VRSF series

VRSF planetary gearbox in line

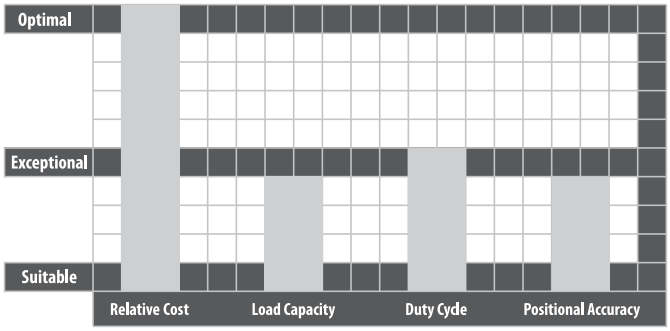
Lightweight and compact aluminum body

Description

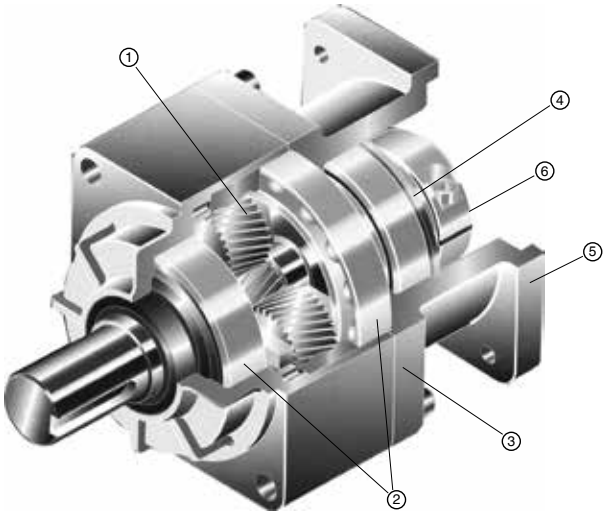
The intelligent, value engineered selection for lower duty cycle servo and stepper motor applications. The VRSF utilizes a lightweight aluminum frame, making it optimal for traveling axes and end of arm tooling systems. Helical cut gearing allows the VRSF to operate much quieter than the industry standard economy products which rely on spur gearing. The VRSF comes standard with 15 arc-minutes of backlash, but can also be configured to higher accuracy levels.

The VRSF is available in four frame sizes, putting out a peak output torque of 274Nm across 9 reduction ratios. The VRSF is the ideal choice for OEMs producing high volume machines where cost is critical, accuracy relatively important and duty cycle not overly extreme. The VRSF's aluminum body has made it a popular choice in medical, food packaging and other harsh environments. The VRSF can be fitted with a NEMA output flange, for standardized connection to customer equipment.

- Quiet operation: Helical cut gears contribute to reduced vibration and noise
- Wide range of mounting adapters offer a simple, precise attachment to any motor
- Lightweight aluminum body reduces excess weight
- Aluminum body, combined with other wash-down features can be used in harsh environments
- Maintenance-free solution that is lubricated for life. High performance grease allows flexible mounting in any orientation



Features



1 Carburized helical gears with proprietary secondary finishing process for higher accuracy and smooth, quiet operation

2 One piece output shaft and planet carrier with two bearings straddling the planet gears. Higher stiffness and safety factor, with guaranteed alignment of gearing

3 Aluminum body for a light weight solution, capable of withstanding corrosive environments

4 Input seal allows for IP65 ingress protection

5 Optimized mounting system with active centering on motor pilot diameter guarantees alignment of motor. Motor can be installed in any orientation

6 True concentric clamping connection, optimized for your motor. Reduced inertia for dynamic performance and balanced for high speed operation

Part Number **VRSF -LB -15 -C -19HB16**

Model name - VRSF serie

Backlash: No code - standard (15 arc-min)
LB: low - (5 arc-min)

Ratio: 1 stage: 3, 5, S9 - 2 stage: 15, 20, 25, 35, 45, 81

Size: B, C, D, E

Motor mounting code (*)

*1) Code varies depending on the motor. Use the selection tool link below to configure the code

VRSF B-Frame 1-Stage and 2-Stage Specifications

Frame Size			B						
Stage			1-Stage			2-Stage			
Ratio	Units	Note	3	5	9	15	20	25	35
Nominal Output Torque	[Nm]	*1	3.43	2.84	2.35	4.02	5.00	6.27	3.84
Maximum Acceleration Torque	[Nm]	*2	10.3	8.53	7.25	12.2	15.0	19.0	11.5
Emergency Stop Torque	[Nm]	--	--	--	--	--	--	--	--
Nominal Input Speed	[rpm]	*3	3000			3000			
Maximum Input Speed	[rpm]	*4	5000			5000			
No Load Running Torque	[Nm]	*5	0.119			0.048			
Permitted Radial Load	[N]	*6	392	490	588	784	804	882	882
Permitted Axial Load	[N]	*7	196	245	294	392	402	441	441
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.081	0.059	0.052	0.057	0.056	0.056	0.052
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.150	0.130	0.120	0.130	0.130	0.130	0.120
Efficiency	[%]	*8	90			85			
Torsional Rigidity	[Nm/arc-min]	*9	0.8			0.8			
Backlash (Standard)	[arc-min]	--	≤ 15			≤ 15			
Backlash (Low)	[arc-min]	--	≤ 10			≤ 10			
Backlash (Precision)	[arc-min]	--	≤ 3			≤ 3			
Noise Level	[dB]	*10	≤ 72			≤ 65			
Protection Class	--	*11	IP65			IP65			
Ambient Temperature	[°C]	--	0-40			0-40			
Permitted Housing Temperature	[°C]	--	90			90			
Weight (≤ Ø 8)	[kg]	*12	0.58			0.75			
Weight (≤ Ø 14)	[kg]	*12	0.7			0.86			

*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation
*3) The average input speed
*4) The maximum intermittent input speed
*5) Torque at no load applied to the input shaft at nominal input speed
*6) At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)
*7) At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)
*8) The efficiency at the nominal output torque rating
*9) This does not include lost motion
*10) Contact SIT S.p.A. for the testing conditions and environment
*11) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*12) The weight may vary slightly between models

VRSF C-Frame 1-Stage and 2-Stage Specifications

Frame Size	C										
Stage	1-Stage					2-Stage					
Ratio	Units	Note	3	5	9	15	20	25	35	45	81
Nominal Output Torque	[Nm]	*1	6.86	11.5	9.7	16.2	21.1	26.4	15.5	9.5	9.7
Maximum Acceleration Torque	[Nm]	*2	20.6	34.3	29.2	48.6	63.3	79.2	46.6	28.6	29.2
Emergency Stop Torque	[Nm]	--	--	--	--	--	--	--	--	--	--
Nominal Input Speed	[rpm]	*3	3000			3000					
Maximum Input Speed	[rpm]	*4	5000			5000					
No Load Running Torque	[Nm]	*5	0.29			0.19					
Permitted Radial Load	[N]	*6	784	980	1180	1470	1570	1670	1670	1670	1670
Permitted Axial Load	[N]	*7	392	490	588	735	785	833	833	833	833
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	--	--	0.077	0.070	0.062	0.055	0.053	0.052
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.630	0.380	0.300	0.150	0.140	0.130	0.130	0.120	0.120
--	--	--	1.100	0.880	0.800	--	--	--	--	--	--
Efficiency	[%]	*8	90			85					
Torsional Rigidity	[Nm/arc-min]	*9	3			3					
Backlash (Standard)	[arc-min]	--	≤ 15			≤ 15					
Backlash (Low)	[arc-min]	--	≤ 5			≤ 5					
Backlash (Precision)	[arc-min]	--	≤ 3			≤ 3					
Noise Level	[dB]	*10	≤ 72			≤ 65					
Protection Class	--	*11	IP 65			IP65					
Ambient Temperature	[°C]	--	0-40			0-40					
Permitted Housing Temperature	[°C]	--	90			90					
Weight (≤ Ø 8)	[kg]	*12	--			1.8					
Weight (≤ Ø 14)	[kg]	*12	1.8			1.9					
Weight (≤Ø 19)	--	*12	2.2			--					

*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation
*3) The average input speed
*4) The maximum intermittent input speed
*5) Torque at no load applied to the input shaft at nominal input speed
*6) At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)
*7) At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)
*8) The efficiency at the nominal output torque rating
*9) This does not include lost motion
*10) Contact SIT S.p.A. for the testing conditions and environment
*11) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*12) The weight may vary slightly between models

VRSF D-Frame 1-Stage and 2-Stage Specifications

Frame Size			D								
Stage			1-Stage			2-Stage					
Ratio	Units	Note	3	5	9	15	20	25	35	45	81
Nominal Output Torque	[Nm]	*1	18.3	23.5	18.2	30.4	40.6	50.7	37	28.3	17.8
Maximum Acceleration Torque	[Nm]	*2	54.9	70.6	54.7	91.2	122	152	111	85.2	53.5
Emergency Stop Torque	[Nm]	--	--	--	--	--	--	--	--	--	--
Nominal Input Speed	[rpm]	*3	3000			3000					
Maximum Input Speed	[rpm]	*4	5000			5000					
No Load Running Torque	[Nm]	*5	0.51			0.26					
Permitted Radial Load	[N]	*6	882	1080	1470	1760	1910	2060	2060	2060	2060
Permitted Axial Load	[N]	*7	441	539	735	882	955	1030	1030	1030	1030
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--	0.10
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	1.30	0.59	0.38	0.37	0.35	0.34	0.30	0.29	0.29
Moment of Inertia (≤Ø 19)	[kgcm^2]	--	1.80	1.10	0.90	0.86	0.84	0.83	0.79	0.78	0.77
Moment of Inertia (≤Ø 28)	[kgcm^2]	--	3.60	2.90	2.70	2.70	2.70	2.70	--	--	--
Efficiency	[%]	*8	90			85					
Torsional Rigidity	[Nm/arc-min]	*9	6			6					
Backlash (Standard)	[arc-min]	--	≤ 15			≤ 15					
Backlash (Low)	[arc-min]	--	≤ 5			≤ 5					
Backlash (Precision)	[arc-min]	--	≤ 3			≤ 3					
Noise Level	[dB]	*10	≤ 72			≤ 65					
Protection Class	--	*11	IP65			IP65					
Ambient Temperature	[°C]	--	0-40			0-40					
Permitted Housing Temperature	[°C]	--	90			90					
Weight (≤ Ø 8)	[kg]	*12	--			2.8					
Weight (≤ Ø 14)	[kg]	*12	2.8			3.3					
Weight (≤Ø 19)	[kg]	*12	3.2			3.7					
Weight (≤Ø 28)	[kg]	*12	4.0			4.8					

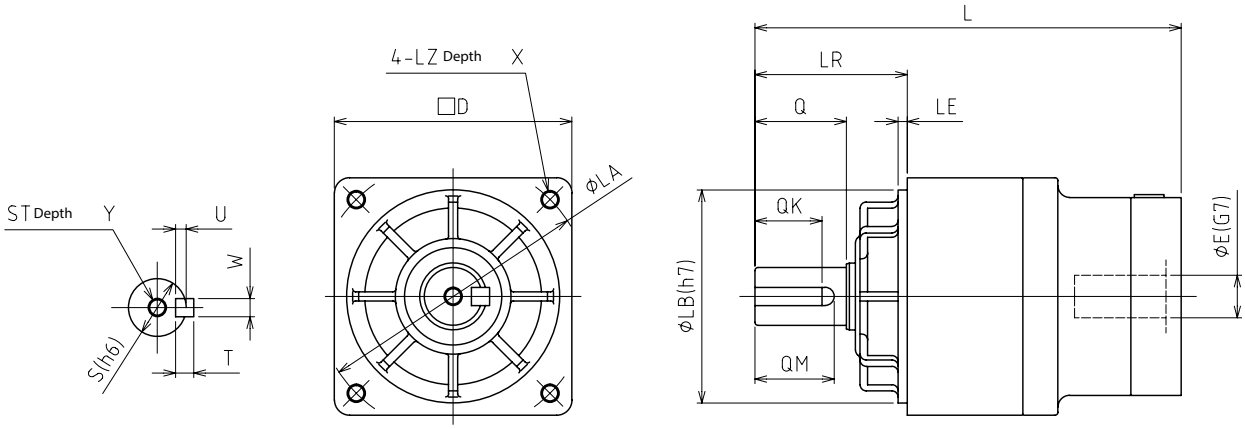
*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation
*3) The average input speed
*4) The maximum intermittent input speed
*5) Torque at no load applied to the input shaft at nominal input speed
*6) At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)
*7) At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)
*8) The efficiency at the nominal output torque rating
*9) This does not include lost motion
*10) Contact SIT S.p.A. for the testing conditions and environment
*11) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*12) The weight may vary slightly between models

VRSF E-Frame 1-Stage and 2-Stage Specifications

Frame Size			E								
Stage			1-Stage			2-Stage					
Ratio	Units	Note	3	5	9	15	20	25	35	45	81
Nominal Output Torque	[Nm]	*1	44.1	56.8	73.5	91.4	78.4	65.4	71	91.3	43.3
Maximum Acceleration Torque	[Nm]	*2	132	171	221	274	235	196	213	274	130
Emergency Stop Torque	[Nm]	--	--	--	--	--	--	--	--	--	--
Nominal Input Speed	[rpm]	*3	3000			3000					
Maximum Input Speed	[rpm]	*4	5000			5000					
No Load Running Torque	[Nm]	*5	1.12			0.62					
Permitted Radial Load	[N]	*6	1370	1670	1960	2350	2500	2650	3430	3520	3530
Permitted Axial Load	[N]	*7	686	833	980	1180	1250	1320	1715	1760	1765
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	0.61	0.63	0.56	0.53	0.40	0.35	0.34
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	4.40	1.90	1.20	1.10	1.10	1.00	0.90	0.85	0.84
Moment of Inertia (≤Ø 19)	[kgcm^2]	--	6.20	3.70	2.90	3.30	3.20	3.20	2.80	2.70	2.70
Moment of Inertia (≤Ø 28)	[kgcm^2]	--	14.00	11.00	11.00	11.00	11.00	11.00	--	--	--
Efficiency	[%]	*8	90			85					
Torsional Rigidity	[Nm/arc-min]	*9	20			20					
Backlash (Standard)	[arc-min]	--	≤ 15			≤ 15					
Backlash (Low)	[arc-min]	--	≤ 5			≤ 5					
Backlash (Precision)	[arc-min]	--	≤ 3			≤ 3					
Noise Level	[dB]	*10	≤ 75			≤ 75					
Protection Class	--	*11	IP65			IP65					
Ambient Temperature	[°C]	--	0-40			0-40					
Permitted Housing Temperature	[°C]	--	90			90					
Weight (≤ Ø 8)	[kg]	*12	6.1			7.1					
Weight (≤ Ø 14)	[kg]	*12	6.5			7.5					
Weight (≤Ø 19)	[kg]	*12	7.4			9.3					
Weight (≤Ø 28)	[kg]	*12	9.8			11.7					

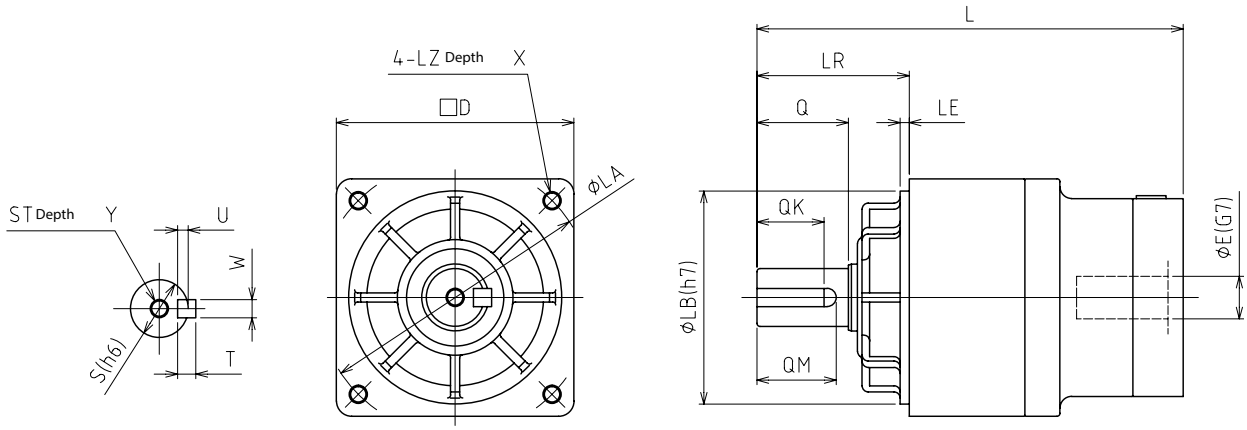
*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation
*3) The average input speed
*4) The maximum intermittent input speed
*5) Torque at no load applied to the input shaft at nominal input speed
*6) At this load and nominal input speed, service life will be 20,000 hours. (The radial load applied to the output side shaft center)
*7) At this load and nominal input speed, service life will be 20,000 hours. (The axial load applied to the output side bearing)
*8) The efficiency at the nominal output torque rating
*9) This does not include lost motion
*10) Contact SIT S.p.A. for the testing conditions and environment
*11) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*12) The weight may vary slightly between models

VRSF B-Frame 1-Stage and 2-Stage Dimensions



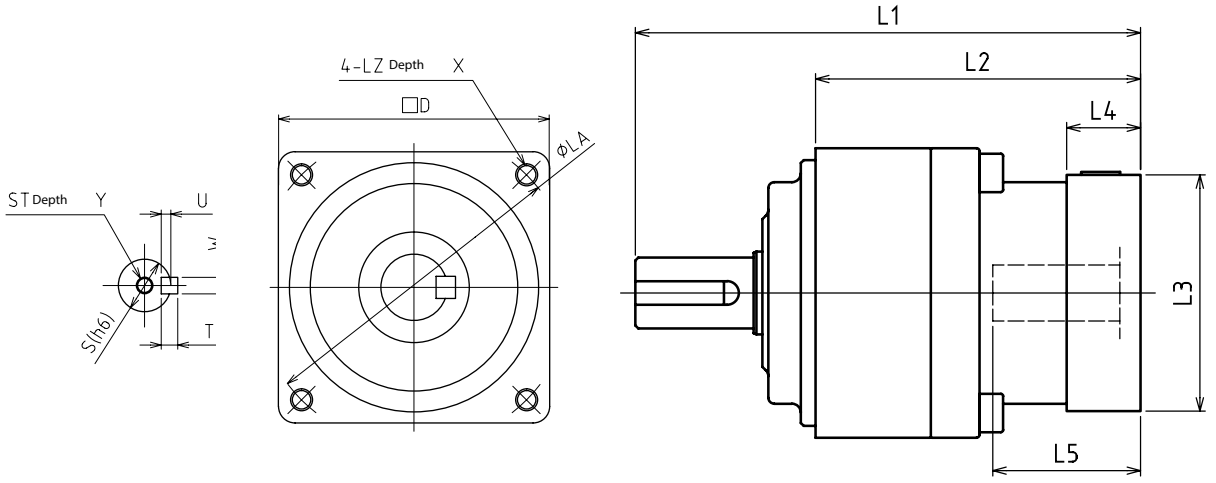
Frame Size	Ratio	Input Bore Dia. E	Dimensions															
			L	LR	S	ST	Y	Q	QM	QK	W×U	T	D	LB	LE	LA	LZ	X
B	1-Stage	≦φ 8	104.5	32	12	M5	10	20	18	16	4×2.5	4	52	50	3	60	M5	12
		≦φ 14	107.5															
	2-Stage	≦φ 8	115.5															
		≦φ 14	118.5															

VRSF C-Frame 1-Stage and 2-Stage Dimensions



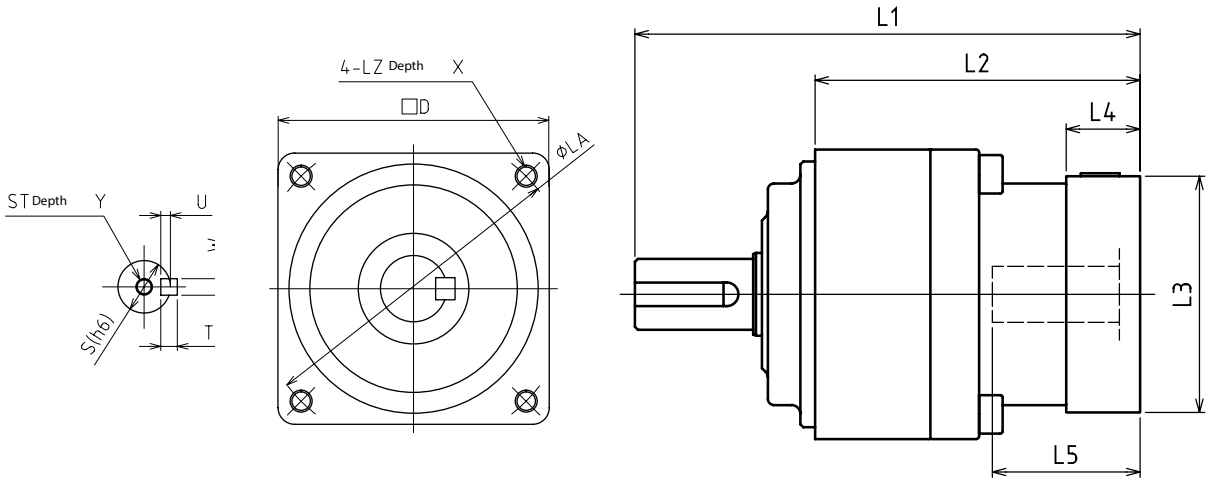
Frame Size	Ratio	Input Bore Dia. E	Dimensions															
			L	LR	S	ST	Y	Q	QM	QK	W×U	T	D	LB	LE	LA	LZ	X
C	1-Stage	≦φ14	140	50	19	M6	12	30	26	22	6×3.5	6	78	70	3	90	M6	20
		≦φ19	156															
	2-Stage	≦φ 8	147.5															
		≦φ14	150.5															

VRSF D-Frame 1-Stage and 2-Stage Dimensions



Frame Size	Ratio	Input Bore Dia. E	Dimensions															
			L	LR	S	ST	Y	Q	QM	QK	W×U	T	D	LB	LE	LA	LZ	X
D	1-Stage	≦φ14	155	61	24	M8	16	40	35	30	8×4	7	98	90	5	115	M8	20
		≦φ19	171															
		≦φ28	186															
	2-Stage	≦φ8	163															
		≦φ14	169															
		≦φ19	184															
		≦φ28	200.5															

VRSF E-Frame 1-Stage and 2-Stage Dimensions



Frame Size	Ratio	Input Bore Dia. E	Dimensions															
			L	LR	S	ST	Y	Q	QM	QK	W×U	T	D	LB	LE	LA	LZ	X
E	1-Stage	≦φ14	189	75	32	M10	20	55	52	45	10×5	8	125	110	5	135	M10	20
		≦φ19	198.5															
		≦φ28	224															
		≦φ38	240															
	2-Stage	≦φ14	210															
		≦φ19	225															
		≦φ28	246.5															
		≦φ38	261.5															

VRL series

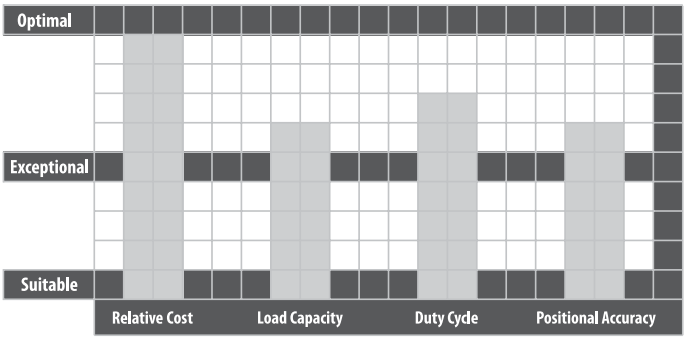
VRL planetary gearbox in line

Reliability, complete product range

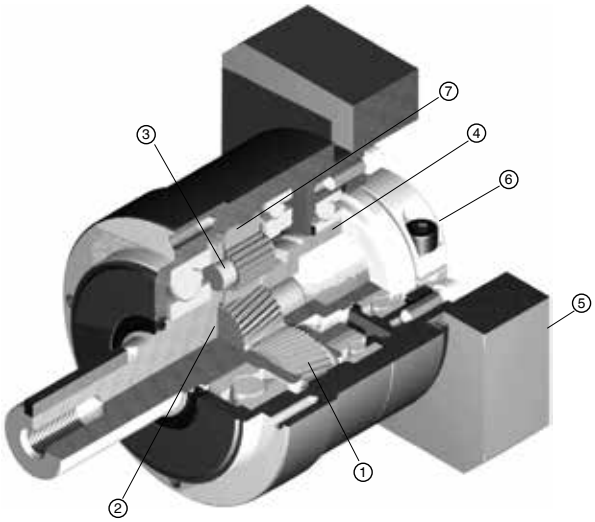
Description

The VRL series is the all-rounder in the planetary gearbox marketplace. With helical gearing, robust internal construction, smooth operation and high torque density, this product is truly best-in-class. 5 arc-min backlash allows the VRL to be applied to a wide range of applications where accuracy and dynamics are in play, but cost is of concern.
The VRL is an excellent choice for servo applications in packaging, handling and automation systems. A variety of standard wash down and food grade options are available, making it an attractive option for the toughest environments. We offer the broadest selection of frame sizes and ratios, giving our customers more flexibility than ever before. Industry standard mounting dimensions allow the VRL to be implemented in legacy machine designs, saving our customers valuable time.

- The all-rounder for mid to high end motion control applications
- The widest range of frame sizes and ratios available in the market
- Best-In-class backlash (≤5 arc-min)
- Broad range of mounting adapters offer a simple, precise attachment to any motor
- Maintenance-free solution that is lubricated for life. High performance grease allows flexible mounting in any orientation
- Industry standard mounting dimensions



Features



1 Carburized helical gears with proprietary secondary finishing process for higher accuracy and smooth, quiet operation. 40% higher tooth surface area than the industry standard

2 One piece output shaft and planet carrier with two bearings straddling the planet gears. Higher stiffness, torque capacity and safety factor, with guaranteed alignment of gearing

3 Uncaged needle roller bearings provide excellent torque density and torsional rigidity. 43% larger bearing surface area compared to the rest of the industry

4 Unique labyrinth input seal design greatly reduces heat and increases system efficiency. IP65 protection is available for wash down applications

5 Optimized mounting system with active centering on motor pilot diameter guarantees alignment of motor. Motor can be installed in any orientation

6 True concentric motor shaft clamping connection, optimized for your specific motor. Reduced inertia for dynamic performance and balanced for high speed operation

7 Ring gear machined directly into the housing, not welded or pressed in. Provides greater concentricity and elimination of speed fluctuation

Part Number VRL -090 C -7 -K 5 -19HB16

- VRL: Model name - VRL series
- -090: Size: 050, 070, 090, 120, 155, 205, 235
- C: Version. **B** design version in exhaustion. Available on demand.
- -7: Ratio: 1 stage: 3, 4, 5, 6, 7, 8, 9, 10; 2 stage: 15, 16, 20, 25, 28, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
- -K: Output mounting style: K: Keyed Shaft / S: Smooth shaft
- 5: Backlash: 5 arc-min
- -19HB16: Motor mounting code (*)

*1) Code varies depending on the motor. Use the selection tool link below to configure the code

VRL 050 1-Stage Specifications

Frame Size	050									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	6	9	10	10	10	10	10	10
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	17	25	25	25	25	25	17	17
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8000	8000	8000	8000	8000	8000	8000	8000
No Load Running Torque	[Nm]	*7	0.03							
Maximum Radial Load	[N]	*8	710							
Maximum Axial Load	[N]	*9	640							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.053	0.041	0.036	0.034	0.032	0.031	0.031	0.030
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	2							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	0.7							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

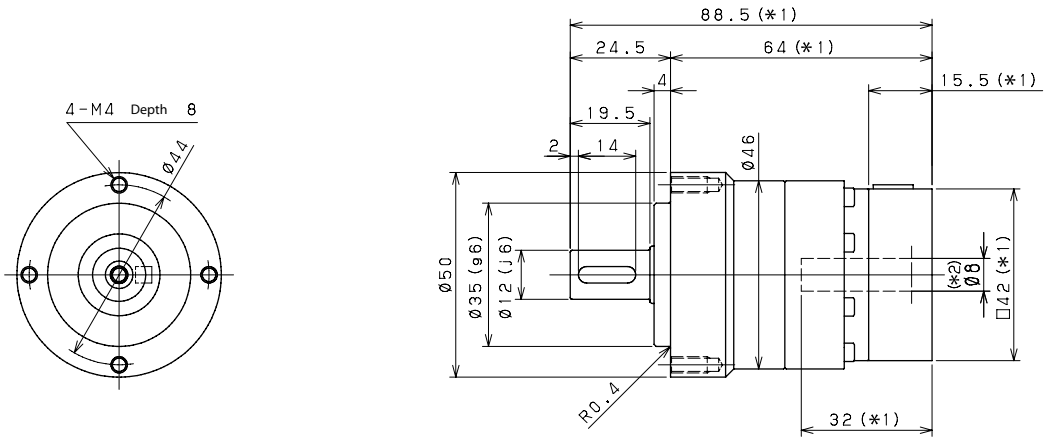
VRL 050 2-Stage Specifications

Frame Size	050									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	9	14	14	15	15	11	15	15
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	14	21	21
Maximum Torque	[Nm]	*3	17	21	21	21	21	14	21	21
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	30	35	35
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01							
Maximum Radial Load	[N]	*8	710							
Maximum Axial Load	[N]	*9	640							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.035	0.038	0.034	0.034	0.038	0.030	0.034	0.030
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	2							
Maximum Torsional Backlash	[arc-min]	--	≤ 7							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	0.8							

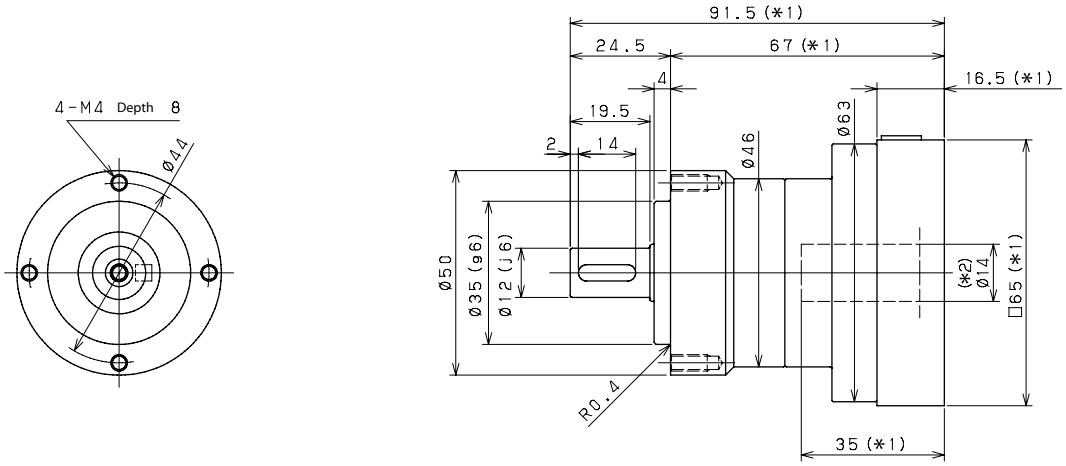
Frame Size	050								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	11	15	15	15	15	11	11
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	14	21	21	21	21	14	14
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01						
Maximum Radial Load	[N]	*8	710						
Maximum Axial Load	[N]	*9	640						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.034	0.030	0.030	0.030	0.030	0.030	0.030
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	2						
Maximum Torsional Backlash	[arc-min]	--	≤ 7						
Noise Level	dB [A]	*12	≤ 61						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	0.8						

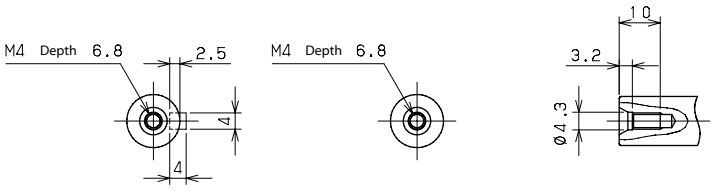
VRL 050 1-Stage Dimensions

Input bore size ≦φ8 mm



Input bore size ≦φ14 mm





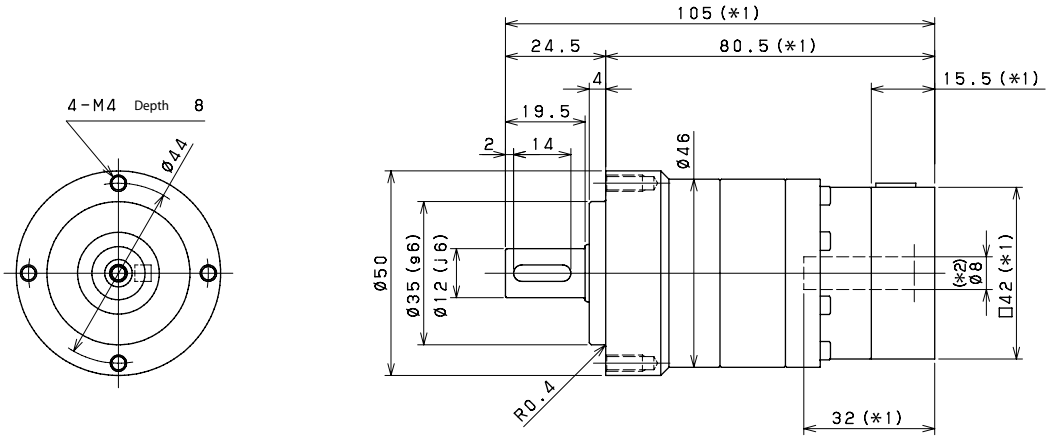
Keyed shaft Smooth shaft

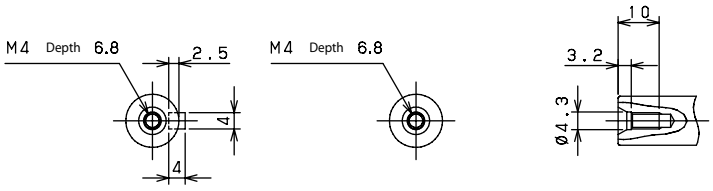
*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 050 2-Stage Dimensions

Input bore size ≦φ8 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 070 1-Stage Specifications

Frame Size	070									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	19	27	28	28	28	28	28	28
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	55	79	79	79	79	76	55	55
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	3300	3300	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.08							
Maximum Radial Load	[N]	*8	1200							
Maximum Axial Load	[N]	*9	1100							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.14	0.095	0.077	0.068	0.062	0.059	0.057	0.056
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.25	0.21	0.19	0.18	0.17	0.17	0.17	0.17
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.53	0.48	0.46	0.46	0.45	0.45	0.44	0.44
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	3							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.5							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

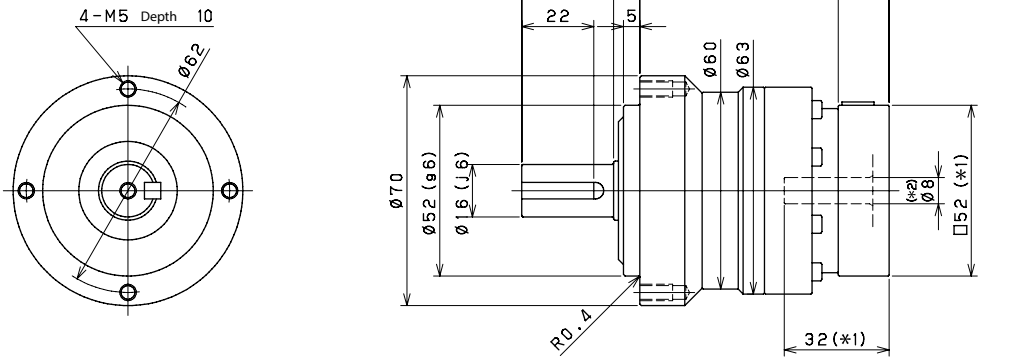
VRL 070 2-Stage Specifications

Frame Size	070									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	25	32	32	43	45	32	45	45
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	66	66
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	66	66
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	100	100
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04							
Maximum Radial Load	[N]	*8	1200							
Maximum Axial Load	[N]	*9	1100							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.064	0.070	0.062	0.061	0.068	0.051	0.061	0.051
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.18	0.18	0.17	0.17	0.18	0.16	0.17	0.16
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	0.45	0.46	0.45	0.45	0.46	0.44	0.45	0.44
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	3							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.7							

