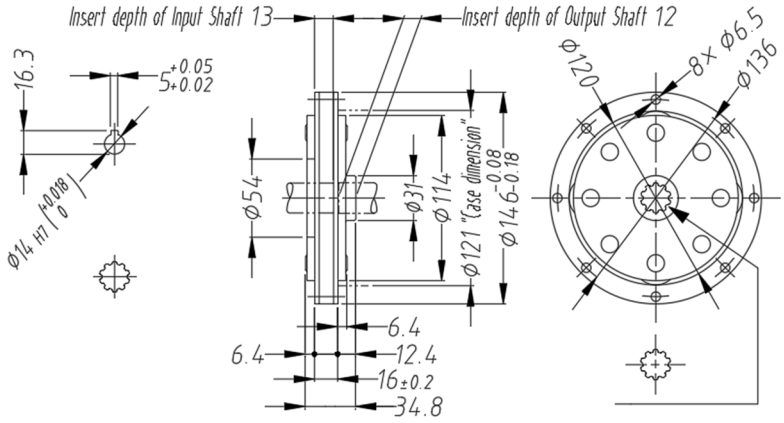
EXAMPLE of STACKING



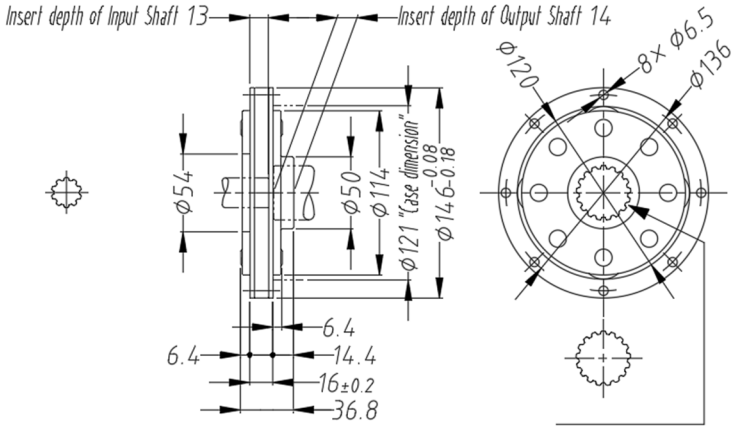
- See P31 for Multi-Stage Usage
- See P32 for the Optional Parts

DIMENSIONS (mm)

LGU146-MBE, MEE



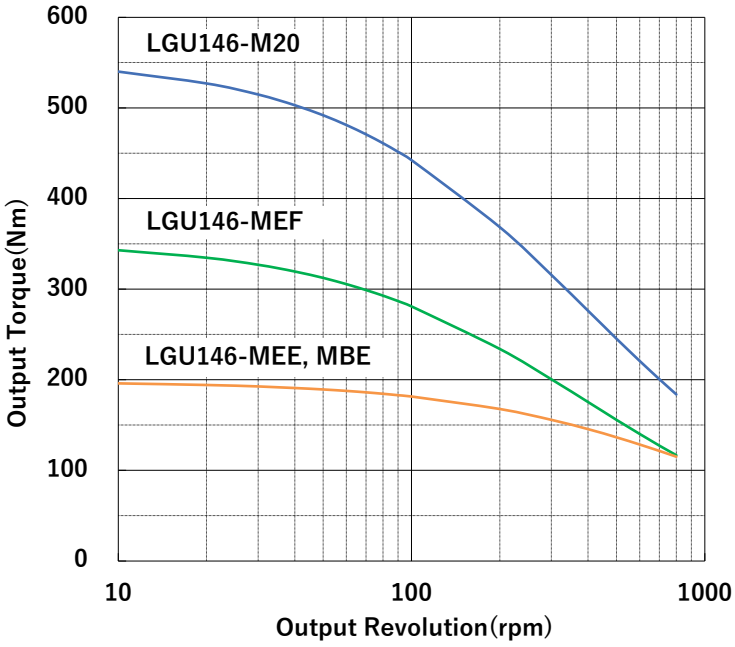
LGU146-MEF



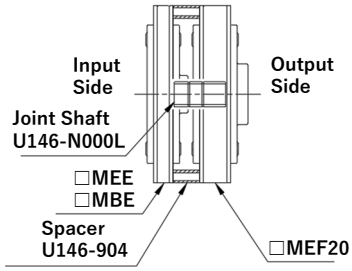
Series	Model Name	Actual Speed Ratio	Maximum Output Torque(Nm)	Input Shape	Output Shape	Weight (kg)
LGU146-M	LGU146-3MBE	3	196	Hole with Key Φ14-5×16.3	Spline Hole 21×10×1.75	2.0
	LGU146-4MBE	4				2.1
	LGU146-5MBE	5				2.2
	LGU146-3MEE	3		Spline Hole 21×10×1.75		2.0
	LGU146-4MEE	4				2.1
	LGU146-5MEE	5				2.2
	LGU146-3MEF	3	343		Spline Hole 38×17×2	2.0
	LGU146-4MEF	4				2.2
	LGU146-5MEF	5				2.2

LGU146-M20 Series UNIT TYPE ϕ146 540 Nm

OUTPUT TORQUE CURVE



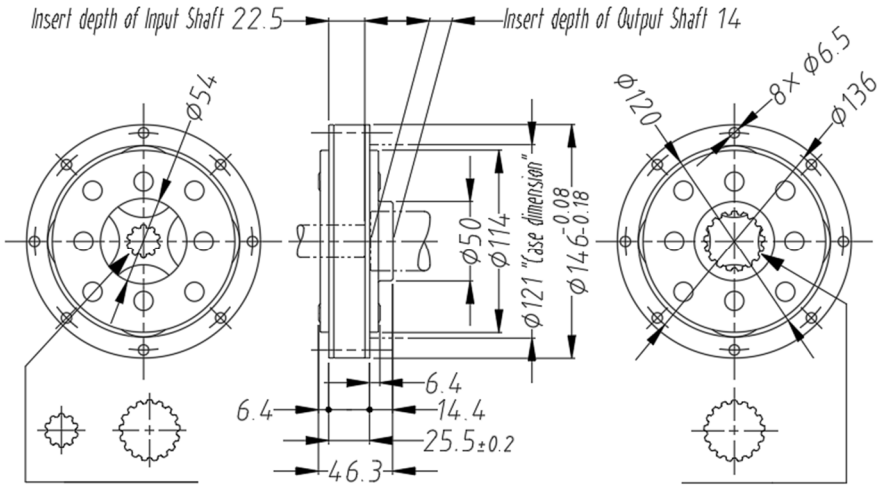
EXAMPLE of STACKING



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

DIMENSIONS (mm)

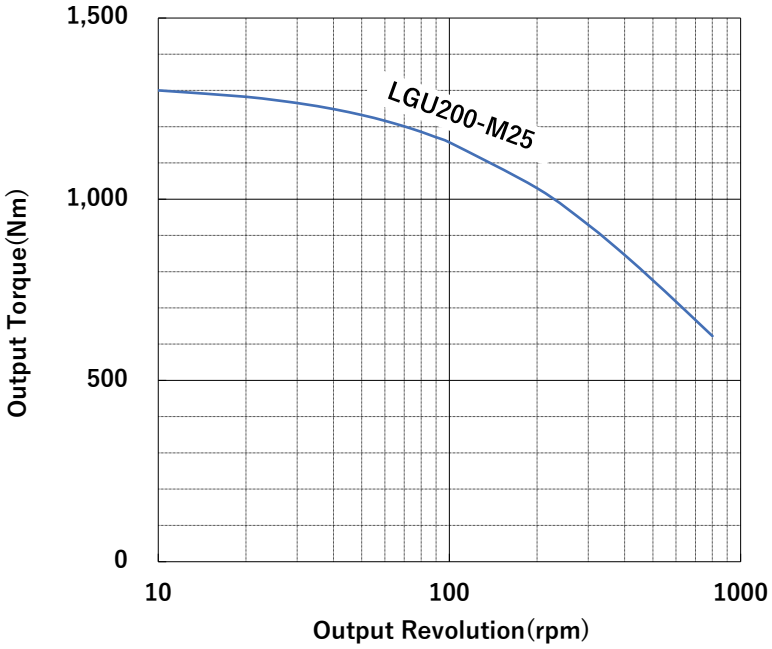
LGU146-MEF20, MFF20



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

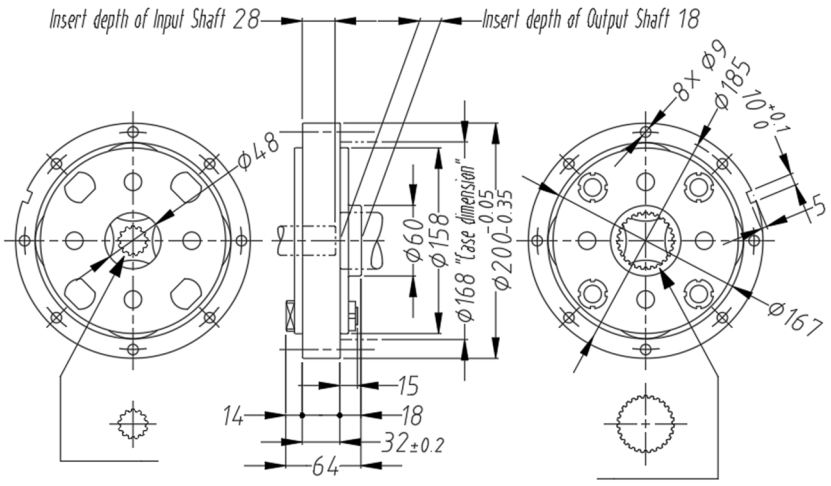
LGU200-M25 Series UNIT TYPE ϕ200 1300 Nm

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.

