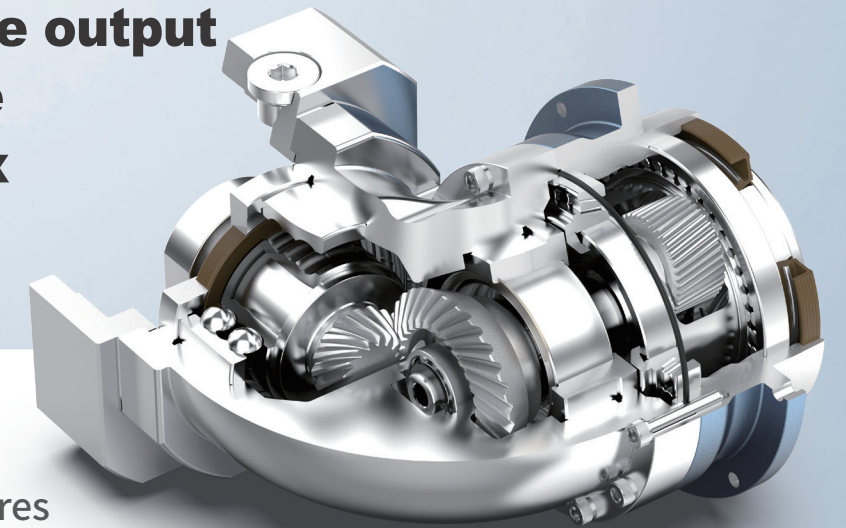


High rigidity flange output helical right-angle planetary gearbox

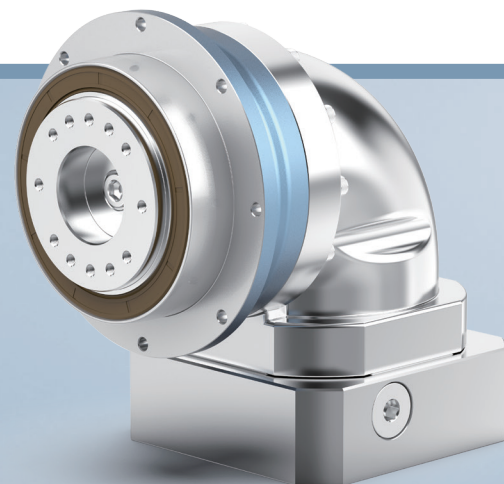
WTHR Series



Product Features

- ◆ High precision, compact dimensions, excellent sealing performance.
- ◆ High universality in installation dimensions.
- ◆ Significantly enhances overall rigidity, vibration resistance, and load-bearing capacity in any direction.
- ◆ Special manufacturing processes for annular gear to ensure superior accuracy throughout its entire lifespan.
 - ◆ For WSH series with size 100 above, the output bearings adopt a double-support structure, leads to a longer span and superior overturning torque capacity.
 - ◆ Compared to similar models in the market, its total length is further reduced, resulting in higher power density.

※ Suitable for conditions requiring high positioning accuracy, high dynamic periodic operation and compact radial/axial space.

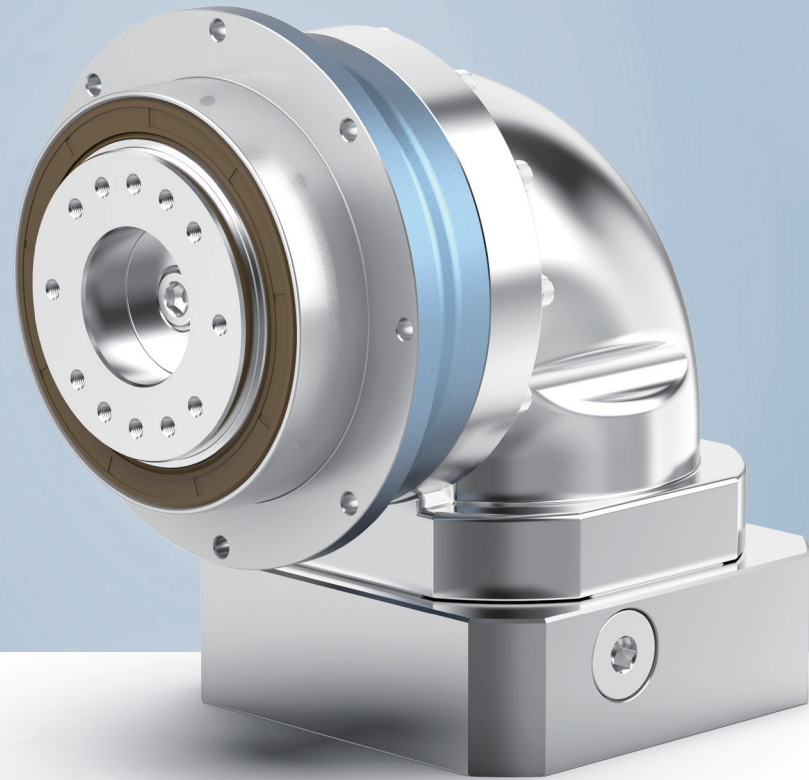


Product Features

- ◆ Higher and more stable rotation speed, less vibration.
- ◆ High universality in installation dimensions.
- ◆ Brand-new manufacturing processes for superior accuracy retention.
- ◆ Significantly enhances overall rigidity, vibration resistance, and load-bearing capacity in any direction.
- ◆ Special manufacturing processes for input stages using spiral bevel gears, resulting in lower working noise and higher precision.
- ◆ Compared to similar models in the market, its total length is further reduced, resulting in higher power density.

※ Suitable for conditions requiring high positioning accuracy, high dynamic periodic operation and compact axial space.

Model No.



Advantages



Heat Treatment Process

The internal gear adopts a nitriding heat treatment process, which maximizes the material performance and significantly improves the surface hardness, while retaining the core toughness



Precision Control

High precision gear processing machine tool + imported CNC lathe, combined with special cutting tools and processing technology to ensure stable control of backlash within the standard