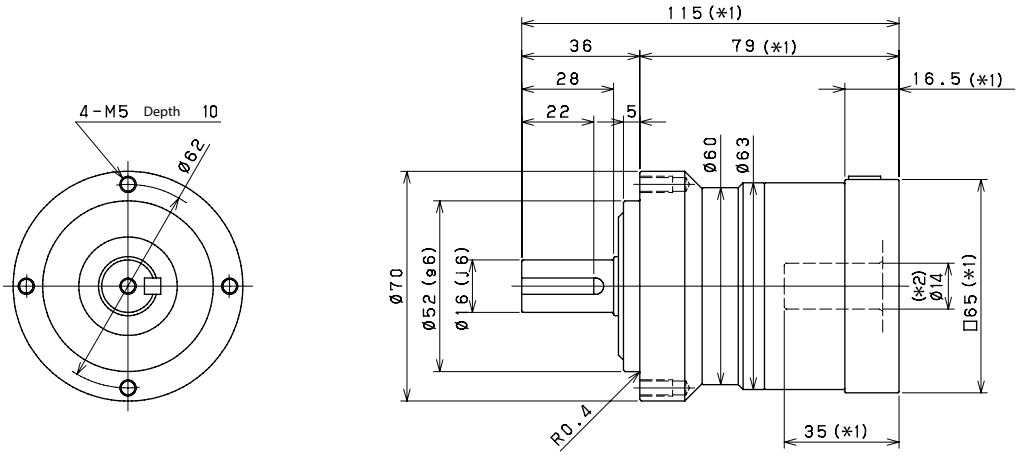
Frame Size	070								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	32	45	45	45	45	32	32
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	46
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	4000	4800	4800	5500	5500	5500	5500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04						
Maximum Radial Load	[N]	*8	1200						
Maximum Axial Load	[N]	*9	1100						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.061	0.051	0.051	0.051	0.051	0.051	0.051
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.17	0.16	0.16	0.16	0.16	0.16	0.16
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	0.45	0.44	0.44	0.44	0.44	0.44	0.44
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	3						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 66						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	1.7						

VRL 070 1-Stage Dimensions

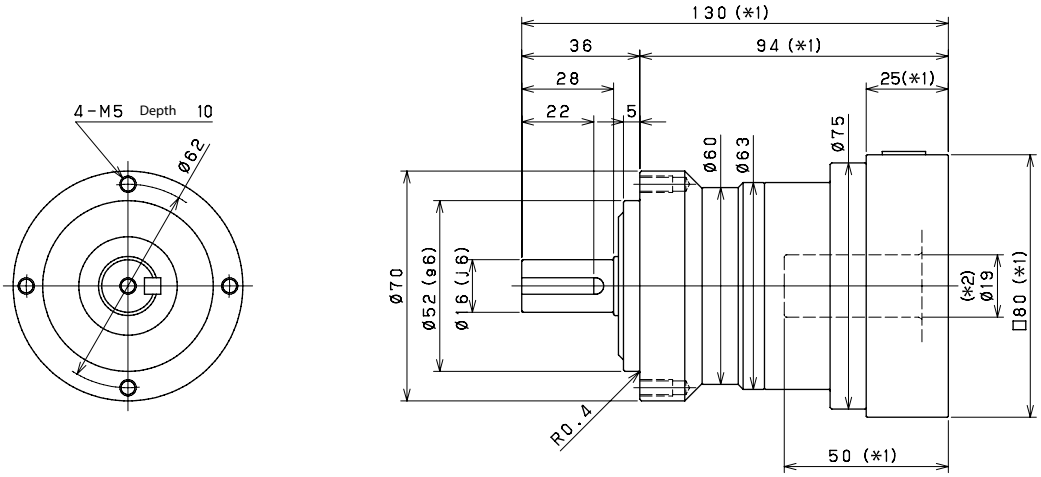
Input bore size ≦φ8 mm

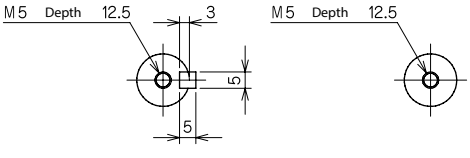


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





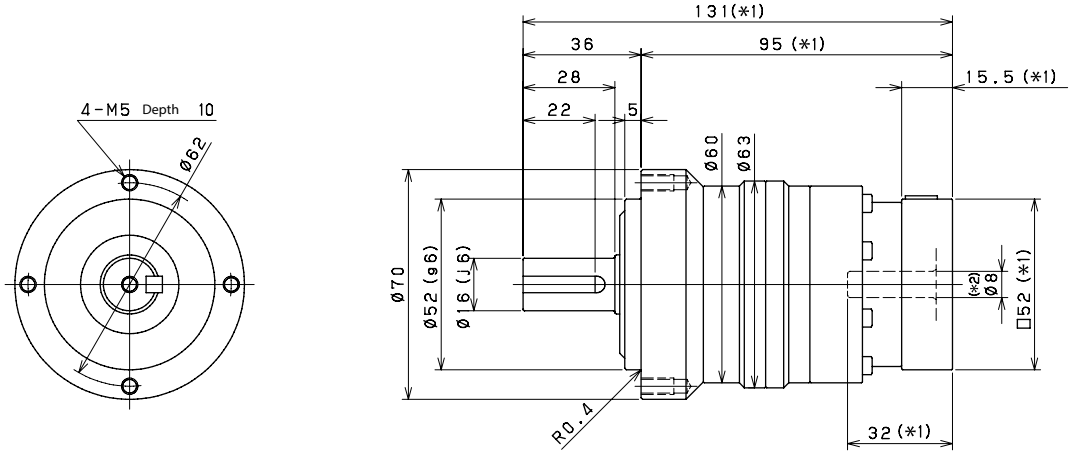
Keyed shaft Smooth shaft

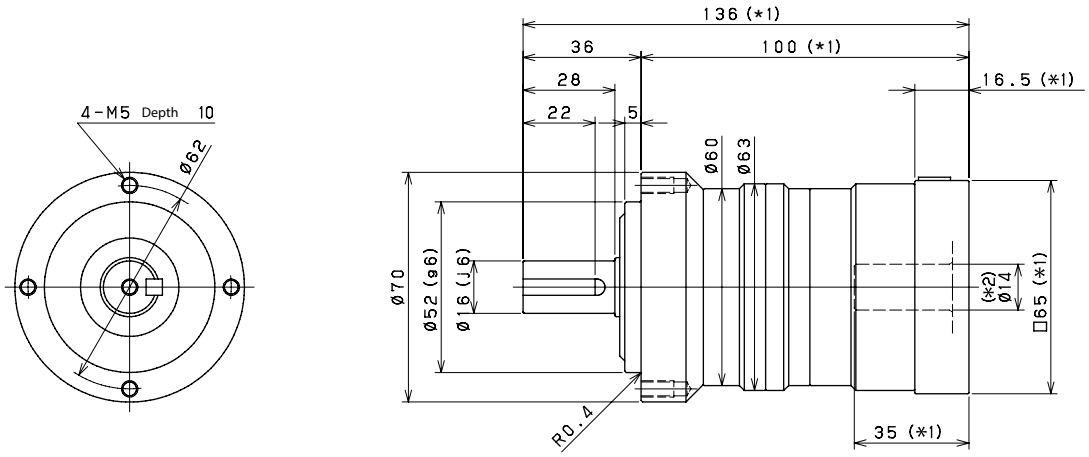
*1) Length will vary depending on motor

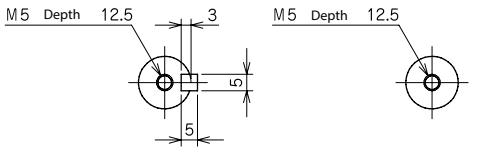
*2) Bushing will be inserted to adapt to motor shaft

VRL 070 2-Stage Dimensions

Input bore size ≦φ8 mm







Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 090 1-Stage Specifications

Frame Size	090									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	53	77	84	84	84	84	84	84
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	135	200	200	195	195	190	145	145
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.35							
Maximum Radial Load	[N]	*8	2400							
Maximum Axial Load	[N]	*9	2200							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.72	0.50	0.41	0.36	0.33	0.31	0.30	0.30
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.1	0.90	0.80	0.75	0.73	0.71	0.70	0.70
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.9	2.7	2.6	2.5	2.5	2.5	2.5	2.5
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	3.5							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

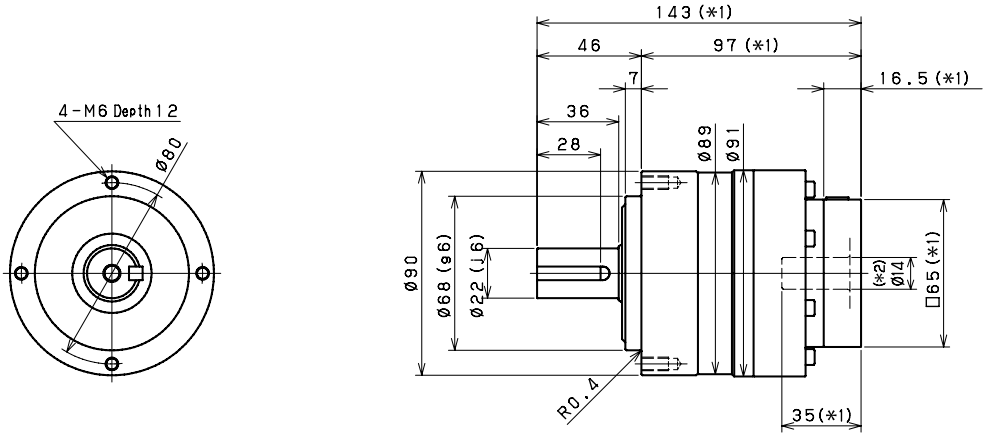
VRL 090 2-Stage Specifications

Frame Size			090							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	65	80	86	106	118	88	118	118
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	108	165	165
Maximum Torque	[Nm]	*3	108	165	165	165	165	108	165	165
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	250	250
Nominal Input Speed	[rpm]	*5	3500	3500	3500	3500	3500	3500	3500	3500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06							
Maximum Radial Load	[N]	*8	2400							
Maximum Axial Load	[N]	*9	2200							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.20	0.25	0.19	0.19	0.24	0.12	0.18	0.11
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.36	0.41	0.35	0.35	0.40	0.28	0.35	0.28
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.75	0.79	0.74	0.74	0.78	0.67	0.73	0.67
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.4
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	4							

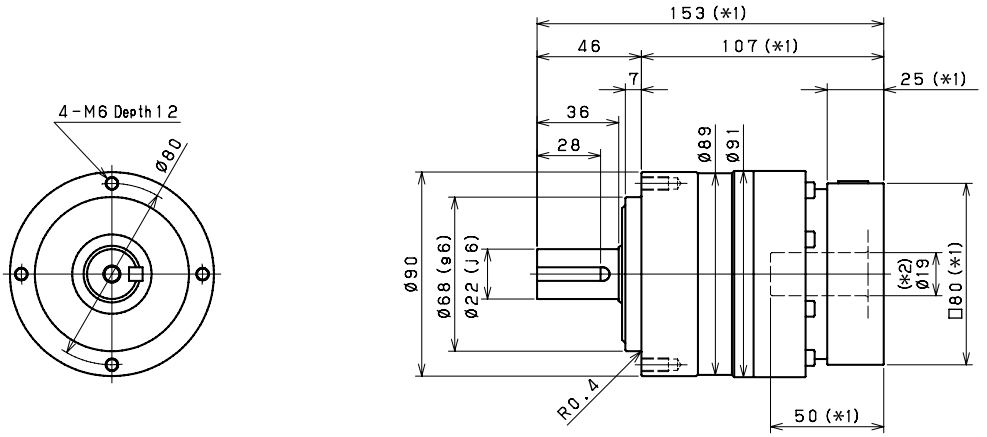
Frame Size			090						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	88	118	118	118	118	88	88
Maximum Acceleration Torque	[Nm]	*2	112	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	112	165	165	165	165	112	112
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	3500	3800	3800	4500	4500	4500	4500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06						
Maximum Radial Load	[N]	*8	2400						
Maximum Axial Load	[N]	*9	2200						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.18	0.11	0.11	0.11	0.11	0.11	0.11
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.34	0.27	0.27	0.27	0.27	0.27	0.27
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.73	0.67	0.67	0.67	0.67	0.67	0.67
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.5	2.4	2.4	2.4	2.4	2.4	2.4
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	10						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	4						

VRL 090 1-Stage Dimensions

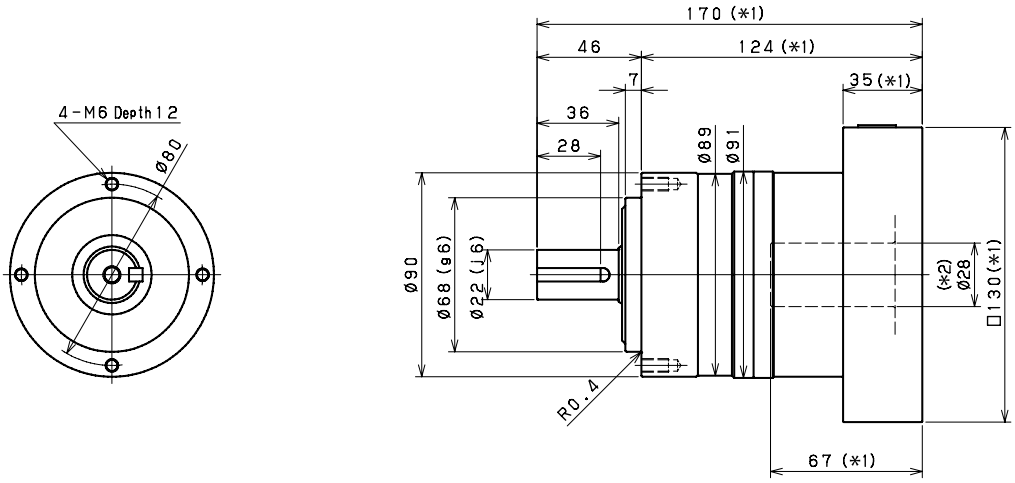
Input bore size ≦φ14 mm

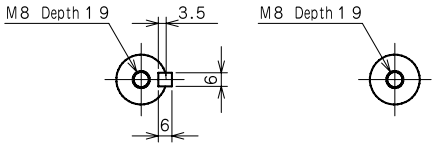


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





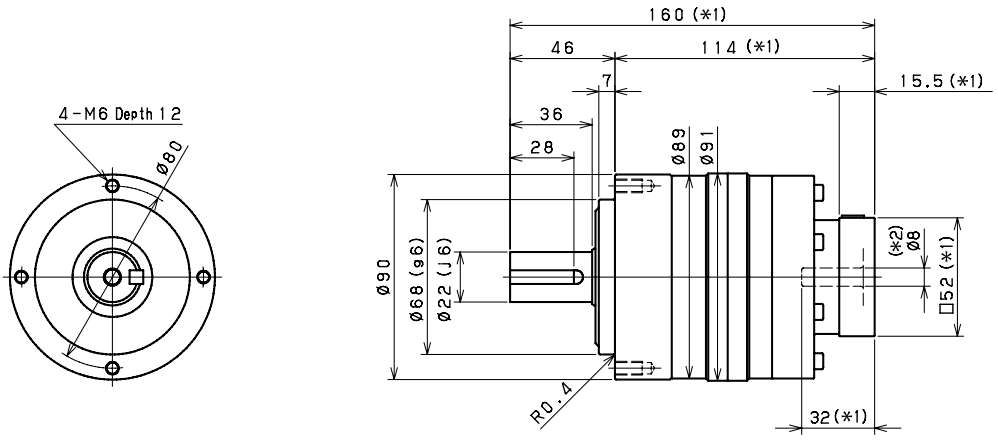
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

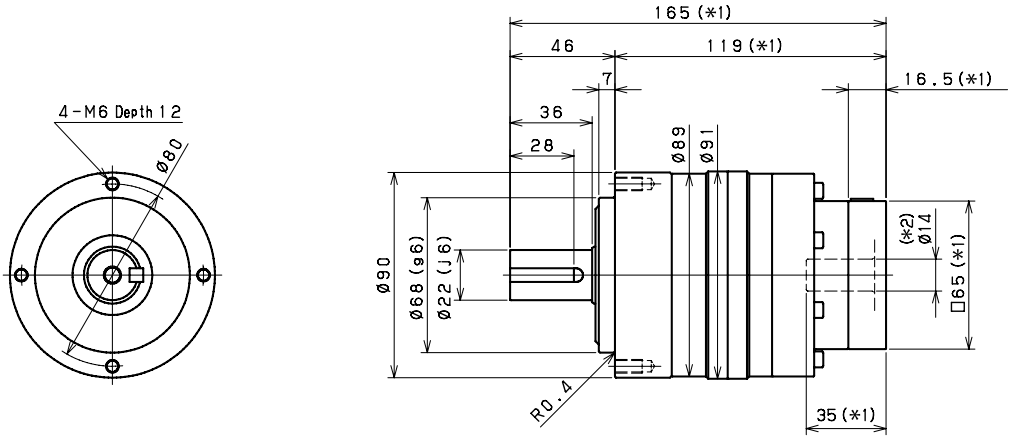
*2) Bushing will be inserted to adapt to motor shaft

VRL 090 2-Stage Dimensions

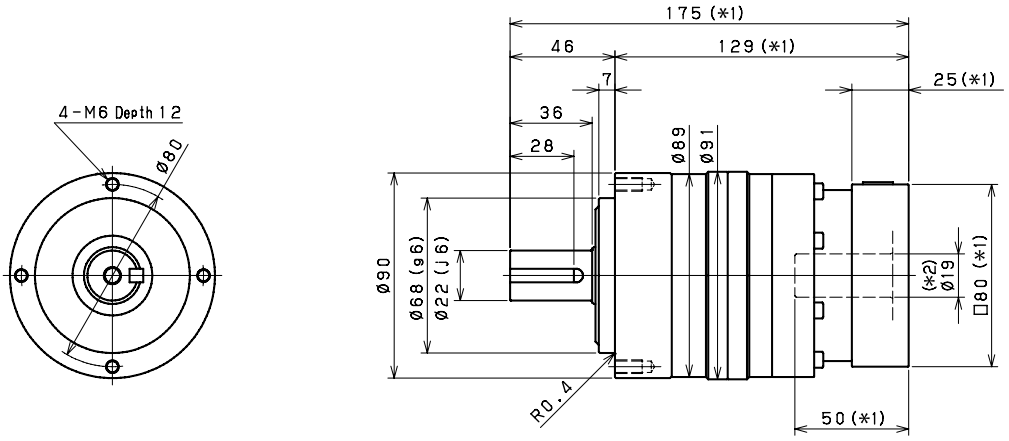
Input bore size ≦φ8 mm

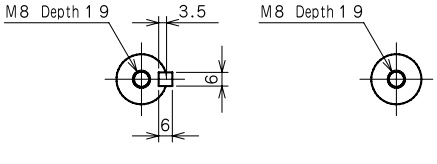


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 120 1-Stage Specifications

Frame Size			120							
Stage			1-Stage							
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	128	146	190	190	190	190	190	190
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	340	490	490	480	480	480	370	370
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	2800	2800	2800	2800	2800	2800	2800	2800
Maximum Input Speed	[rpm]	*6	5500	5500	5500	5500	5500	5500	5500	5500
No Load Running Torque	[Nm]	*7	1.30							
Maximum Radial Load	[N]	*8	4300							
Maximum Axial Load	[N]	*9	3900							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	3.2	2.0	1.4	1.2	1.0	0.92	0.86	0.83
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	5.1	3.7	3.1	2.9	2.8	2.7	2.6	2.6
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	12	10	9.5	9.3	9.1	9	8.9	8.9
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*13	≤ 71							
Protection Class	--	--	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	*13	90							
Weight	[kg]	*14	7.8							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

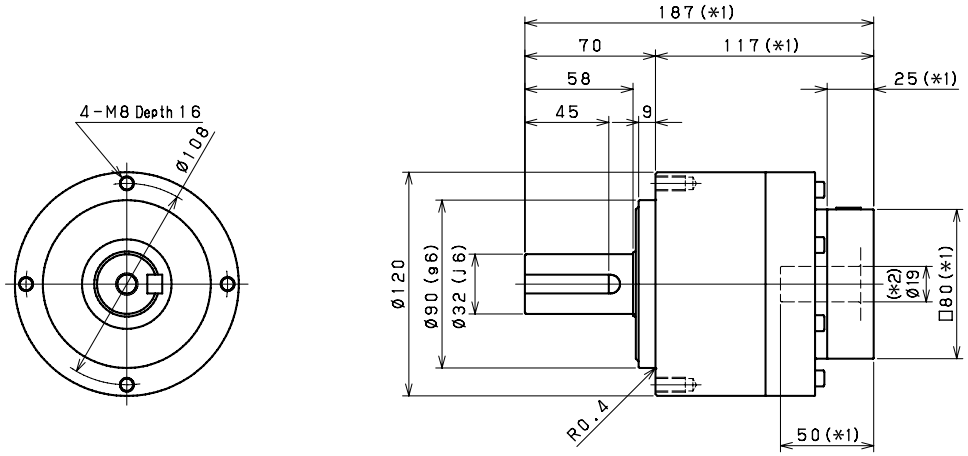
VRL 120 2-Stage Specifications

Frame Size	120									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	174	200	220	280	280	220	280	270
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	270	390	390
Maximum Torque	[Nm]	*3	270	390	390	390	390	270	390	390
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	625	625
Nominal Input Speed	[rpm]	*5	3100	3100	3100	3100	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42							
Maximum Radial Load	[N]	*8	4300							
Maximum Axial Load	[N]	*9	3900							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.77	0.98	0.72	0.70	0.92	0.38	0.68	0.37
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.2	1.4	1.1	1.1	1.3	0.78	1.1	0.77
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.9	3.1	2.8	2.8	3	2.5	2.8	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.2	9.4	9.1	9.1	9.3	8.8	9.1	8.8
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*13	≤ 71							
Protection Class	--	--	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	*13	90							
Weight	[kg]	*14	8.7							

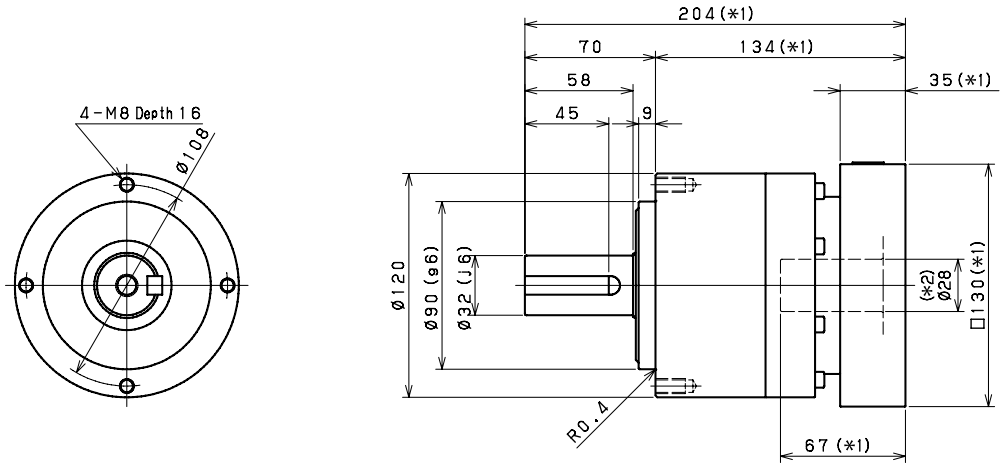
Frame Size	120								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	220	280	280	280	280	220	220
Maximum Acceleration Torque	[Nm]	*2	292	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	292	390	390	390	390	292	292
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	3100	3500	3500	4200	4200	4200	4200
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42						
Maximum Radial Load	[N]	*8	4300						
Maximum Axial Load	[N]	*9	3900						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	0.19	0.19	0.19	0.19	0.19	0.19
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.68	0.36	0.36	0.36	0.36	0.36	0.36
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.1	0.76	0.76	0.76	0.76	0.76	0.76
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.8	2.5	2.5	2.5	2.5	2.5	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.1	8.8	8.8	8.8	8.8	8.8	8.8
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	31						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*13	≤ 71						
Protection Class	--	--	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	*13	90						
Weight	[kg]	*14	8.7						

VRL 120 1-Stage Dimensions

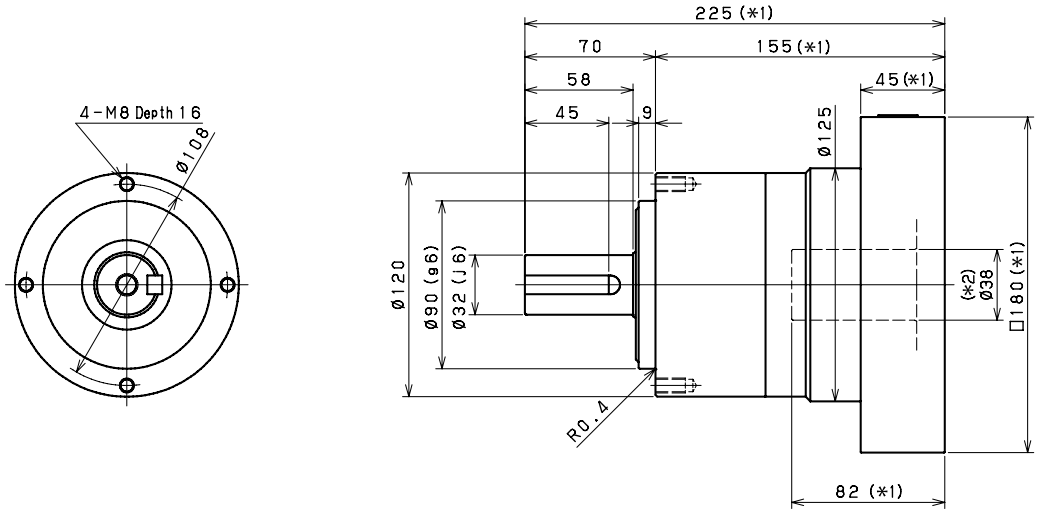
Input bore size ≦φ19 mm

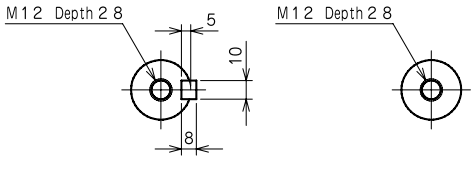


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm





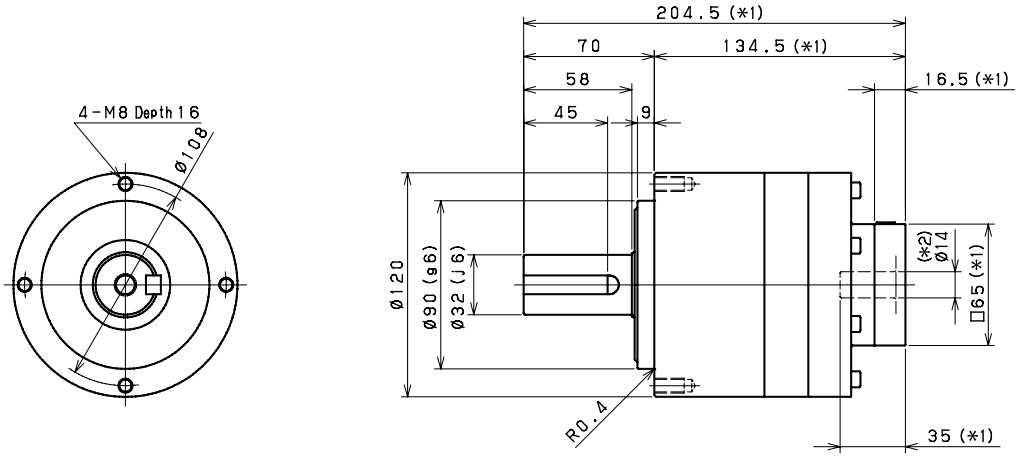
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

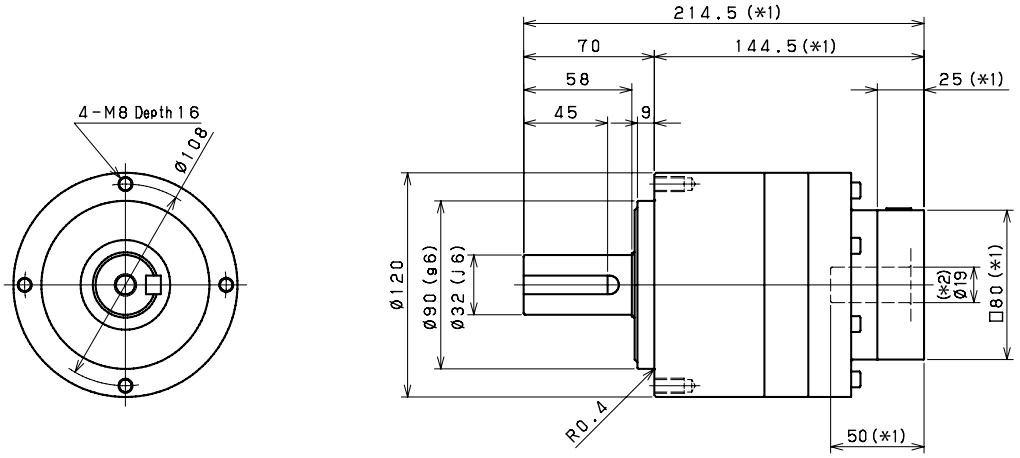
*2) Bushing will be inserted to adapt to motor shaft

VRL 120 2-Stage Dimensions

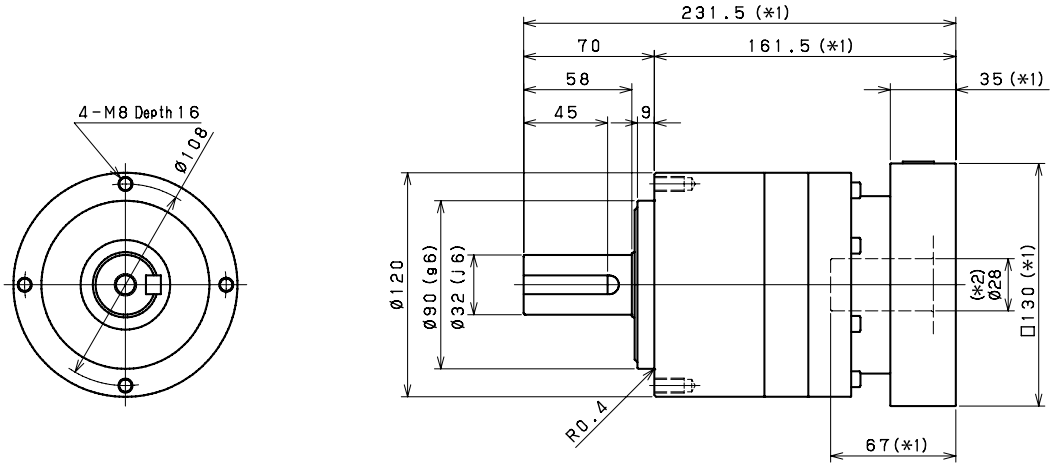
Input bore size ≦φ14 mm

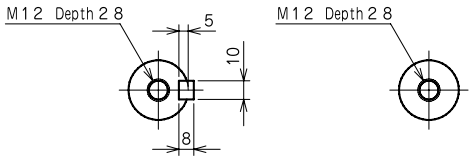


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 155 1-Stage Specifications

Frame Size	155									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	248	280	380	380	380	380	380	380
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	630	1000	1000	950	950	950	730	730
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2100	2100	2100	2100	2600	2600	2600	2600
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.63							
Maximum Radial Load	[N]	*8	9100							
Maximum Axial Load	[N]	*9	8200							
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	12	7.3	5.3	4.3	3.9	3.5	3.3	3.2
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	14	12	11	10	9.9	9.7	9.6
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	35	29	27	26	25	25	25	25
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	16							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

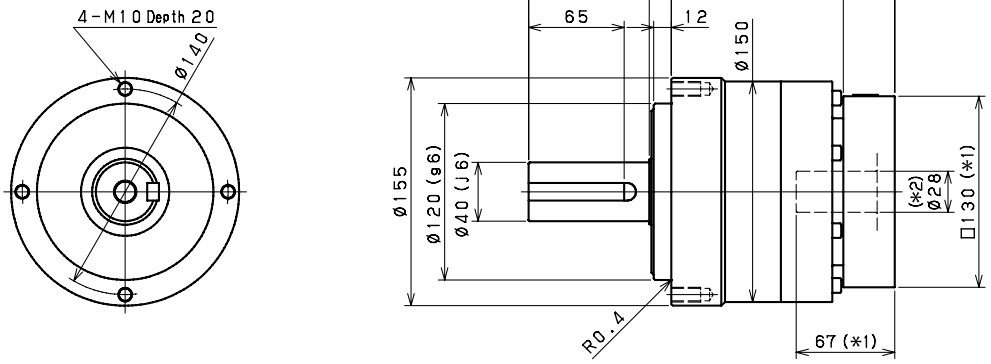
VRL 155 2-Stage Specifications

Frame Size	155									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	360	380	410	590	590	440	590	500
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	560	840	840
Maximum Torque	[Nm]	*3	560	840	840	840	840	560	840	840
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1250	1250
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	2900	2900	2900	2900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56							
Maximum Radial Load	[N]	*8	9100							
Maximum Axial Load	[N]	*9	8200							
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.6	3.5	2.4	2.4	3.3	1.1	2.3	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.4	5.3	4.2	4.1	5.1	2.9	4.1	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	11	12	10	10	11	9.2	10	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	26	27	25	25	26	24	25	24
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	18							

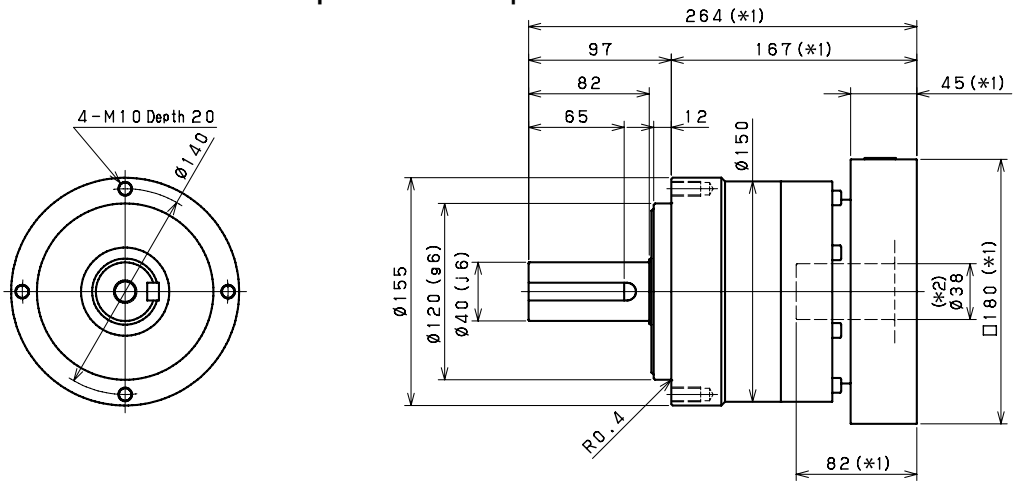
Frame Size	155								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	440	590	590	590	590	440	440
Maximum Acceleration Torque	[Nm]	*2	610	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	610	840	840	840	840	610	610
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2900	3200	3200	3900	3900	3900	3900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56						
Maximum Radial Load	[N]	*8	9100						
Maximum Axial Load	[N]	*9	8200						
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	0.65	0.64	0.64	0.63	0.63	0.63
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.3	1.1	1.1	1.1	1.1	1.1	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.0	2.8	2.8	2.8	2.8	2.8	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	10	9.1	9.1	9.1	9.1	9.1	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	25	24	24	24	24	24	24
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	60						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	18						