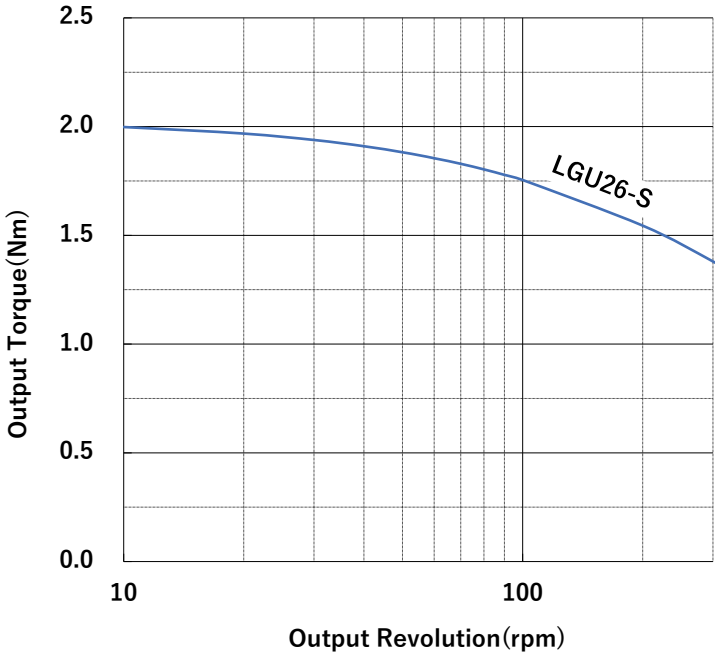
Series	Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option Part)	Maximum Output Torque(Nm)
LGU26	20.25	LGU26-5SAS4	LGU26-5SYI4	-	U26-903×1	2.0
	91.13	LGU26-5SAS4	LGU26-5SYS4	LGU26-5SYI4	U26-903×2	
LGU35	13.4	LGU35-4SRS	LGU35-4SYD7-A	-	U35-913×1	5.0
	18.3	LGU35-4SRS	LGU35-5SYD7-A			
			LGU35-5MYD7			10
	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		
				LGU35-5MYD7		10
	91.7	LGU35-4SRS	LGU35-5SYS	LGU35-5SYD7-A		5.0
				LGU35-5MYD7		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			
	44.57	LGU75-4SAD	LGU75-4MLD	LGU75-3MLG8	U75-903×2	44.1
	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　ϕ26　2.0 Nm

※The units will not be stacked at shipment.

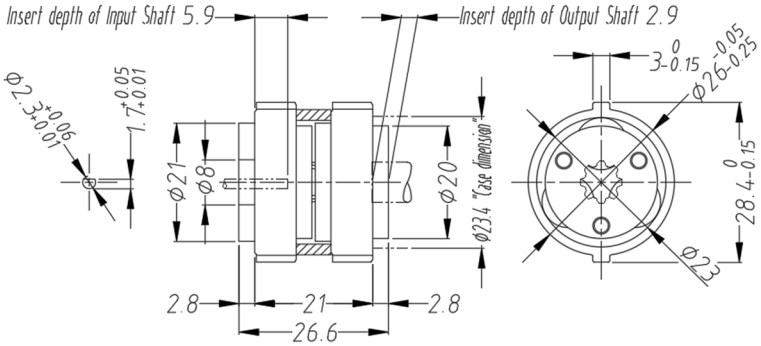
■ OUTPUT TORQUE CURVE



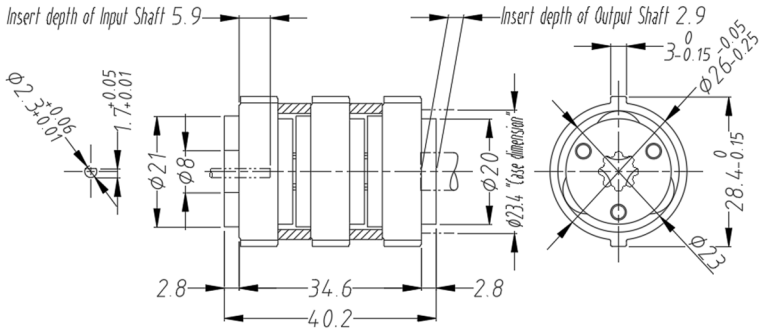
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS（STACKED）　(mm)

2 STAGES



3 STAGES

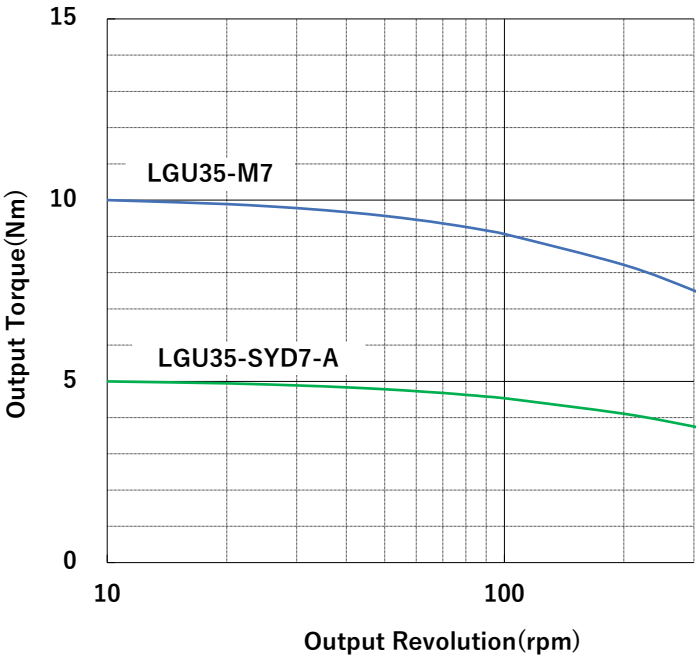


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
20.25	LGU26-5SAS4	LGU26-5SYI4	-	U26-903×1	2.0	D Cut Hole ϕ2.3×1.7	Spline Hole 7.5×8×0.75
91.13	LGU26-5SAS4	LGU26-5SYS4	LGU26-5SYI4	U26-903×2			

LGU35 Multi-Stage　UNIT TYPE COMBINATION　ϕ35　5.0 - 10 Nm

※The units will not be stacked at shipment.

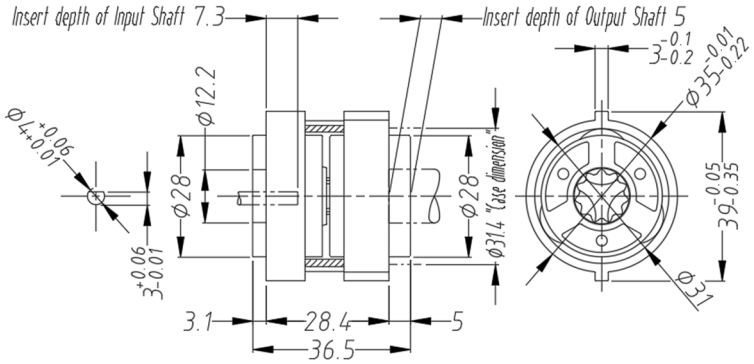
■ OUTPUT TORQUE CURVE



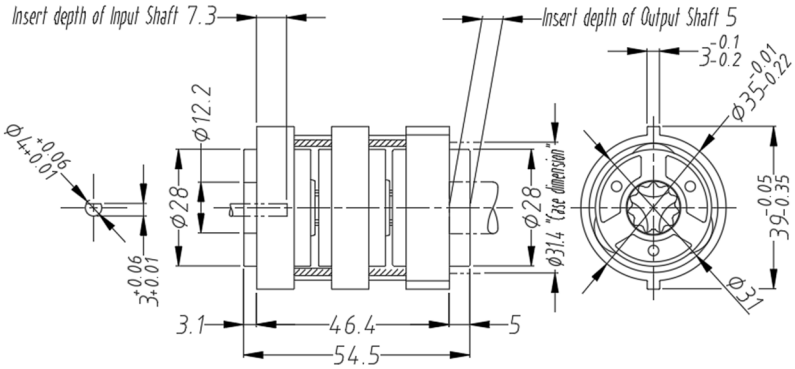
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS（STACKED）　(mm)

2 STAGES



3 STAGES

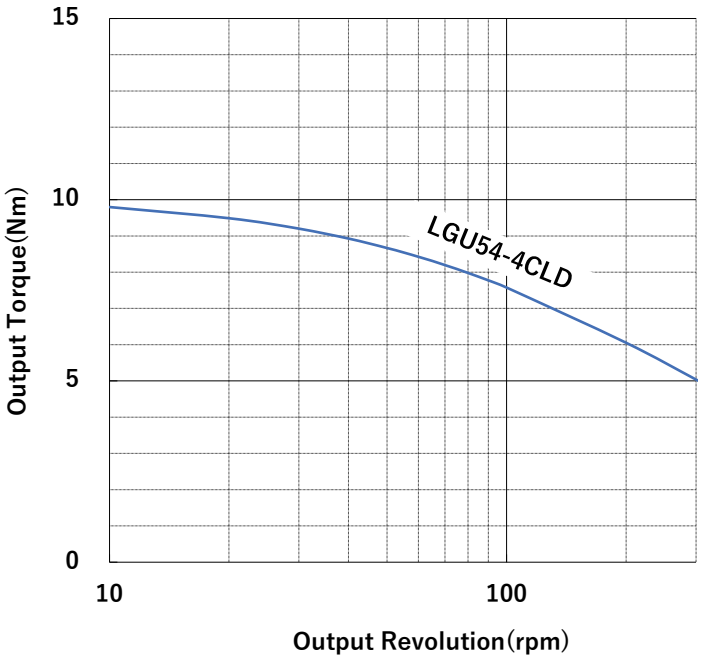


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
13.4	LGU35-4SRS	LGU35-4SYD7-A	-	U35-913×1	5.0	D Cut Hole ϕ4×3	Serration Hole12×11×1
18.3	LGU35-4SRS	LGU35-5SYD7-A					
		LGU35-5MYD7			10		
25	LGU35-5SRS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

LGU54 Multi-Stage　UNIT TYPE COMBINATION　ϕ54　9.8 Nm

※The units are not stacked at shipment.