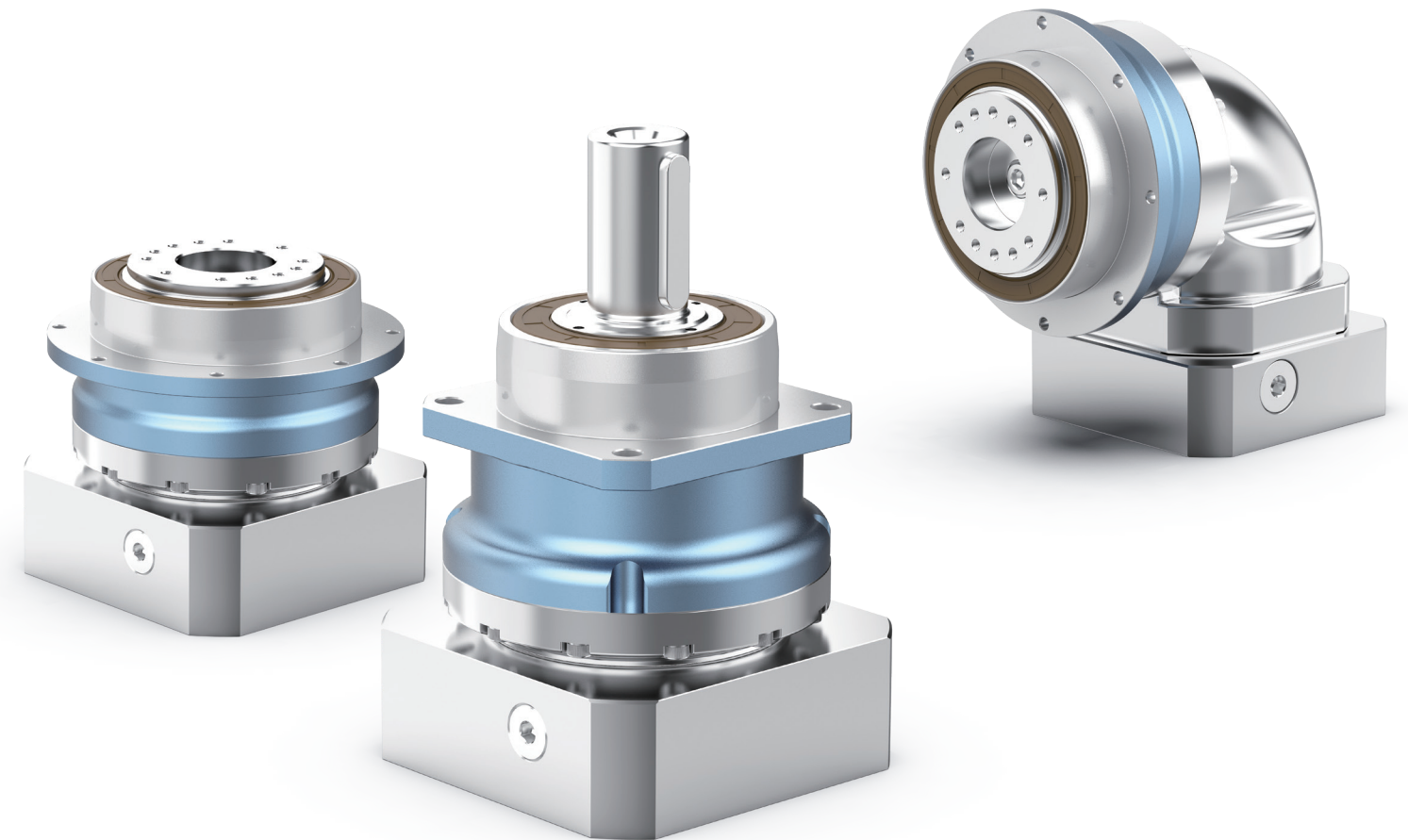
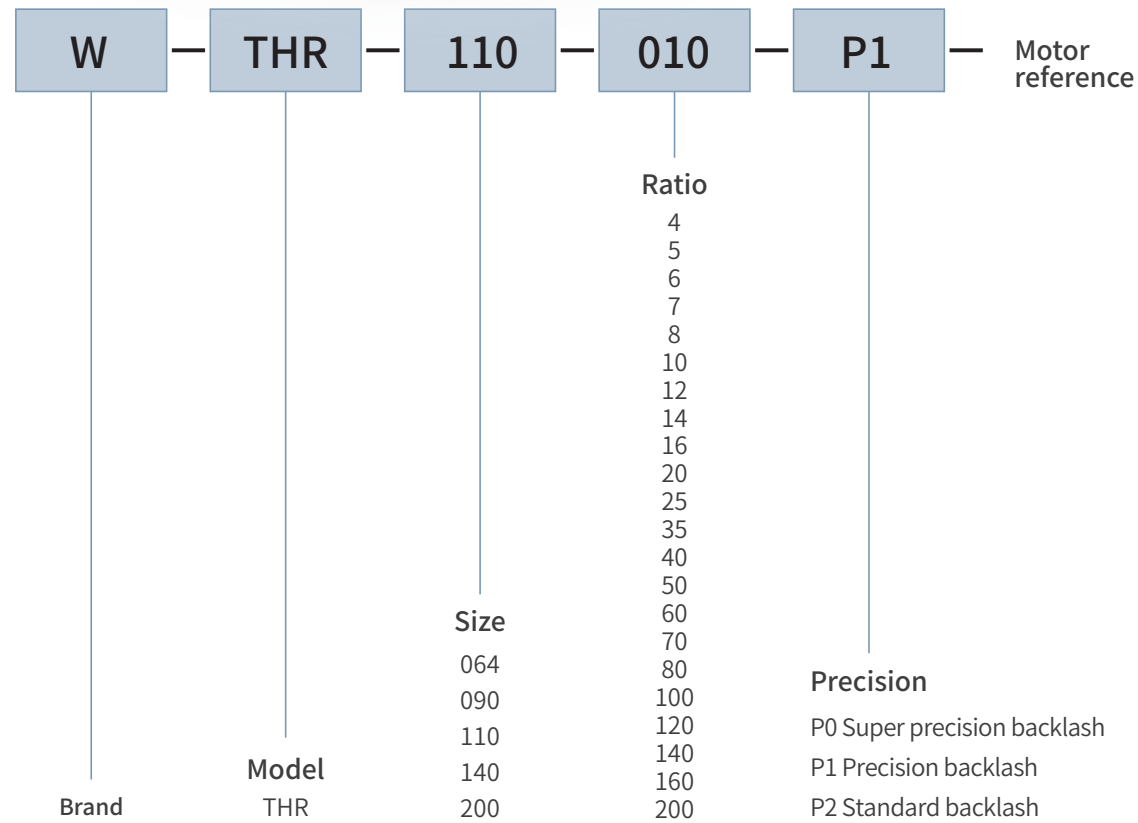
Production Management

Adopts the ISO9001 management system to ensure temperature rise, noise, lifespan, efficiency and other indicators in mass production products



Fast Delivery

We have more than 80 thousands spare parts in stock to ensure fast delivery



Specification	Unit	WTHR064-1-Stage										
		4	5	6	7	8	10	12	14	16	20	
Ratio		4	5	6	7	8	10	12	14	16	20	
Rated Output Torque T_{2N}	Nm	55	60	55	50	55	60	55	50	40	35	
Emergency stop Torque T_{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T_{2N}										
Rated Input Speed n_{1N} (a)	rpm	3300	3300	3300	3300	4000	4000	4000	4000	4000	4000	
Max Input Speed n_{1B}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
No Load Running Torque (n1=3000rpm,20°C running)	Nm	0.65	0.55	0.55	0.55	0.45	0.4	0.4	0.4	0.35	0.35	
Max Backlash	arcmin	P1 \leq 4 / P2 \leq 6										
Torsional rigidity	Nm/arcmin	13										
Max Tilting Moment M_{2K}	Nm	130										
Allowable Radial Force F_{2R} (b)	N	2500										
Allowable Axle Force F_{2A} (b)	N	2000										
Service Life	h	20000										
Efficient	%	\geq 95										
Applicable Ambient Temperature	°C	-20°C~+40°C										
Weight	kg	2.2										
Protection class		IP65										
Lubrication (c)		Synthetic Lubricating Oil										
Noise	dB(A)	\leq 63										
Rotational inertia J_1	\leq 14	kg.cm ²	0.42	0.4	0.38	0.38	0.33	0.31	0.31	0.31	0.31	0.31
	\leq 19		0.75	0.7	0.65	0.65	0.68	0.63	0.58	0.58	0.58	0.58

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.