VRL 155 1-Stage Dimensions

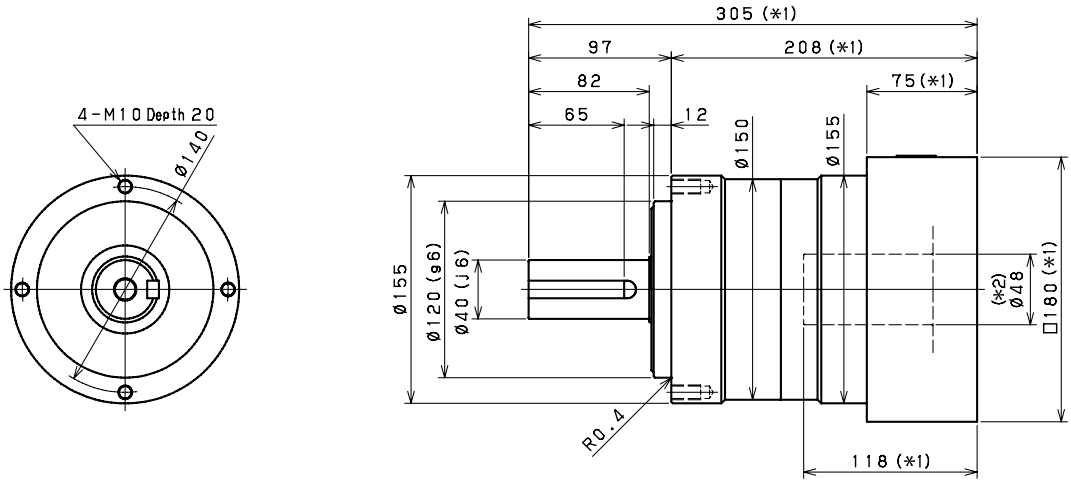
Input bore size ≦φ28 mm

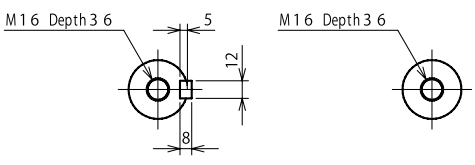


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





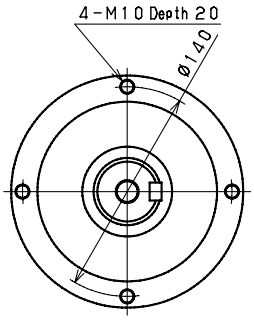
Keyed shaft Smooth shaft

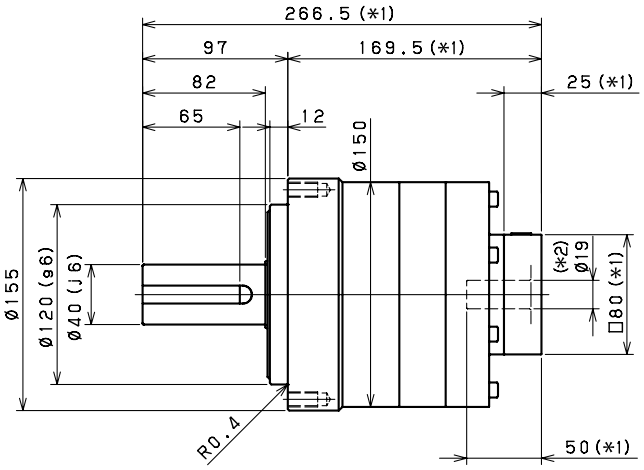
*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

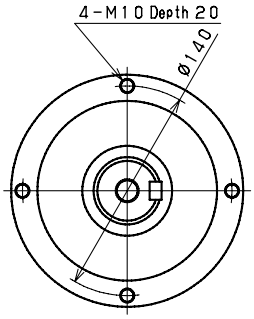
VRL 155 2-Stage Dimensions

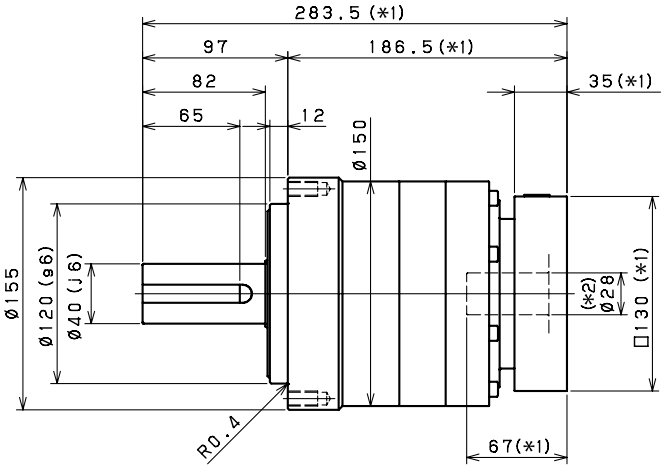
Input bore size ≦φ19 mm



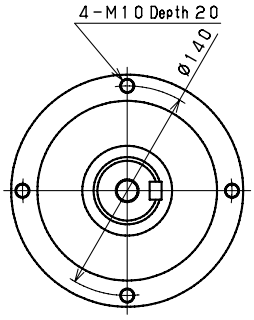


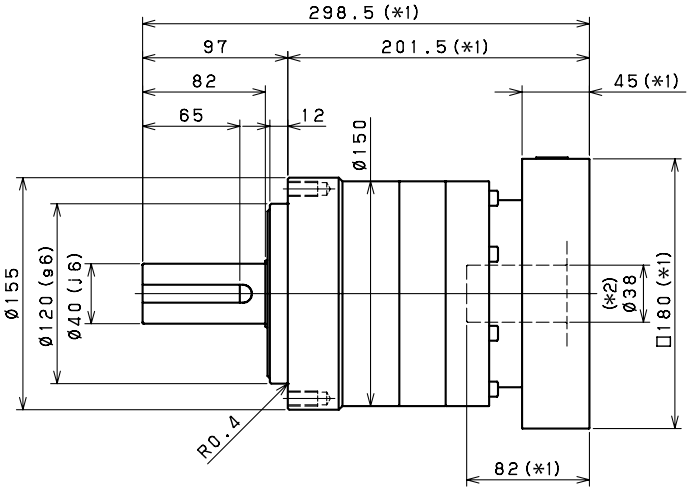
Input bore size ≦φ28 mm

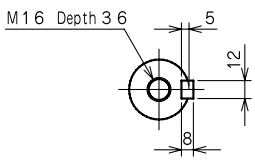




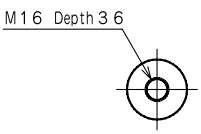
Input bore size ≦φ38 mm







Keyed shaft



Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 205 1-Stage Specifications

Frame Size	205									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	570	850	910	910	910	910	910	910
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1450	2250	2250	2150	2150	2150	1750	1750
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	1500	1500	1500	1500	2300	2300	2300	2300
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	2.68							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	43	26	19	15	14	13	12	12
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	57	41	34	31	29	28	27	27
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	110	85	78	75	73	72	71	71
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	39							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

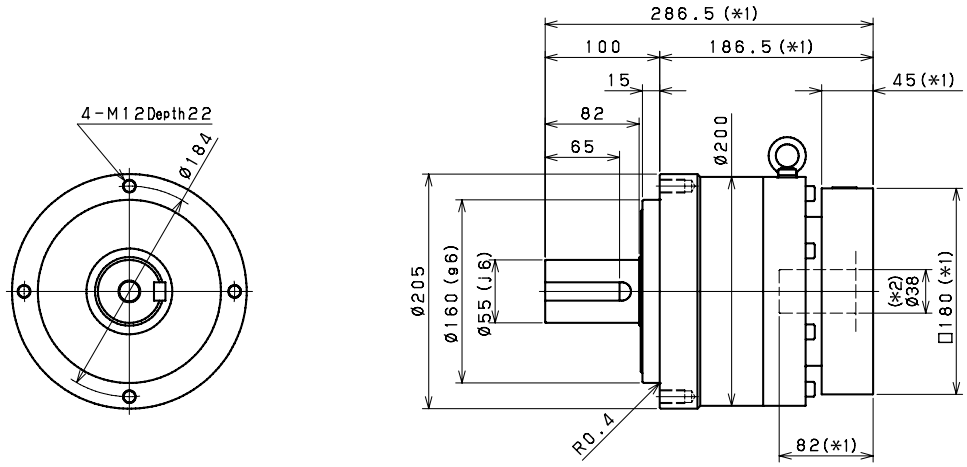
VRL 205 2-Stage Specifications

Frame Size			205							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	660	850	910	1100	1300	930	1300	1200
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1300	1850	1850
Maximum Torque	[Nm]	*3	1300	1850	1850	1850	1850	1300	1850	1850
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2750	2750
Nominal Input Speed	[rpm]	*5	2700	2700	2700	2700	2700	2700	2700	2700
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	8.8	11	8.1	7.9	11	4.0	7.6	3.9
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	15	18	14	14	17	10	14	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	30	33	29	29	32	25	29	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	40							

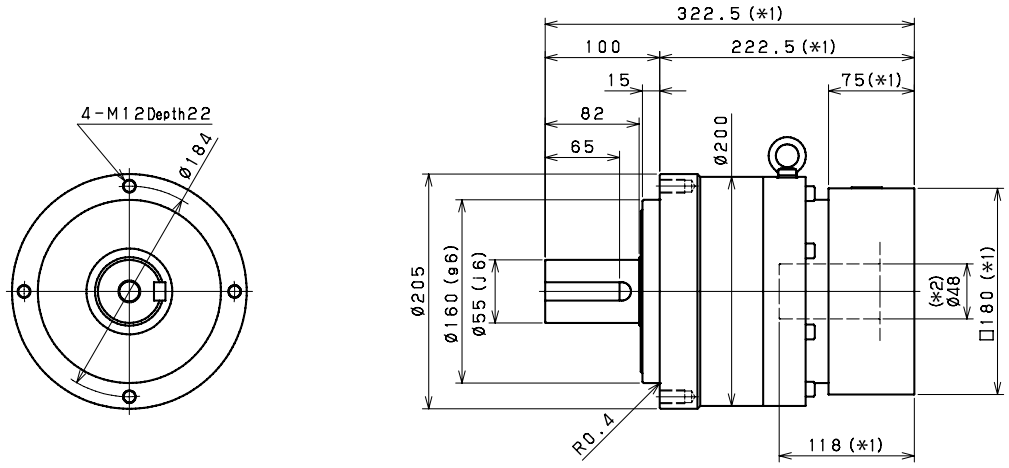
Frame Size			205						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	930	1300	1300	1300	1300	930	930
Maximum Acceleration Torque	[Nm]	*2	1350	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1350	1850	1850	1850	1850	1350	1350
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	2700	2900	2900	3400	3400	3400	3400
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39						
Maximum Radial Load	[N]	*8	15000						
Maximum Axial Load	[N]	*9	14000						
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	1.9	1.9	1.8	1.8	1.8	1.8
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	7.6	3.8	3.8	3.8	3.7	3.7	3.7
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	14	10	10	10	10	10	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	29	25	25	25	25	25	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	175						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	40						

VRL 205 1-Stage Dimensions

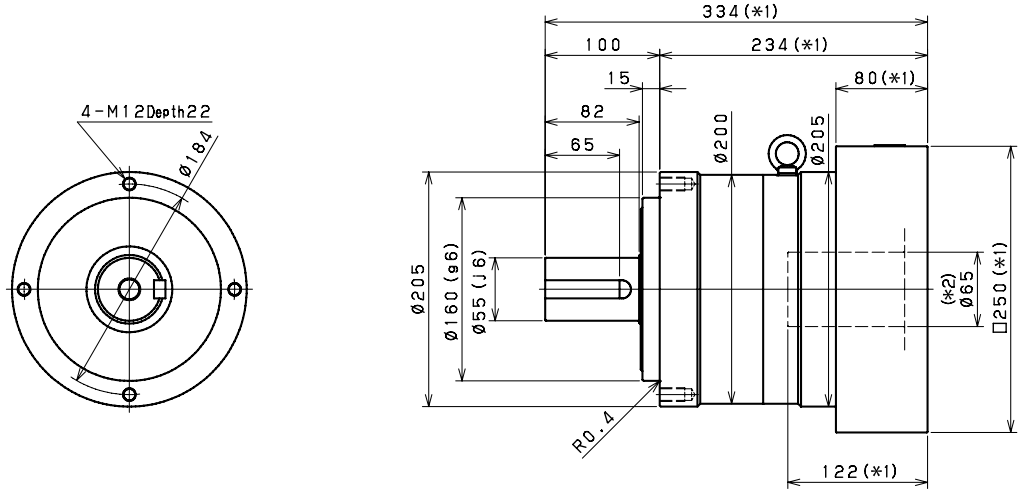
Input bore size ≦φ38 mm

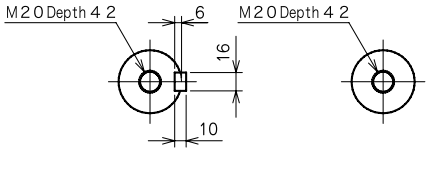


Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





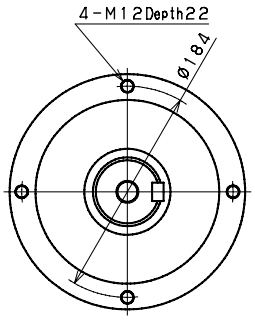
Keyed shaft Smooth shaft

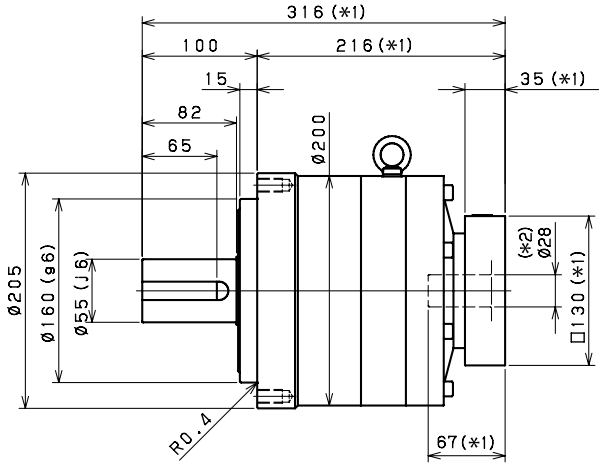
*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

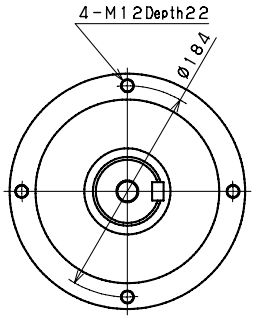
VRL 205 2-Stage Dimensions

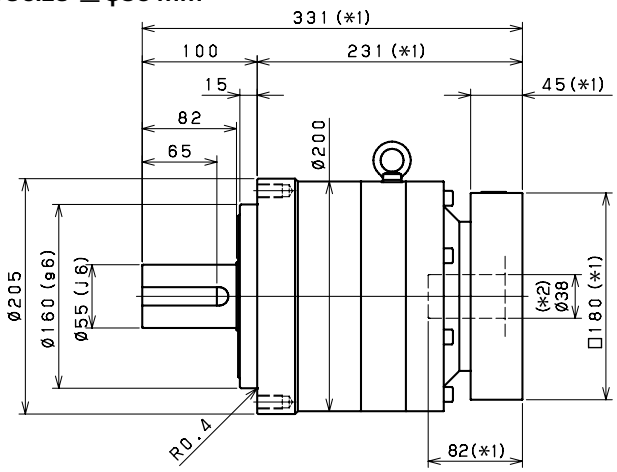
Input bore size ≦φ28 mm



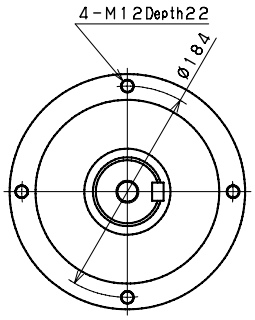


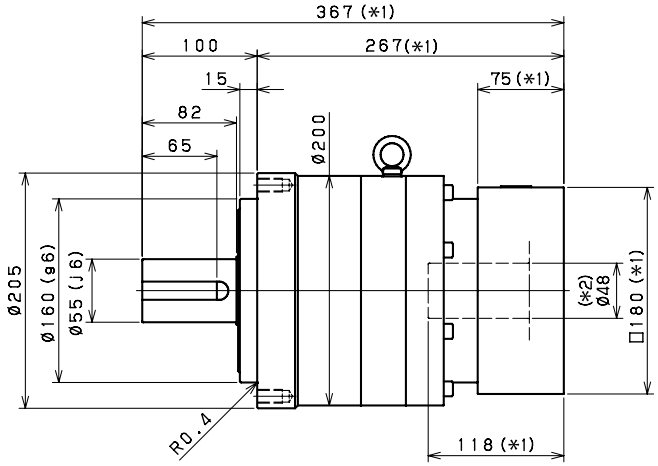
Input bore size ≦φ38 mm

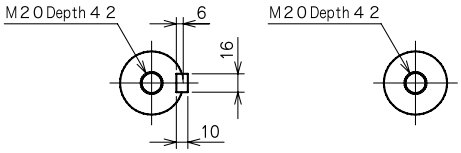




Input bore size ≦φ48 mm







Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRL 235 1-Stage Specifications

Frame Size	235									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	980	1400	1400	1600	1700	1700	1700	1700
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2900	2600	2200
Maximum Torque	[Nm]	*3	2400	3700	3700	3500	3500	3400	3000	2700
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	1200	1200	1500	1500	1700	1700	2000	2000
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	2.92							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	110	54	42	35	33	30	29	28
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	160	98	85	79	76	74	73	72
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	55							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

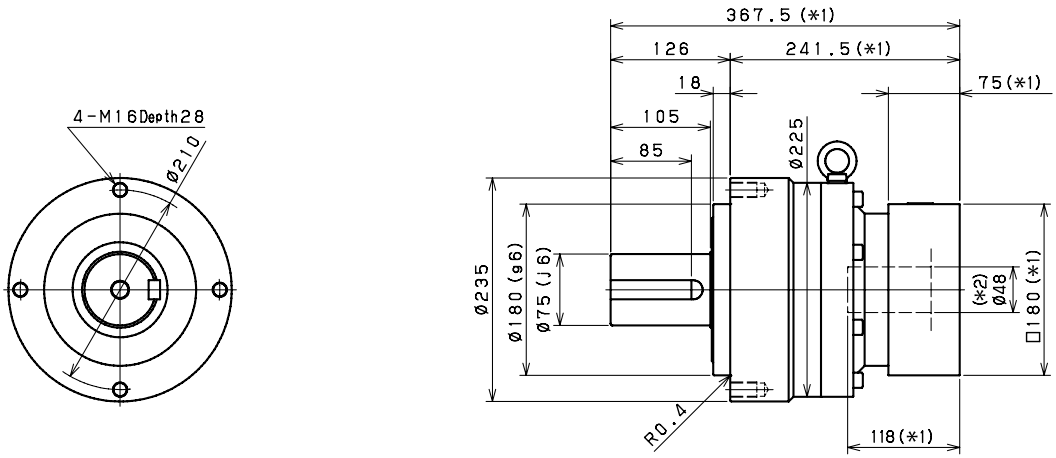
VRL 235 2-Stage Specifications

Frame Size	235									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	1100	1400	1500	1800	2000	1300	2000	2000
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2000	2900	2900
Maximum Torque	[Nm]	*3	2000	2900	2900	2900	2900	2000	2900	2900
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	5000	5000
Nominal Input Speed	[rpm]	*5	2200	2200	2200	2200	2200	2200	2200	2200
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	20	24	19	18	23	12	18	12
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	34	39	33	33	37	26	32	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	57							

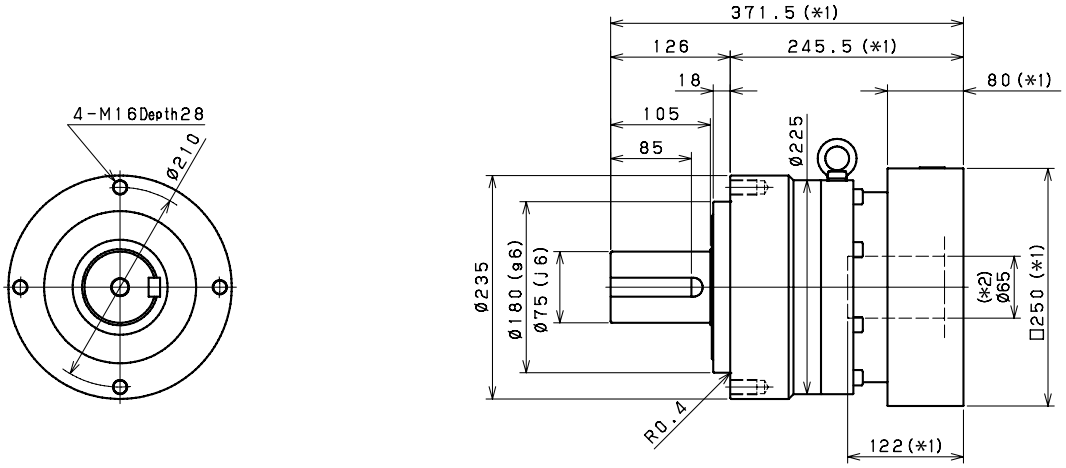
Frame Size	235								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	1300	2000	2000	2000	2000	1300	1300
Maximum Acceleration Torque	[Nm]	*2	1800	2900	2900	2900	2500	1800	1600
Maximum Torque	[Nm]	*3	1800	2900	2900	2900	2500	1800	1600
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	2200	2500	2500	3000	3000	3000	3000
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14						
Maximum Radial Load	[N]	*8	15000						
Maximum Axial Load	[N]	*9	14000						
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	4.7	4.7	4.6	4.6	4.6	4.6
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	12	11	11	11	11	11
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	32	26	26	26	26	26	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	400						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 61						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	57						

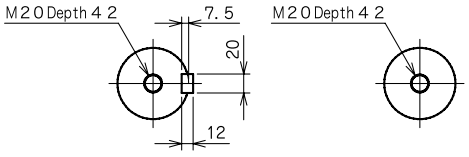
VRL 235 1-Stage Dimensions

Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





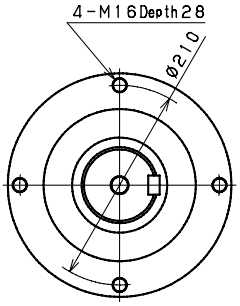
Keyed shaft Smooth shaft

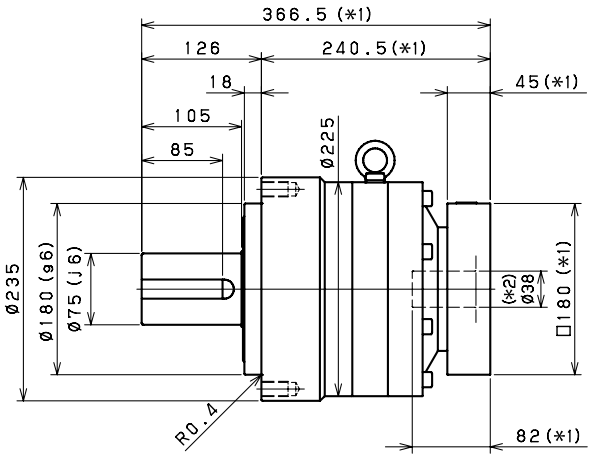
*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

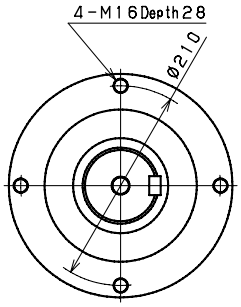
VRL 235 2-Stage Dimensions

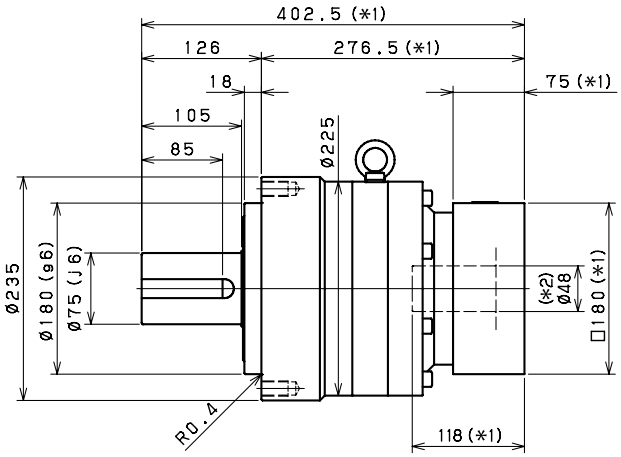
Input bore size ≦φ38 mm

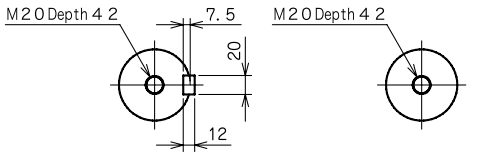




Input bore size ≦φ48 mm







Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB series

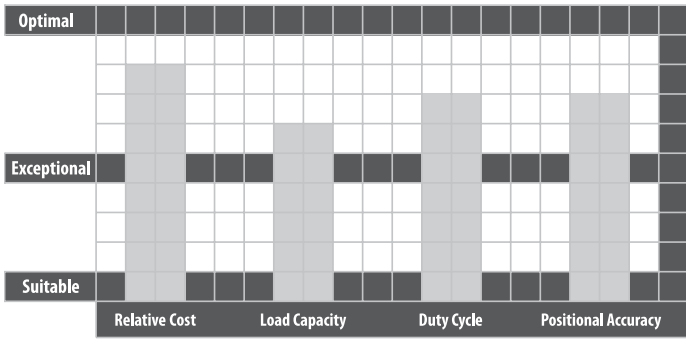
VRB planetary gearbox in line

Precision, easy mounting by square flange

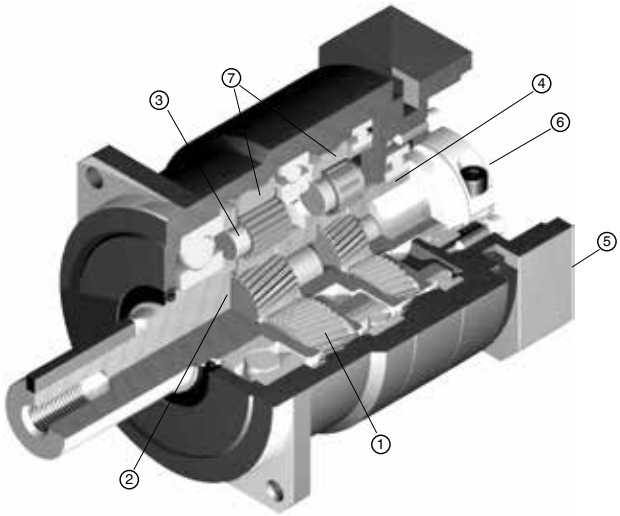
Description

A valuable alternative for applications requiring high positional accuracy and dynamic performance. The VRB is a <3 arc-min gearbox that offers a through hole mounting design, making it easier to assemble onto various equipment. This product is an ideal fit for various belt drive and actuator applications found throughout the packaging and assembly cell automation markets. Various standard wash down and food grade options are available, making the VRB an attractive choice for the toughest environments. We offer the broadest selection of frame sizes and ratios, with immediate availability on most configurations. Industry standard mounting dimensions allow the VRB to be employed in legacy equipment designs, saving our customers time and money.

- Exceptional value for high end motion control applications with demanding accuracy requirements
- The widest range of frame sizes and ratios available in the market
- Best-In-class backlash (≤3 arc-min)
- Broad range of mounting adapters offer a simple, precise attachment to any motor
- Maintenance-free solution that is lubricated for life.
  High performance grease allows flexible mounting in any orientation
- Industry standard through-bolt mounting style



Features



1 Carburized helical gears with proprietary secondary finishing process for higher accuracy and smooth, quiet operation. 40% higher tooth surface area than the industry standard

2 One piece output shaft and planet carrier with two bearings straddling the planet gears. Higher stiffness, torque capacity and safety factor, with guaranteed alignment of gearing

3 Uncaged needle roller bearings provide excellent torque density and torsional rigidity. 43% larger bearing surface area compared to the rest of the industry

4 Unique labyrinth input seal design greatly reduces heat and increases system efficiency. IP65 protection is available for wash down applications

5 Optimized mounting system with active centering on motor pilot diameter guarantees alignment of motor. Motor can be installed in any orientation

6 True concentric motor shaft clamping connection, optimized for your specific motor. Reduced inertia for dynamic performance and balanced for high speed operation

7 Ring gear machined directly into the housing, not welded or pressed in. Provides greater concentricity and elimination of speed fluctuation

Part Number **VRB -090 C -7 -K 3 -19HB16**

- Model name - VRB series
- Size: 042, 060, 090, 115, 140, 180, 220
- Version.
  B design version in exhaustion. Available on demand.
- Ratio: 1 stage: 3, 4, 5, 6, 7, 8, 9, 10
  2 stage: 15, 16, 20, 25, 28, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
- Output mounting style: K: Keyed Shaft / S: Smooth shaft
- Backlash: 3 arc-min
- Motor mounting code (*)

*1) Motor mounting code varies depending on the motor. Use the selection tool link below to configure the code.

VRB 042 1-Stage Specifications

Frame Size	042									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	6	9	10	10	10	10	10	10
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	17	25	25	25	25	25	17	17
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8000	8000	8000	8000	8000	8000	8000	8000
No Load Running Torque	[Nm]	*7	0.03							
Maximum Radial Load	[N]	*8	710							
Maximum Axial Load	[N]	*9	640							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.053	0.041	0.036	0.034	0.032	0.031	0.031	0.030
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.17	0.16	0.15	0.15	0.15	0.15	0.15	0.15
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	2							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	0.6							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

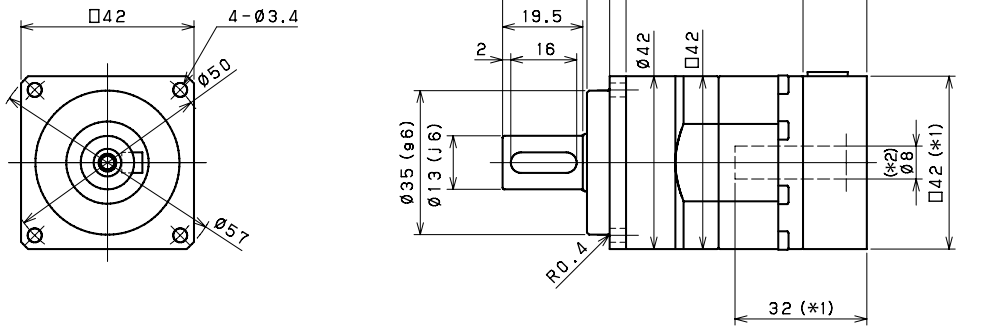
VRB 042 2-Stage Specifications

Frame Size	042									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	9	14	14	15	15	11	15	15
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	14	21	21
Maximum Torque	[Nm]	*3	14	21	21	21	21	14	21	21
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	30	35	35
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01							
Maximum Radial Load	[N]	*8	710							
Maximum Axial Load	[N]	*9	640							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.035	0.038	0.034	0.034	0.038	0.030	0.034	0.030
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	2							
Maximum Torsional Backlash	[arc-min]	--	≤ 5							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	0.7							

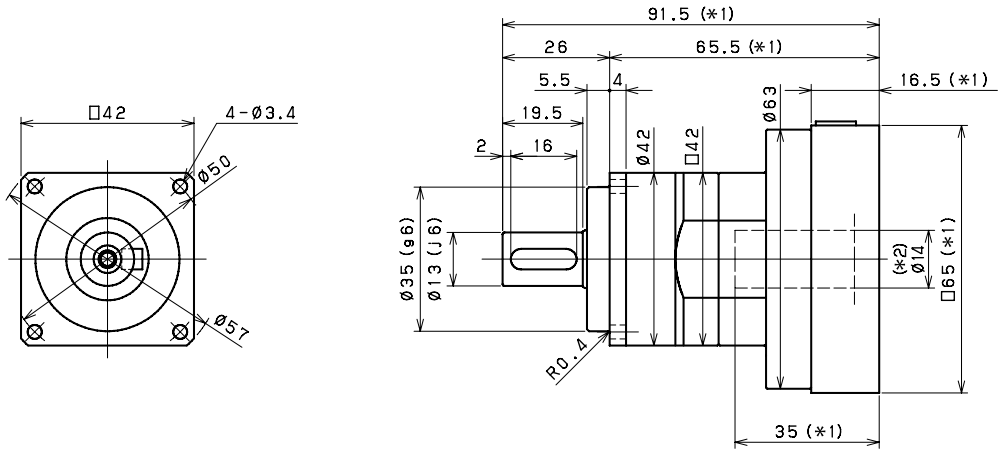
Frame Size	042								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	11	15	15	15	15	11	11
Maximum Acceleration Torque	[Nm]	*2	14	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	14	21	21	21	21	14	14
Emergency Stop Torque	[Nm]	*4	30	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01						
Maximum Radial Load	[N]	*8	710						
Maximum Axial Load	[N]	*9	640						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.034	0.030	0.030	0.030	0.030	0.030	0.030
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	2						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*12	≤ 61						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	0.7						

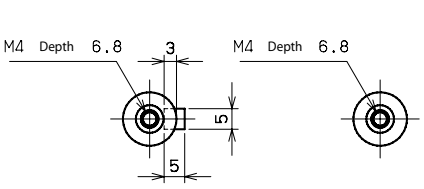
VRB 042 1-Stage Dimensions

Input bore size ≦φ8 mm

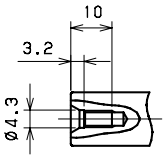


Input bore size ≦φ14 mm





Keyed shaft Smooth shaft

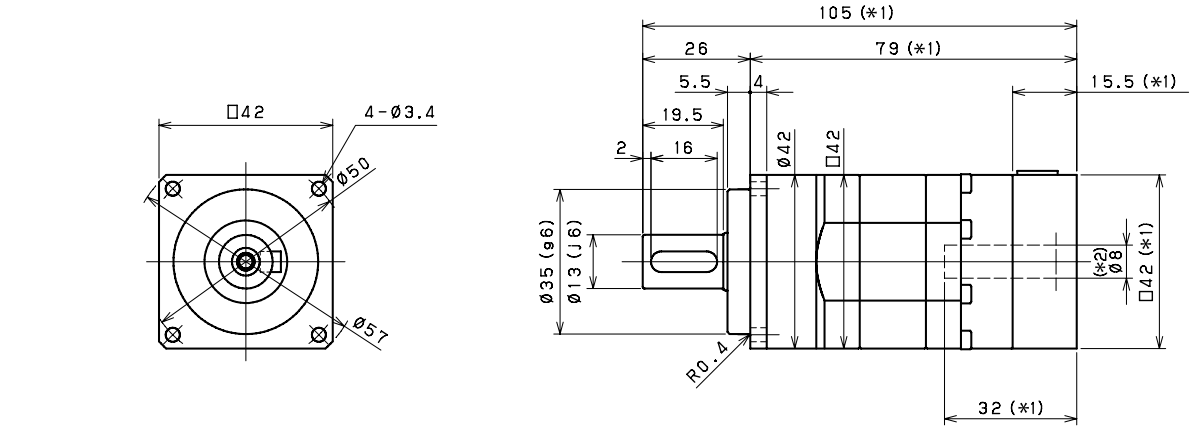


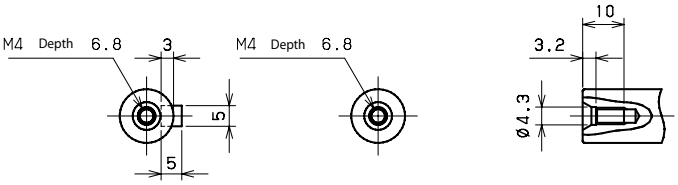
*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 042 2-Stage Dimensions

Input bore size ≦φ8 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 060 1-Stage Specifications

Frame Size	060									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	19	27	28	28	28	28	28	28
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	55	79	79	79	79	76	55	55
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	3300	3300	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.15							
Maximum Radial Load	[N]	*8	1200							
Maximum Axial Load	[N]	*9	1100							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.14	0.095	0.077	0.068	0.062	0.059	0.057	0.056
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.25	0.21	0.19	0.18	0.17	0.17	0.17	0.17
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.53	0.48	0.46	0.46	0.45	0.45	0.44	0.44
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	3							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.4							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

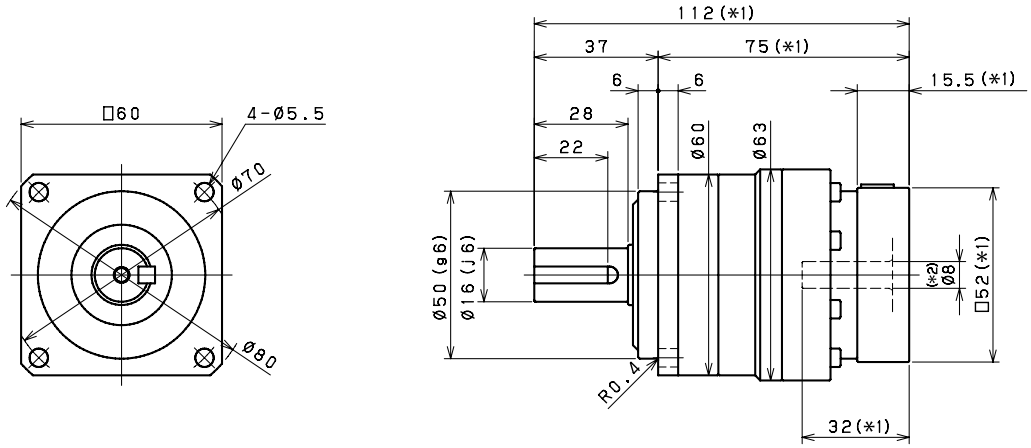
VRB 060 2-Stage Specifications

Frame Size	060									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	25	32	32	43	45	32	45	45
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	66	66
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	66	66
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	100	100
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04							
Maximum Radial Load	[N]	*8	1200							
Maximum Axial Load	[N]	*9	1100							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.064	0.070	0.062	0.061	0.068	0.051	0.061	0.051
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.18	0.18	0.17	0.17	0.18	0.16	0.17	0.16
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.45	0.46	0.45	0.45	0.46	0.44	0.45	0.44
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	3							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.6							