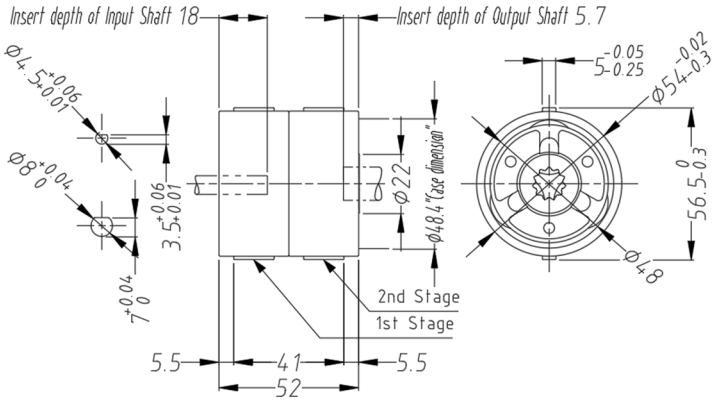
■ OUTPUT TORQUE CURVE



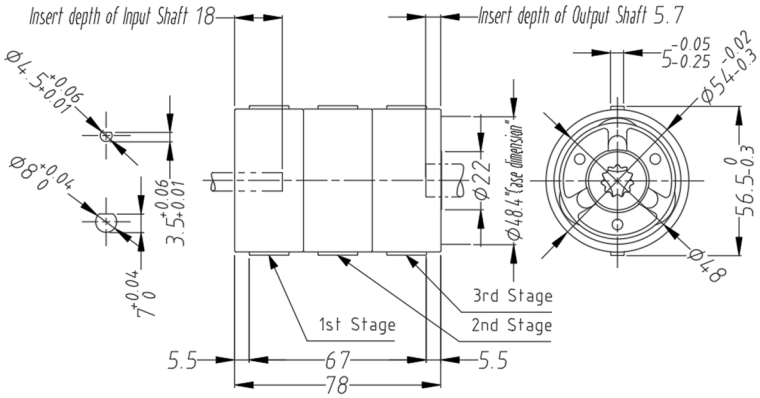
※The torque curve of the final stage(output side) is described.

■ DIMENSIONS（STACKED）　(mm)

2 STAGES



3 STAGES

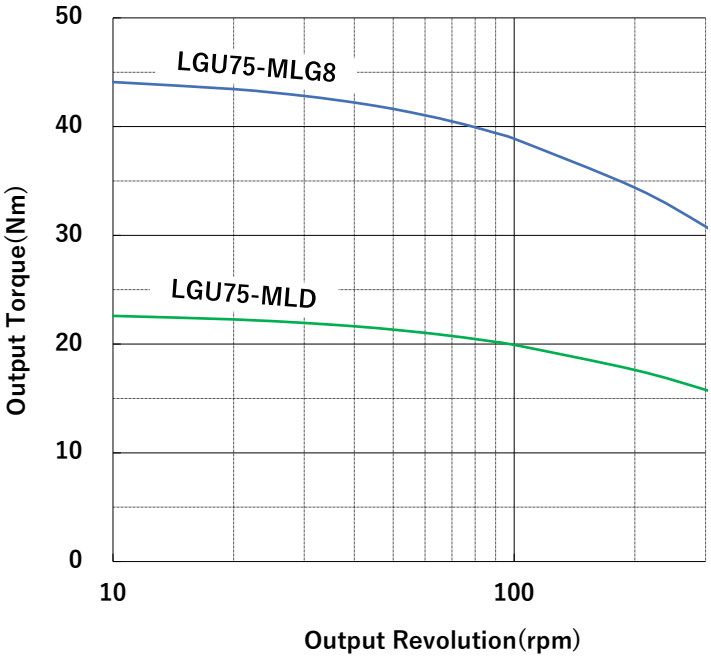


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Maximum Output Torque(Nm)	Input Shape	Output Shape
16	LGU54-4PAD	LGU54-4CLD	-	9.8	D Cut Hole ϕ8×7	Serration Hole12×11×1
24	LGU54-6PAD				D Cut Hole ϕ4.5×3.5	
64	LGU54-4PAD	LGU54-4PLD	LGU54-4CLD		D Cut Hole ϕ8×7	
96	LGU54-6PAD				D Cut Hole ϕ4.5×3.5	

LGU75 Multi-Stage UNIT TYPE COMBINATION ϕ75 22.6 – 44.1 Nm

※The units will not be stacked at shipment.

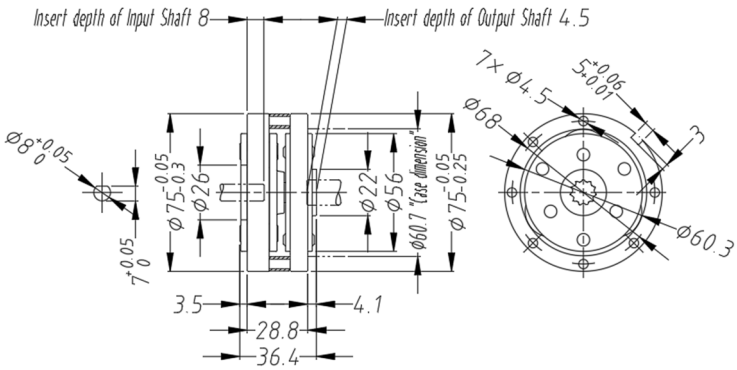
OUTPUT TORQUE CURVE



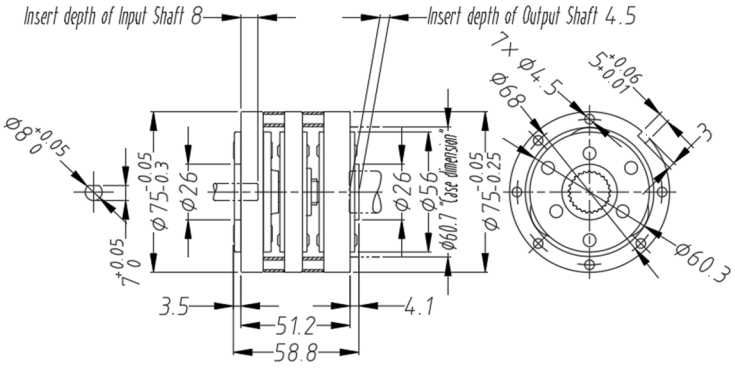
※The torque curve of the final stage(output side) is described.

DIMENSIONS (STACKED) (mm)

2 STAGES



3 STAGES

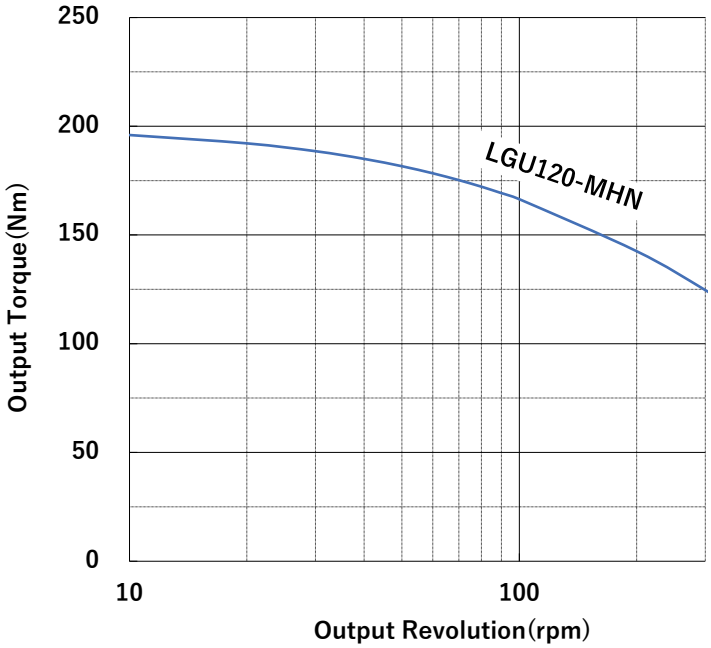


Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	3rd Stage Model Name	Spacer (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9.33	LGU75-3SAD	LGU75-3MLD	-	U75-903×1	22.6	D Cut Hole ϕ8×7	Serration Hole 12×11×1
12.44	LGU75-3SAD	LGU75-4MLD					
14.86	LGU75-4SAD	LGU75-4MLD					
18.57	LGU75-4SAD	LGU75-5MLD					
24	LGU75-5SAD	LGU75-5MLD					
44.57	LGU75-4SAD	LGU75-4MLD	LGU75-3MLG8	U75-903×2	44.1		Serration Hole 19.5×25×0.75
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				

LGU120 Multi-Stage UNIT TYPE COMBINATION ϕ120 196 Nm

※The units will not be stacked at shipment.