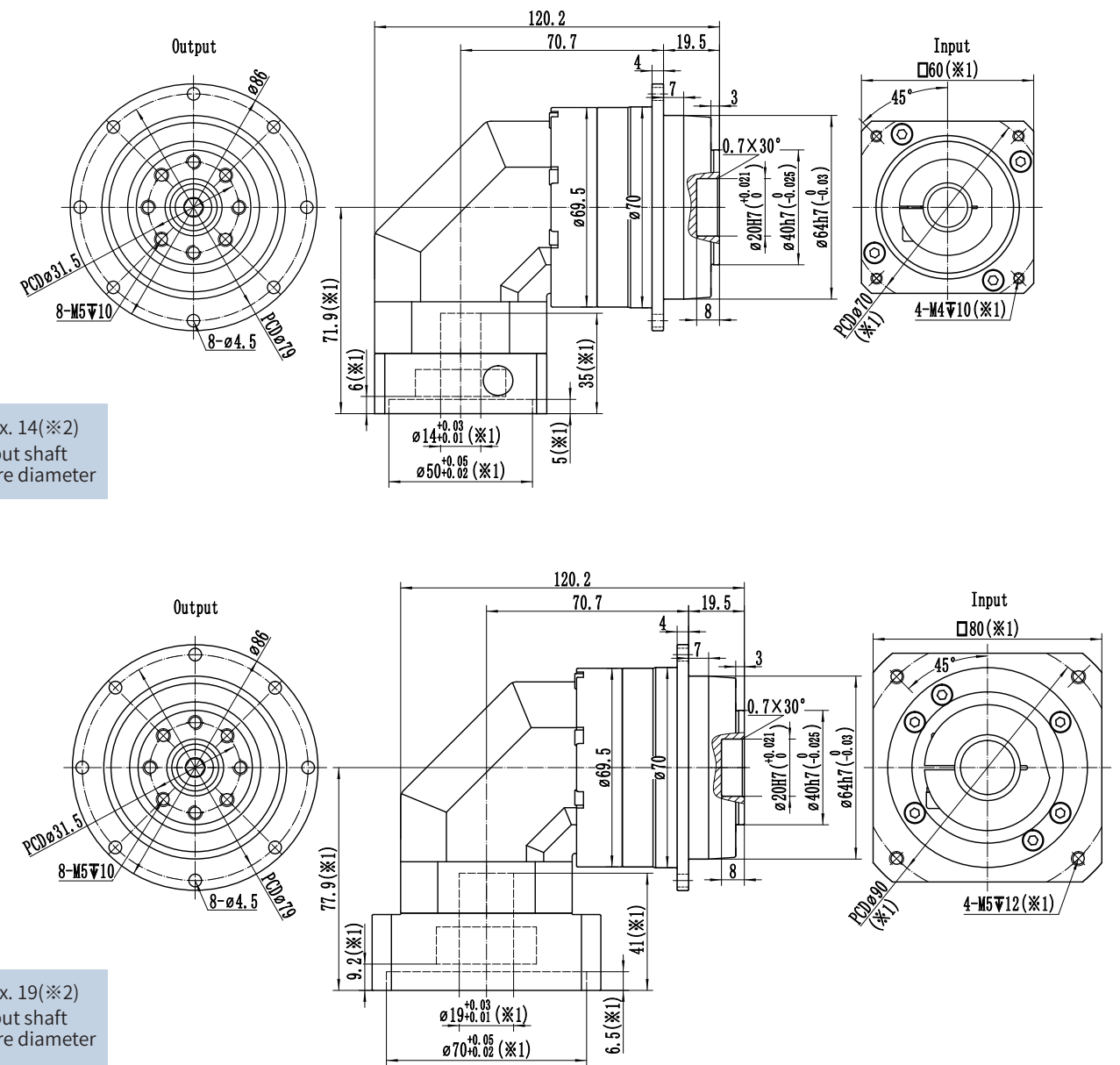
(b) Applied to the center point of the output shaft.

(c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

Motor shaft diameter(mm)

Max. 14(※2)
Input shaft
bore diameter

Max. 19(※2)
Input shaft
bore diameter



※1: Dimensions will vary with the motor size.

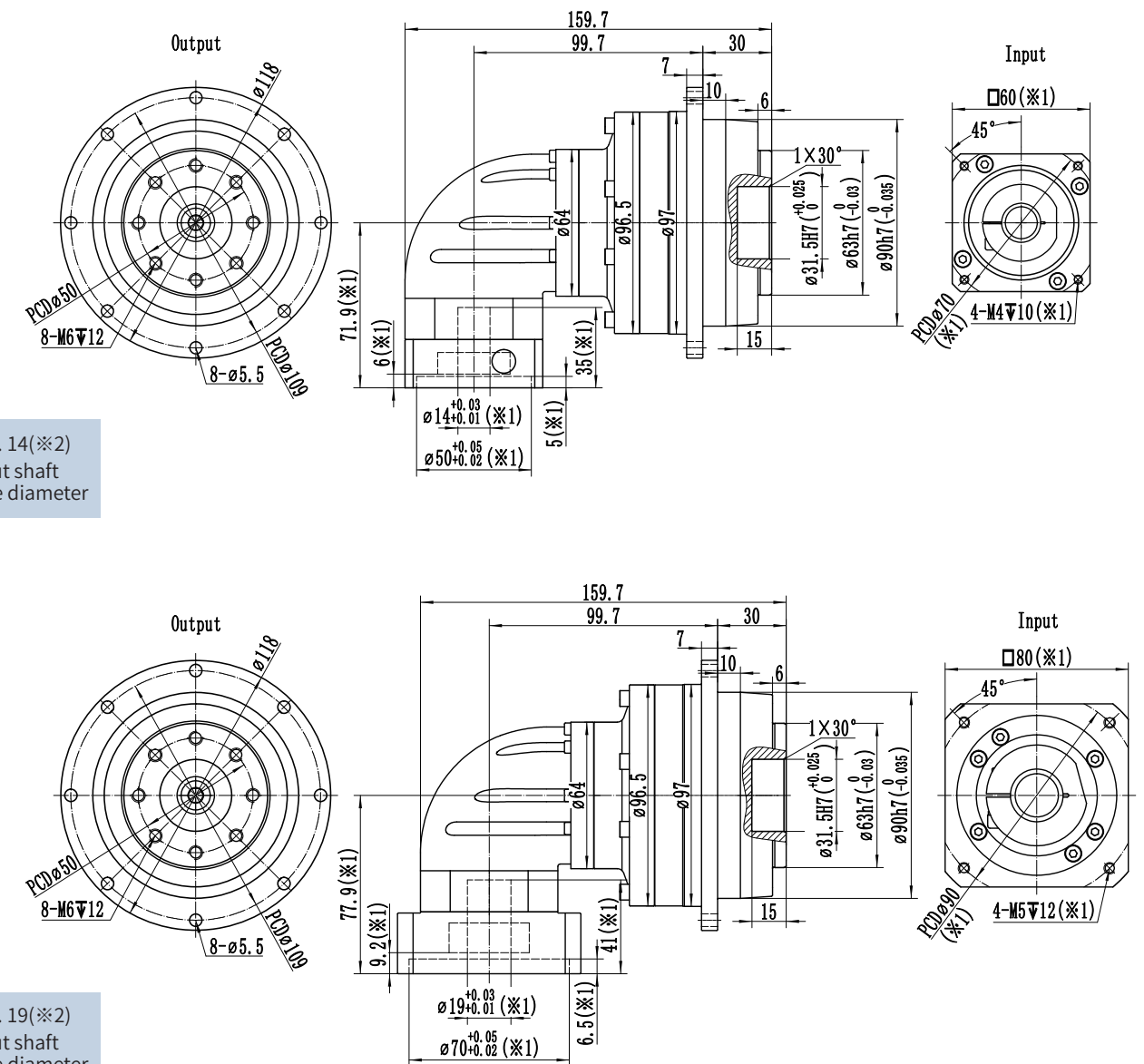
※2: If the motor shaft diameter is small, a bushing may be used, which has a mini thickness of 1mm.