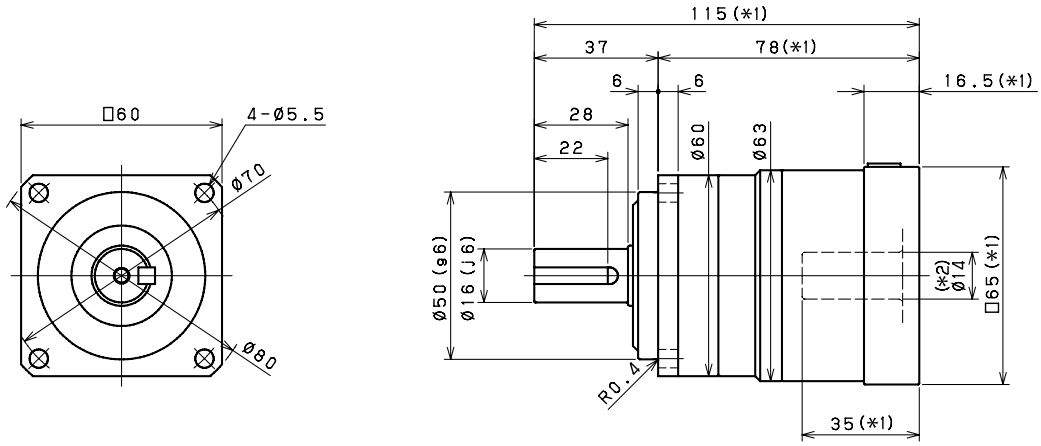
Frame Size	060								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	32	45	45	45	45	32	32
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	46
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	4000	4800	4800	5500	5500	5500	5500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04						
Maximum Radial Load	[N]	*8	1200						
Maximum Axial Load	[N]	*9	1100						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.061	0.051	0.051	0.051	0.051	0.051	0.051
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.17	0.16	0.16	0.16	0.16	0.16	0.16
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.45	0.44	0.44	0.44	0.44	0.44	0.44
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	3						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 66						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	1.6						

VRB 060 1-Stage Dimensions

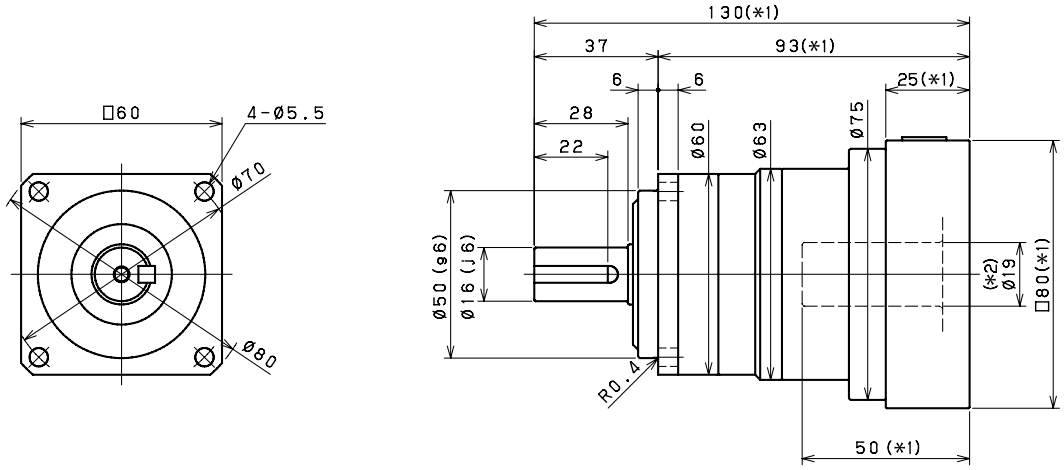
Input bore size ≦φ8 mm

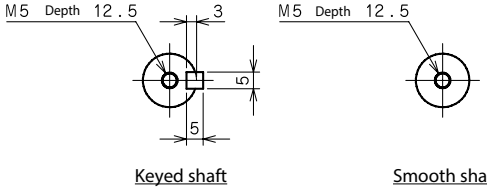


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





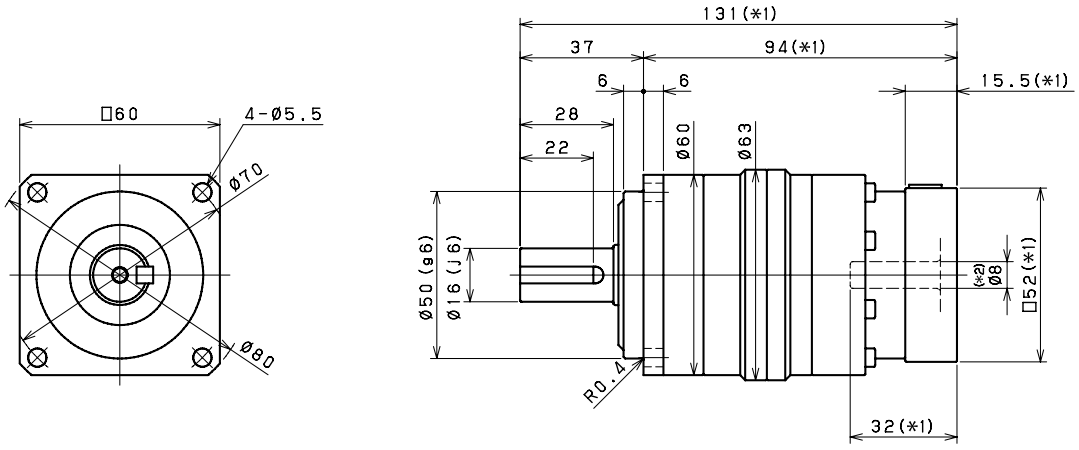
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

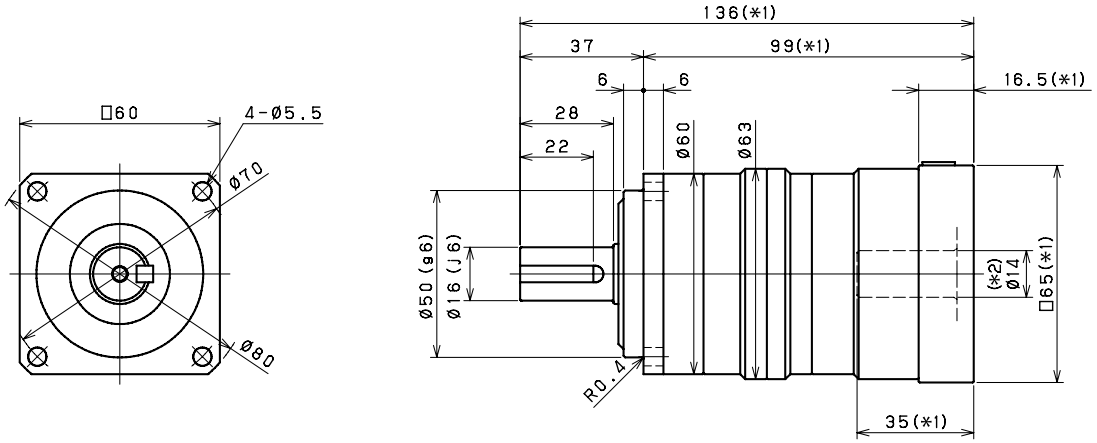
*2) Bushing will be inserted to adapt to motor shaft

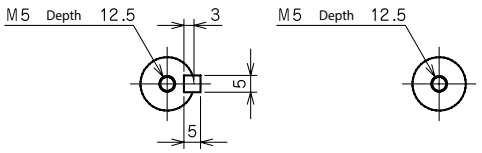
VRB 060 2-Stage Dimensions

Input bore size ≦φ8 mm



Input bore size ≦φ14 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 090 1-Stage Specifications

Frame Size	090									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	53	77	84	84	84	84	84	84
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	135	200	200	195	195	190	145	145
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.35							
Maximum Radial Load	[N]	*8	2400							
Maximum Axial Load	[N]	*9	2200							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.72	0.50	0.41	0.36	0.33	0.31	0.30	0.30
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.1	0.90	0.80	0.75	0.73	0.71	0.70	0.70
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.9	2.7	2.6	2.5	2.5	2.5	2.5	2.5
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	3.7							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

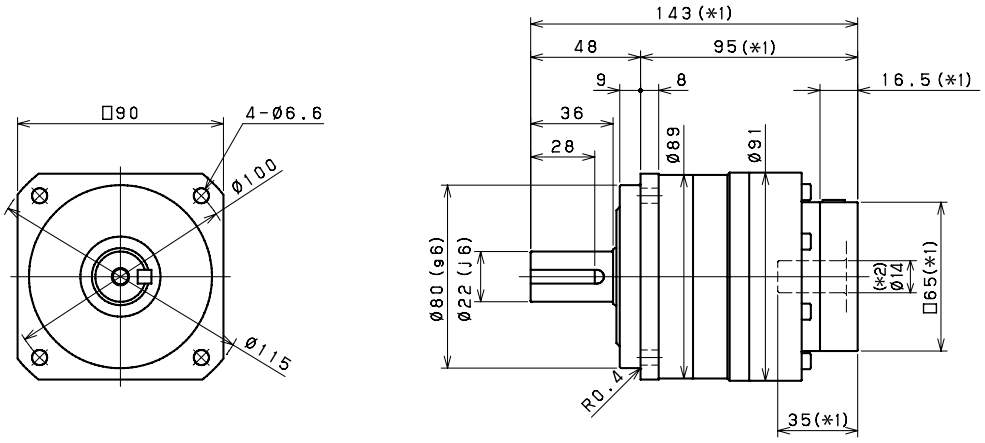
VRB 090 2-Stage Specifications

Frame Size	090									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	65	80	86	106	118	88	118	118
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	108	165	165
Maximum Torque	[Nm]	*3	108	165	165	165	165	108	165	165
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	250	250
Nominal Input Speed	[rpm]	*5	3500	3500	3500	3500	3500	3500	3500	3500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06							
Maximum Radial Load	[N]	*8	2400							
Maximum Axial Load	[N]	*9	2200							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.20	0.25	0.19	0.19	0.24	0.12	0.18	0.11
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.36	0.41	0.35	0.35	0.4	0.28	0.35	0.28
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.75	0.79	0.74	0.74	0.78	0.67	0.73	0.67
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.4
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	4.2							

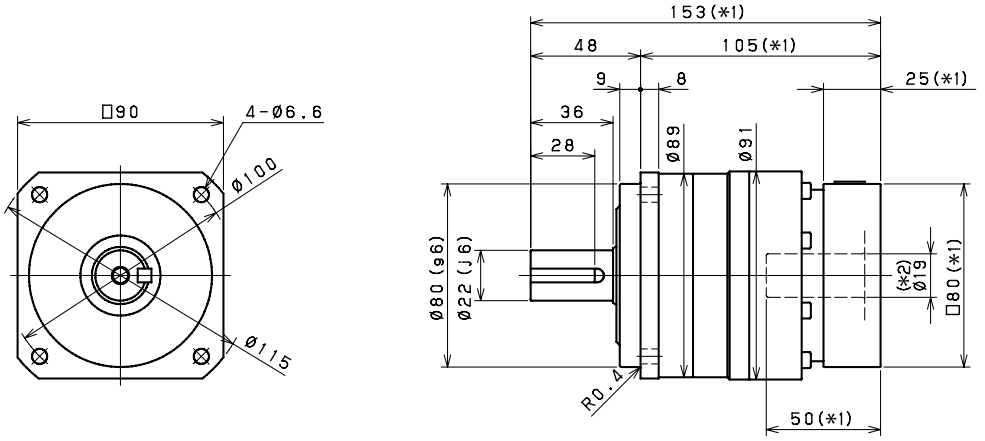
Frame Size	090								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	88	118	118	118	118	88	88
Maximum Acceleration Torque	[Nm]	*2	112	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	112	165	165	165	165	112	112
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	3500	3800	3800	4500	4500	4500	4500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06						
Maximum Radial Load	[N]	*8	2400						
Maximum Axial Load	[N]	*9	2200						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.18	0.11	0.11	0.11	0.11	0.11	0.11
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.34	0.27	0.27	0.27	0.27	0.27	0.27
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.73	0.67	0.67	0.67	0.67	0.67	0.67
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.5	2.4	2.4	2.4	2.4	2.4	2.4
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	10						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	4.2						

VRB 090 1-Stage Dimensions

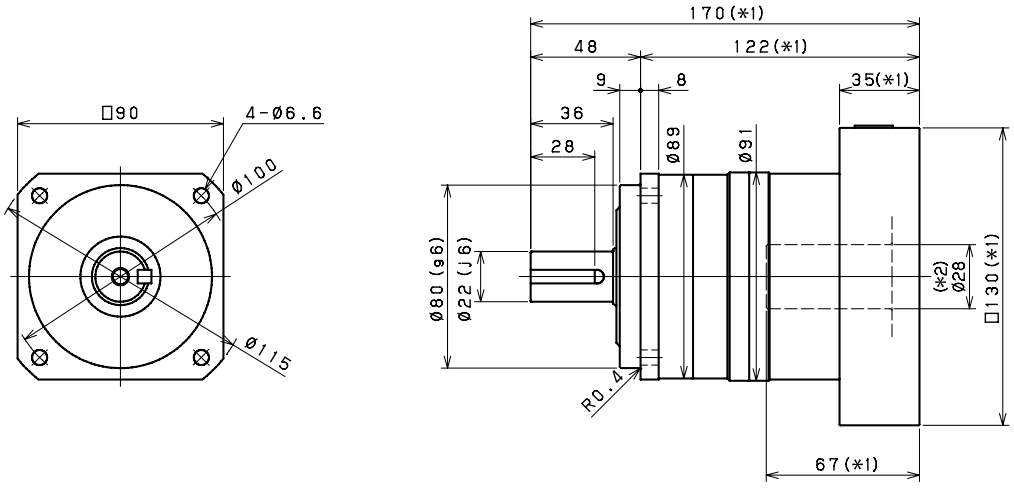
Input bore size ≦φ14 mm

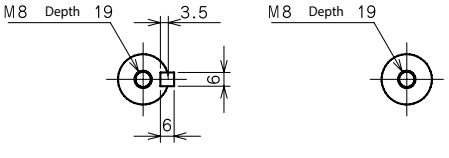


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





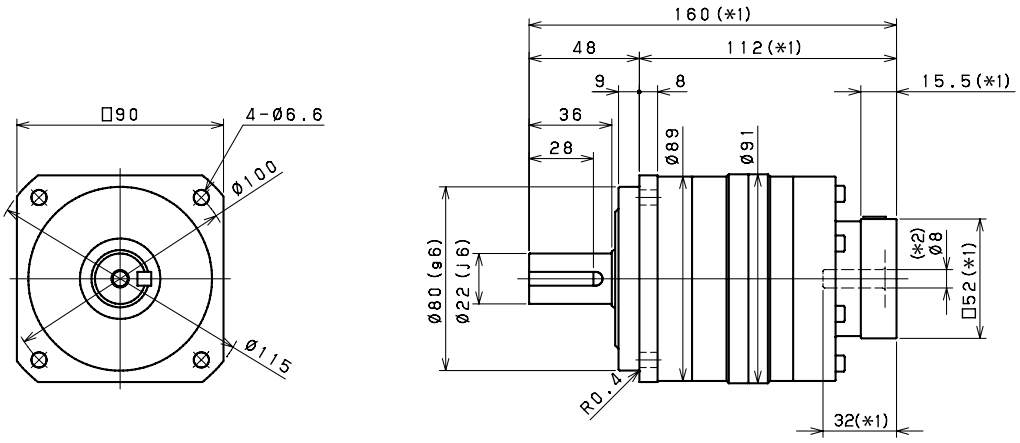
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

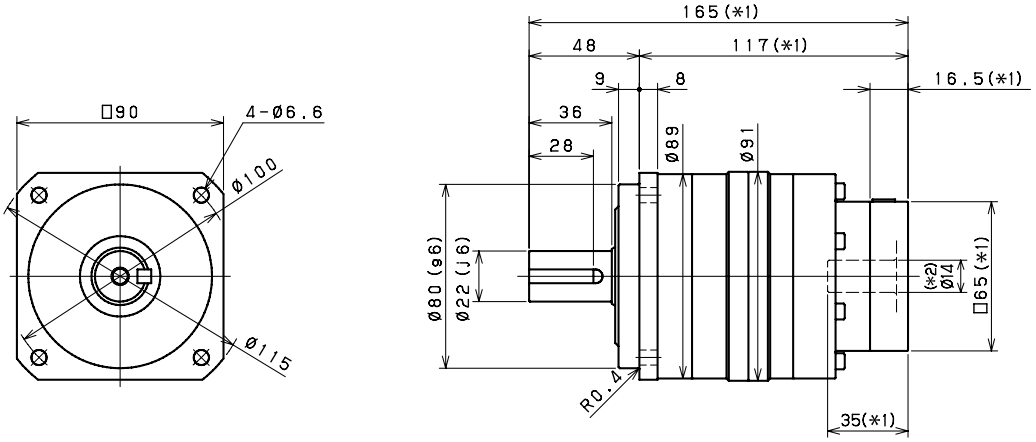
*2) Bushing will be inserted to adapt to motor shaft

VRB 090 2-Stage Dimensions

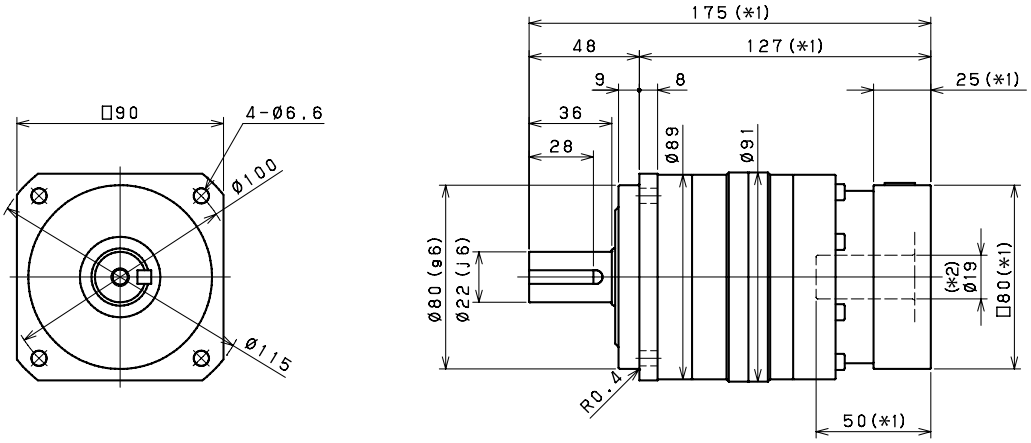
Input bore size ≦φ8 mm

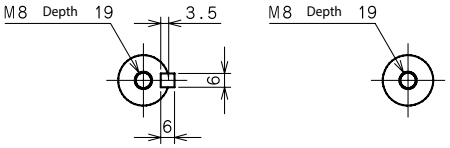


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 115 1-Stage Specifications

Frame Size	115									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	128	146	190	190	190	190	190	190
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	340	490	490	480	480	480	370	370
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	2800	2800	2800	2800	2800	2800	2800	2800
Maximum Input Speed	[rpm]	*6	5500	5500	5500	5500	5500	5500	5500	5500
No Load Running Torque	[Nm]	*7	1.30							
Maximum Radial Load	[N]	*8	4300							
Maximum Axial Load	[N]	*9	3900							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	3.2	2.0	1.4	1.2	1.0	0.92	0.86	0.83
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	5.1	3.7	3.1	2.9	2.8	2.7	2.6	2.6
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	12	10	9.5	9.3	9.1	9.0	8.9	8.9
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 71							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	8							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

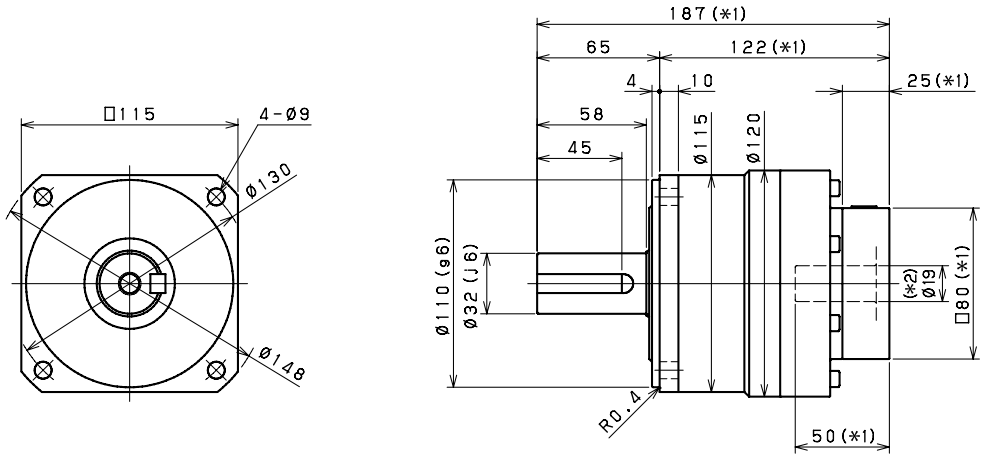
VRB 115 2-Stage Specifications

Frame Size	115									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	174	200	220	280	280	220	280	270
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	270	390	390
Maximum Torque	[Nm]	*3	270	390	390	390	390	270	390	390
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	625	625
Nominal Input Speed	[rpm]	*5	3100	3100	3100	3100	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42	--	--	--	--	--	--	--
Maximum Radial Load	[N]	*8	4300	--	--	--	--	--	--	--
Maximum Axial Load	[N]	*9	3900	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.77	0.98	0.72	0.70	0.92	0.38	0.68	0.37
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.2	1.4	1.1	1.1	1.3	0.78	1.1	0.77
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.9	3.1	2.8	2.8	3.0	2.5	2.8	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.2	9.4	9.1	9.1	9.3	8.8	9.1	8.8
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 71							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	8.9							

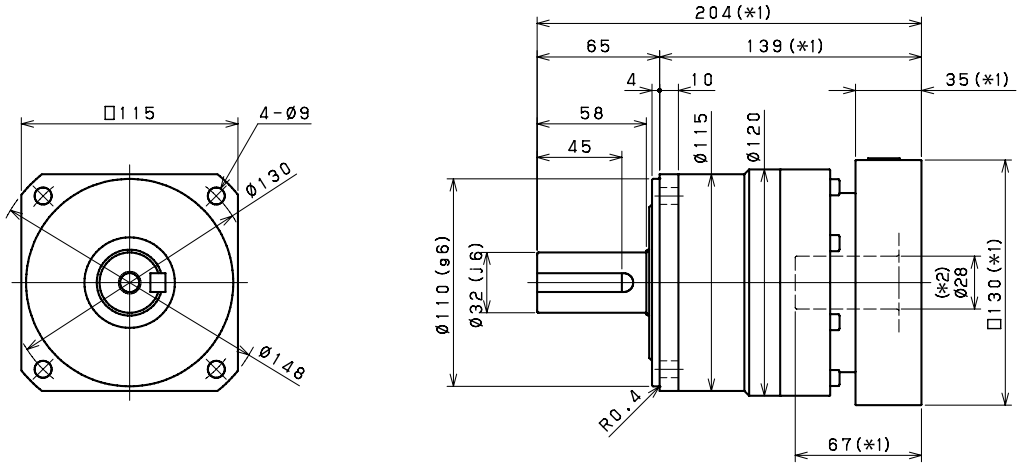
Frame Size	115								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	220	280	280	280	280	220	220
Maximum Acceleration Torque	[Nm]	*2	292	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	292	390	390	390	390	292	292
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	3100	3500	3500	4200	4200	4200	4200
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42	--	--	--	--	--	--
Maximum Radial Load	[N]	*8	4300	--	--	--	--	--	--
Maximum Axial Load	[N]	*9	3900	--	--	--	--	--	--
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	0.19	0.19	0.19	0.19	0.19	0.19
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.68	0.36	0.36	0.36	0.36	0.36	0.36
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.1	0.76	0.76	0.76	0.76	0.76	0.76
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.8	2.5	2.5	2.5	2.5	2.5	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.1	8.8	8.8	8.8	8.8	8.8	8.8
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	31						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 71						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	8.9						

VRB 115 1-Stage Dimensions

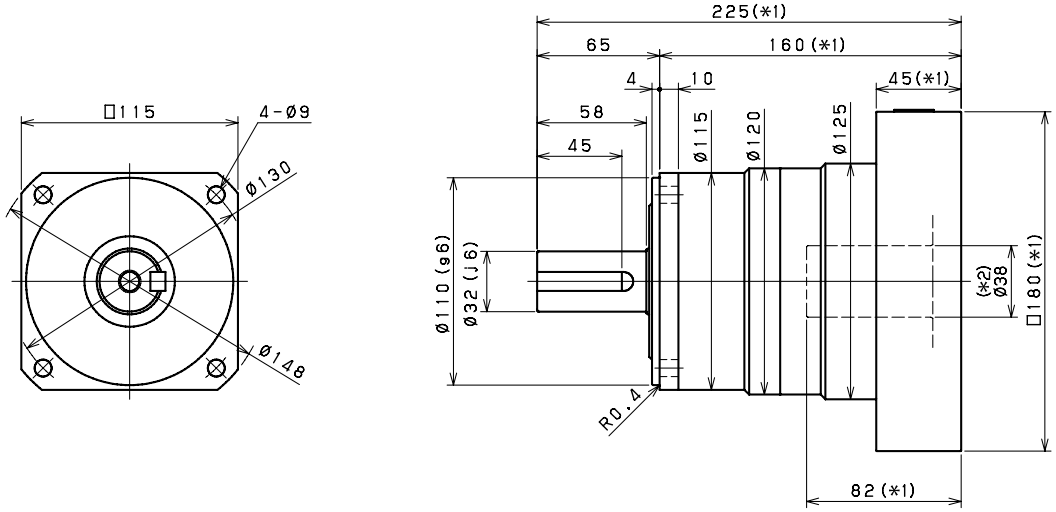
Input bore size ≦φ19 mm

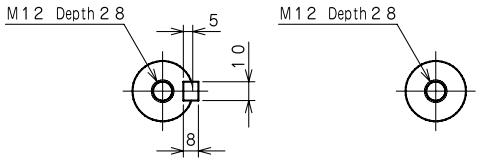


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm





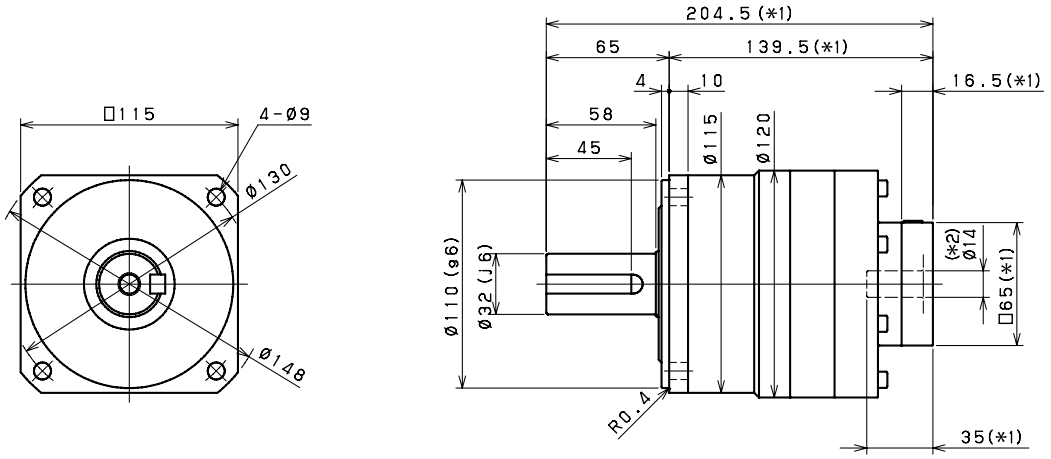
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

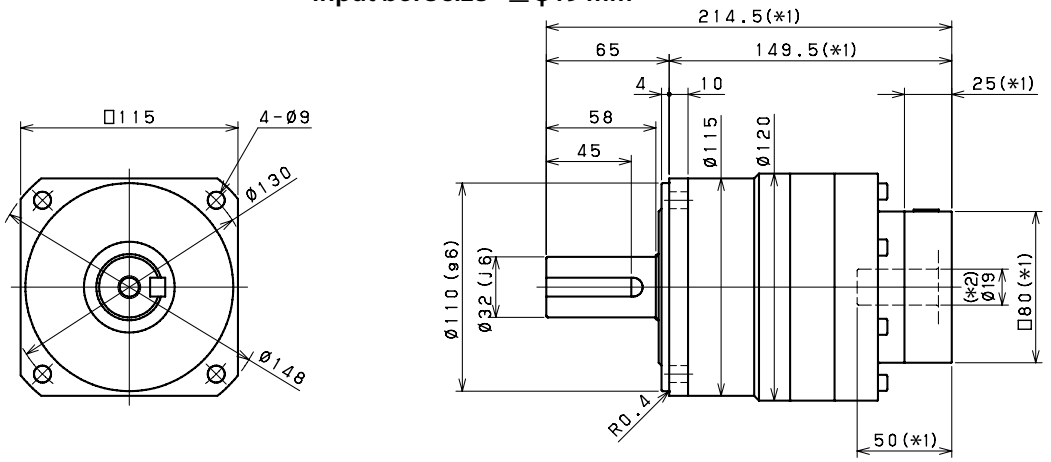
*2) Bushing will be inserted to adapt to motor shaft

VRB 115 2-Stage Dimensions

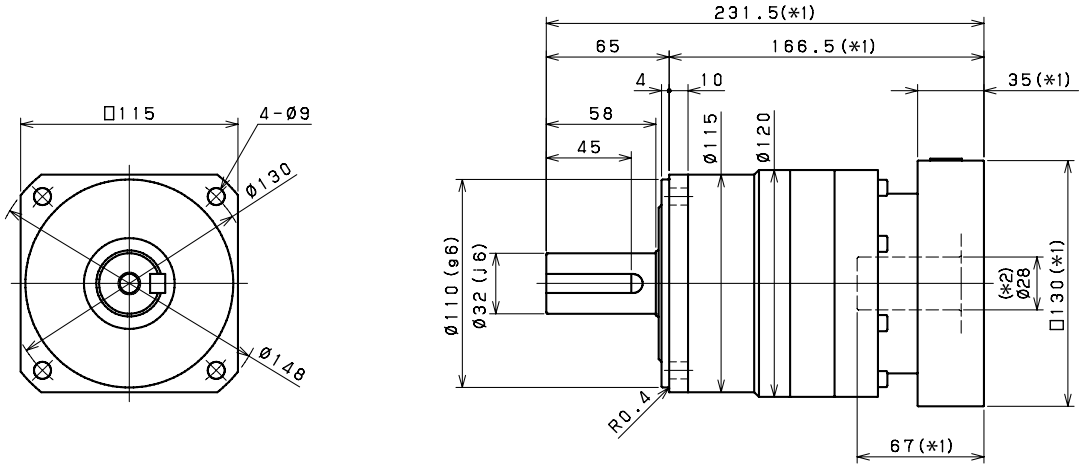
Input bore size ≦φ14 mm

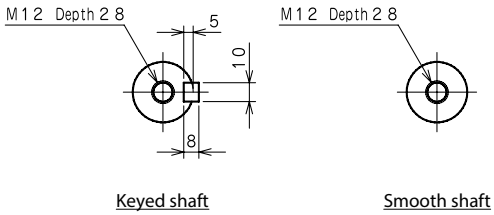


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 140 1-Stage Specifications

Frame Size	140									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	248	280	380	380	380	380	380	380
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	630	1000	1000	950	950	950	730	730
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2100	2100	2100	2100	2600	2600	2600	2600
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.63							
Maximum Radial Load	[N]	*8	9100							
Maximum Axial Load	[N]	*9	8200							
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	12	7.3	5.3	4.3	3.9	3.5	3.3	3.2
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	14	12	11	10	9.9	9.7	9.6
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	35	29	27	26	25	25	25	25
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	16							

*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value
*6) The maximum intermittent input speed
*7) Torque at no load applied to the input shaft at nominal input speed
*8) The maximum radial load that the gearbox can accept
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating
*11) This does not include lost motion
*12) Contact SIT S.p.A. for the testing conditions and environment
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*14) Weight may vary slightly between models

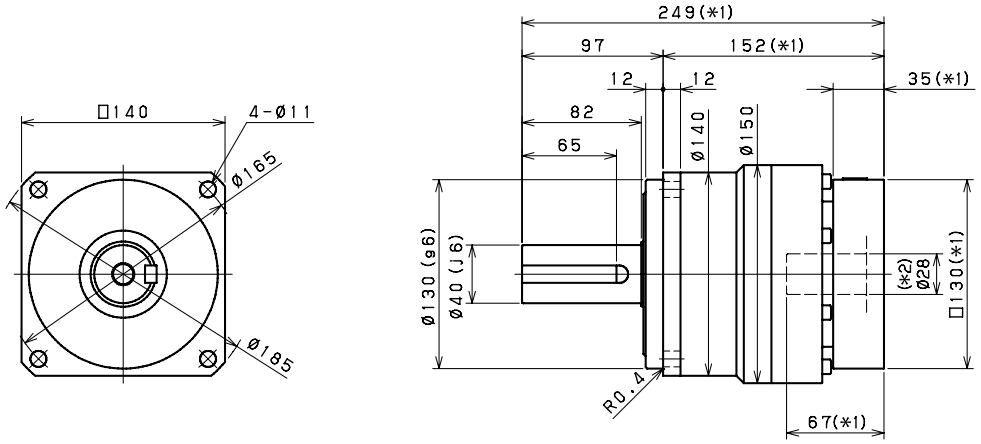
VRB 140 2-Stage Specifications

Frame Size	140									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	360	380	410	590	590	440	590	500
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	560	840	840
Maximum Torque	[Nm]	*3	560	840	840	840	840	560	840	840
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1250	1250
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	2900	2900	2900	2900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56							
Maximum Radial Load	[N]	*8	9100							
Maximum Axial Load	[N]	*9	8200							
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.6	3.5	2.4	2.4	3.3	1.1	2.3	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.4	5.3	4.2	4.1	5.1	2.9	4.1	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	11	12	10	10	11	9.2	10	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	26	27	25	25	26	24	25	24
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	17							

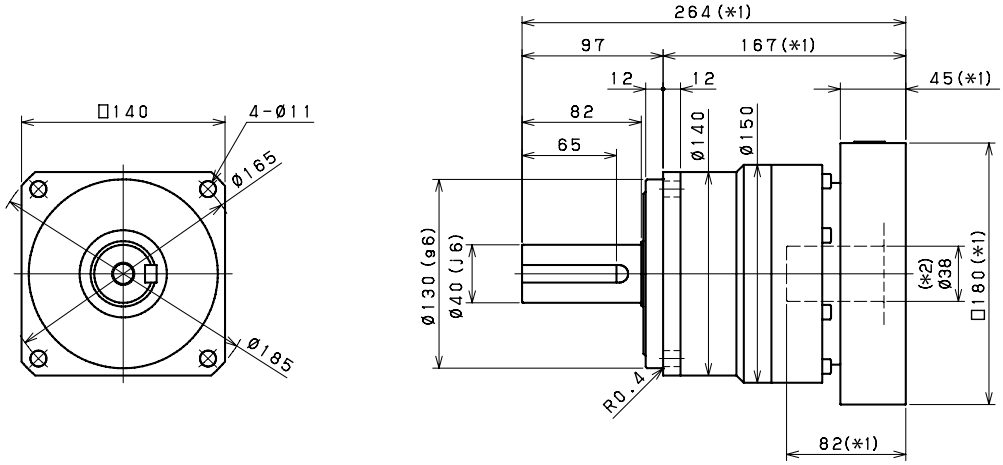
Frame Size	140								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	440	590	590	590	590	440	440
Maximum Acceleration Torque	[Nm]	*2	610	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	610	840	840	840	840	610	610
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2900	3200	3200	3900	3900	3900	3900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56						
Maximum Radial Load	[N]	*8	9100						
Maximum Axial Load	[N]	*9	8200						
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	0.65	0.64	0.64	0.63	0.63	0.63
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.3	1.1	1.1	1.1	1.1	1.1	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.0	2.8	2.8	2.8	2.8	2.8	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	10	9.1	9.1	9.1	9.1	9.1	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	25	24	24	24	24	24	24
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	60						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	17						