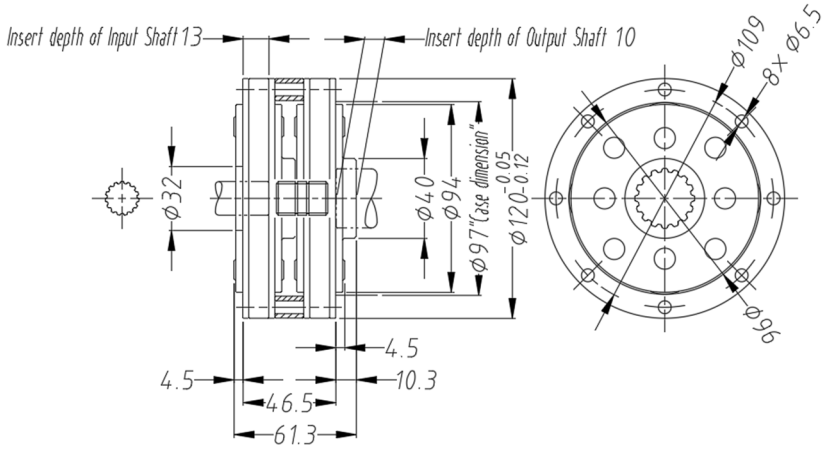
■ OUTPUT TORQUE CURVE



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

■ DIMENSIONS（STACKED）

2 Stages



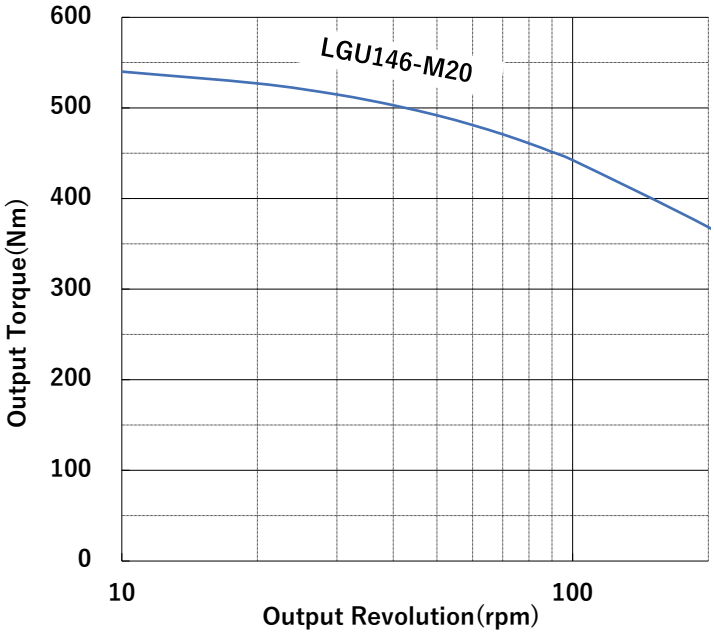
Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	Spacer (Option)	Joint Shaft (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9	LGU120-3MHH	LGU120-3MHN	U120-903×1	U120-906×1	196	Spline Hole 17×15×1	Spline Hole 30×16×1.667
12	LGU120-4MHH	LGU120-3MHN					
16	LGU120-4MHH	LGU120-4MHN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

LGU146 Multi-Stage UNIT TYPE COMBINATION ϕ146 540 Nm

※The units will not be stacked at shipment.

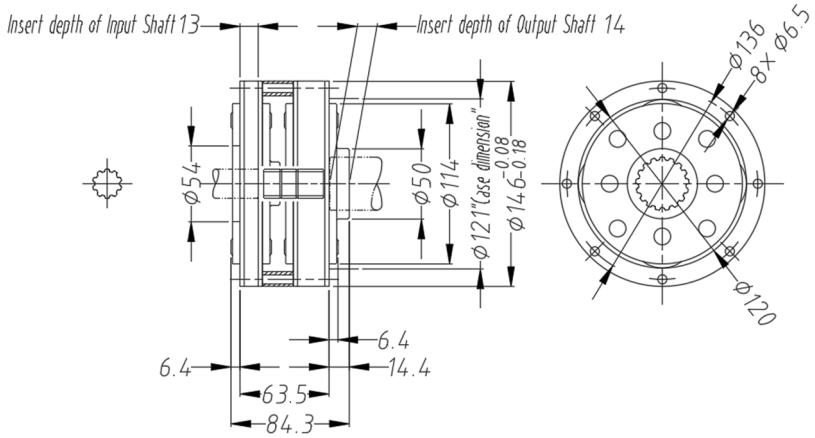
■ OUTPUT TORQUE CURVE



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

■ DIMENSIONS (STACKED)

2 Stages



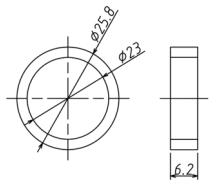
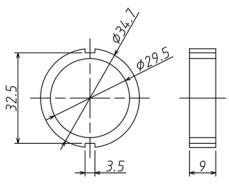
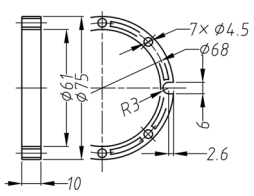
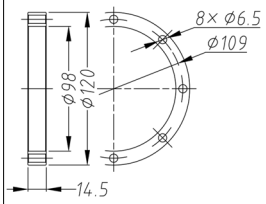
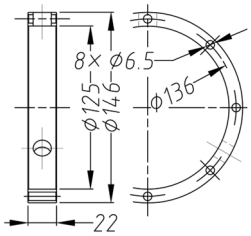
Actual Speed Ratio	1st Stage Model Name	2nd Stage Model Name	Spacer (Option)	Joint Shaft (Option)	Maximum Output Torque(Nm)	Input Shape	Output Shape
9	LGU146-3MEE	LGU146-3MEF20	U146-904×1	U146-N000L×1	540	Spline Hole 21×10×1.75	Spline Hole 38×17×2
12	LGU146-4MEE	LGU146-3MEF20					
16	LGU146-4MEE	LGU146-4MEF20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

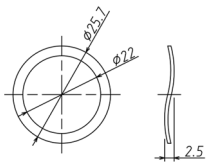
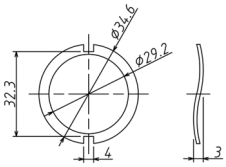
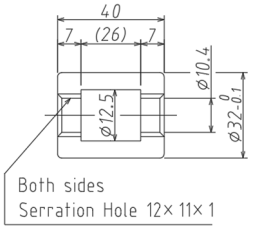
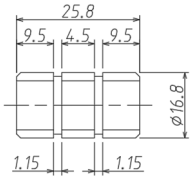
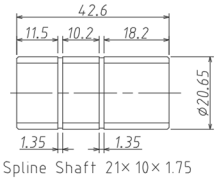
Part Name	Spacer				
DIMENSIONS (mm)					
Gear	LGU26	LGU35	LGU75	LGU120	LGU146
Model Name	U26-903	U35-913	U75-903	U120-903	U146-904
Material	PBT	POM	PA-G	STKM	STKM
Weight (g)	1.2	3.4	14	390	690

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)

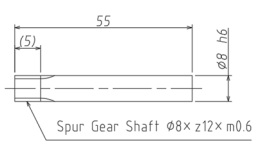
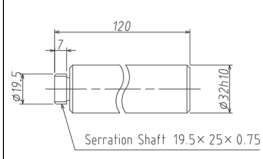
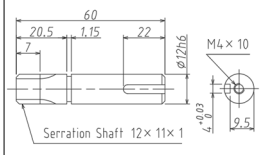
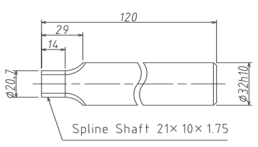
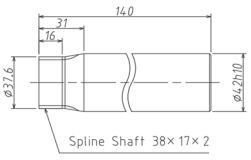
A coupling or joint shaft to connect input and output of the planetary gear unit. .
Please employ this option part in case multi-stage usage is used.