※ Please notify if a keyway is needed for the gearbox input shaft bore.

Specification	Unit	WTHR090-2-Stage												
Ratio		25	35	40	50	60	70	80	100	120	140	160	200	
Rated Output Torque T _{2N}	Nm	160	140	150	160	150	140	150	160	150	140	100	90	
Emergency stop Torque T _{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T _{2N}												
Rated Input Speed n _{1N} (a)	rpm	3300	3300	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	
Max Input Speed n _{1B}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
No Load Running Torque (n ₁ =3000rpm,20°C running)	Nm	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.35	0.35	
Max Backlash	arcmin	P1≤7 / P2≤9												
Torsional rigidity	Nm/arcmin	31												
Max Tilting Moment M _{2K}	Nm	280												
Allowable Radial Force F _{2R} (b)	N	4800												
Allowable Axle Force F _{2A} (b)	N	3500												
Service Life	h	20000												
Efficient	%	≥92												
Applicable Ambient Temperature	°C	-20°C~+40°C												
Weight	kg	5.1												
Protection class		IP65												
Lubrication (c)		Synthetic Lubricating Oil												
Noise	dB(A)	≤63												
Rotational inertia J ₁	≤14	kg.cm ²	0.45	0.45	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	
	≤19		0.8	0.8	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.
 (b) Applied to the center point of the output shaft.
 (c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

Motor shaft diameter (mm)

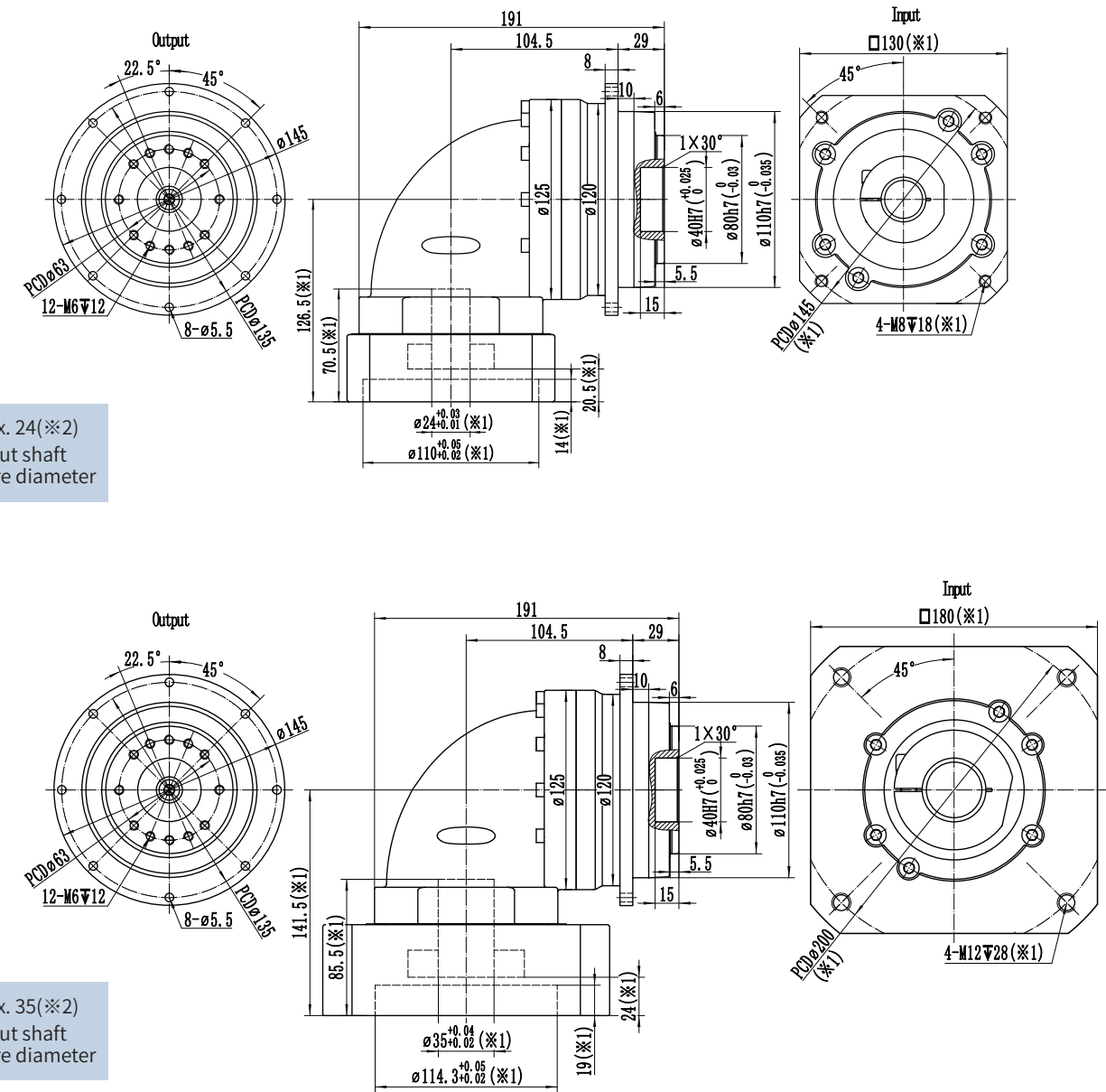


※1: Dimensions will vary with the motor size.
 ※2: If the motor shaft diameter is small, a bushing may be used, which has a mini thickness of 1mm.
 ※ Please notify if a keyway is needed for the gearbox input shaft bore.

Specification	Unit	WTHR110-1-Stage										
		4	5	6	7	8	10	12	14	16	20	
Ratio		4	5	6	7	8	10	12	14	16	20	
Rated Output Torque T_{2N}	Nm	330	330	310	300	330	330	310	300	230	200	
Emergency stop Torque T_{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T_{2N}										
Rated Input Speed n_{1N} (a)	rpm	2800	2800	2800	3300	3300	3300	3300	3300	3300	3300	
Max Input Speed n_{1B}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	
No Load Running Torque (n1=3000rpm,20°C running)	Nm	2.3	1.9	1.9	1.9	1.6	1.55	1.55	1.55	1.4	1.4	
Max Backlash	arcmin	$P1 \leq 4 / P2 \leq 6$										
Torsional rigidity	Nm/arcmin	82										
Max Tilting Moment M_{2K}	Nm	510										
Allowable Radial Force F_{2R} (b)	N	7800										
Allowable Axle Force F_{2A} (b)	N	6000										
Service Life	h	20000										
Efficient	%	≥ 95										
Applicable Ambient Temperature	°C	$-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$										
Weight	kg	11.3										
Protection class		IP65										
Lubrication (c)		Synthetic Lubricating Oil										
Noise	dB(A)	≤ 68										
Rotational inertia J_1	≤ 19	kg.cm ²	5.9	5.4	4.9	4.9	4.4	4.3	4.2	4.2	4.2	4.2
	≤ 24		6.4	5.9	5.4	5.4	4.9	4.8	4.7	4.7	4.7	4.7
	≤ 28		6.9	6.4	5.9	5.9	5.4	5.3	5.2	5.2	5.2	5.2
	≤ 35		13.4	12.9	12.4	12.4	11.5	11.2	11	11	11	11

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.
 (b) Applied to the center point of the output shaft.
 (c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

Motor shaft diameter (mm)



※1: Dimensions will vary with the motor size.
 ※2: If the motor shaft diameter is small, a bushing may be used, which has a mini thickness of 1mm.
 ※ Please notify if a keyway is needed for the gearbox input shaft bore.