VRB 140 1-Stage Dimensions

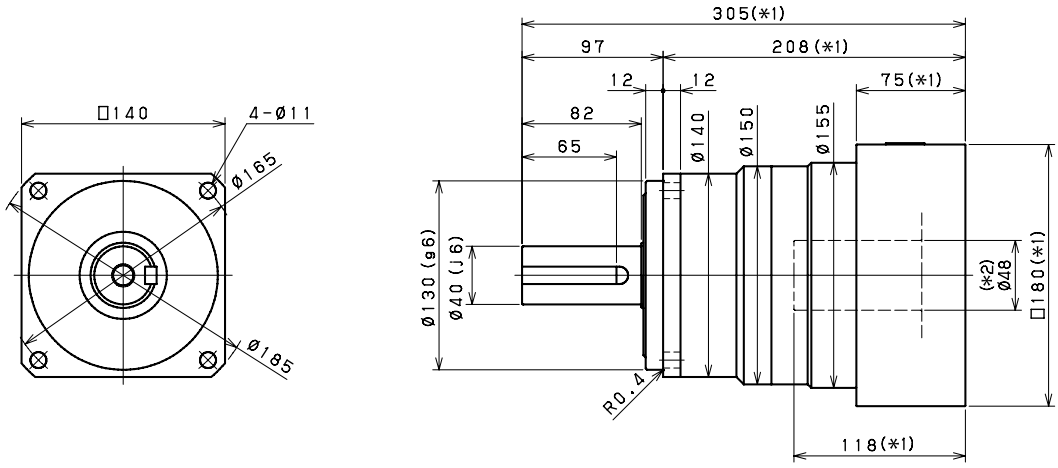
Input bore size ≦φ28 mm

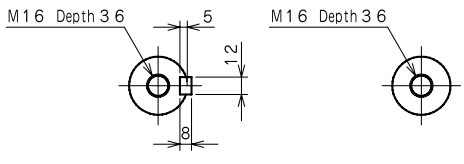


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





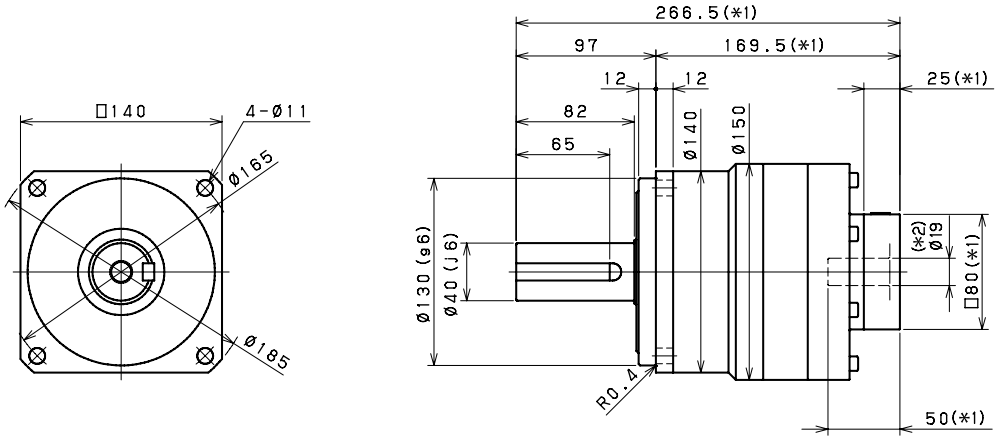
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

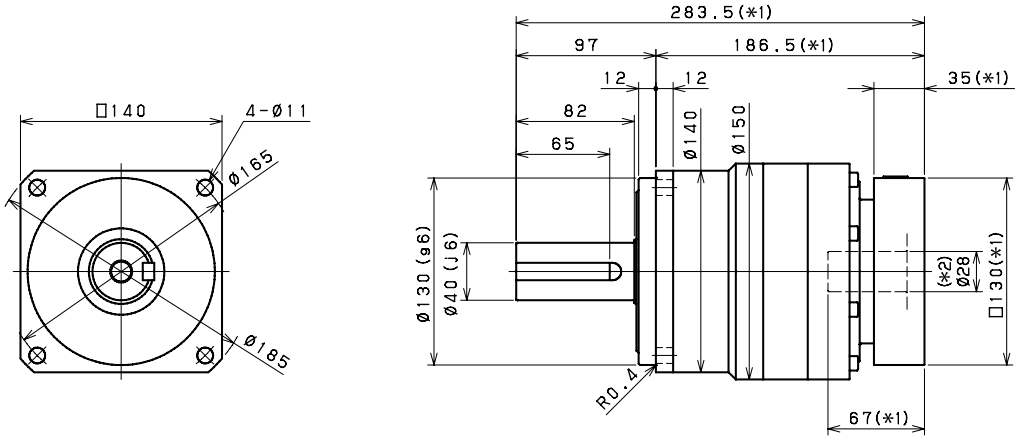
*2) Bushing will be inserted to adapt to motor shaft

VRB 140 2-Stage Dimensions

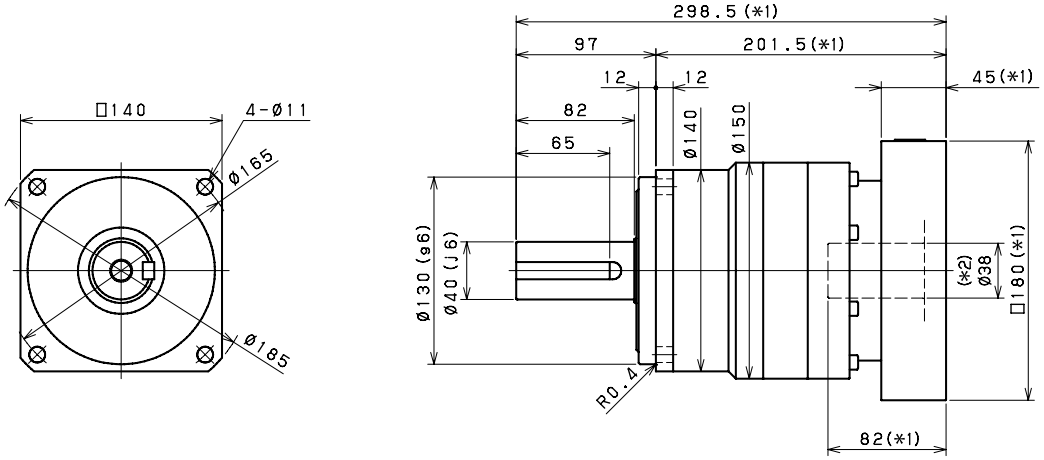
Input bore size ≦φ19 mm

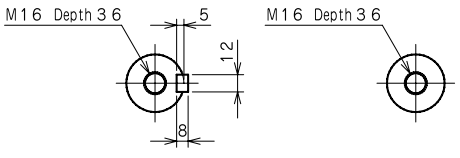


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 180 1-Stage Specifications

Frame Size			180							
Stage			1-Stage							
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	570	850	910	910	910	910	910	910
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1450	2250	2250	2150	2150	2150	1750	1750
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	1500	1500	1500	1500	2300	2300	2300	2300
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	2.68							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	43	26	19	15	14	13	12	12
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	57	41	34	31	29	28	27	27
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	110	85	78	75	73	72	71	71
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	36							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

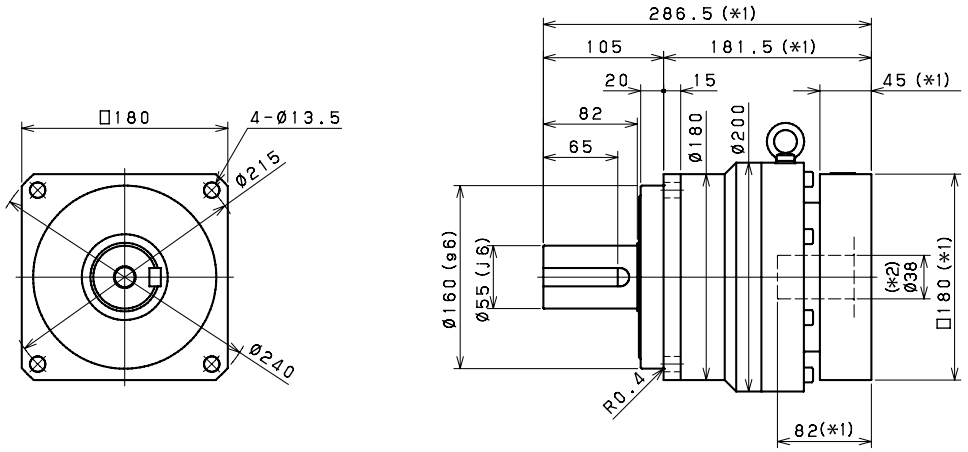
VRB 180 2-Stage Specifications

Frame Size			180							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	660	850	910	1100	1300	930	1300	1200
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1300	1850	1850
Maximum Torque	[Nm]	*3	1300	1850	1850	1850	1850	1300	1850	1850
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2750	2750
Nominal Input Speed	[rpm]	*5	2700	2700	2700	2700	2700	2700	2700	2700
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	8.8	11	8.1	7.9	11	4.0	7.6	3.9
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	15	18	14	14	17	10	14	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	30	33	29	29	32	25	29	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	37							

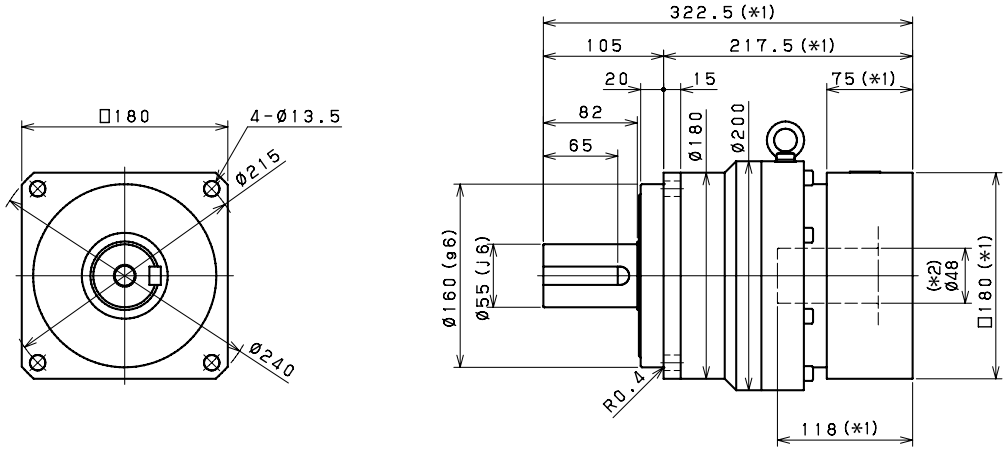
Frame Size			180						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	930	1300	1300	1300	1300	930	930
Maximum Acceleration Torque	[Nm]	*2	1350	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1350	1850	1850	1850	1850	1350	1350
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	2700	2900	2900	3400	3400	3400	3400
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39						
Maximum Radial Load	[N]	*8	15000						
Maximum Axial Load	[N]	*9	14000						
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	1.9	1.9	1.8	1.8	1.8	1.8
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	7.6	3.8	3.8	3.8	3.7	3.7	3.7
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	14	10	10	10	10	10	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	29	25	25	25	25	25	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	175						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	37						

VRB 180 1-Stage Dimensions

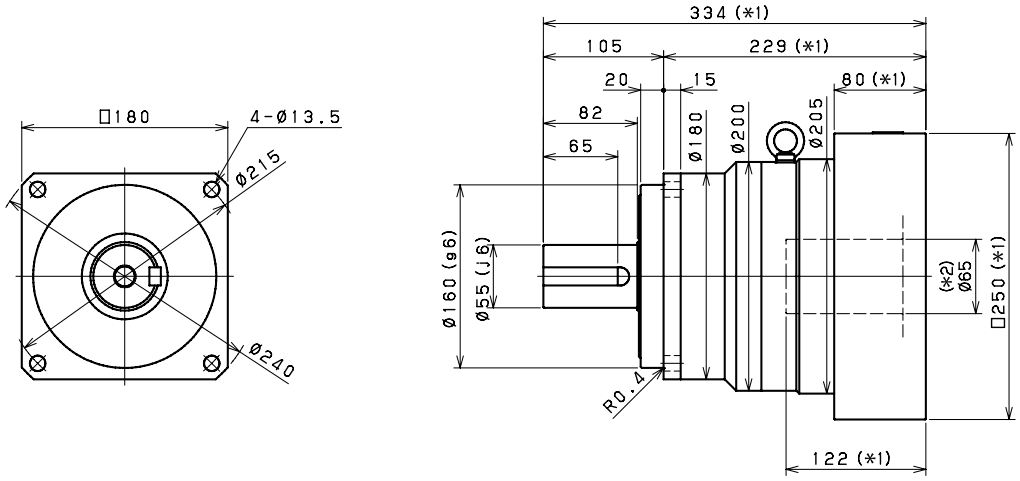
Input bore size ≦φ38 mm

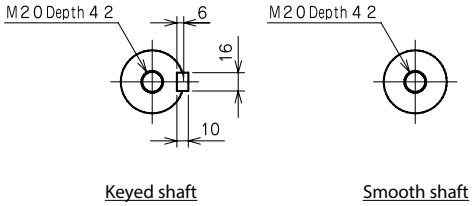


Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





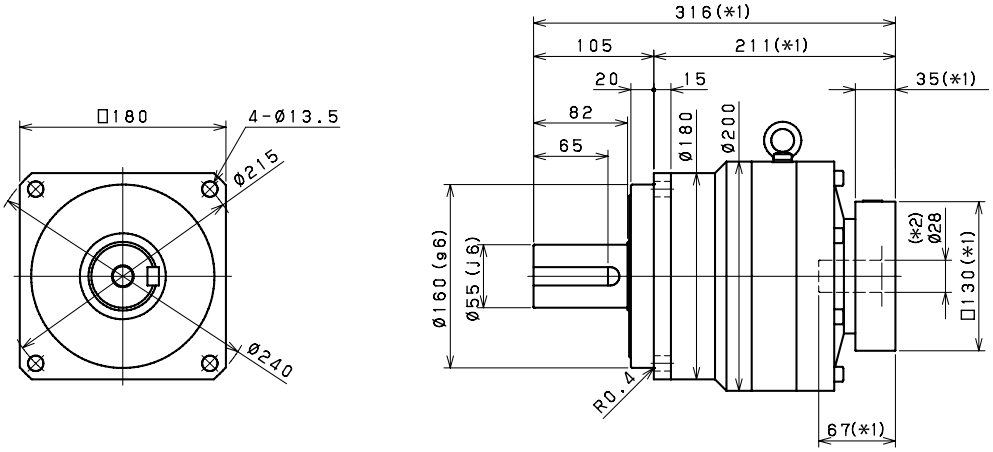
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

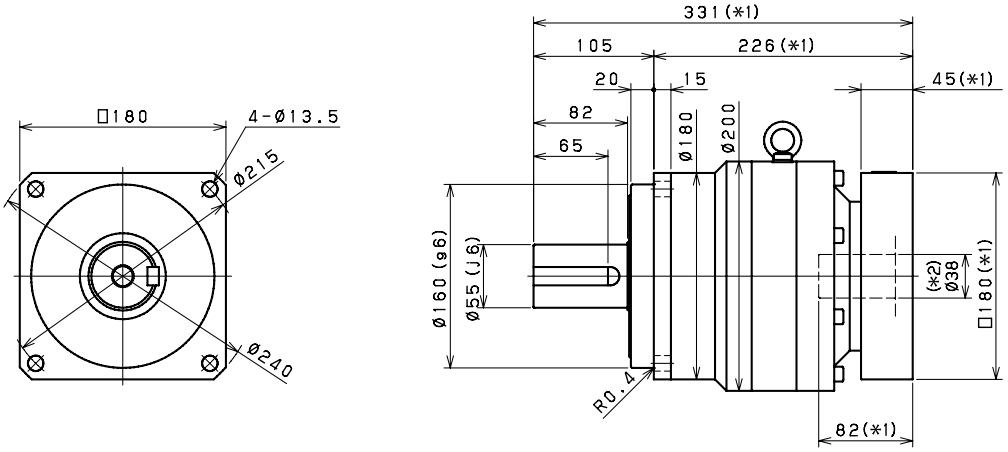
*2) Bushing will be inserted to adapt to motor shaft

VRB 180 2-Stage Dimensions

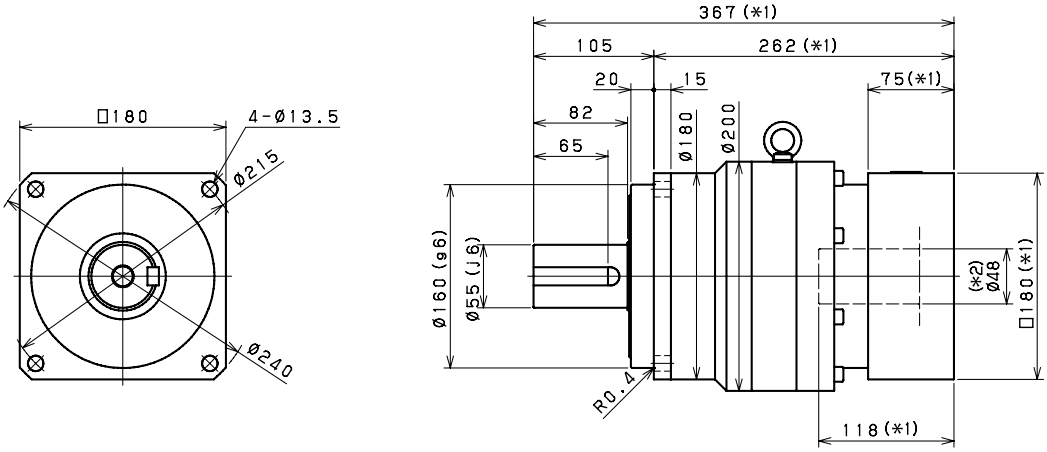
Input bore size ≦φ28 mm

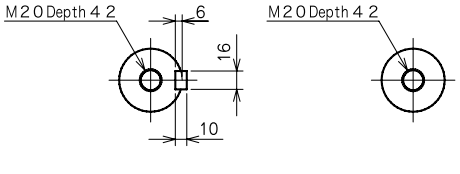


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRB 220 1-Stage Specifications

Frame Size	220									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	980	1400	1400	1600	1700	1700	1700	1700
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2900	2600	2200
Maximum Torque	[Nm]	*3	2400	3700	3700	3500	3500	3400	3000	2700
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	1200	1200	1500	1500	1700	1700	2000	2000
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	2.92							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	110	54	42	35	33	30	29	28
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	160	98	85	79	76	74	73	72
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	53							

*1) At nominal input speed, service life is 20,000 hours
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value
*6) The maximum intermittent input speed
*7) Torque at no load applied to the input shaft at nominal input speed
*8) The maximum radial load that the gearbox can accept
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating
*11) This does not include lost motion
*12) Contact SIT S.p.A. for the testing conditions and environment
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details
*14) Weight may vary slightly between models

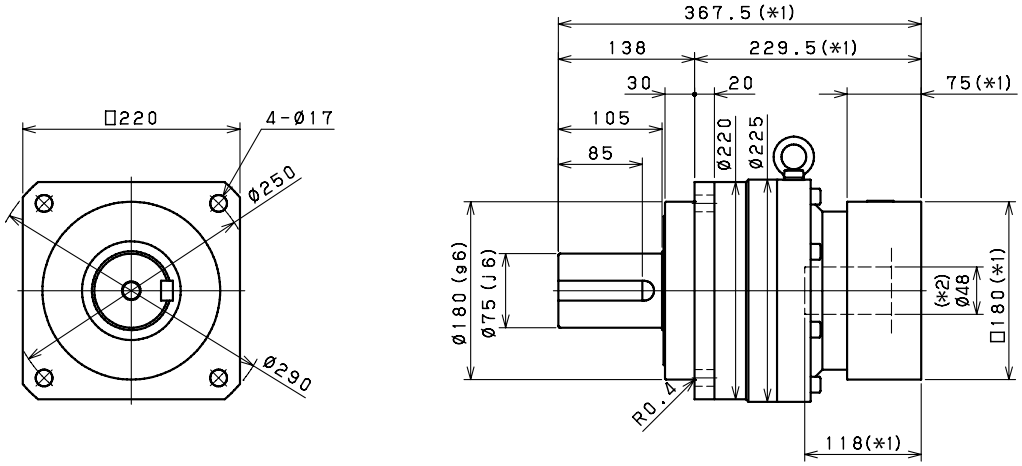
VRB 220 2-Stage Specifications

Frame Size			220							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	1100	1400	1500	1800	2000	1300	2000	2000
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2000	2900	2900
Maximum Torque	[Nm]	*3	2000	2900	2900	2900	2900	2000	2900	2900
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	5000	5000
Nominal Input Speed	[rpm]	*5	2200	2200	2200	2200	2200	2200	2200	2200
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14							
Maximum Radial Load	[N]	*8	15000							
Maximum Axial Load	[N]	*9	14000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	20	24	19	18	23	12	18	12
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	34	39	33	33	37	26	32	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	54							

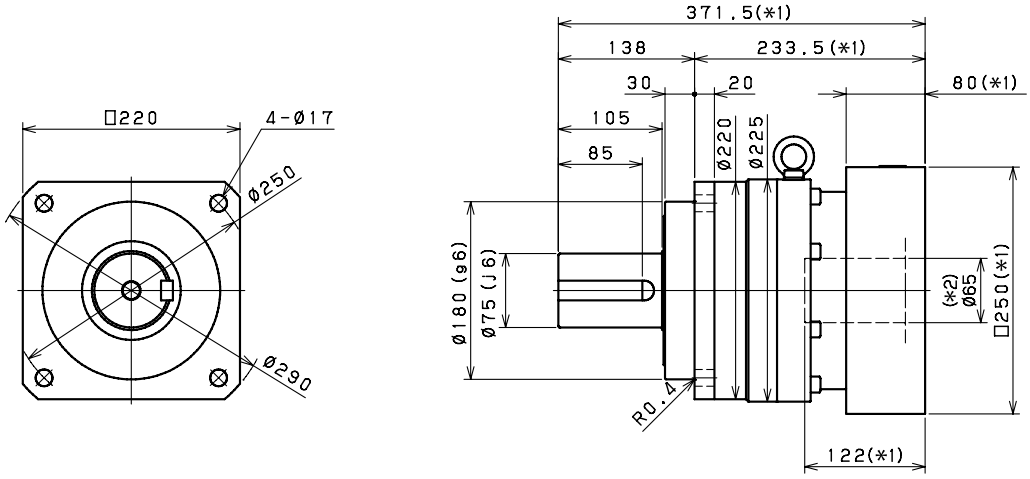
Frame Size			220						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	1300	2000	2000	2000	2000	1300	1300
Maximum Acceleration Torque	[Nm]	*2	1800	2900	2900	2900	2500	1800	1600
Maximum Torque	[Nm]	*3	1800	2900	2900	2900	2500	1800	1600
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	2200	2500	2500	3000	3000	3000	3000
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14						
Maximum Radial Load	[N]	*8	15000						
Maximum Axial Load	[N]	*9	14000						
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	4.7	4.7	4.6	4.6	4.6	4.6
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	12	11	11	11	11	11
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	32	26	26	26	26	26	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	400						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 61						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	54						

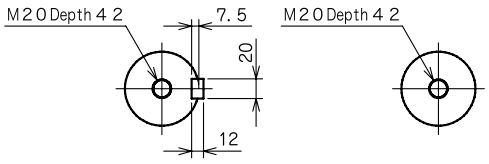
VRB 220 1-Stage Dimensions

Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





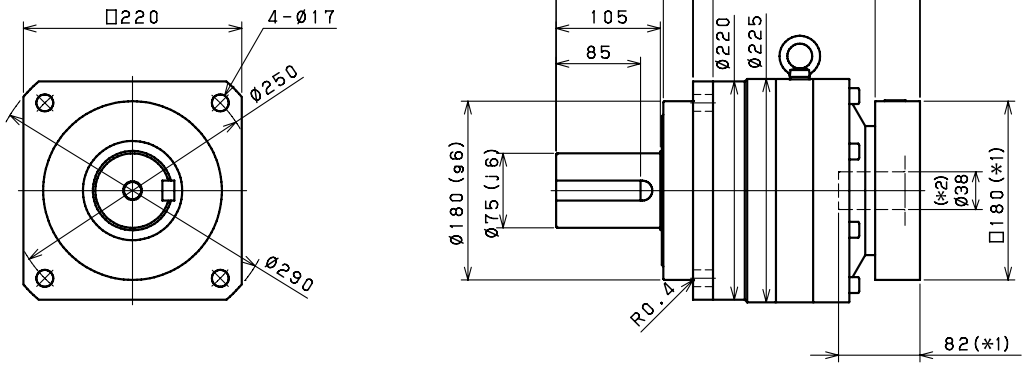
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

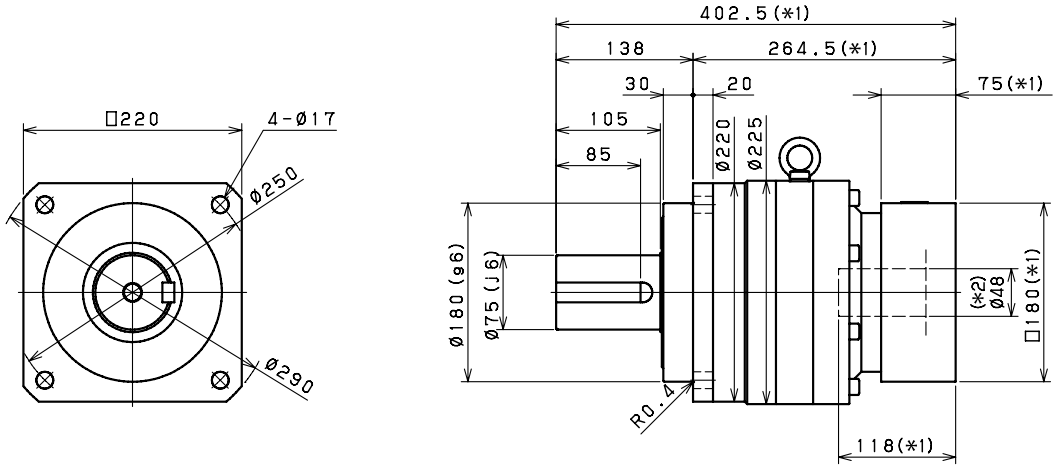
*2) Bushing will be inserted to adapt to motor shaft

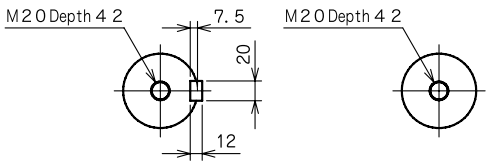
VRB 220 2-Stage Dimensions

Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS series

VRS planetary gearbox in line

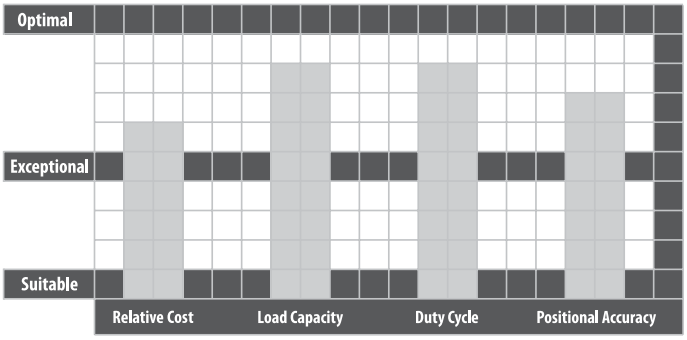
High precision, versatility and high radial and axial load

Description

Compact and precise, the VRS is the ideal solution for demanding positioning accuracy and speed requirements. This product is a proven performer in higher speed, continuous duty applications where heat reduction is critical. Equipped with two rows of robust tapered roller bearings, the VRS runs smoothly and quietly even with the most challenging dynamic and static forces.

The VRS is available with reduced backlash, less than 2 arc-min, to handle dynamic machine tool and robotic applications with ease. With maximum acceleration torques up to 3700Nm, this product is an excellent partner to higher capacity servomotor models. Our customers specify this product when the industry standard is simply not good enough.

- Proven performer in high end motion control applications with demanding accuracy requirements
- Excellent fit for difficult overhung load situations or continuous duty cycles
- The widest range of frame sizes and ratios available in the market
- Best-In-class standard backlash (≤3 arc-min) with reduced backlash options available
- Broad range of mounting adapters offer a simple, precise attachment to any motor
- Maintenance-free solution that is lubricated for life. High performance grease allows flexible mounting in any orientation
- Industry standard through-bolt mounting style



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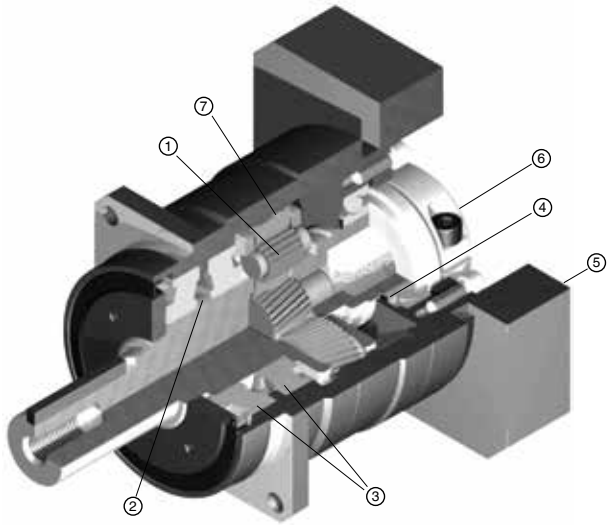


1 Carburized, case hardened helical gears with proprietary secondary finishing process for higher accuracy and smooth, quiet operation

2 One piece output shaft and planet carrier with two robust tapered bearings straddling the planet gears. Higher radial/ axial load capacity, stiffness, torque density and safety factor, with guaranteed alignment of gearing

3 Uncaged needle roller bearings provide excellent torque density and torsional rigidity

4 Unique labyrinth input seal design greatly reduces heat and increases system efficiency. IP65 protection is available for wash down applications

5 Optimized mounting system with active centering on motor pilot diameter guarantees alignment of motor. Motor can be installed in any orientation

6 True concentric motor shaft clamping connection, optimized for your specific motor. Reduced inertia for dynamic performance and balanced for high speed operation

7 Ring gear machined directly into the housing, not welded or pressed in. Provides greater concentricity and elimination of speed fluctuation

Part Number **VRS -100 C -7 -K 3 -19HB16**

- VRS: Model name - VRS series
- -100: Size: 060, 075, 100, 140, 180, 210, 240
- C: Version. **B** design version in exhaustion. Available on demand.
- -7: Ratio: 1 stage: 3, 4, 5, 6, 7, 8, 9, 10; 2 stage: 15, 16, 20, 25, 28, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
- -K: Output mounting style: K - Keyed shaft / S - Smooth shaft
- 3: Backlash: 3 arc-min
- -19HB16: Motor mounting code (*)

*1) Motor mounting code varies depending on the motor. Use the selection tool link below to configure the code.