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

Output Shaft (for LGU35, 75, 146)

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

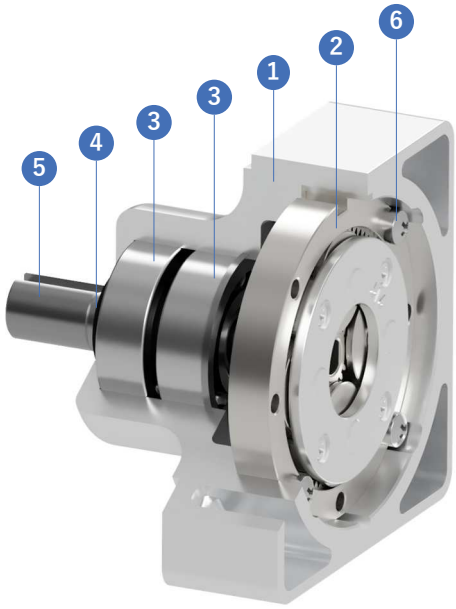
※ Please use C snap ring (JIS B 2804) to fix the Joint Shaft.
STW-16 for U120-906 and STW-21 for U146-N000L should be used.
Please notice that C snap ring is not included in the option.
(2 C snap rings will be needed for one Joint Shaft)

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

LGH75 Series GEARHEAD TYPE □90 1.8 – 39.2 Nm

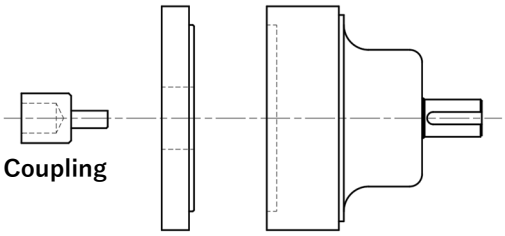
STRUCTURE of GEARHEAD

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.



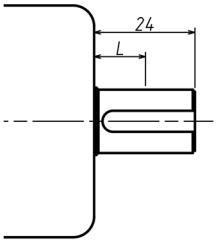
LIFE OF OUTPUT SHAFT BEARING

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.

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

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

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

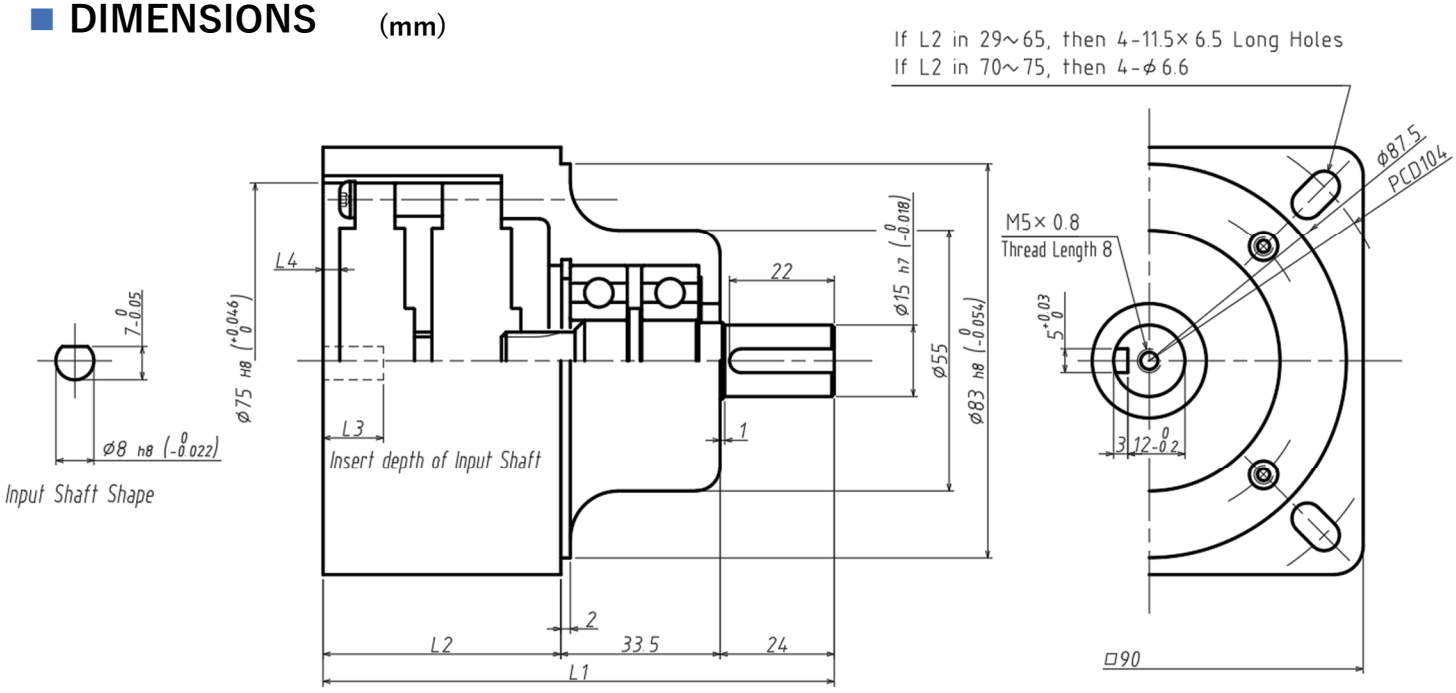
Grease is injected at manufacturing.

LGH75 Series GEARHEAD TYPE □90 1.8 – 39.2 Nm

MODEL NAMING RULE

LGH	75	-	125	SSM8	A	15
Gearhead Type	Gear Outer Diameter		Nominal Speed Ratio	Material · Width of Gear	Input Shape	Diameter of Output Shaft

DIMENSIONS (mm)

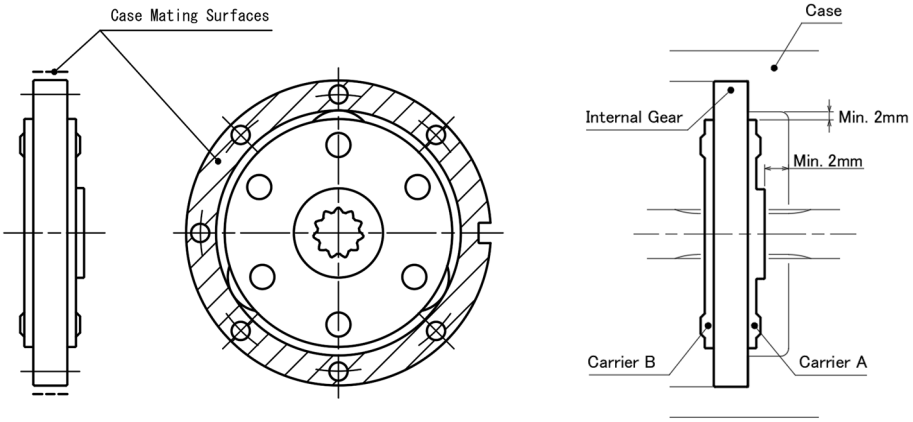


* Nominal Speed Ratio will be described in □ .

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		3 4 5	5.9				4.9	0.87
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			16.7	5.2	1.36
LGH75-□SM8A15			27.5	116.5	59	21.7	10.2	1.51
LGH75-□PPPA15	27 36 45 48 60 64 75 80 100 125	30.1 36 46.5 42.9 55.5 51.2 71.7 66.2 85.6 110.6	3.9	127.5	70	14.3	2.8	1.43
LGH75-□PPSA15			10.8					1.53
LGH75-□PSSA15			12.3					1.64
LGH75-□SSMA15		29 34.7 44.8 41.4 53.5 55.2 69.1 71.3 92.2 115.2	22.6			16.3	4.8	1.78
LGH75-□SSM8A15			39.2	132.5	75	17.3	5.8	2.04

DESIGN GUIDE

■ CASE DESIGN



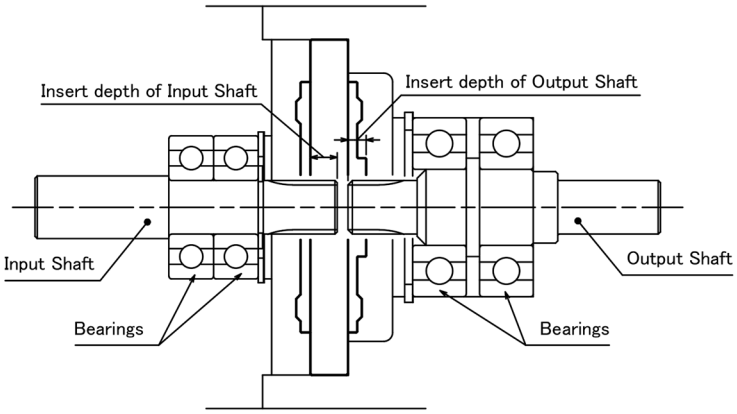
【Case Size】
The inner surface of the case which is fitted to the outer surface of the internal gear should be designed with fitting tolerance class H7～H8(JIS).

【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,LGU85Series : 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.