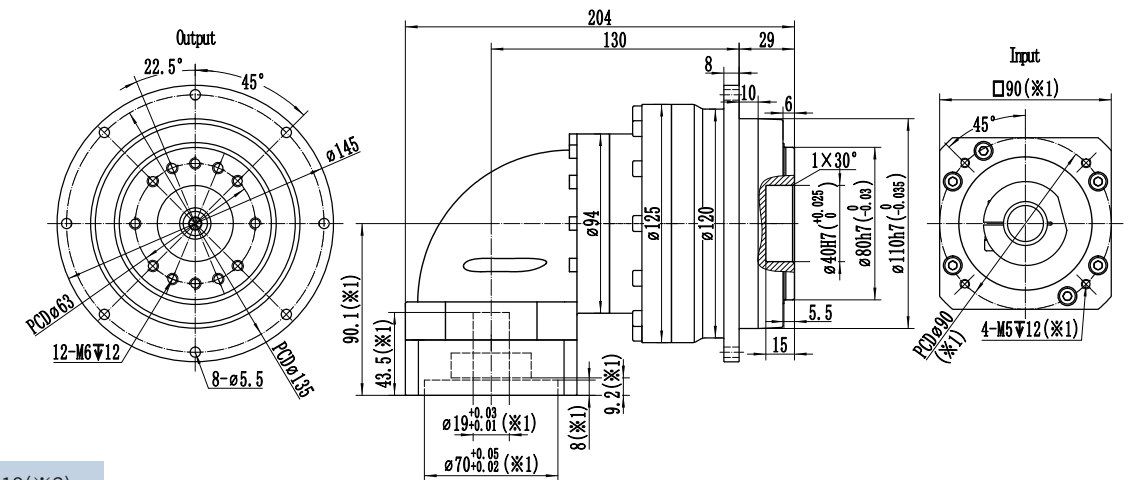
Specification	Unit	WTHR110-2-Stage											
		25	35	40	50	60	70	80	100	120	140	160	200
Ratio		25	35	40	50	60	70	80	100	120	140	160	200
Rated Output Torque T_{2N}	Nm	330	300	330	330	310	300	330	330	310	300	230	200
Emergency stop Torque T_{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T_{2N}											
Rated Input Speed n_{1N} (a)	rpm	3300	3300	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max Input Speed n_{1B}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque (n1=3000rpm,20°C running)	Nm	1	1	0.85	0.85	0.85	0.85	0.75	0.75	0.75	0.75	0.7	0.7
Max Backlash	arcmin	$P1 \leq 7 / P2 \leq 9$											
Torsional rigidity	Nm/arcmin	82											
Max Tilting Moment M_{2K}	Nm	510											
Allowable Radial Force F_{2R} (b)	N	7800											
Allowable Axle Force F_{2A} (b)	N	6000											
Service Life	h	20000											
Efficient	%	≥ 92											
Applicable Ambient Temperature	°C	$-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$											
Weight	kg	9.5											
Protection class		IP65											
Lubrication (c)		Synthetic Lubricating Oil											
Noise	dB(A)	≤ 65											
Rotational inertia J_1	≤ 19	kg.cm ²	2.5	2.5	2	2	2	2	2	2	2	2	2
	≤ 24		3.7	3.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.

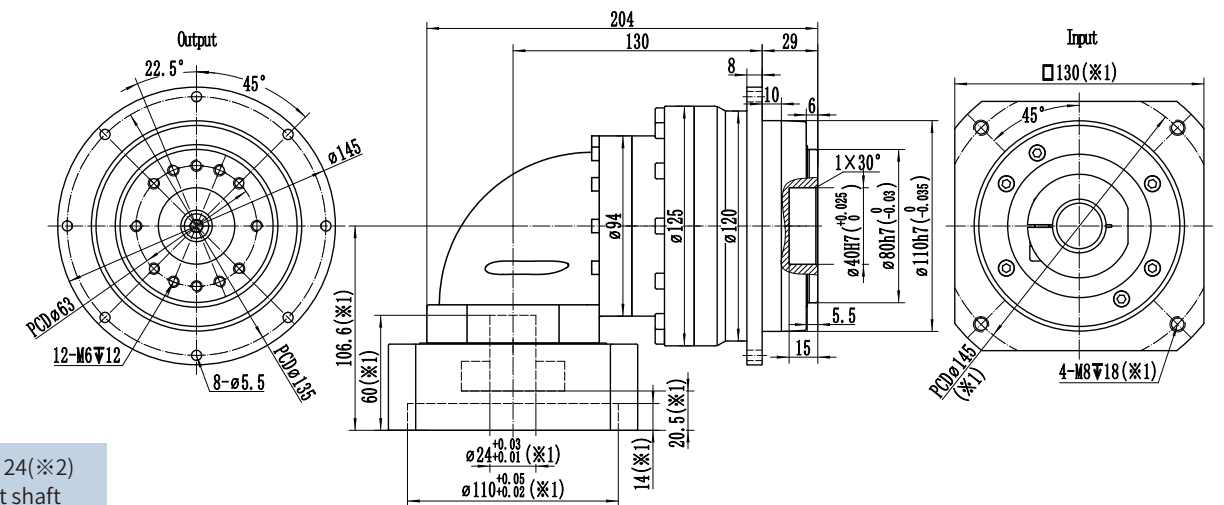
(b) Applied to the center point of the output shaft.

(c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

Motor shaft diameter (mm)



Max. 19(※2)
Input shaft
bore diameter



Max. 24(※2)
Input shaft
bore diameter

※1: Dimensions will vary with the motor size.

※2: If the motor shaft diameter is small, a bushing may be used, which has a mini. thickness of 1mm.

※ Please notify if a keyway is needed for the gearbox input shaft bore.