VRS 060 1-Stage Specifications

Frame Size	060									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	19	27	28	28	28	28	28	28
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	55	79	79	79	79	76	55	55
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	3300	3300	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.15							
Maximum Radial Load	[N]	*8	3000							
Maximum Axial Load	[N]	*9	2700							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.15	0.10	0.080	0.070	0.064	0.060	0.058	0.056
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.26	0.21	0.19	0.18	0.18	0.17	0.17	0.17
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.54	0.49	0.47	0.46	0.45	0.45	0.45	0.44
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	3.5							
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 2							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.6							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

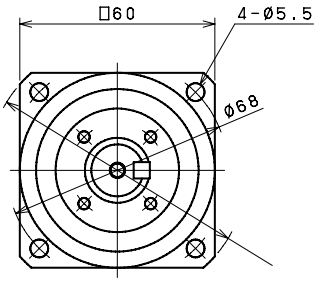
VRS 060 2-Stage Specifications

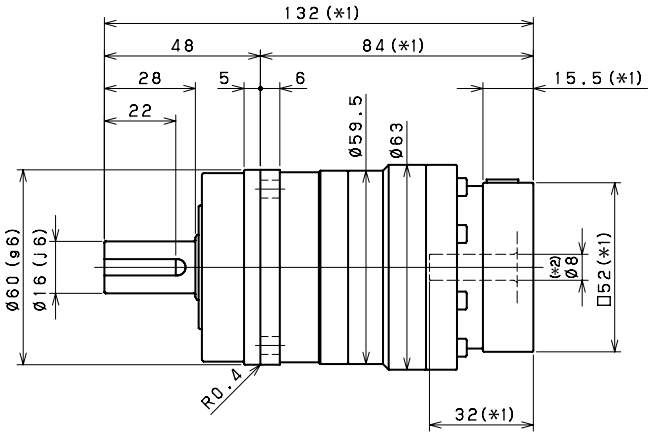
Frame Size	060									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	25	32	32	43	45	32	45	45
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	66	66
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	66	66
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	100	100
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04							
Maximum Radial Load	[N]	*8	3000							
Maximum Axial Load	[N]	*9	2700							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.064	0.070	0.062	0.062	0.068	0.052	0.061	0.051
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.18	0.18	0.17	0.17	0.18	0.16	0.17	0.16
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.45	0.46	0.45	0.45	0.46	0.44	0.45	0.44
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	3.5							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 66							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	1.8							

Frame Size	060								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	32	45	45	45	45	32	32
Maximum Acceleration Torque	[Nm]	*2	46	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	46	66	66	66	66	46	46
Emergency Stop Torque	[Nm]	*4	80	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	4000	4800	4800	5500	5500	5500	5500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04						
Maximum Radial Load	[N]	*8	3000						
Maximum Axial Load	[N]	*9	2700						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.061	0.051	0.051	0.051	0.051	0.051	0.051
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.17	0.16	0.16	0.16	0.16	0.16	0.16
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.45	0.44	0.44	0.44	0.44	0.44	0.44
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	3.5						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 66						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	1.8						

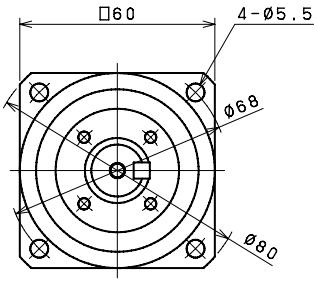
VRS 060 1-Stage Dimensions

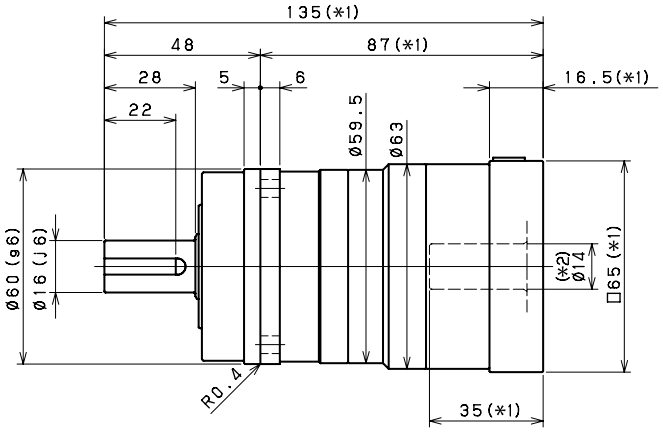
Input bore size ≦φ8 mm



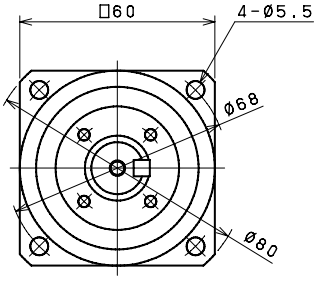


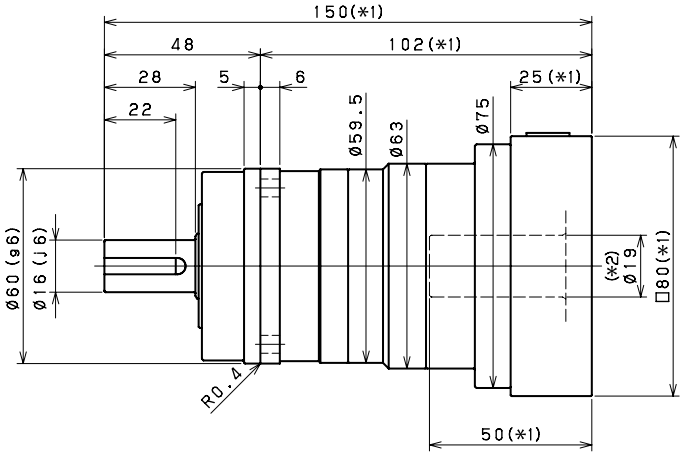
Input bore size ≦φ14 mm

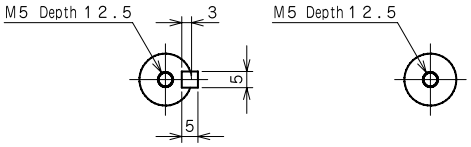




Input bore size ≦φ19 mm







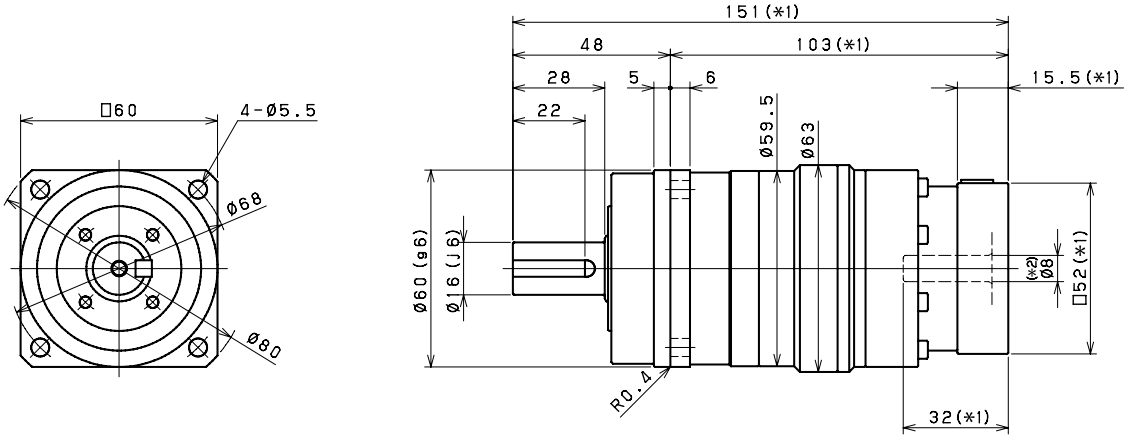
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

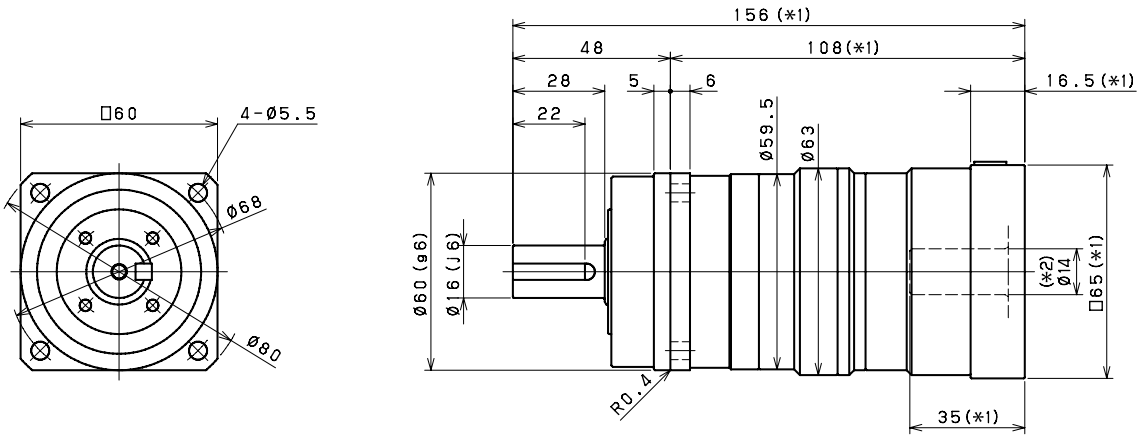
*2) Bushing will be inserted to adapt to motor shaft

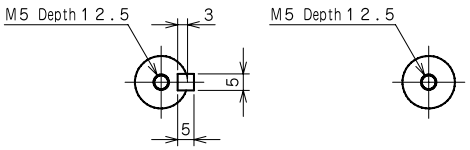
VRS 060 2-Stage Dimensions

Input bore size ≦φ8 mm



Input bore size ≦φ14 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS 075 1-Stage Specifications

Frame Size	075									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	53	77	84	84	84	84	84	84
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	135	200	200	195	195	190	145	145
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.35							
Maximum Radial Load	[N]	*8	4300							
Maximum Axial Load	[N]	*9	3900							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.68	0.48	0.39	0.34	0.32	0.31	0.30	0.29
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.1	0.87	0.79	0.74	0.72	0.71	0.70	0.69
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.9	2.6	2.6	2.5	2.5	2.5	2.5	2.4
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 2							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	3.4							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_o}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

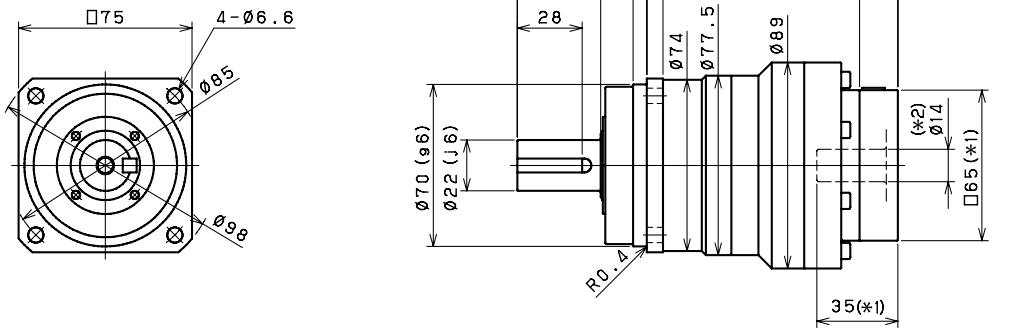
VRS 075 2-Stage Specifications

Frame Size	075									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	65	80	86	106	118	88	118	118
Maximum Acceleration Torque	[Nm]	*2	108	165	165	165	165	108	165	165
Maximum Torque	[Nm]	*3	108	165	165	165	165	108	165	165
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	250	250
Nominal Input Speed	[rpm]	*5	3500	3500	3500	3500	3500	3500	3500	3500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06							
Maximum Radial Load	[N]	*8	4300							
Maximum Axial Load	[N]	*9	3900							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.20	0.25	0.19	0.19	0.24	0.12	0.18	0.11
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.36	0.41	0.35	0.35	0.40	0.28	0.34	0.27
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	0.75	0.79	0.74	0.73	0.78	0.67	0.73	0.67
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.4
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	10							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	3.8							

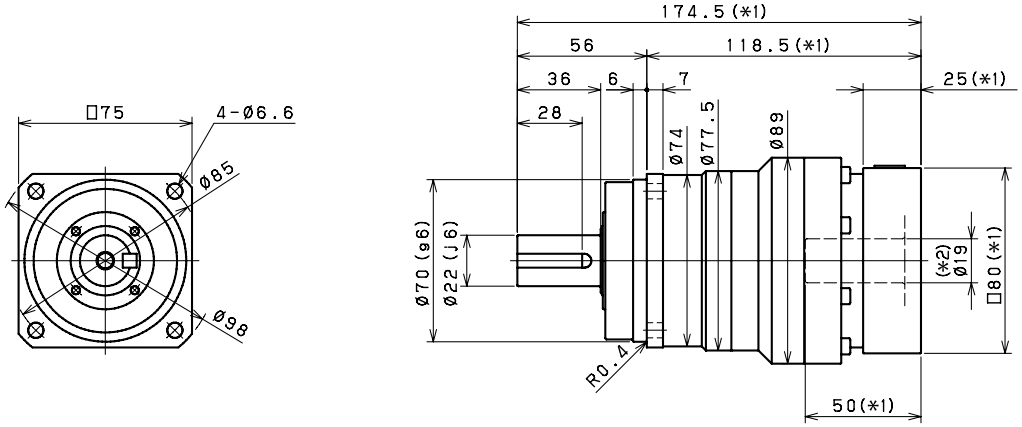
Frame Size	075								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	88	118	118	118	118	88	88
Maximum Acceleration Torque	[Nm]	*2	112	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	112	165	165	165	165	112	112
Emergency Stop Torque	[Nm]	*4	200	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	3500	3800	3800	4500	4500	4500	4500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.06						
Maximum Radial Load	[N]	*8	4300						
Maximum Axial Load	[N]	*9	3900						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	0.18	0.11	0.11	0.11	0.11	0.11	0.11
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.34	0.27	0.27	0.27	0.27	0.27	0.27
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	0.73	0.67	0.67	0.67	0.67	0.67	0.67
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.5	2.4	2.4	2.4	2.4	2.4	2.4
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	10						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	3.8						

VRS 075 1-Stage Dimensions

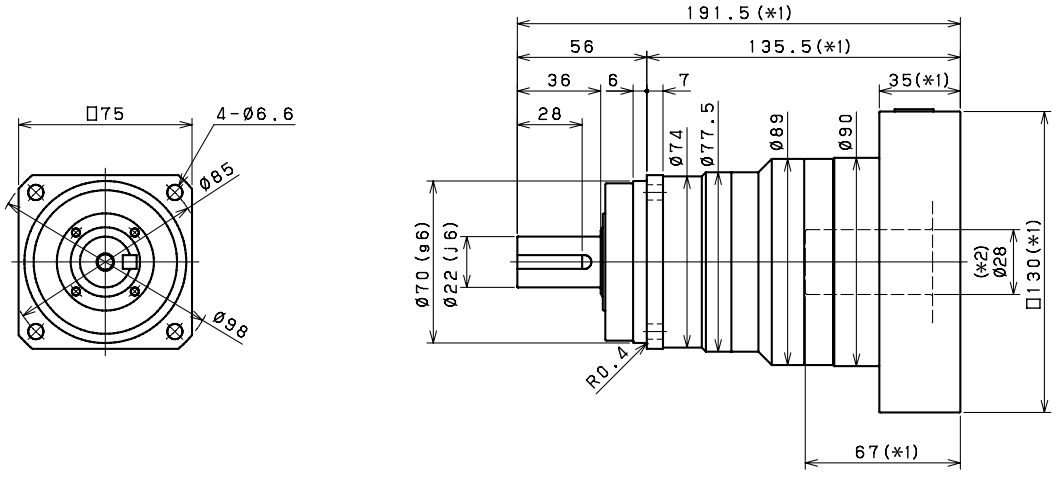
Input bore size ≦φ14 mm

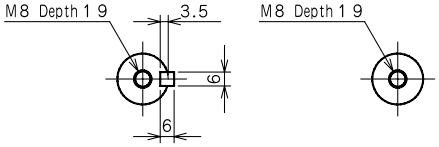


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





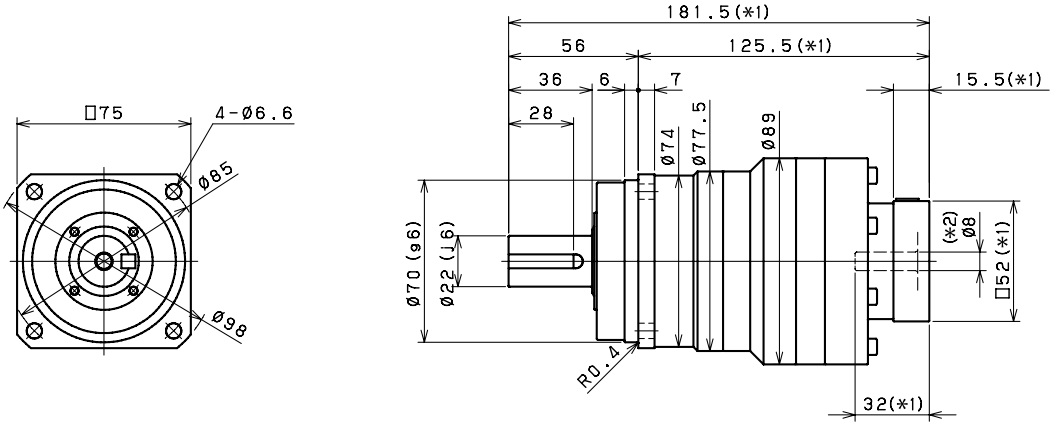
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

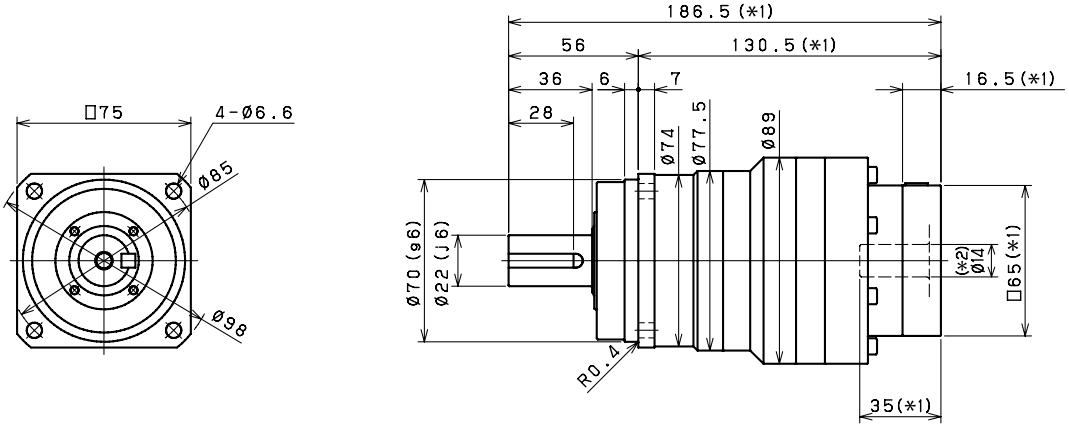
*2) Bushing will be inserted to adapt to motor shaft

VRS 075 2-Stage Dimensions

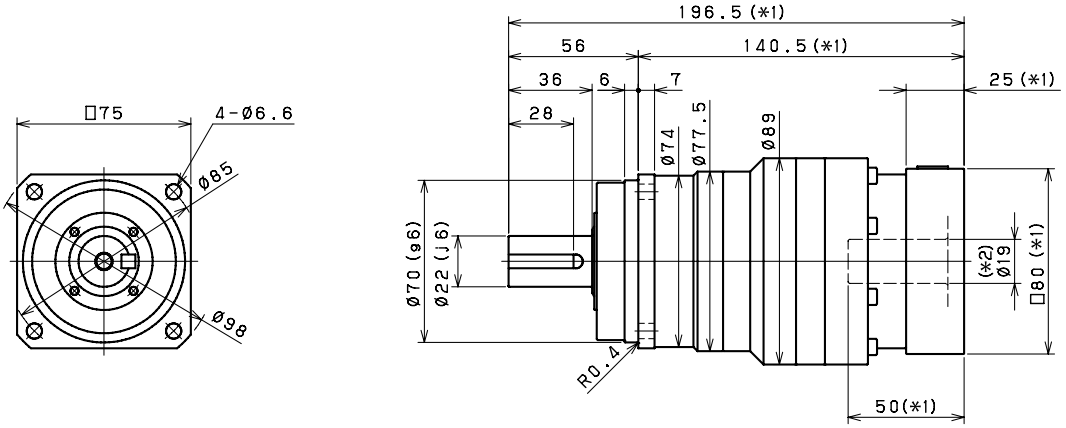
Input bore size ≦φ8 mm

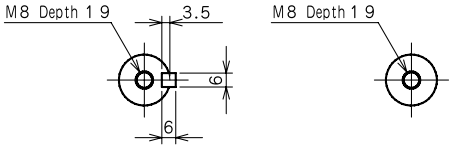


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS 100 1-Stage Specifications

Frame Size			100							
Stage			1-Stage							
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	128	146	190	190	190	190	190	190
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	340	490	490	480	480	480	370	370
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	2800	2800	2800	2800	2800	2800	2800	2800
Maximum Input Speed	[rpm]	*6	5500	5500	5500	5500	5500	5500	5500	5500
No Load Running Torque	[Nm]	*7	1.30							
Maximum Radial Load	[N]	*8	7000							
Maximum Axial Load	[N]	*9	6300							
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	3.1	1.9	1.4	1.1	1.0	0.91	0.85	0.82
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	5.0	3.7	3.1	2.8	2.7	2.6	2.6	2.5
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	12	10	9.5	9.2	9.1	8.9	8.9	8.8
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1							
Noise Level	dB [A]	*12	≤ 71							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	8.1							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

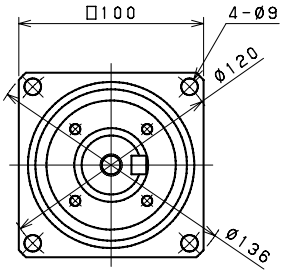
VRS 100 2-Stage Specifications

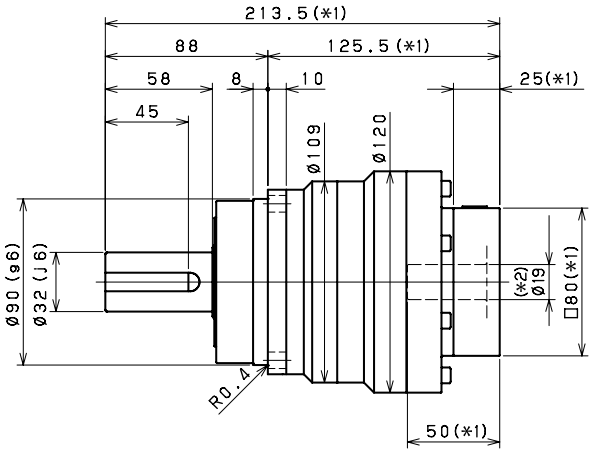
Frame Size			100							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	174	200	220	280	280	220	280	270
Maximum Acceleration Torque	[Nm]	*2	270	390	390	390	390	270	390	390
Maximum Torque	[Nm]	*3	270	390	390	390	390	270	390	390
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	625	625
Nominal Input Speed	[rpm]	*5	3100	3100	3100	3100	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42							
Maximum Radial Load	[N]	*8	7000							
Maximum Axial Load	[N]	*9	6300							
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.76	0.97	0.72	0.70	0.92	0.38	0.68	0.37
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.1	1.4	1.1	1.1	1.3	0.78	1.1	0.77
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.9	3.1	2.8	2.8	3	2.5	2.8	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.2	9.4	9.1	9.1	9.3	8.8	9.1	8.8
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	31							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 71							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	8.8							

Frame Size			100						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	220	280	280	280	280	220	220
Maximum Acceleration Torque	[Nm]	*2	292	390	390	390	390	292	292
Maximum Torque	[Nm]	*3	292	390	390	390	390	292	292
Emergency Stop Torque	[Nm]	*4	500	625	625	625	625	500	500
Nominal Input Speed	[rpm]	*5	3100	3500	3500	4200	4200	4200	4200
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.42						
Maximum Radial Load	[N]	*8	7000						
Maximum Axial Load	[N]	*9	6300						
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	0.19	0.19	0.19	0.19	0.19	0.19
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	0.68	0.36	0.36	0.36	0.36	0.36	0.36
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	1.1	0.76	0.76	0.76	0.76	0.76	0.76
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	2.8	2.5	2.5	2.5	2.5	2.5	2.5
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	9.1	8.8	8.8	8.8	8.8	8.8	8.8
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	31						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 71						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	8.8						

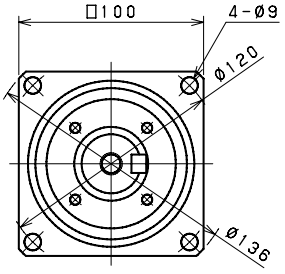
VRS 100 1-Stage Dimensions

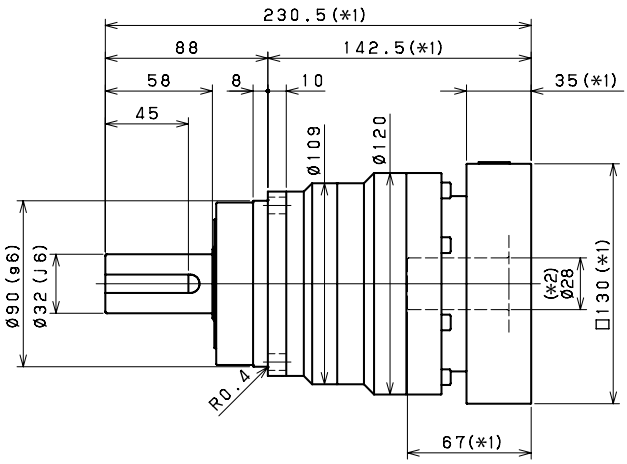
Input bore size ≦φ19 mm



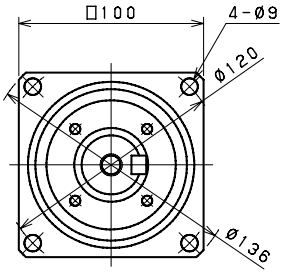


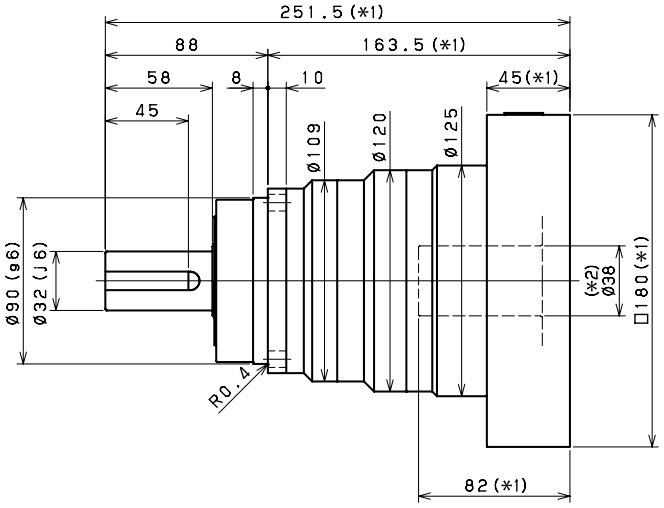
Input bore size ≦φ28 mm

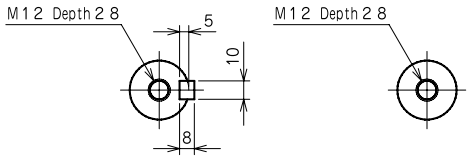




Input bore size ≦φ38 mm







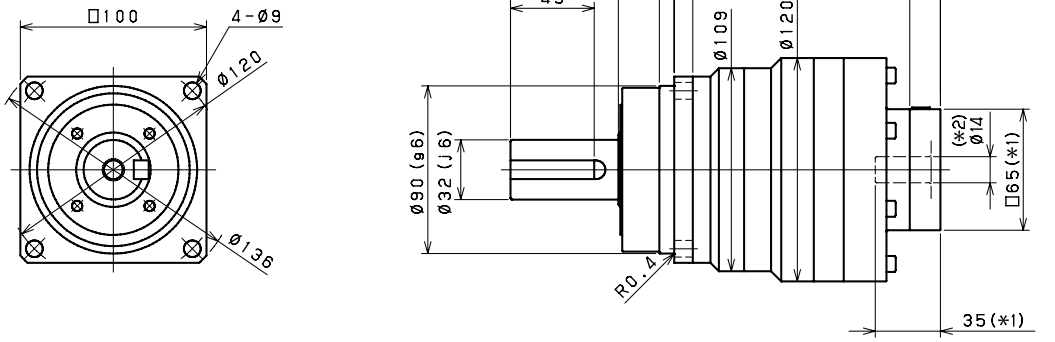
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

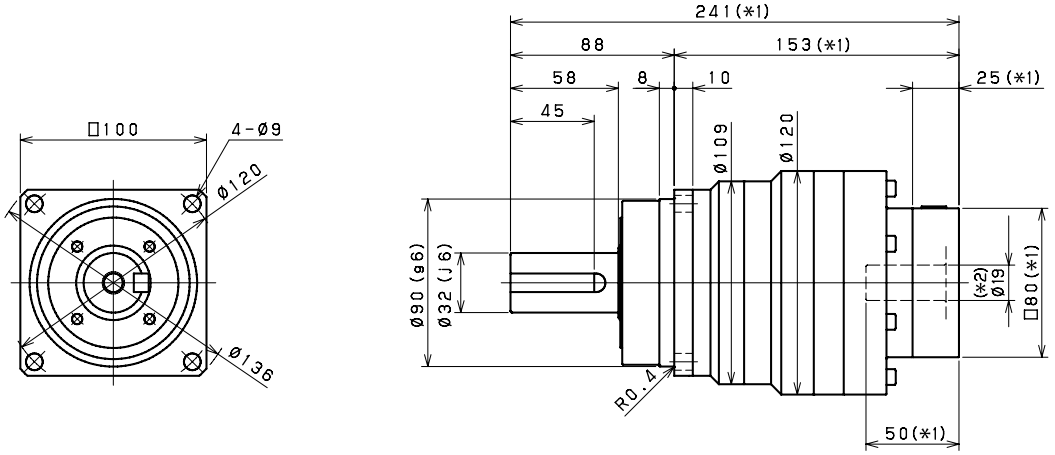
*2) Bushing will be inserted to adapt to motor shaft

VRS 100 2-Stage Dimensions

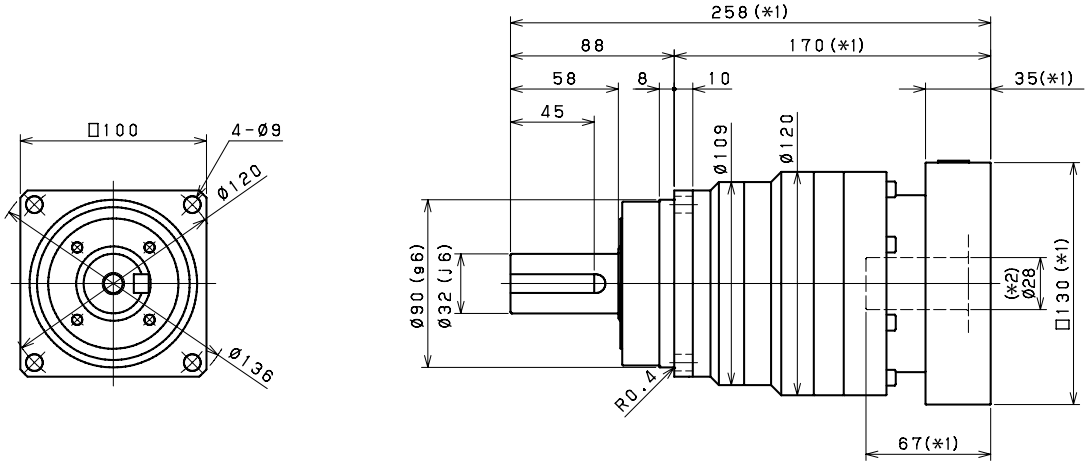
Input bore size ≦φ14 mm

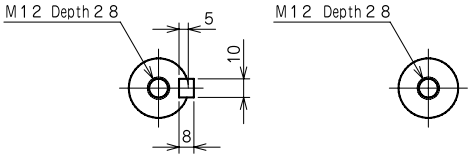


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS 140 1-Stage Specifications

Frame Size			140							
Stage			1-Stage							
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	248	280	380	380	380	380	380	380
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	630	1000	1000	950	950	950	730	730
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2100	2100	2100	2100	2600	2600	2600	2600
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.63							
Maximum Radial Load	[N]	*8	10000							
Maximum Axial Load	[N]	*9	9000							
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	12	7.2	5.2	4.3	3.8	3.5	3.3	3.2
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	14	12	11	10	9.9	9.7	9.6
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	35	29	27	26	25	25	25	25
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	17							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

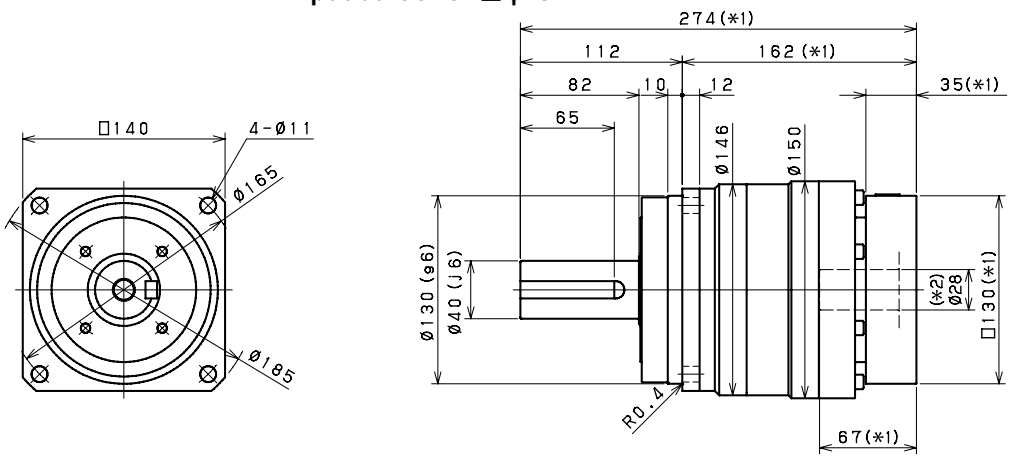
VRS 140 2-Stage Specifications

Frame Size			140							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	360	380	410	590	590	440	590	500
Maximum Acceleration Torque	[Nm]	*2	560	840	840	840	840	560	840	840
Maximum Torque	[Nm]	*3	560	840	840	840	840	560	840	840
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1250	1250
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900	2900	2900	2900	2900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56							
Maximum Radial Load	[N]	*8	10000							
Maximum Axial Load	[N]	*9	9000							
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.6	3.5	2.4	2.4	3.3	1.1	2.3	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.4	5.3	4.2	4.1	5.1	2.9	4.1	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	11	12	10	10	11	9.2	10	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	26	27	25	25	26	24	25	24
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	60							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	19							

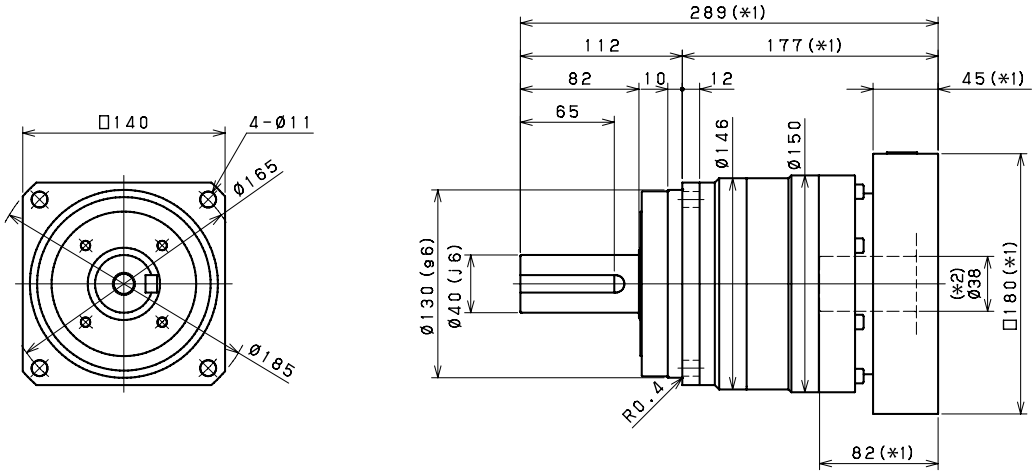
Frame Size			140						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	440	590	590	590	590	440	440
Maximum Acceleration Torque	[Nm]	*2	610	840	840	840	840	610	610
Maximum Torque	[Nm]	*3	610	840	840	840	840	610	610
Emergency Stop Torque	[Nm]	*4	1000	1250	1250	1250	1250	1000	1000
Nominal Input Speed	[rpm]	*5	2900	3200	3200	3900	3900	3900	3900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.56						
Maximum Radial Load	[N]	*8	10000						
Maximum Axial Load	[N]	*9	9000						
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	0.65	0.64	0.64	0.63	0.63	0.63
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.3	1.1	1.1	1.1	1.1	1.1	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.0	2.8	2.8	2.8	2.8	2.8	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	10	9.1	9.1	9.1	9.1	9.1	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	25	24	24	24	24	24	24
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	60						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	19						

VRS 140 1-Stage Dimensions

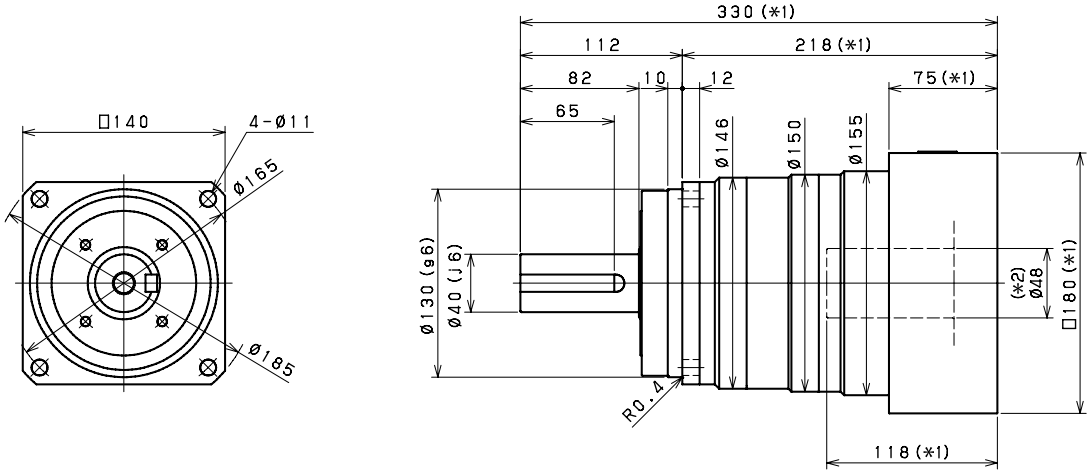
Input bore size ≦φ28 mm

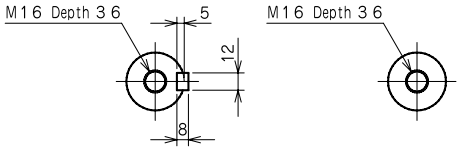


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





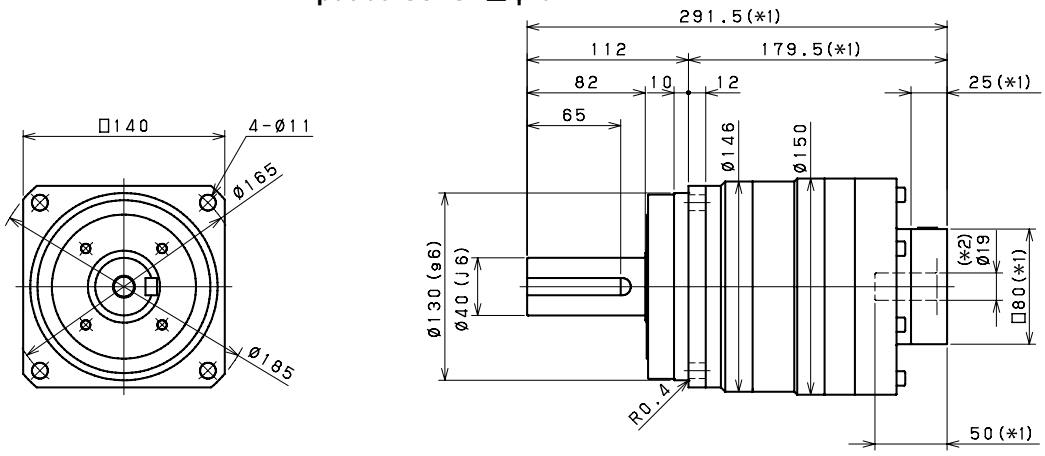
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