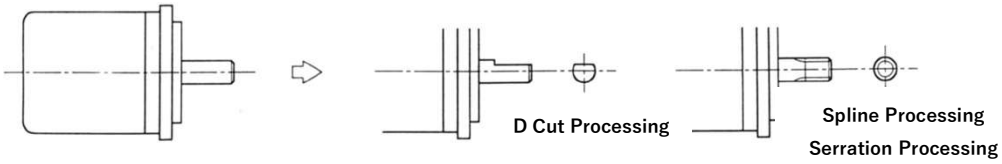
■ PRECAUTIONS

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

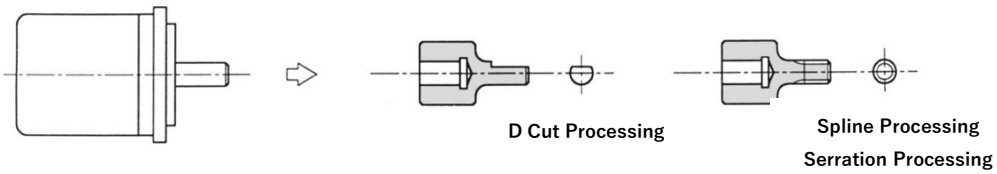
DESIGN GUIDE

■ CONNECTION to MOTOR

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

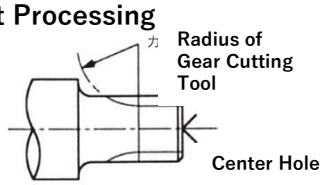


2. Indirect connection to the gear unit via a coupling or a joint shaft



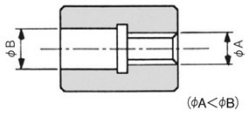
■ GEAR CUTTING(Serration・Spline)

1. Shaft Processing



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

2. Hole Processing



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 (FEMALE SERRATION)						SHAFT (MALE SERRATION)					
Nominal Diameter	Number of Teeth	Module	Pressure Angle	Basic Pitch Circle Diameter	Shift Factor	Major Diameter	Minor Diameter		Over Pin Diameter			Major Diameter		Minor 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 0	5.831	+0.091 +0.045	ϕ1.5	9	0 -0.075	7.5	10.693	-0.018 -0.054	ϕ1.5
12	11	1		11		12.4	10.4	+0.07 0	7.775	+0.091 +0.045	ϕ2.0	12	0 -0.1	10	14.257	-0.018 -0.054	ϕ2.0
19.5	25	0.75		18.75		19.8	18.3	+0.084 0	16.403	+0.088 +0.046	ϕ1.5	19.5	0 -0.075	18	21.276	-0.023 -0.061	ϕ1.5

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

BASIC PROFILES						HOLE (FEMALE SPLINE)							SHAFT (MALE SPLINE)					
Nominal Diameter	Number of Teeth	Module	Pressure Angle	Basic Pitch Circle Diameter	Shift Factor	Major Diameter Centralizing by tooth flank		Minor Diameter		Over Pin Diameter			Major Diameter	Minor Diameter	Over Pin Diameter			
						Basic Dimension	Deviation	Basic Dimension	Deviation	Basic Dimension	Deviation	Measuring Pin Diameter	Basic Dimension	Basic Dimension	Basic Dimension	Deviation		Measuring Pin Diameter
																Class a	Class b	
8	9	0.75	20°	6.75	+0.633	8	-0.013 -0.028	6.5	+0.015 0	4.916	+0.108 0	V=1.50 V1=1.20	7.85	6.2	9.202	-0.097 -0.162	-0.011 -0.076	ϕ1.4
17	15	1		15	+0.8	17	-0.016 -0.034	15	+0.018 0	12.984	+0.07 0	V=2.00 V1=1.68	16.8	14.6	18.598	-0.108 -0.18	-0.013 -0.085	ϕ1.8
21	10	1.75		17.5		21	-0.02 -0.041	17.5	+0.018 0	14.12	+0.083 0	V=3.50 V1=2.94	20.65	16.8	24.913	-0.111 -0.187	-0.016 -0.092	ϕ3.6
25	13	1.667		21.667		25	-0.02 -0.041	21.7	+0.021 0	18.286	+0.084 0	V=3.333 V1=2.80	24.667	21	27.563	-0.122 -0.206	-0.017 -0.101	ϕ3.0
30	16	1.667		26.667		30	-0.02 -0.041	26.7	+0.021 0	23.445	+0.085 0	V=3.333 V1=2.80	29.667	26	32.851	-0.129 -0.217	-0.018 -0.107	ϕ3.0
38	17	2		34		38	-0.025 -0.05	34	+0.025 0	29.989	+0.085 0	V=4.00 V1=3.36	37.6	33.2	41.297	-0.13 -0.219	-0.019 -0.108	ϕ3.6
38.333	21	1.667		35		38.333	-0.025 -0.05	35	+0.025 0	31.681	+0.085 0	V=3.333 V1=2.80	38	34.333	41.214	-0.136 -0.229	-0.019 -0.113	ϕ3.0
48.333	27	1.667		45		48.333	-0.025 -0.05	45	+0.025 0	41.703	+0.086 0	V=3.333 V1=2.80	48	44.333	51.36	-0.143 -0.241	-0.02 -0.119	ϕ3.0

* Module 1.75 is our original specification 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℃	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℃	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 Processer	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

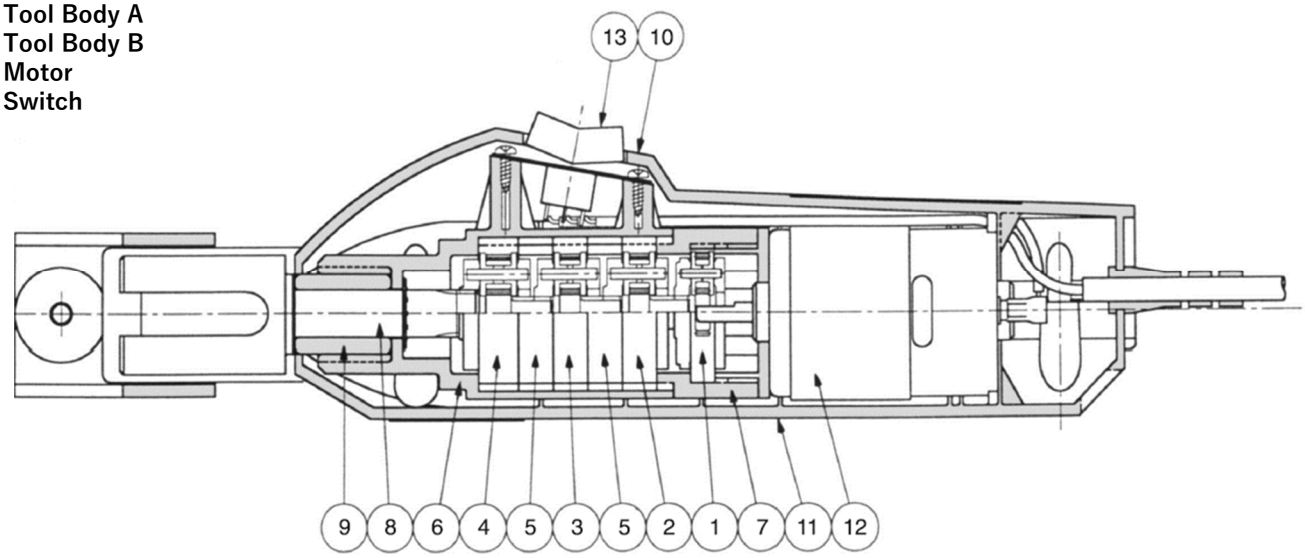
ELECTRIC TOOL

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.



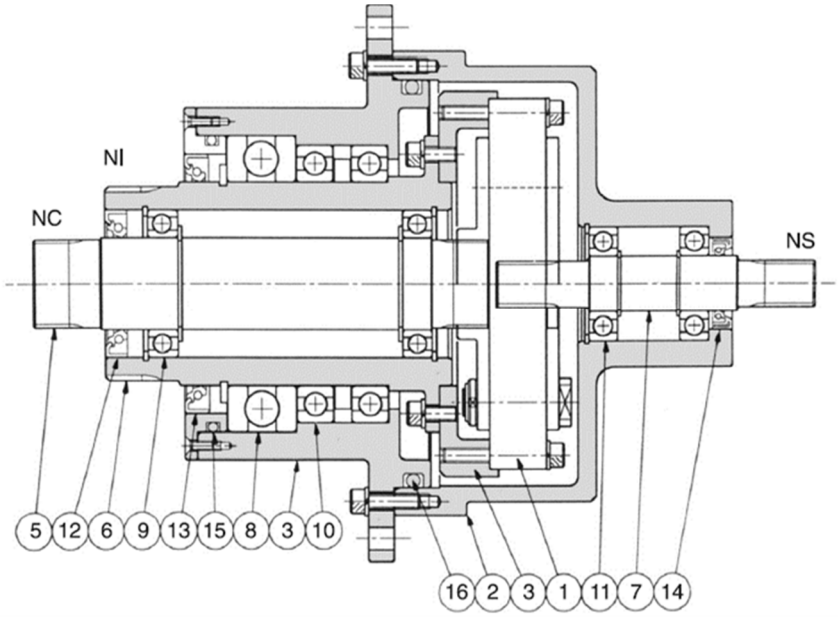
DIFFERENTIAL GEARS

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.



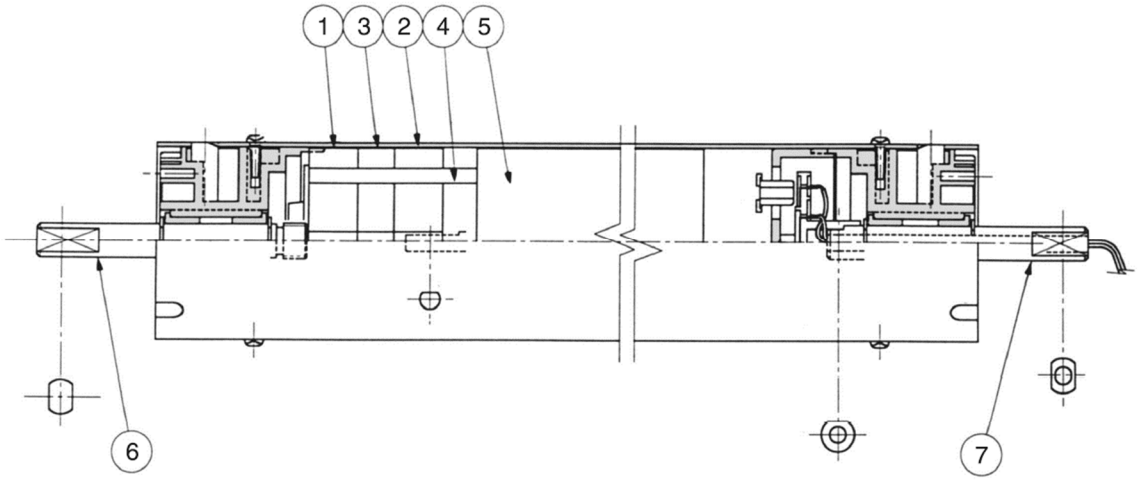
DESIGN EXAMPLES

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.