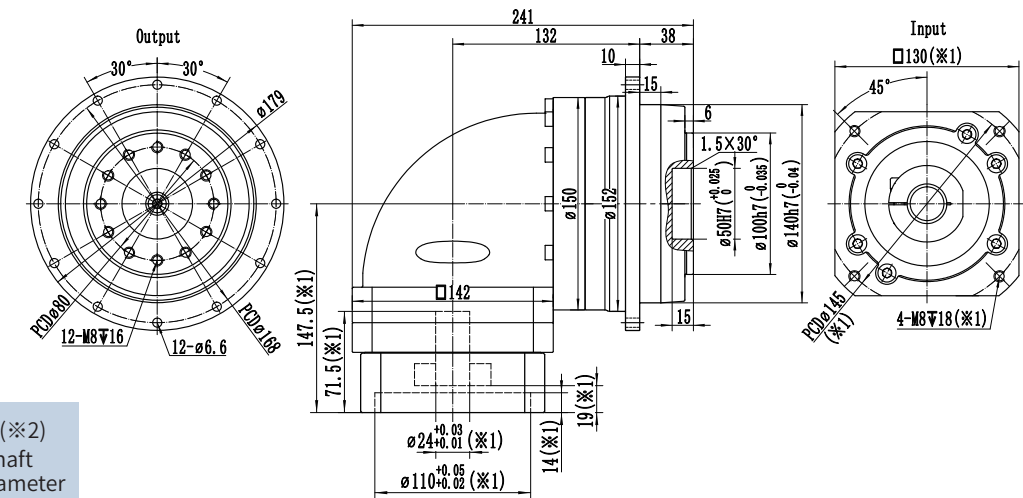
Specification	Unit	WTHR140-1-Stage										
		4	5	6	7	8	10	12	14	16	20	
Ratio		4	5	6	7	8	10	12	14	16	20	
Rated Output Torque T_{2N}	Nm	650	650	600	550	650	650	600	550	450	400	
Emergency stop Torque T_{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T_{2N}										
Rated Input Speed n_{1N} (a)	rpm	2300	2300	2300	2300	2800	2800	2800	2800	2800	2800	
Max Input Speed n_{1B}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	
No Load Running Torque (n1=3000rpm,20°C running)	Nm	4.4	3.6	3.6	3.6	3.1	3	3	3	2.9	2.9	
Max Backlash	arcmin	$P1 \leq 4 / P2 \leq 6$										
Torsional rigidity	Nm/arcmin	155										
Max Tilting Moment M_{2K}	Nm	1350										
Allowable Radial Force F_{2R} (b)	N	13000										
Allowable Axle Force F_{2A} (b)	N	11000										
Service Life	h	20000										
Efficient	%	≥ 95										
Applicable Ambient Temperature	°C	$-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$										
Weight	kg	23										
Protection class		IP65										
Lubrication (c)		Synthetic Lubricating Oil										
Noise	dB(A)	≤ 70										
Rotational inertia J_1	≤ 24	kg.cm ²	19	17.5	16.5	16.5	15.3	15	14.8	14.8	14.8	14.8
	≤ 28		20	18.5	17.5	17.5	16.3	16	15.8	15.8	15.8	15.8
	≤ 35		23.5	22	21	21	19.8	19.5	19.3	19.3	19.3	19.3
	≤ 42		36	35	34	34	32.8	32.5	32.3	32.3	32.3	32.3

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.

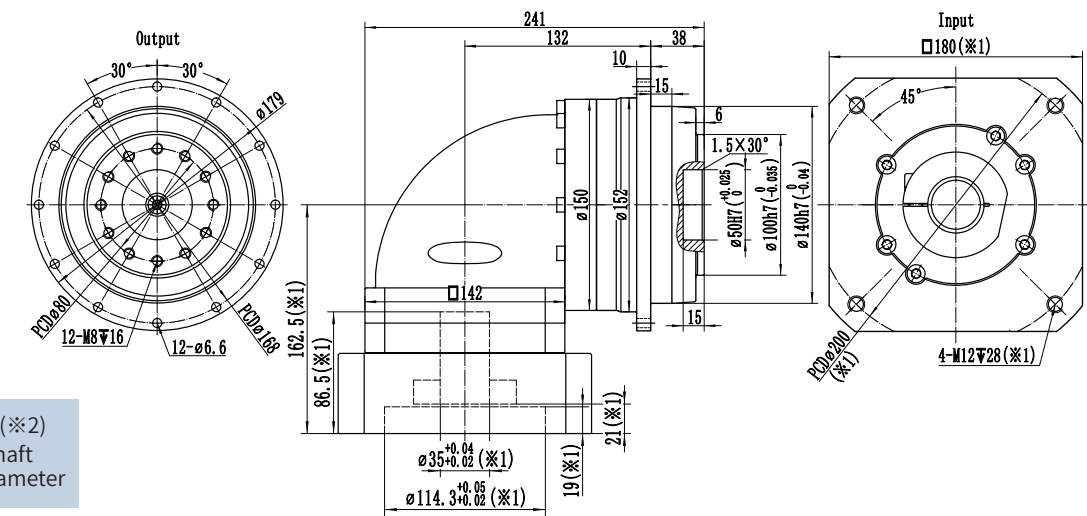
(b) Applied to the center point of the output shaft.

(c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

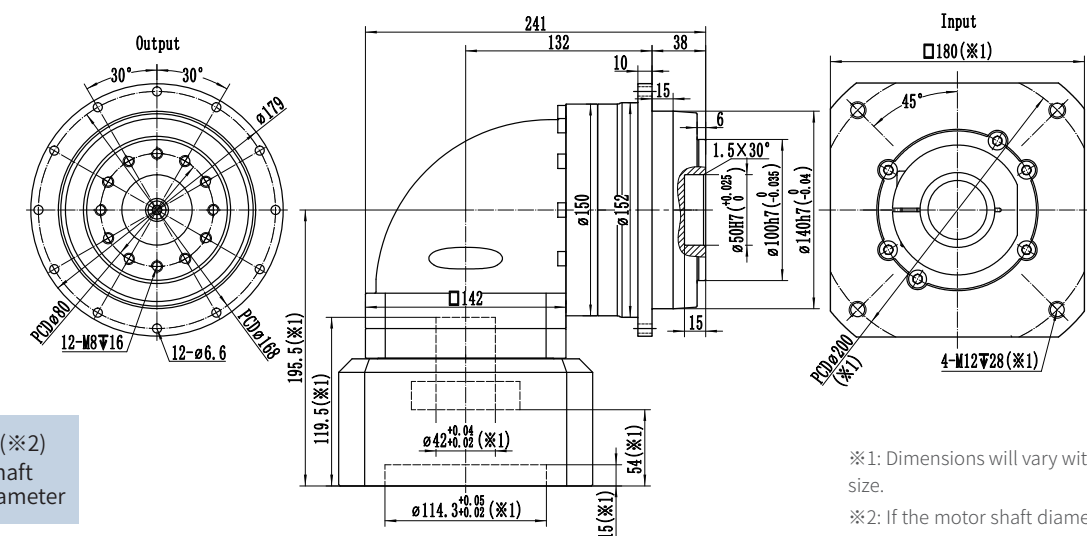
Motor shaft diameter (mm)



Max. 24(※2)
Input shaft
bore diameter



Max. 35(※2)
Input shaft
bore diameter



Max. 42(※2)
Input shaft
bore diameter

※1: Dimensions will vary with the motor size.

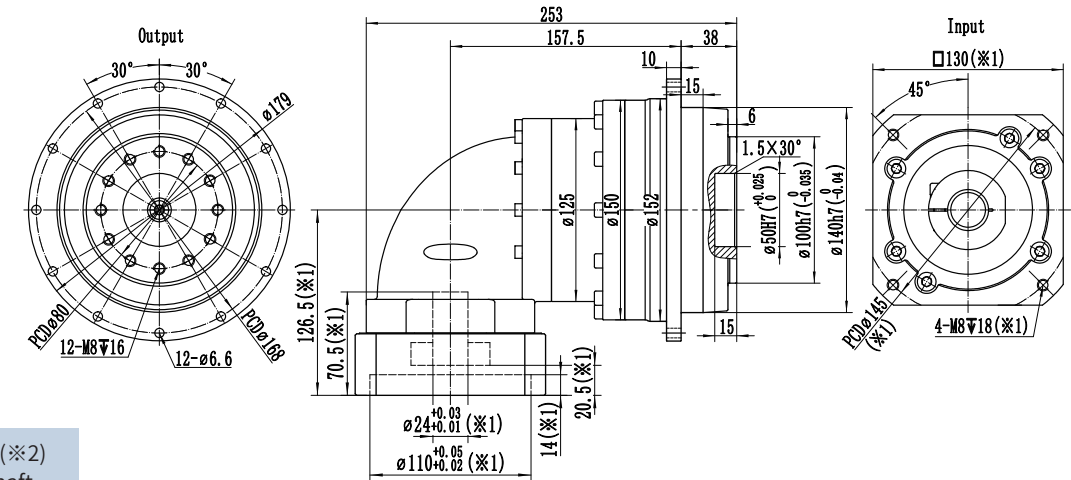
※2: If the motor shaft diameter is small, a bushing may be used, which has a mini thickness of 1mm.