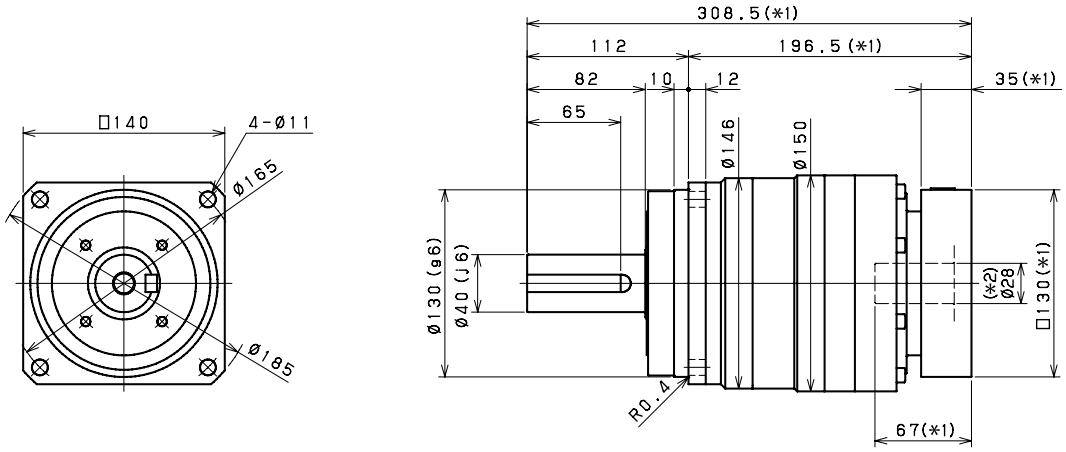
*2) Bushing will be inserted to adapt to motor shaft

VRS 140 2-Stage Dimensions

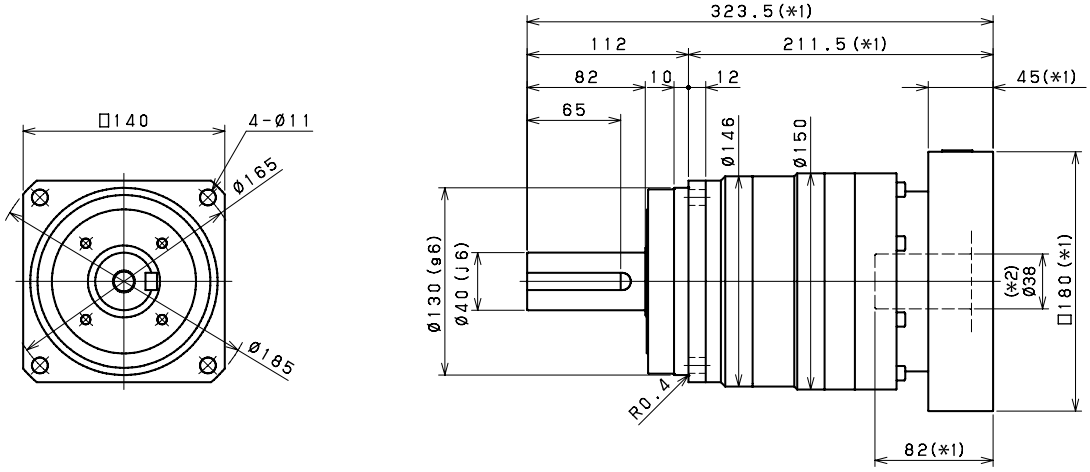
Input bore size ≦φ19 mm

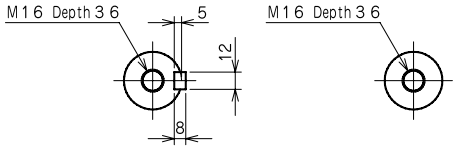


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS 180 1-Stage Specifications

Frame Size			180							
Stage			1-Stage							
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	570	850	910	910	910	910	910	910
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1450	2250	2250	2150	2150	2150	1750	1750
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	1500	1500	1500	1500	2300	2300	2300	2300
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	2.68							
Maximum Radial Load	[N]	*8	19000							
Maximum Axial Load	[N]	*9	17000							
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	41	25	18	15	13	12	12	11
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	55	40	33	30	29	27	27	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	110	84	78	74	73	71	71	70
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	39							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

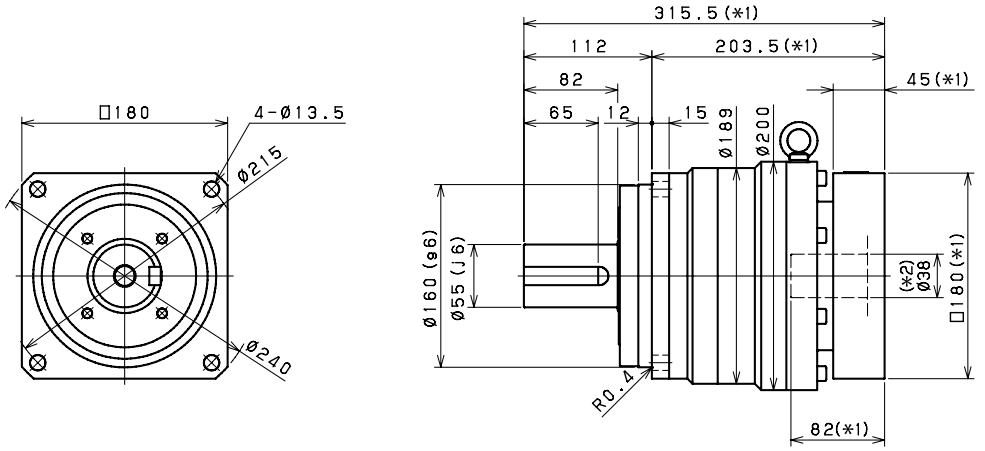
VRS 180 2-Stage Specifications

Frame Size			180							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	660	850	910	1100	1300	930	1300	1200
Maximum Acceleration Torque	[Nm]	*2	1300	1850	1850	1850	1850	1300	1850	1850
Maximum Torque	[Nm]	*3	1300	1850	1850	1850	1850	1300	1850	1850
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2750	2750
Nominal Input Speed	[rpm]	*5	2700	2700	2700	2700	2700	2700	2700	2700
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39							
Maximum Radial Load	[N]	*8	19000							
Maximum Axial Load	[N]	*9	17000							
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	8.7	11	8.1	7.8	11	4	7.6	3.9
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	15	18	14	14	17	10	14	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	30	32	29	29	32	25	29	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	34	39	33	33	38	26	32	26
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	175							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 67							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	40							

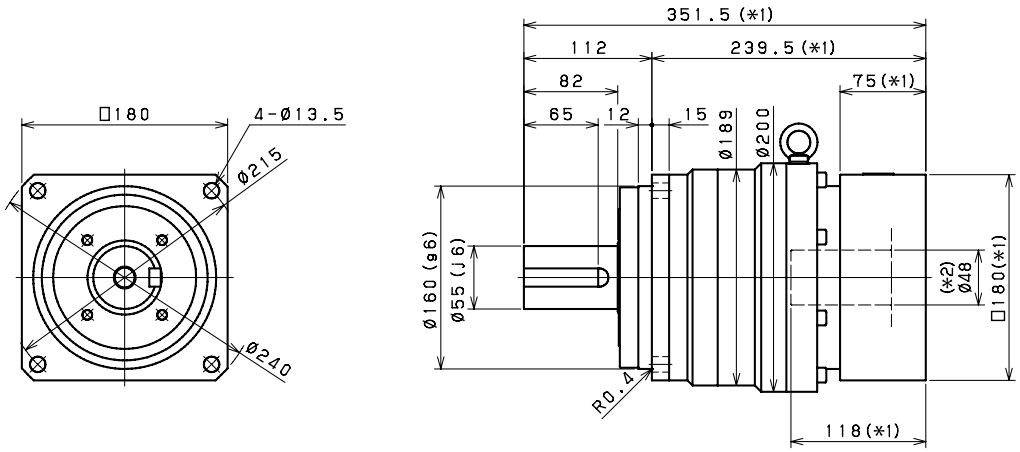
Frame Size			180						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	930	1300	1300	1300	1300	930	930
Maximum Acceleration Torque	[Nm]	*2	1350	1850	1850	1850	1850	1350	1350
Maximum Torque	[Nm]	*3	1350	1850	1850	1850	1850	1350	1350
Emergency Stop Torque	[Nm]	*4	2200	2750	2750	2750	2750	2200	2200
Nominal Input Speed	[rpm]	*5	2700	2900	2900	3400	3400	3400	3400
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.39						
Maximum Radial Load	[N]	*8	19000						
Maximum Axial Load	[N]	*9	17000						
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	1.9	1.9	1.8	1.8	1.8	1.8
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	7.6	3.8	3.8	3.8	3.7	3.7	3.7
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	14	10	10	10	10	10	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	29	25	25	25	25	25	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	32	26	26	26	26	26	26
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	175						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 67						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	40						

VRS 180 1-Stage Dimensions

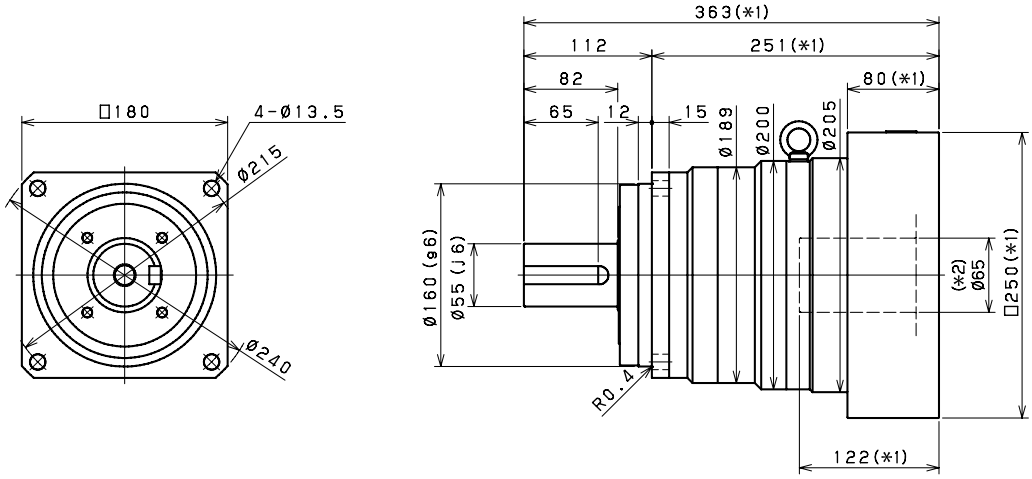
Input bore size ≦φ38 mm

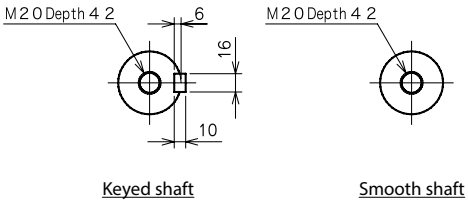


Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





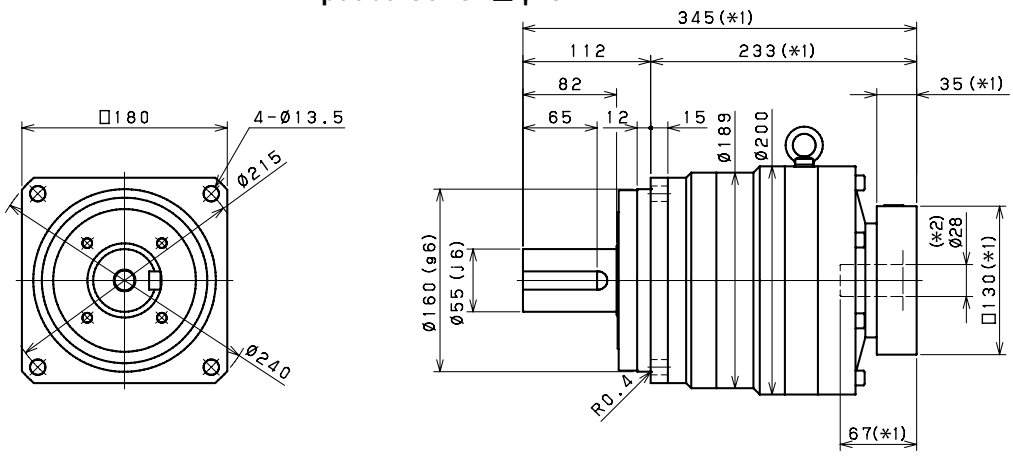
Keyed shaft Smooth shaft

*1) Length will vary depending on motor

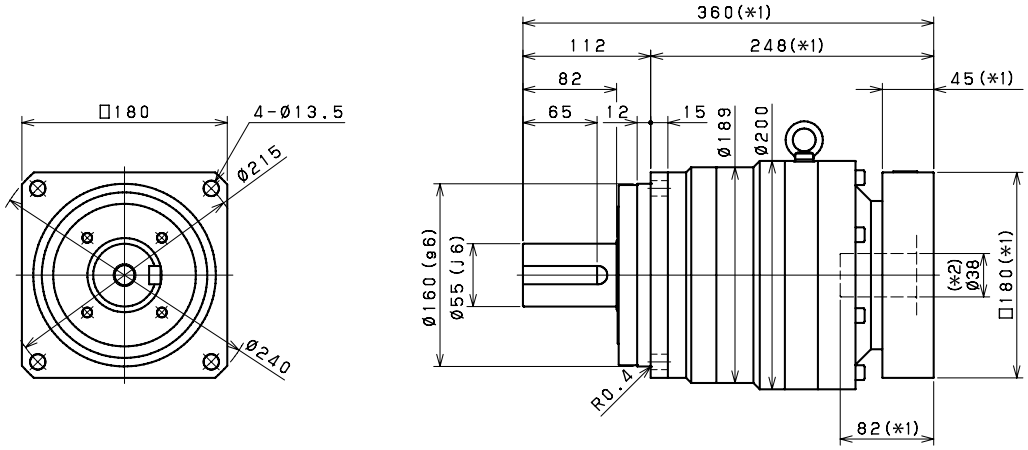
*2) Bushing will be inserted to adapt to motor shaft

VRS 180 2-Stage Dimensions

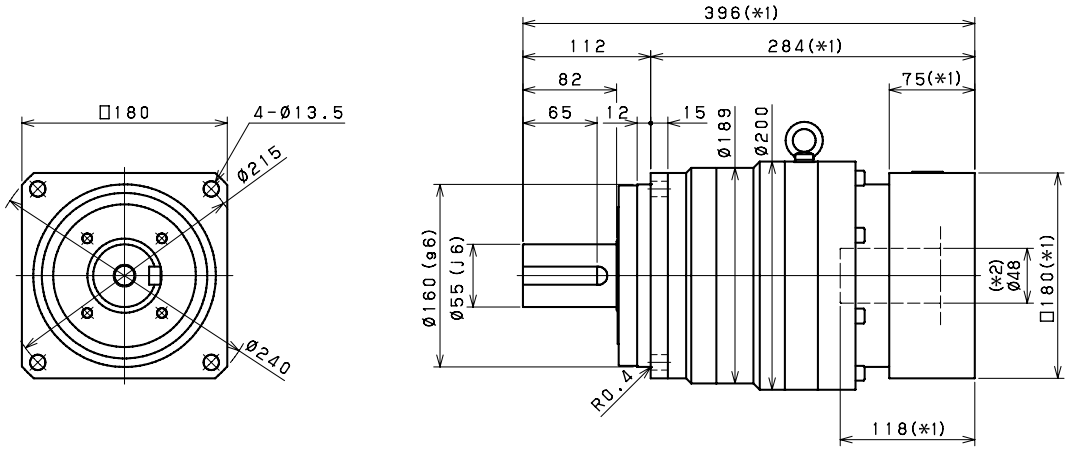
Input bore size ≦φ28 mm

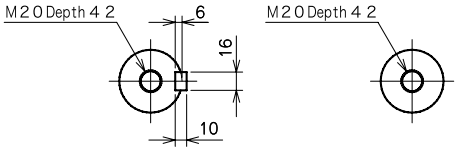


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





Keyed shaft

Smooth shaft

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRS 210 1-Stage Specifications

Frame Size	210									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	980	1400	1400	1600	1700	1700	1700	1700
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2900	2600	2200
Maximum Torque	[Nm]	*3	2400	3700	3700	3500	3500	3400	3000	2700
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	1200	1200	1500	1500	1700	1700	2000	2000
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	2.92							
Maximum Radial Load	[N]	*8	24000							
Maximum Axial Load	[N]	*9	22000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	110	55	42	36	33	31	29	28
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	160	99	86	80	77	74	73	72
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	59							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

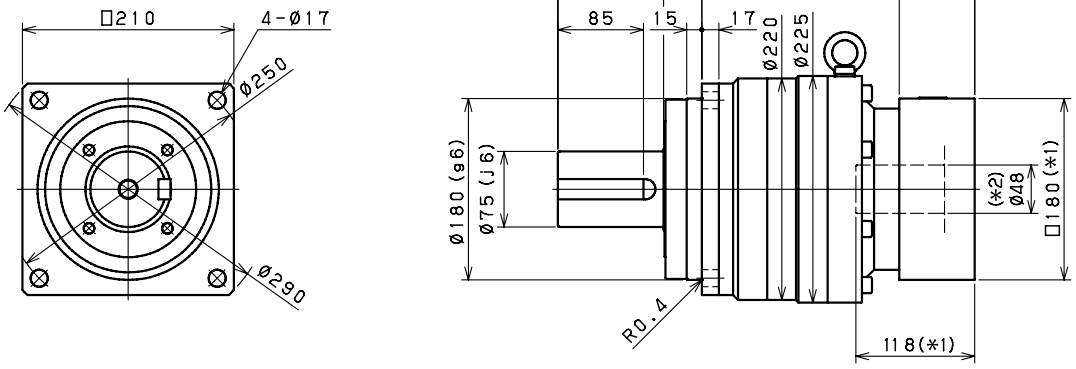
VRS 210 2-Stage Specifications

Frame Size			210							
Stage			2-Stage							
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	1100	1400	1500	1800	2000	1300	2000	2000
Maximum Acceleration Torque	[Nm]	*2	2000	2900	2900	2900	2900	2000	2900	2900
Maximum Torque	[Nm]	*3	2000	2900	2900	2900	2900	2000	2900	2900
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	5000	5000
Nominal Input Speed	[rpm]	*5	2200	2200	2200	2200	2200	2200	2200	2200
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14							
Maximum Radial Load	[N]	*8	24000							
Maximum Axial Load	[N]	*9	22000							
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	20	24	19	18	23	12	18	12
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	34	39	33	33	38	26	32	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	400							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 61							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	60							

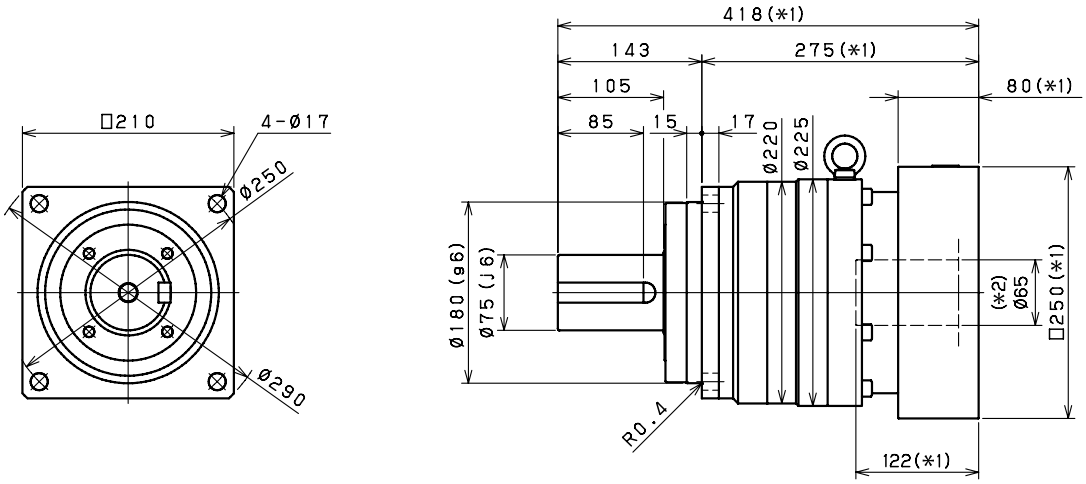
Frame Size			210						
Stage			2-Stage						
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	1300	2000	2000	2000	2000	1300	1300
Maximum Acceleration Torque	[Nm]	*2	1800	2900	2900	2900	2500	1800	1600
Maximum Torque	[Nm]	*3	1800	2900	2900	2900	2500	1800	1600
Emergency Stop Torque	[Nm]	*4	4000	5000	5000	5000	5000	4000	4000
Nominal Input Speed	[rpm]	*5	2200	2500	2500	3000	3000	3000	3000
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.14						
Maximum Radial Load	[N]	*8	24000						
Maximum Axial Load	[N]	*9	22000						
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	4.7	4.7	4.6	4.6	4.6	4.6
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	18	12	11	11	11	11	11
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	32	26	26	26	26	26	26
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	400						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 61						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	60						

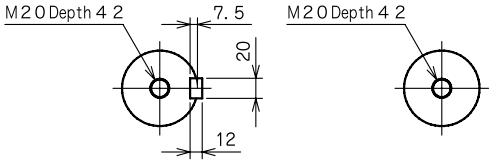
VRS 210 1-Stage Dimensions

Input bore size ≦φ48 mm



Input bore size ≦φ65 mm





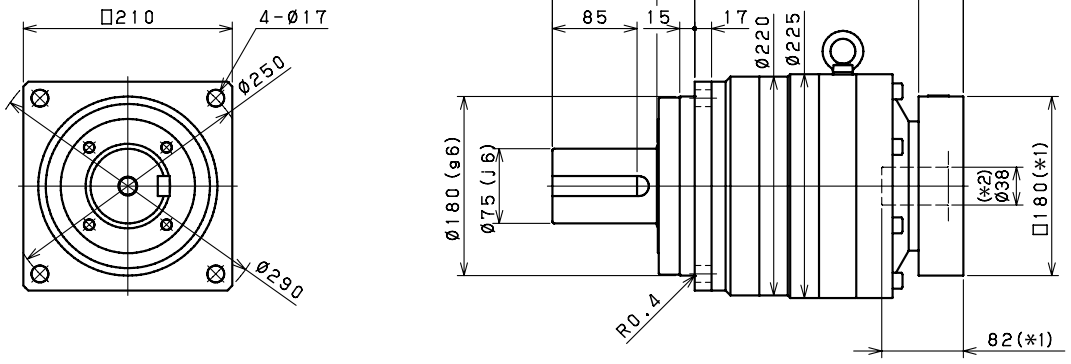
Keyed shaft Smooth shaft

*1) Length will vary depending on motor.

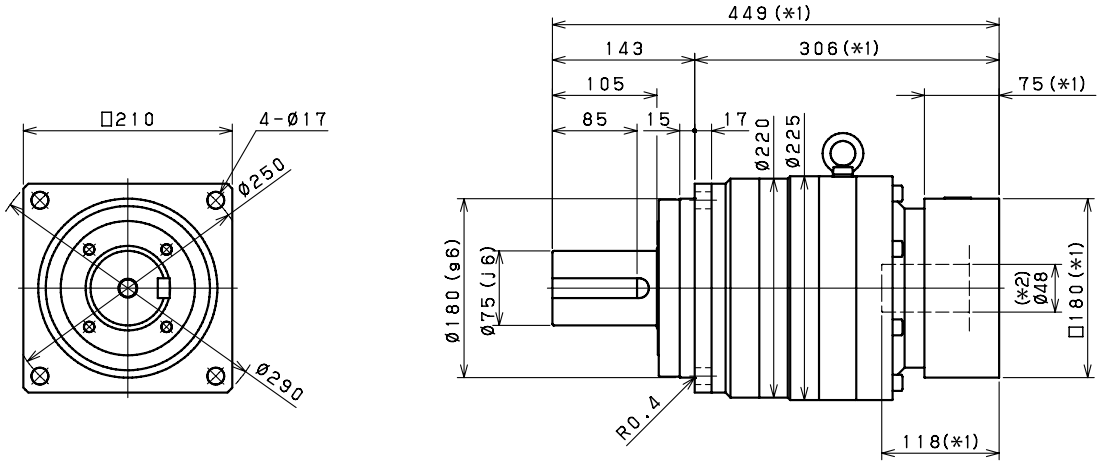
*2) Bushing will be inserted to adapt to motor shaft

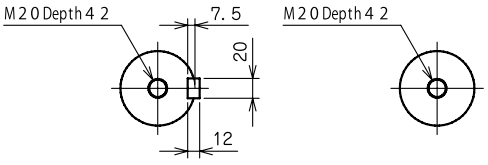
VRS 210 2-Stage Dimensions

Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





Keyed shaft　　Smooth shaft

*1) Length will vary depending on motor.

*2) Bushing will be inserted to adapt to motor shaft

VRS 240 1-Stage Specifications

Frame Size	240									
Stage	1-Stage									
Ratio	Unit	Note	3	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	1600	2400	2400	2600	2700	2700	2700	2700
Maximum Acceleration Torque	[Nm]	*2	3300	5100	5100	4800	4800	4700	4200	3600
Maximum Torque	[Nm]	*3	3800	5700	5700	5400	5400	5300	4700	4100
Emergency Stop Torque	[Nm]	*4	6000	8000	8000	8000	8000	8000	6000	6000
Nominal Input Speed	[rpm]	*5	1000	1000	1200	1200	1500	1500	1700	1700
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	5.96							
Maximum Radial Load	[N]	*8	30000							
Maximum Axial Load	[N]	*9	27000							
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	230	130	110	92	86	81	78	77
Efficiency	[%]	*10	95							
Torsional Rigidity	[Nm/arc-min]	*11	550							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 62							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	85							

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept
*10) The efficiency at the nominal output torque rating.
*11) This does not include lost motion.
*12) Contact SIT S.p.A. for the testing conditions and environment.
*13) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*14) Weight may vary slightly between models.

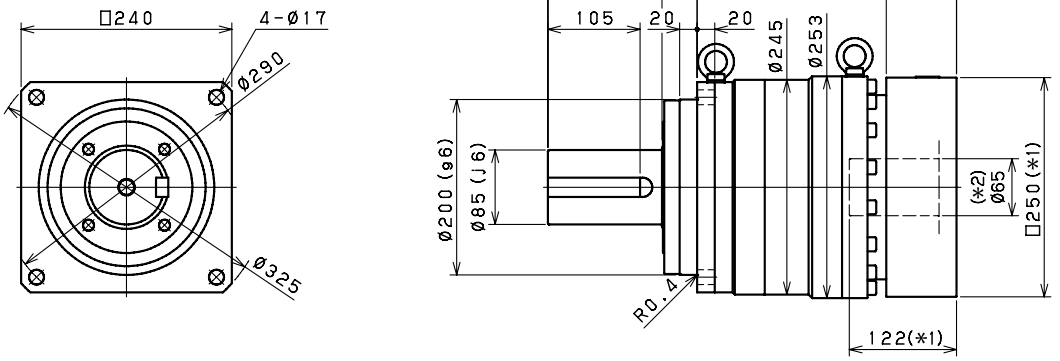
VRS 240 2-Stage Specifications

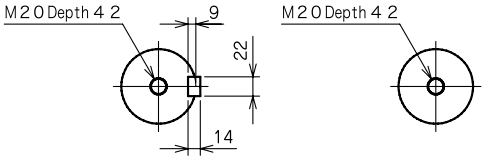
Frame Size	240									
Stage	2-Stage									
Ratio	Unit	Note	15	16	20	25	28	30	35	40
Nominal Output Torque	[Nm]	*1	2000	2400	2600	3200	3400	2000	3400	3400
Maximum Acceleration Torque	[Nm]	*2	3300	5100	5100	5100	4900	3300	4900	5100
Maximum Torque	[Nm]	*3	3300	5100	5100	5100	4900	3300	4900	5100
Emergency Stop Torque	[Nm]	*4	6000	8000	8000	8000	8000	6000	8000	8000
Nominal Input Speed	[rpm]	*5	2000	2000	2000	2000	2000	2000	2000	2000
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.28							
Maximum Radial Load	[N]	*8	30000							
Maximum Axial Load	[N]	*9	27000							
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	47	55	45	44	52	32	43	31
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90							
Torsional Rigidity	[Nm/arc-min]	*11	550							
Maximum Torsional Backlash	[arc-min]	--	≤ 3							
Noise Level	dB [A]	*12	≤ 62							
Protection Class	--	*13	IP54 (IP65)							
Ambient Temperature	[°C]	--	0-40							
Permitted Housing Temperature	[°C]	--	90							
Weight	[kg]	*14	89							

Frame Size	240								
Stage	2-Stage								
Ratio	Unit	Note	45	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	2000	3400	3400	3400	3400	2000	2000
Maximum Acceleration Torque	[Nm]	*2	2900	5100	4800	4900	3700	2900	2500
Maximum Torque	[Nm]	*3	2900	5100	4800	4900	3700	2900	2500
Emergency Stop Torque	[Nm]	*4	6000	8000	8000	8000	8000	6000	6000
Nominal Input Speed	[rpm]	*5	2000	2200	2200	2800	2800	2800	2800
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.28						
Maximum Radial Load	[N]	*8	30000						
Maximum Axial Load	[N]	*9	27000						
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	14	13	13	13	13	13
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	43	31	31	31	31	31	31
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--	--	--
Efficiency	[%]	*10	90						
Torsional Rigidity	[Nm/arc-min]	*11	550						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*12	≤ 62						
Protection Class	--	*13	IP54 (IP65)						
Ambient Temperature	[°C]	--	0-40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*14	89						

VRS 240 1-Stage Dimensions

Input bore size ≦φ65 mm



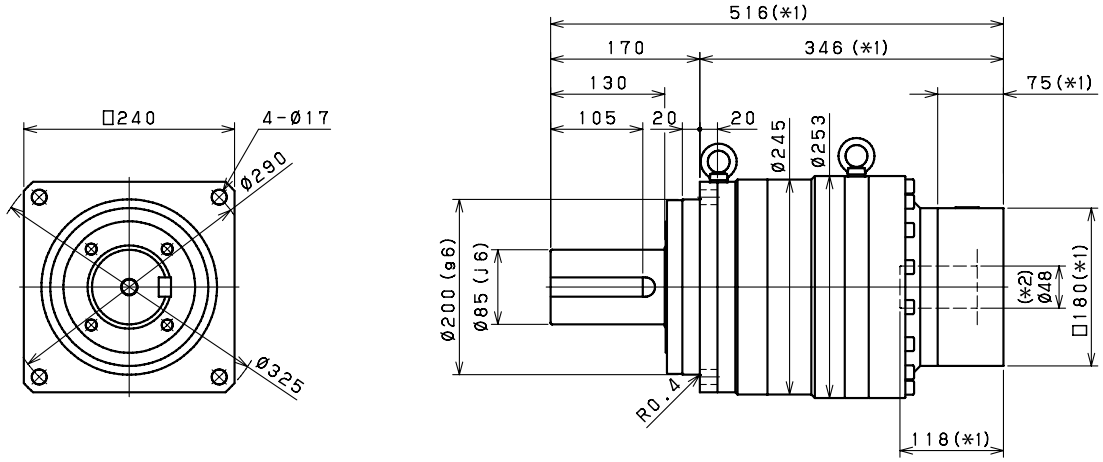


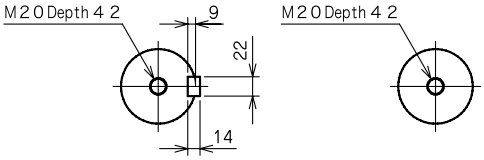
Keyed shaft Smooth shaft

*1) Length will vary depending on motor
*2) Bushing will be inserted to adapt to motor shaft

VRS 240 2-Stage Dimensions

Input bore size ≦φ48 mm





Keyed shaft Smooth shaft

*1) Length will vary depending on motor
*2) Bushing will be inserted to adapt to motor shaft

VRT series

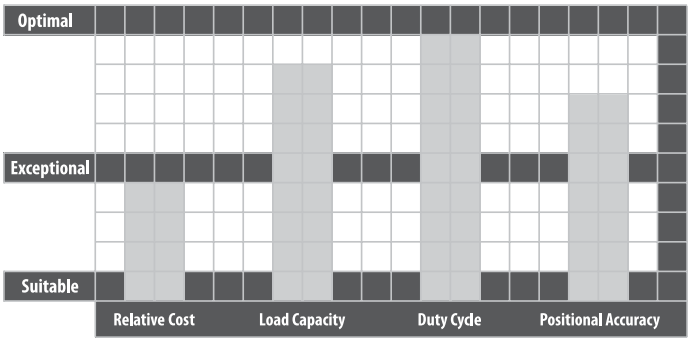
VRT planetary gearbox in line

Compact design, extreme performance with ISO flange

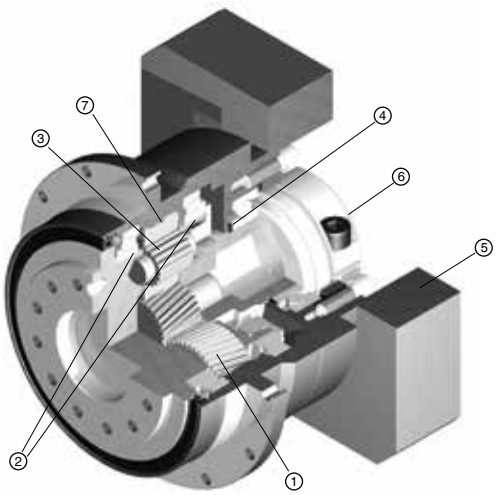
Description

The VRT series sets the new standard in applications requiring extremely high torque density and rigidity. Its compact design and robotic industry ISO flange is ideal for equipment requiring high speed, high precision indexing movement and streamlined installation. The remarkable torsional stiffness and ultra low backlash combine to provide outstanding positioning accuracy. This product comes standard with <3 arc-min backlash, but is also available with reduced options down to <1 arc-min. The VRT is the most robust planetary solution in the marketplace and is used across a numerous range of applications including 7th axis robot shuttles, dial tables, end of arm tooling and any other axis where installation space, reduced assembly time and torque density play an important role.

- The most compact and robust option for machine builders. Tapered roller bearings allow for high radial and axial loading
- ISO robotic mounting interface for superior flexibility and direct mounting of pinions, pulleys and turntables
- Exceptional torsional rigidity for high positional accuracy needs
- Best-In-class standard backlash (≤3 arc-min) with reduced backlash options available
- Broad range of mounting adapters offer a simple, precise attachment to any motor
- Maintenance-free solution that is lubricated for life. High performance grease allows flexible mounting in any orientation



Features



1 Carburized, case hardened helical gears with proprietary secondary finishing process for higher accuracy and smooth, quiet operation

2 One piece output shaft and planet carrier with two robust tapered bearings straddling the planet gears. Higher radial/ axial load capacity, stiffness, torque density and safety factor, with guaranteed alignment of gearing

3 Uncaged needle roller bearings provide excellent torque density and torsional rigidity

4 Unique labyrinth input seal design greatly reduces heat and increases system efficiency. IP65 protection is available for wash down applications

5 Optimized mounting system with active centering on motor pilot diameter guarantees alignment of motor. Motor can be installed in any orientation

6 True concentric motor shaft clamping connection, optimized for your specific motor. Reduced inertia for dynamic performance and balanced for high speed operation

7 Ring gear machined directly into the housing, not welded or pressed in. Provides greater concentricity and elimination of speed fluctuation

Part Number **VRT -110 C -7 -F 3 -19HB16**

- Model name - VRT series
- Size: 047, 064, 090, 110, 140, 200, 255, 285
- Version.
  B design version in exhaustion. Available on demand.
- Ratio: 1 stage: 4, 5, 7, 10
  2 stage: 16, 20, 25, 28, 35, 40, 50, 70, 100
- Output mounting style: K - Keyed shaft / S - Smooth shaft
- Backlash: 3 arc-min
- Motor mounting code (*)

*1) Motor mounting code varies depending on the motor. Use the selection tool link below to configure the code.