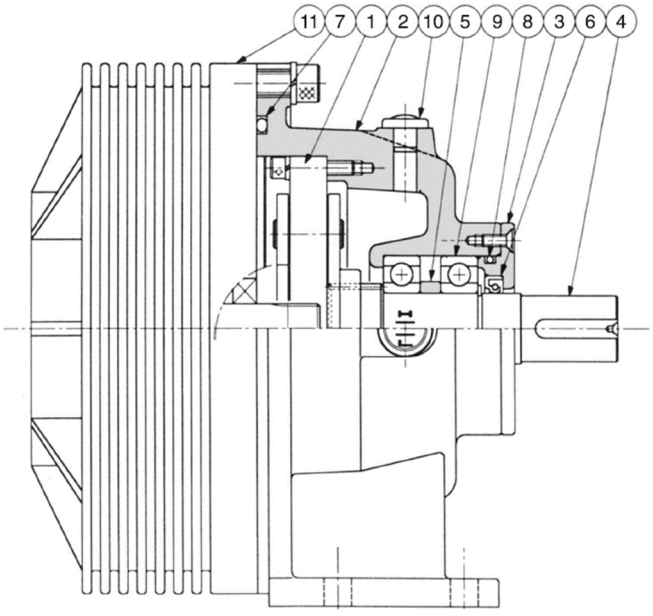
Features :
Compact Powered Roller can be realized by embedding a motor and planetary gear units into its rotating body. Lesser vibration is also obtained thanks to the coaxial setting of all driving parts.



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.

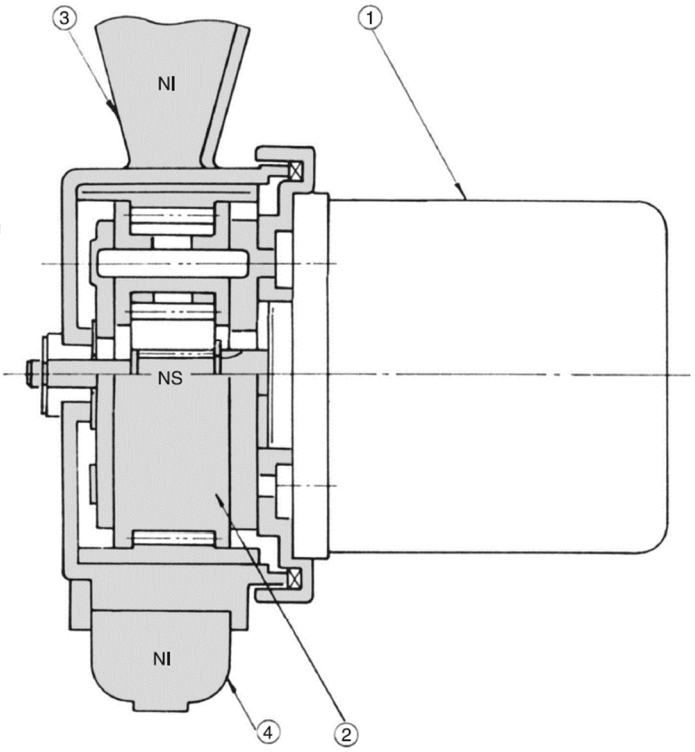


DESIGN EXAMPLES

■ INDUSTRIAL MACHINE DRIVE

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

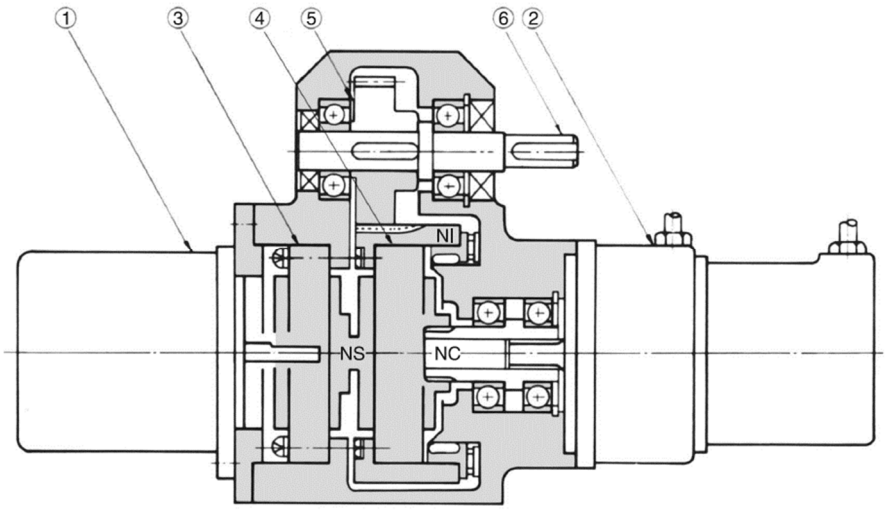
Examples : Carrier Cart, Winch, Automatic Door etc.
Features :
Motor axle and wheel axle are designed in one same axis. Compact design can be easily available by putting the gear(s) in the wheel. Furthermore, individual control of each wheel can be realized.



■ STEPLESS REDUCTION GEAR

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

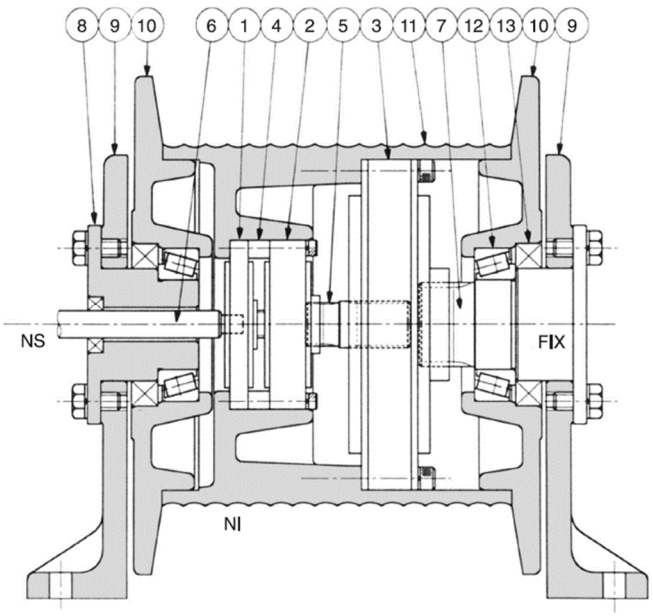
Examples : Conveyer Drive etc.
Features :
Two different motors for drive and control give inputs to the planetary gear unit. By changing the speed of the control motor, smooth and stepless gear reduction is realized. All control of output rotation direction, output speed and output axle are also realized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



DESIGN EXAMPLES

■ WINCH

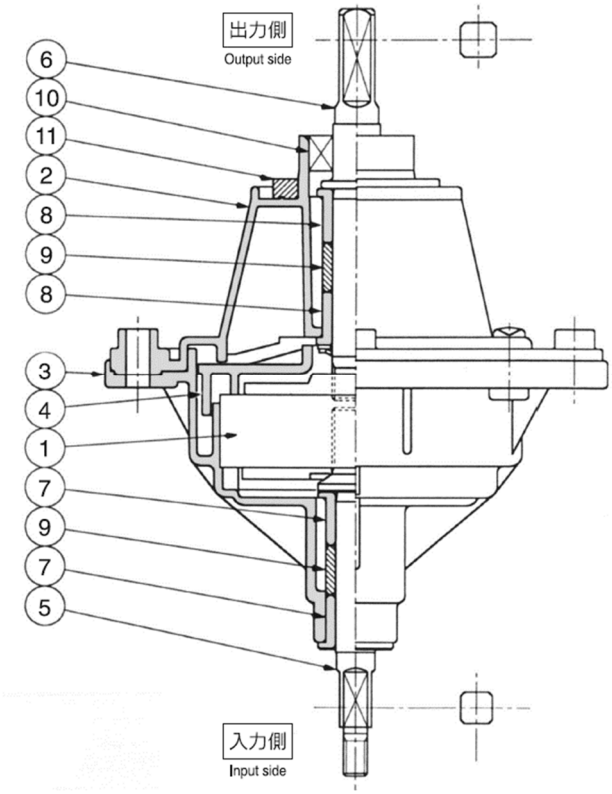
1. Planetary Gear Unit
2. Planetary Gear Unit
3. Planetary Gear Unit
4. Spacer
5. Joint Shaft
6. Input Shaft
7. Fixed Shaft
8. Input Bush
9. Side Plate
10. Flange
11. Winch Drum
12. Cone Roller Bearing
13. Oil Seal