※ Please notify if a keyway is needed for the gearbox input shaft bore.

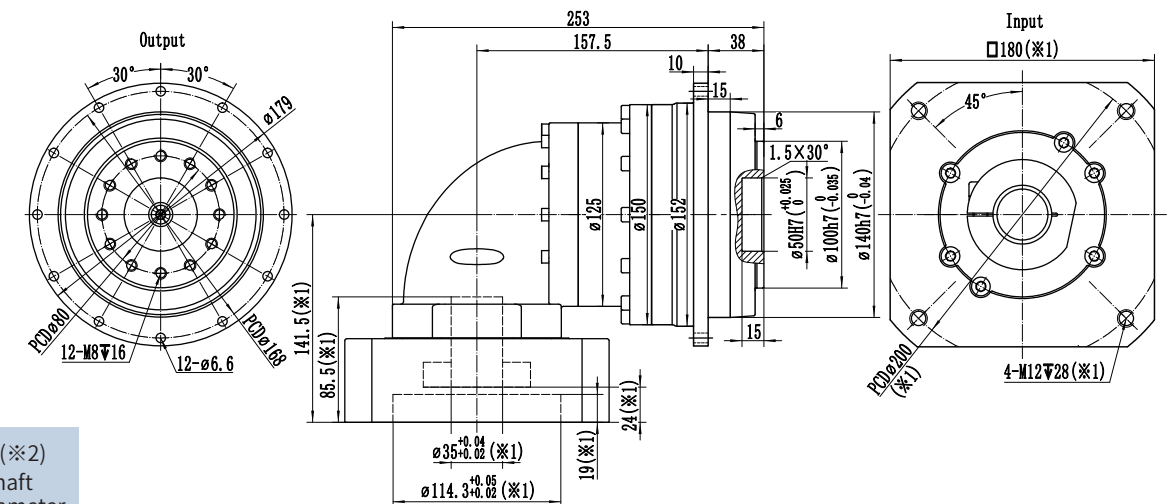
Specification	Unit	WTHR140-2-Stage												
Ratio		25	35	40	50	60	70	80	100	120	140	160	200	
Rated Output Torque T_{2N}	Nm	650	550	650	650	600	550	650	650	600	500	450	400	
Emergency stop Torque T_{2NOT}	Nm	3 times rated output torque(allow 1000 times)/3 Times T_{2N}												
Rated Input Speed n_{1N} (a)	rpm	2800	2800	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	
Max Input Speed n_{1B}	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	
No Load Running Torque (n1=3000rpm,20°C running)	Nm	2	2	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	
Max Backlash	arcmin	P1 \leq 7 / P2 \leq 9												
Torsional rigidity	Nm/arcmin	155												
Max Tilting Moment M_{2K}	Nm	1350												
Allowable Radial Force F_{2R} (b)	N	13000												
Allowable Axle Force F_{2A} (b)	N	11000												
Service Life	h	20000												
Efficient	%	\geq 92												
Applicable Ambient Temperature	°C	-20°C~+40°C												
Weight	kg	21.7												
Protection class		IP65												
Lubrication (c)		Synthetic Lubricating Oil												
Noise	dB(A)	\leq 68												
Rotational inertia J1	\leq 19	kg.cm ²	5.5	5.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	\leq 24		6	6	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	\leq 28		6.5	6.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	\leq 35		13	13	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3

(a) When the ambient temperature exceeds 20°C, it is recommended to reduce the rotational speed appropriately for use.
 (b) Applied to the center point of the output shaft.
 (c) If it is not suitable for continuous S1 operation mode and need change grease lubrication, Please contact us for further information.

Motor shaft diameter (mm)



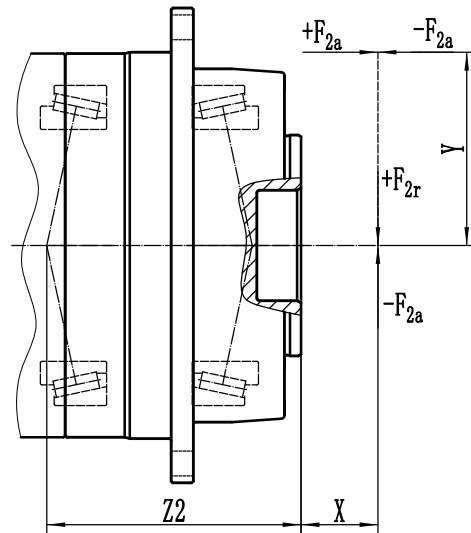
Max. 24(※2)
Input shaft
bore diameter



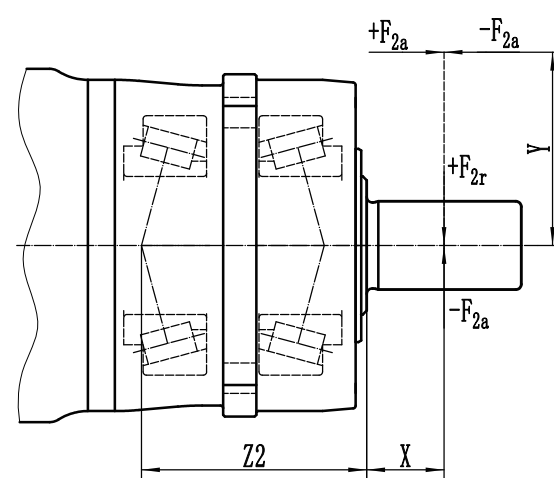
Max. 35(※2)
Input shaft
bore diameter

※1: Dimensions will vary with the motor size.
 ※2: If the motor shaft diameter is small, a bushing may be used, which has a mini thickness of 1mm.
 ※ Please notify if a keyway is needed for the gearbox input shaft bore.

WTH Series Bearing Load Diagram



WSH Series Bearing Load Diagram



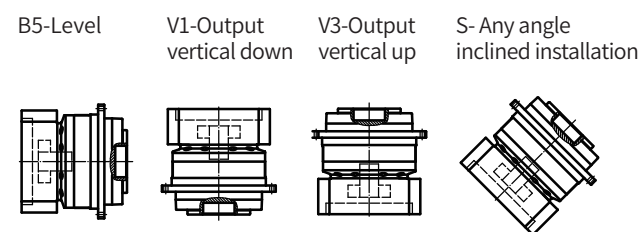
$$\text{Max Tilting Moment } M_{2K} = \frac{F_{2a} \cdot Y + F_{2r} \cdot (X+Z2)}{1000}$$

$M_{2K} : (\text{Nm})$
 $F_{2a}, F_{2r} : (\text{N})$
 $X, Y, Z2 : (\text{mm})$

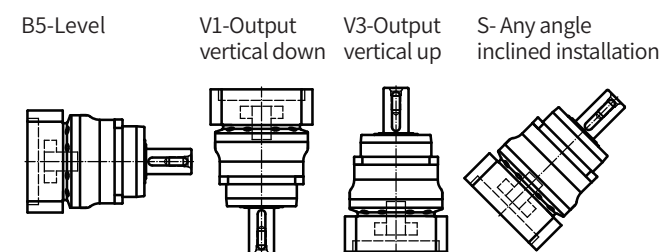
WSH & WSHR	60	75	100	140	180	210
Z2 (mm)	38.8	45.2	85.8	104.7	120.6	146.5
WTH & WTHR	64	90	110	140	200	
Z2 (mm)	46	63.3	69.4	86.2	129.9	

Note: Output speed 100rpm

WTH Installation Location



WSH Installation Location

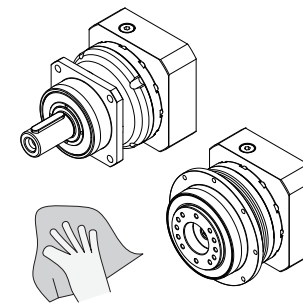


The installation position relates to the oil volume only, provided for reference only, not obligatory when ordering!