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



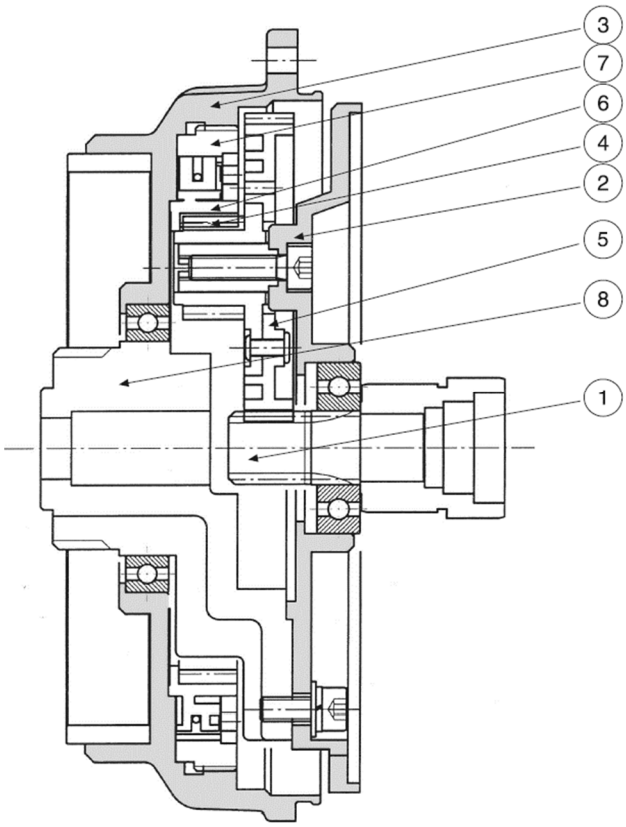
Examples : Driving Unit for Washing Machine etc.
Features :
Lesser noise is realized by covering the whole planetary gear unit with the plastic gear case. Since this unit is used for a washing machine, close sealing is well-considered.
Furthermore, this structure will be able to be utilized in a direct-drive 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

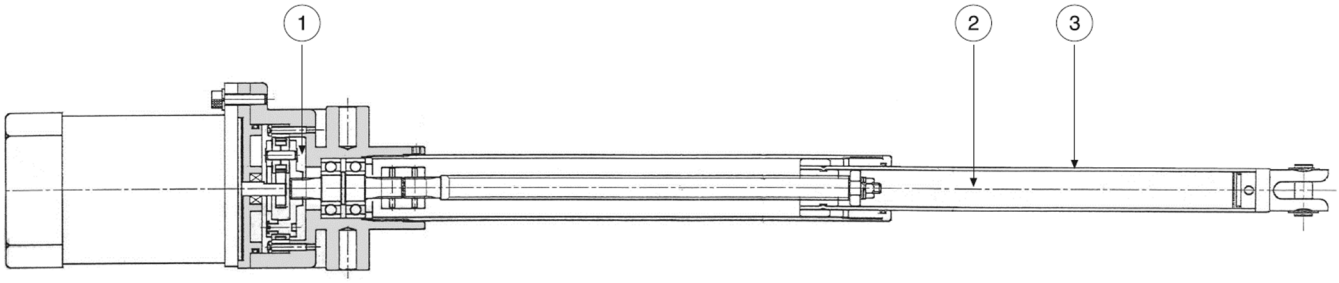
Examples : Drive Unit of power assisted bicycle etc.
Features :
This unit is a drive gear unit for a power assisted bicycle. A ratchet mechanism can be applied to the planetary gear by adding some structures to the internal gear.



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.

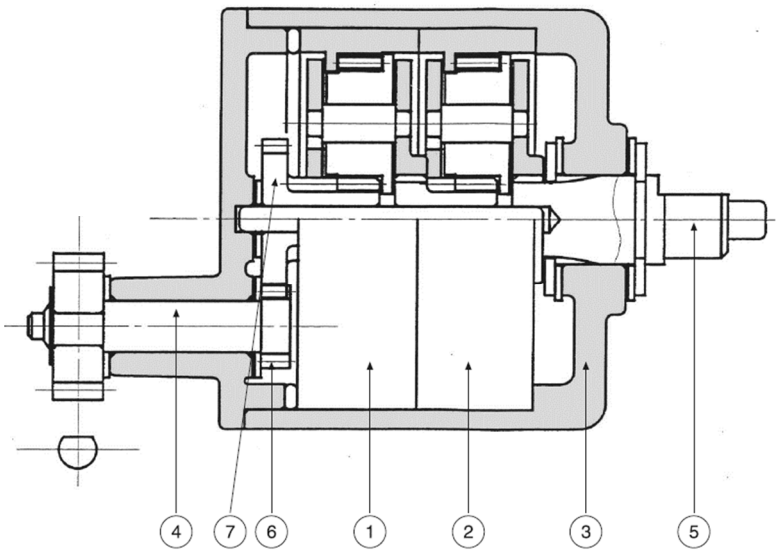


DESIGN EXAMPLES

■ SHIFTED AXIS TYPE GEAR HEAD

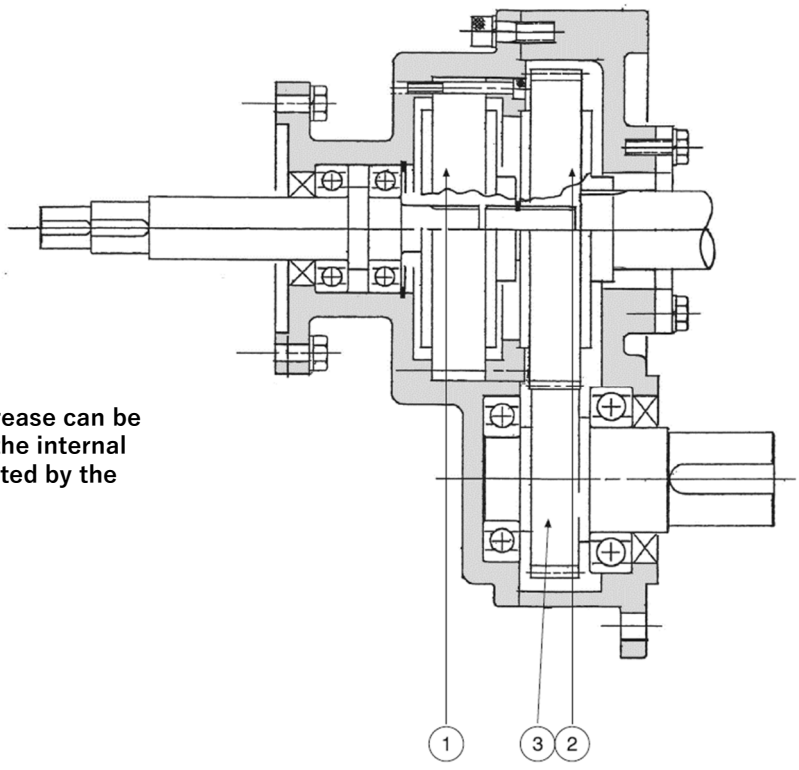
1. Planetary Gear Unit
2. Planetary Gear Unit
3. Gear Case
4. Input Shaft
5. Output Shaft
6. Small Gear
7. Large Gear

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

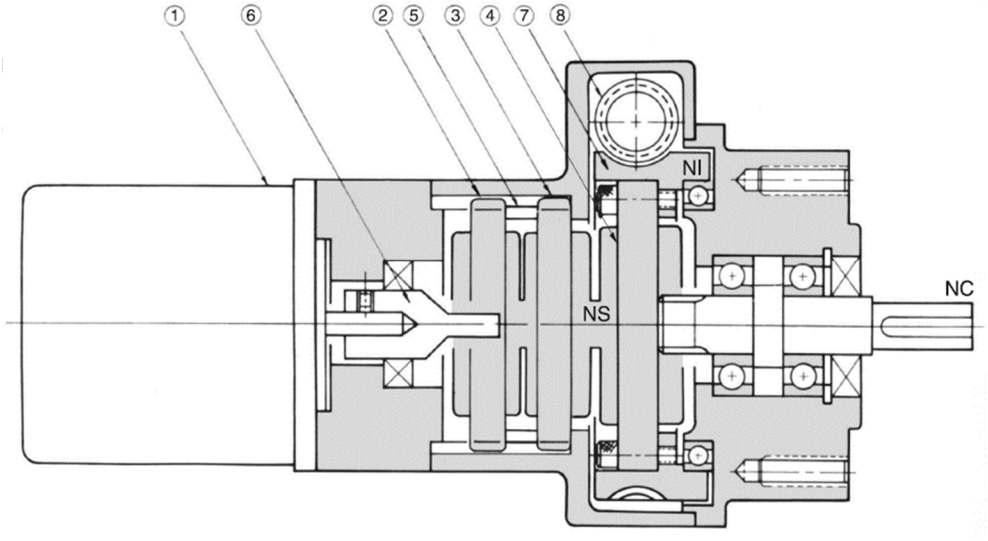
■ DIFFERNTIAL GEAR

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 ℃

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. ℃/Min. ℃ (b) Outdoor Max. ℃/Min. ℃
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]×Speed[rpm] ×2π÷60÷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	・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	・Precision injection molding parts and assembly ・Developing, producing, selling of actuators ・Designing, manufacturing and selling mold.

China

Company Name	Wuxi Matex Precision Co.,Ltd. (無錫麻徳克斯精機有限公司)
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	・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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WEB https://www.matex-japan.com

TEL +81-72-941-8652

- Specifications and/or dimensions in this catalog may be changed without prior notice.
- Appearance of product may be shown differently in this catalog due to the printing limitations.

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