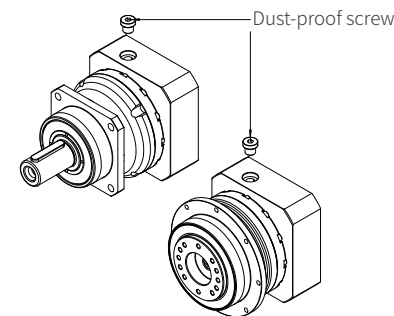
Please comply with the following requirements when installation

The dimension of the adapter on the planetary gearbox differs depending on the servo motor, so please make sure to install the servo motor specified at the time of purchase. The output shaft of the servo motor may be coated with rust inhibitor, etc.

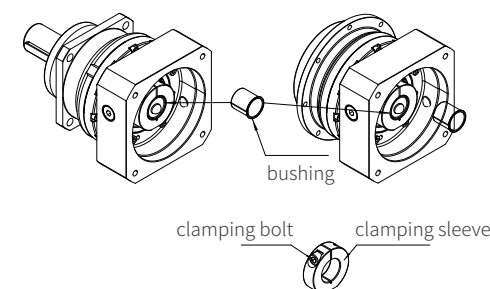
- 1 Wipe the rust inhibitor, oil, and other substances off the motor shaft mounting surface.



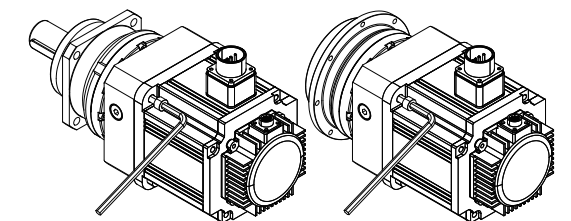
- 2 Remove the plug



- 3 Rotate the input shaft to align the head of the clamping bolt with the plug hole, and please confirm that the clamping bolt is in a relaxed state. Place the reducer vertically in a flat place, with the motor installation surface of the reducer facing upwards. (If there is a bushing, please install it according to the diagram)



- 4 Please slowly insert the motor shaft into the input shaft to avoid impact, and confirm that the motor flange surface is tightly attached to the reducer flange surface. Tighten the motor mounting bolts according to the specified tightening torque. (Refer to Table 3)



- 5 Use tools such as torque wrench to tighten the clamping bolt of the input shaft according to the specified tightening torque (Refer to Table 3)

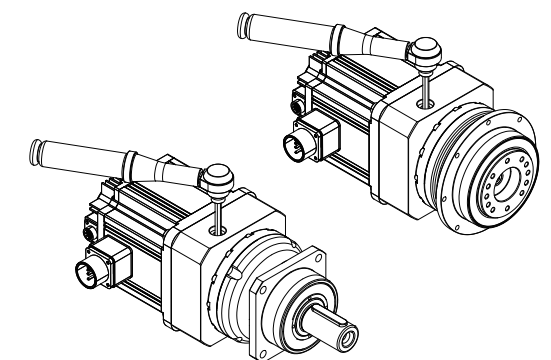
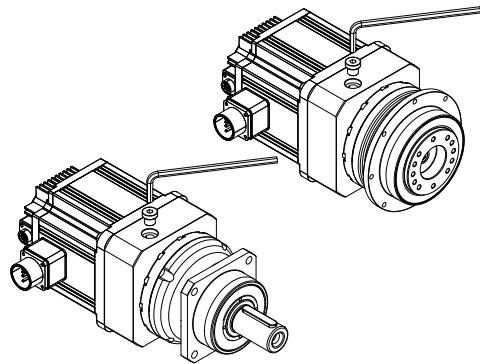


Table 3 Bolt tightening torque

Bolt size		M3	M4	M5	M6	M8	M10	M12	M16
Motor mounting bolts	N·m	1.0	2.5	5.1	8.7	21	42	72	134
	kgf·m	0.11	0.26	0.52	0.89	2.1	4.3	7.3	14
Clamping bolt	N·m	1.9	4.3	8.7	15	36	71	125	-
	kgf·m	0.18	0.44	0.89	1.5	3.7	7.2	13	-

6 Install the plug and complete the task



Installation and Setup

- Avoid using in places that come into direct contact with rainwater. (If you need to use it outdoors or in places that come into contact with dust or water droplets, please consult with Wanshsin in advance.)
- Please set it in an environment of 0-40 °C.
- Please install it on a sturdy and vibration free surface, and firmly secure it with bolts, etc.
- During installation, it should be ensured that it is easy to maintain and inspect.

Install to the output flange (flange type only)

- When installing device components, etc. onto the output flange, please use tools such as torque wrenches. Tighten according to the specified tightening torque.

Bolt size		M3	M4	M5	M6	M8	M10	M12	M16	M20
Clamping bolt	N·m	1.9	4.3	8.7	15	36	71	125	310	603
	kgf·m	0.18	0.44	0.89	1.5	3.7	7.2	13	32	62

※ Recommended bolt strength classification above grade 12.9

Output shaft side connection

- When installing a gear, pulley, sprocket, etc. on the output flange type, please use a flanged installation design, embed it into the output flange's protruding part. Please be careful not to apply excessive thrust load during installation.
- When installing a coupling, sprocket, etc. on the output shaft type, please be careful not to apply excessive thrust load during installation. Do not forcefully strike the output shaft during embedding, otherwise it cause damage to the bearings and the interior of the gearbox.
- Pls. be noted that excessive clearance between shafts and keys in coupling and other parts can lead to sintering.
- Please accurately center when connecting.

Precautions before starting the machine

- It can be used directly after arrival as lubricating oil has been added according to the specified amount.
- When running for the first time, please confirm the steering of the output shaft first, and then gradually increase the load.

Precautions during operation

- Please be careful not to overload.
- The speed of the output shaft must not exceed the specified speed.
- When the following situations occur, please stop the machine for inspection.
 1. The temperature suddenly began to rise.
 2. Suddenly, there was a loud noise.
 3. The speed suddenly began to become unstable.
- The possible reasons are as follows, please handle them promptly.
 1. Is it in an overload state?
 2. Are there any damages to the bearings, gears, and transmission surfaces?
 3. Are there any abnormalities in the machine connection conditions?

Lubricant

- The lubricating oil cannot be replaced

Daily Inspection

- Is there any abnormal increase in the temperature of the gearbox casing during operation? (Maximum not greater than 90 °C)
- Are there any abnormal noises in bearings, gears, and other parts?
- Is there any abnormal vibration in the gearbox? (When such abnormalities occur, please stop the machine immediately and contact our company.)
- Is there any lubricating oil leakage?(When there is a grease leak, please contact with Wanshsin)

Regular Inspection

- Is there an overload state and abnormal rotation?
- Is there any looseness in the installation bolts of the pulley, sprocket, and reducer?
- Inspection and maintenance of main components. (When abnormal phenomena occur, please stop the machine immediately, and contact with Wanshsin)