VRT 047 1-Stage Specifications

Frame Size	047								
Stage	1-Stage								
Ratio	Unit	Note	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	9	10	10	10	10	10	10
Maximum Acceleration Torque	[Nm]	*2	21	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	25	25	25	25	25	17	17
Emergency Stop Torque	[Nm]	*4	35	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8000	8000	8000	8000	8000	8000	8000
No Load Running Torque	[Nm]	*7	0.03						
Maximum Radial Load	[N]	*8	1100						
Maximum Axial Load	[N]	*9	550						
Maximum Tilting Moment	[Nm]	*10	32						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.052	0.043	0.038	0.036	0.034	0.033	0.032
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.17	0.16	0.15	0.15	0.15	0.15	0.15
Efficiency	[%]	*11	95						
Torsional Rigidity	[Nm/arc-min]	*12	2						
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*13	≤ 61						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	0.7						

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

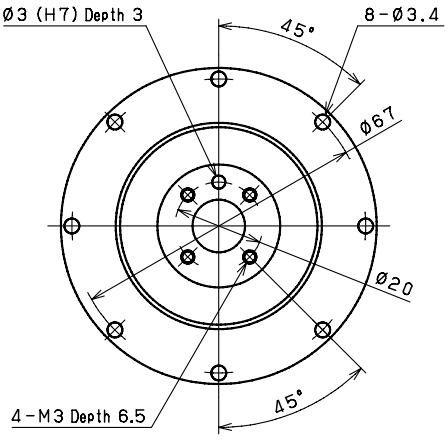
VRT 047 2-Stage Specifications

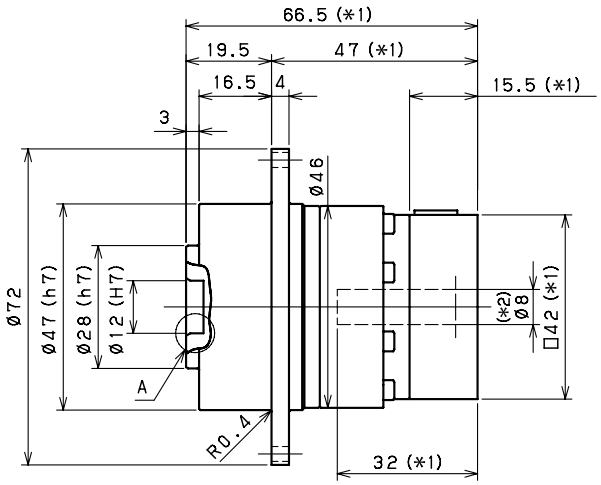
Frame Size	047								
Stage	2-Stage								
Ratio	Unit	Note	16	20	25	28	35	40	45
Nominal Output Torque	[Nm]	*1	14	14	15	15	15	15	11
Maximum Acceleration Torque	[Nm]	*2	21	21	21	21	21	21	14
Maximum Torque	[Nm]	*3	21	21	21	21	21	21	14
Emergency Stop Torque	[Nm]	*4	35	35	35	35	35	35	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01						
Maximum Radial Load	[N]	*8	1100						
Maximum Axial Load	[N]	*9	550						
Maximum Tilting Moment	[Nm]	*10	32						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.039	0.035	0.034	0.038	0.034	0.030	0.034
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--	--
Efficiency	[%]	*11	90						
Torsional Rigidity	[Nm/arc-min]	*12	2						
Maximum Torsional Backlash	[arc-min]	--	≤ 5						
Noise Level	dB [A]	*13	≤ 61						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	0.8						

Frame Size	047							
Stage	2-Stage							
Ratio	Unit	Note	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	15	15	15	15	11	11
Maximum Acceleration Torque	[Nm]	*2	21	21	21	21	14	14
Maximum Torque	[Nm]	*3	21	21	21	21	14	14
Emergency Stop Torque	[Nm]	*4	35	35	35	35	30	30
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.01					
Maximum Radial Load	[N]	*8	1100					
Maximum Axial Load	[N]	*9	550					
Maximum Tilting Moment	[Nm]	*10	32					
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.030	0.030	0.030	0.030	0.030	0.030
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	--	--	--	--	--	--
Efficiency	[%]	*11	90					
Torsional Rigidity	[Nm/arc-min]	*12	2					
Maximum Torsional Backlash	[arc-min]	--	≤ 5					
Noise Level	dB [A]	*13	≤ 61					
Protection Class	--	*14	IP54 (IP65)					
Ambient Temperature	[°C]	--	0 - 40					
Permitted Housing Temperature	[°C]	--	90					
Weight	[kg]	*15	0.8					

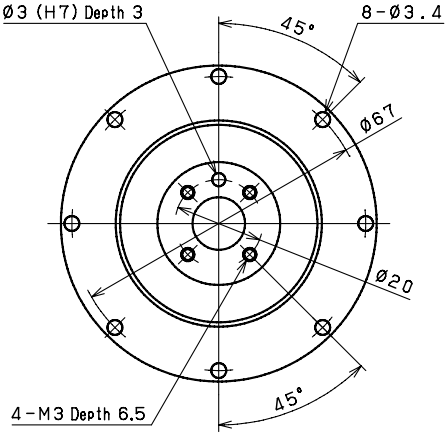
VRT 047 1-Stage Dimensions

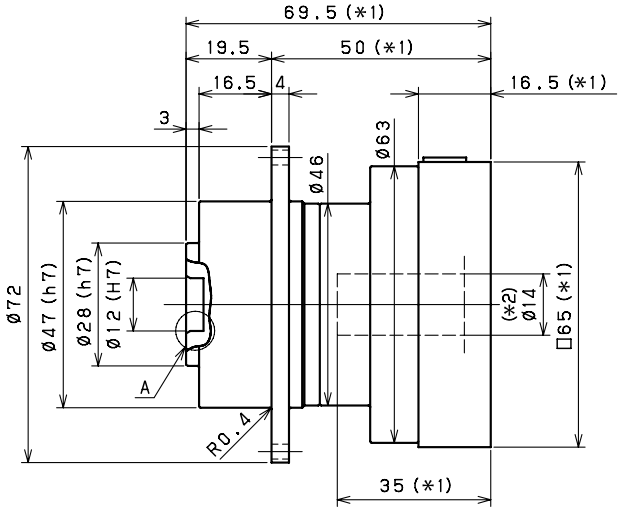
Input bore size ≦φ8 mm





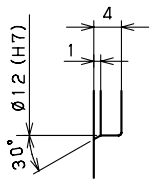
Input bore size ≦φ14 mm





*1) Length will vary depending on motor

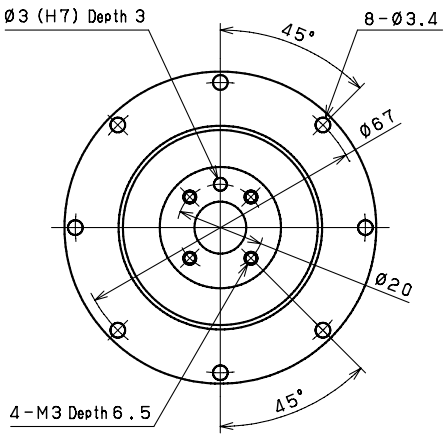
*2) Bushing will be inserted to adapt to motor shaft

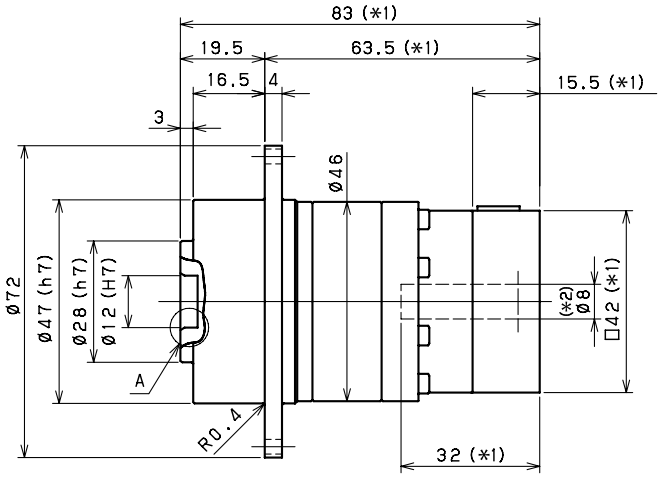


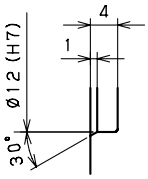
Enlarged detail A

VRT 047 2-Stage Dimensions

Input bore size ≦φ8 mm







Enlarged detail A

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 064 1-Stage Specifications

Frame Size	064								
Stage	1-Stage								
Ratio	Unit	Note	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	27	28	28	28	28	28	28
Maximum Acceleration Torque	[Nm]	*2	66	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	79	79	79	79	76	55	55
Emergency Stop Torque	[Nm]	*4	100	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	3300	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.08						
Maximum Radial Load	[N]	*8	1500						
Maximum Axial Load	[N]	*9	750						
Maximum Tilting Moment	[Nm]	*10	58						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	-	0.13	0.10	0.085	0.075	0.068	0.064	0.062
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.24	0.21	0.20	0.19	0.18	0.18	0.17
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.52	0.49	0.47	0.46	0.46	0.45	0.45
Efficiency	[%]	*11	95						
Torsional Rigidity	[Nm/arc-min]	*12	12	12	11	11	8	8	8
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*13	≤ 66						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	1.4						

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

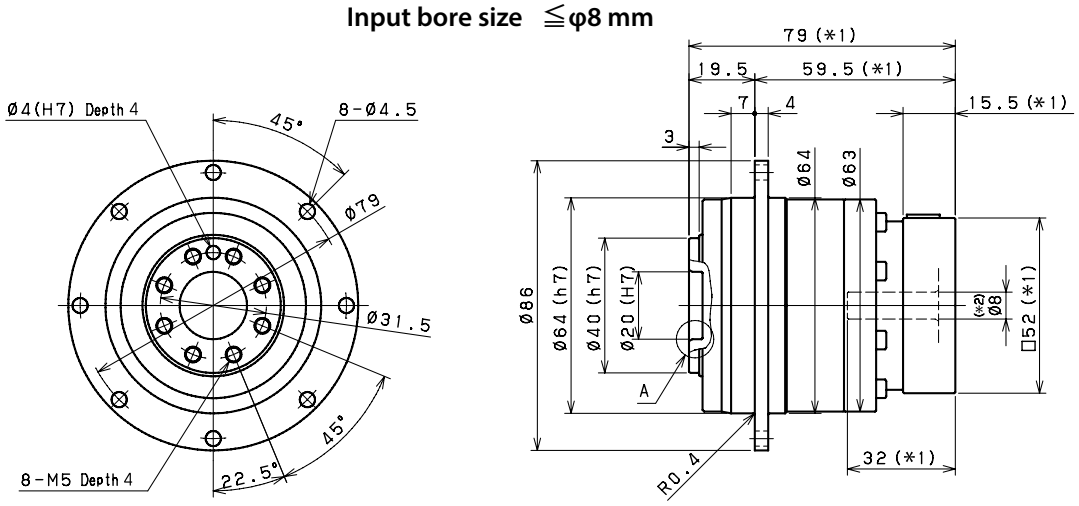
VRT 064 2-Stage Specifications

Frame Size	064								
Stage	2-Stage								
Ratio	Unit	Note	16	20	25	28	35	40	45
Nominal Output Torque	[Nm]	*1	32	32	43	45	45	45	32
Maximum Acceleration Torque	[Nm]	*2	66	66	66	66	66	66	46
Maximum Torque	[Nm]	*3	66	66	66	66	66	66	46
Emergency Stop Torque	[Nm]	*4	100	100	100	100	100	100	80
Nominal Input Speed	[rpm]	*5	4000	4000	4000	4000	4000	4000	4000
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04						
Maximum Radial Load	[N]	*8	1500						
Maximum Axial Load	[N]	*9	750						
Maximum Tilting Moment	[Nm]	*10	58						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	-	0.072	0.064	0.062	0.069	0.061	0.051	0.061
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.18	0.18	0.17	0.18	0.17	0.16	0.17
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.46	0.45	0.45	0.46	0.45	0.44	0.45
Efficiency	[%]	*11	90						
Torsional Rigidity	[Nm/arc-min]	*12	12	12	12	12	12	11	11
Maximum Torsional Backlash	[arc-min]	--	≤ 3						
Noise Level	dB [A]	*13	≤ 66						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	1.6						

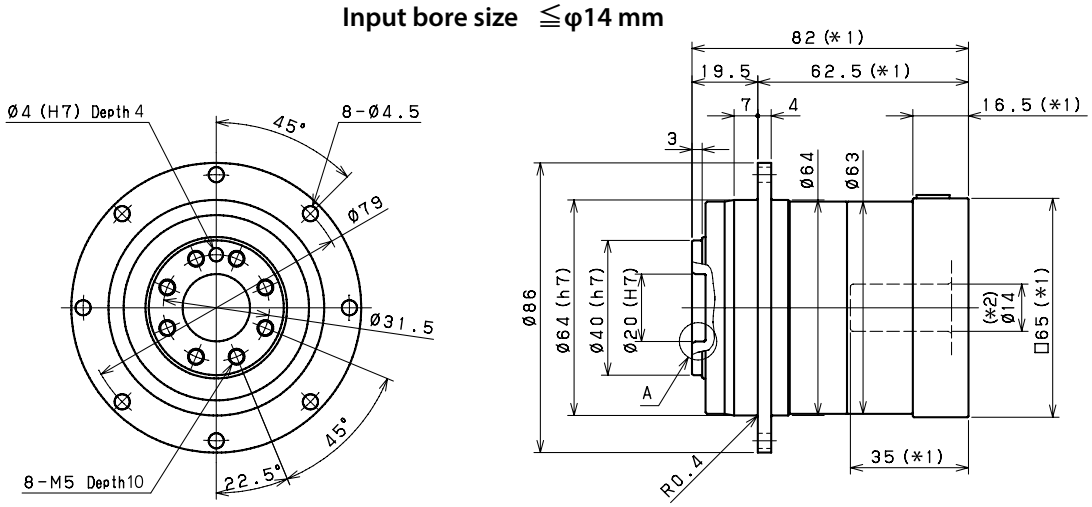
Frame Size	064							
Stage	2-Stage							
Ratio	Unit	Note	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	45	45	45	45	32	32
Maximum Acceleration Torque	[Nm]	*2	66	66	66	66	46	46
Maximum Torque	[Nm]	*3	66	66	66	66	46	46
Emergency Stop Torque	[Nm]	*4	100	100	100	100	80	80
Nominal Input Speed	[rpm]	*5	4800	4800	5500	5500	5500	5500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.04					
Maximum Radial Load	[N]	*8	1500					
Maximum Axial Load	[N]	*9	750					
Maximum Tilting Moment	[Nm]	*10	58					
Moment of Inertia (≤ Ø 8)	[kgcm^2]	-	0.051	0.051	0.051	0.051	0.051	0.051
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.16	0.16	0.16	0.16	0.16	0.16
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.44	0.44	0.44	0.44	0.44	0.44
Efficiency	[%]	*11	90					
Torsional Rigidity	[Nm/arc-min]	*12	12	9	11	7	7	8
Maximum Torsional Backlash	[arc-min]	--	≤ 3					
Noise Level	dB [A]	*13	≤ 66					
Protection Class	--	*14	IP54 (IP65)					
Ambient Temperature	[°C]	--	0 - 40					
Permitted Housing Temperature	[°C]	--	90					
Weight	[kg]	*15	1.6					

VRT 064 1-Stage Dimensions

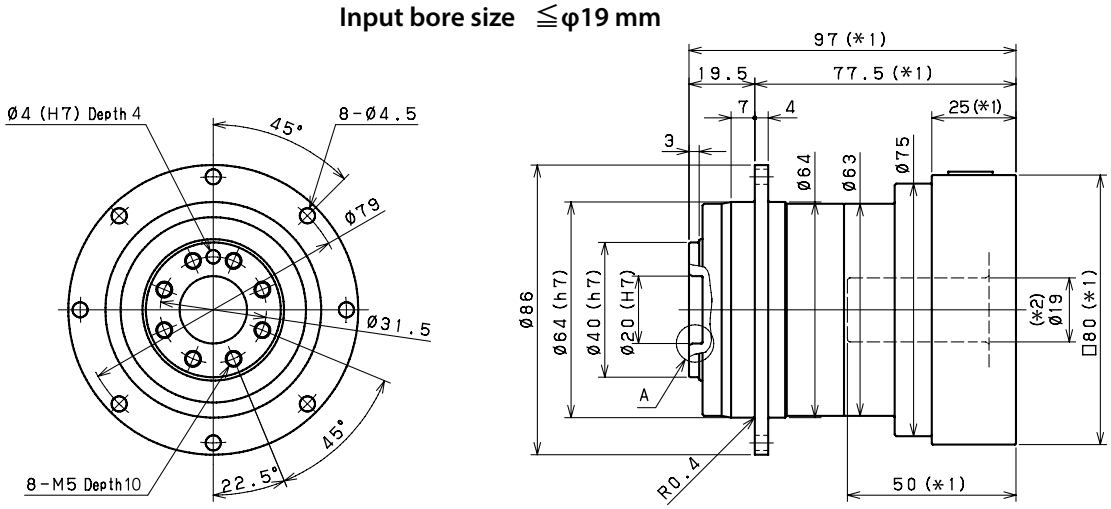
Input bore size ≦φ8 mm

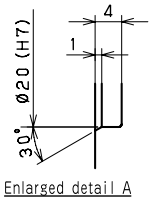


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm



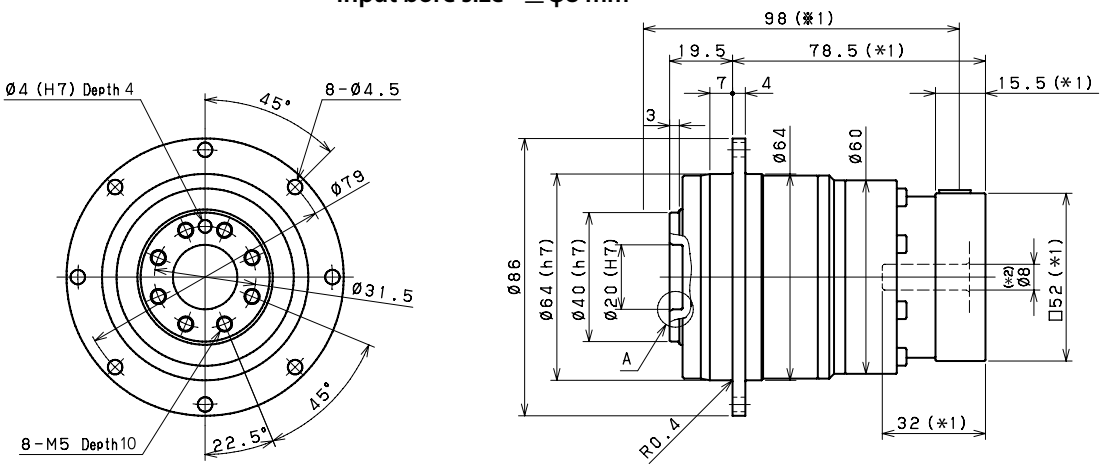


*1) Length will vary depending on motor

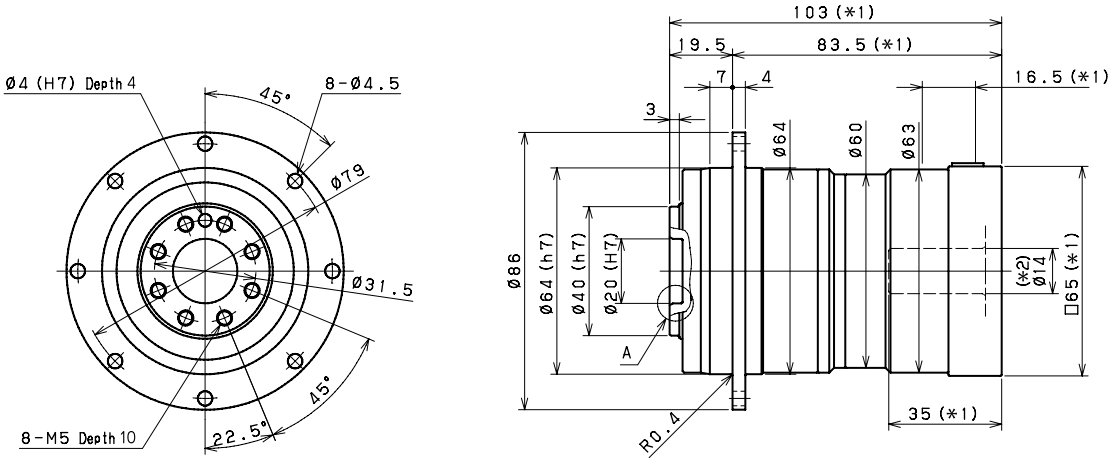
*2) Bushing will be inserted to adapt to motor shaft

VRT 064 2-Stage Dimensions

Input bore size ≦φ8 mm

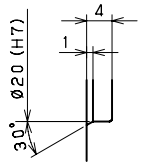


Input bore size ≦φ14 mm



*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft



Enlarged detail A

VRT 090 1-Stage Specifications

Frame Size	090								
Stage	1-Stage								
Ratio	Unit	Note	4	5	6	7	8	9	10
Nominal Output Torque	[Nm]	*1	77	84	84	84	84	84	84
Maximum Acceleration Torque	[Nm]	*2	165	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	200	200	195	195	190	145	145
Emergency Stop Torque	[Nm]	*4	250	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	2900	2900	2900	3100	3100	3100	3100
Maximum Input Speed	[rpm]	*6	7500	7500	7500	7500	7500	7500	7500
No Load Running Torque	[Nm]	*7	0.17						
Maximum Radial Load	[N]	*8	3300						
Maximum Axial Load	[N]	*9	1700						
Maximum Tilting Moment	[Nm]	*10	170						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.78	0.58	0.48	0.42	0.38	0.36	0.34
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.2	0.98	0.87	0.82	0.78	0.75	0.74
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.9	2.7	2.6	2.6	2.5	2.5	2.5
Efficiency	[%]	*11	95						
Torsional Rigidity	[Nm/arc-min]	*12	32	33	30	30	23	23	23
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1						
Noise Level	dB [A]	*13	≤ 67						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	3.6						

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

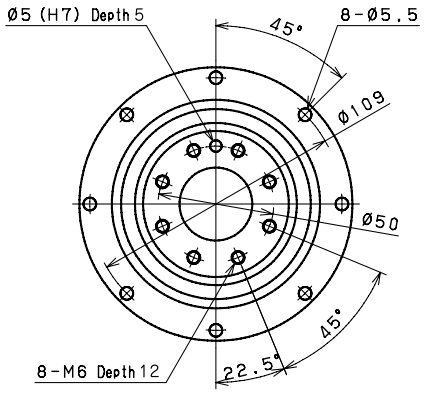
VRT 090 2-Stage Specifications

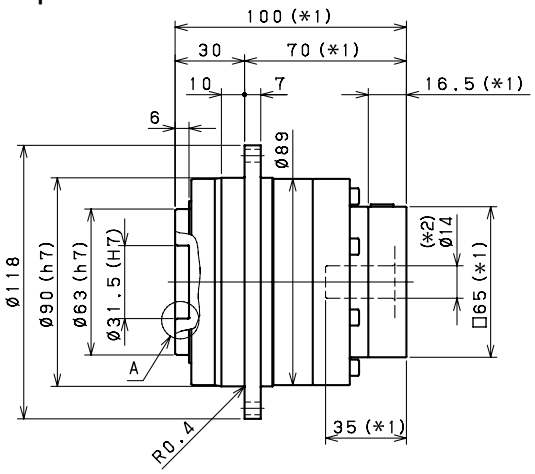
Frame Size			090						
Stage			2-Stage						
Ratio	Unit	Note	16	20	25	28	35	40	45
Nominal Output Torque	[Nm]	*1	80	86	106	118	118	118	88
Maximum Acceleration Torque	[Nm]	*2	165	165	165	165	165	165	112
Maximum Torque	[Nm]	*3	165	165	165	165	165	165	112
Emergency Stop Torque	[Nm]	*4	250	250	250	250	250	250	200
Nominal Input Speed	[rpm]	*5	3500	3500	3500	3500	3500	3500	3500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.05						
Maximum Radial Load	[N]	*8	3300						
Maximum Axial Load	[N]	*9	1700						
Maximum Tilting Moment	[Nm]	*10	170						
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.26	0.20	0.19	0.24	0.19	0.12	0.19
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.43	0.36	0.36	0.40	0.35	0.28	0.35
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.81	0.75	0.74	0.79	0.74	0.67	0.73
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.5	2.5	2.5	2.5	2.5	2.4	2.5
Efficiency	[%]	*11	90						
Torsional Rigidity	[Nm/arc-min]	*12	32	32	32	31	32	30	30
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1						
Noise Level	dB [A]	*13	≤ 67						
Protection Class	--	*14	IP54 (IP65)						
Ambient Temperature	[°C]	--	0 - 40						
Permitted Housing Temperature	[°C]	--	90						
Weight	[kg]	*15	4						

Frame Size			090					
Stage			2-Stage					
Ratio	Unit	Note	50	60	70	80	90	100
Nominal Output Torque	[Nm]	*1	118	118	118	118	88	88
Maximum Acceleration Torque	[Nm]	*2	165	165	165	165	112	112
Maximum Torque	[Nm]	*3	165	165	165	165	112	112
Emergency Stop Torque	[Nm]	*4	250	250	250	250	200	200
Nominal Input Speed	[rpm]	*5	3800	3800	4500	4500	4500	4500
Maximum Input Speed	[rpm]	*6	8500	8500	8500	8500	8500	8500
No Load Running Torque	[Nm]	*7	0.05					
Maximum Radial Load	[N]	*8	3300					
Maximum Axial Load	[N]	*9	1700					
Maximum Tilting Moment	[Nm]	*10	170					
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	0.12	0.11	0.11	0.11	0.11	0.11
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.28	0.27	0.27	0.27	0.27	0.27
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	0.67	0.67	0.67	0.67	0.67	0.67
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.4	2.4	2.4	2.4	2.4	2.4
Efficiency	[%]	*11	90					
Torsional Rigidity	[Nm/arc-min]	*12	30	24	28	22	22	22
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1					
Noise Level	dB [A]	*13	≤ 67					
Protection Class	--	*14	IP54 (IP65)					
Ambient Temperature	[°C]	--	0 - 40					
Permitted Housing Temperature	[°C]	--	90					
Weight	[kg]	*15	4					

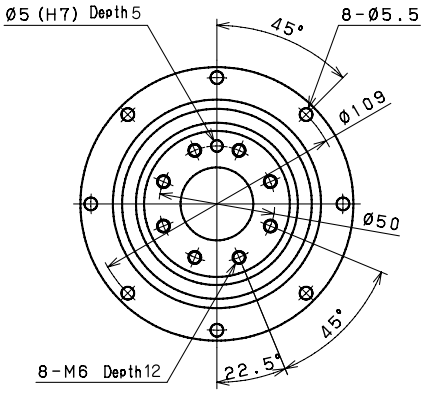
VRT 090 1-Stage Specifications

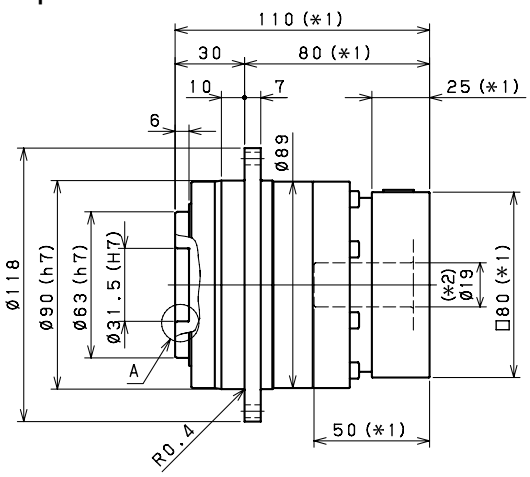
Input bore size ≦φ14 mm



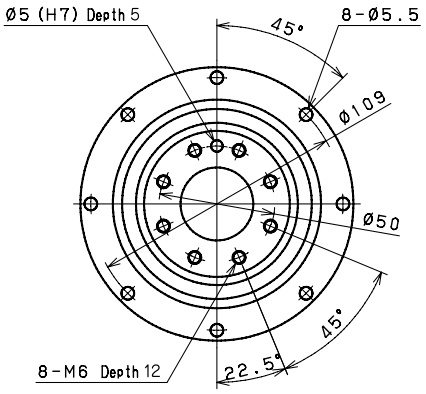


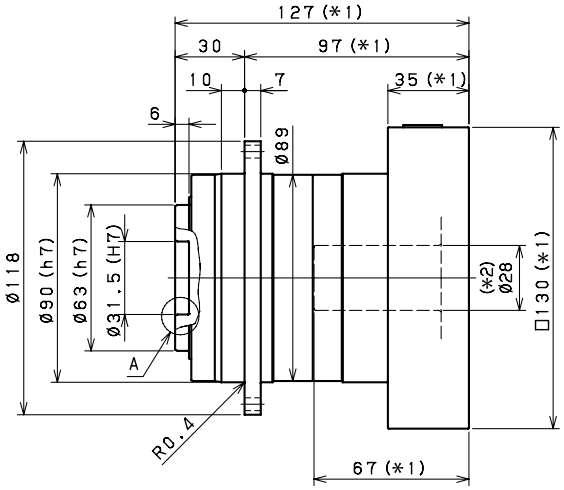
Input bore size ≦φ19 mm

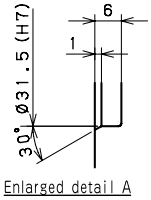




Input bore size ≦φ28 mm





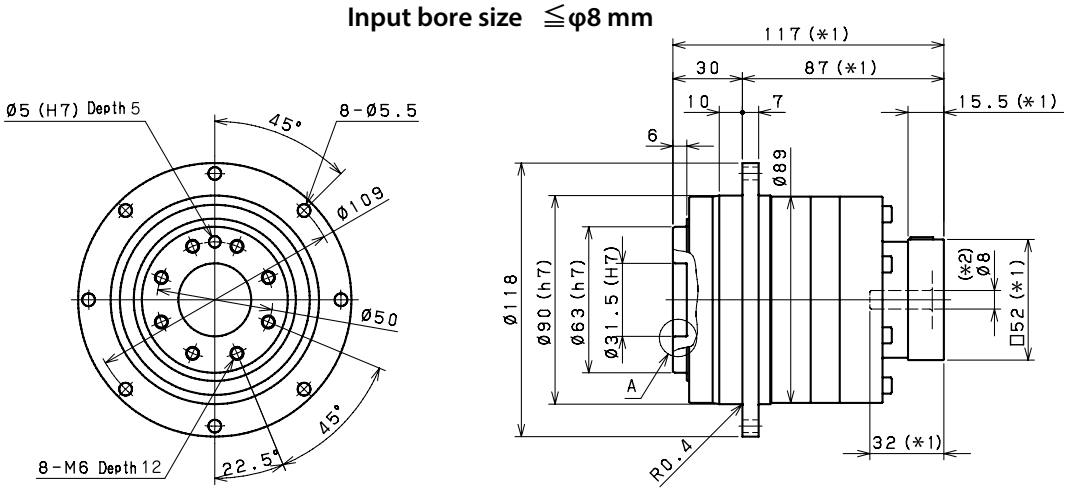


*1) Length will vary depending on motor

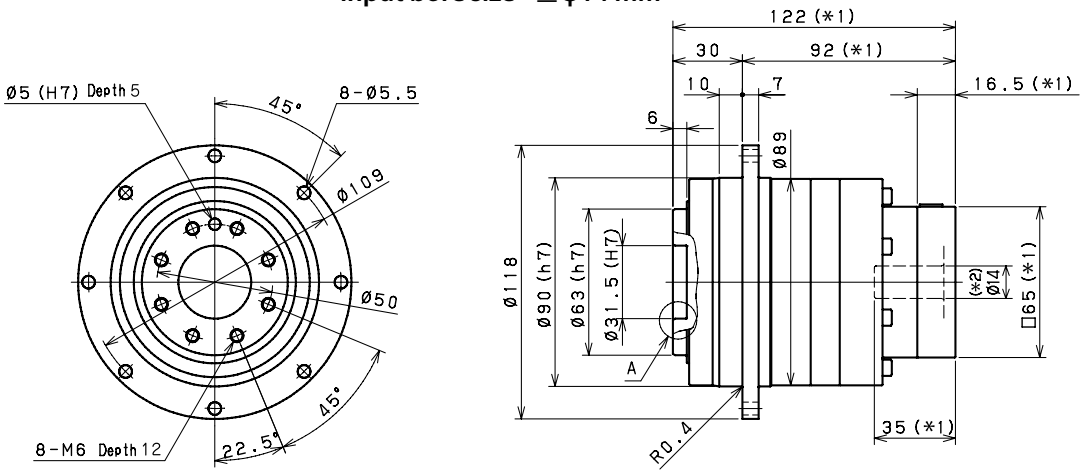
*2) Bushing will be inserted to adapt to motor shaft

VRT 090 2-Stage Dimensions

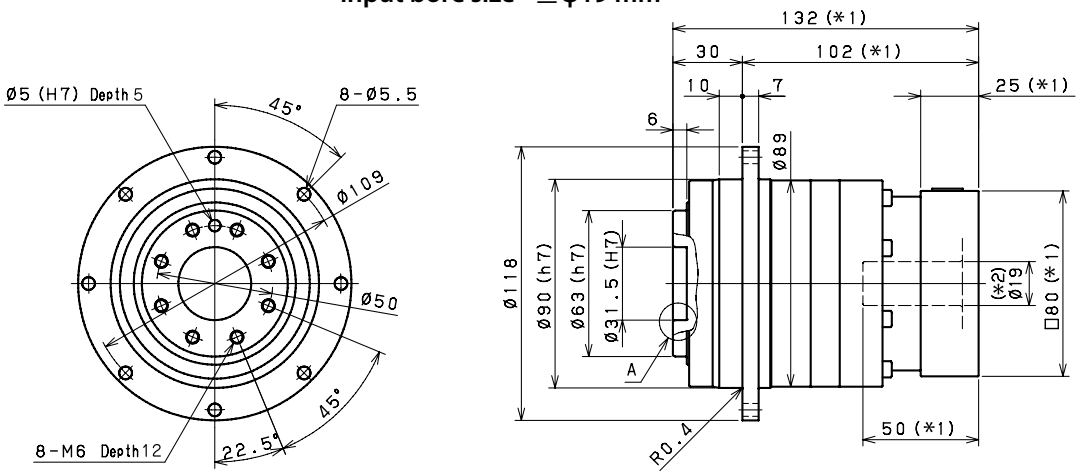
Input bore size ≦φ8 mm

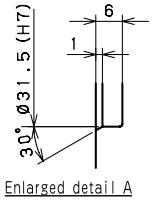


Input bore size ≦φ14 mm



Input bore size ≦φ19 mm





Enlarged detail A

*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 110 1-Stage Specifications

Frame Size	110					
Stage	1-Stage					
Ratio	Unit	Note	4	5	7	10
Nominal Output Torque	[Nm]	*1	146	190	190	190
Maximum Acceleration Torque	[Nm]	*2	390	390	390	292
Maximum Torque	[Nm]	*3	490	490	480	370
Emergency Stop Torque	[Nm]	*4	625	625	625	500
Nominal Input Speed	[rpm]	*5	2800	2800	2800	2800
Maximum Input Speed	[rpm]	*6	5500	5500	5500	5500
No Load Running Torque	[Nm]	*7	0.77			
Maximum Radial Load	[N]	*8	12000			
Maximum Axial Load	[N]	*9	8800			
Maximum Tilting Moment	[Nm]	*10	990			
Moment of Inertia (≤ Ø 8)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	3.1	2.1	1.3	0.99
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.8	3.8	3.1	2.7
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	11	10	9.5	9.0
Efficiency	[%]	*11	95			
Torsional Rigidity	[Nm/arc-min]	*12	80	86	76	62
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1			
Noise Level	dB [A]	*13	≤ 71			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	7.8			

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

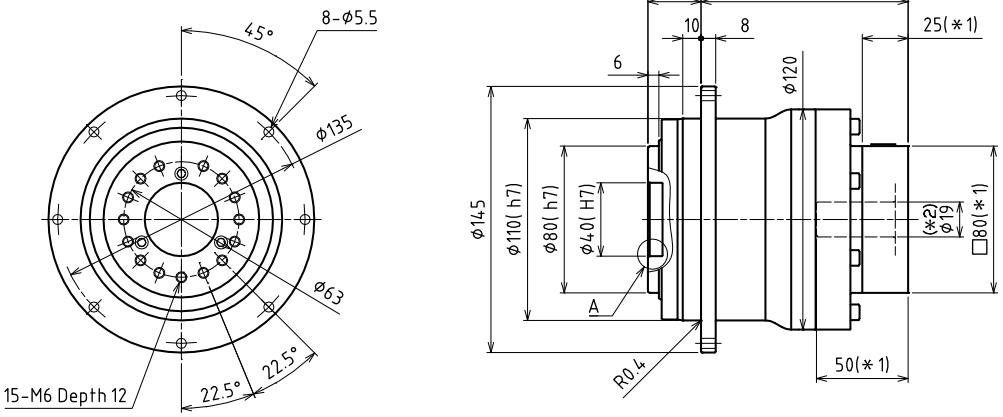
VRT 110 2-Stage Specifications

Frame Size	110					
Stage	2-Stage					
Ratio	Unit	Note	16	20	25	28
Nominal Output Torque	[Nm]	*1	180	180	180	180
Maximum Output Torque	[Nm]	*2	330	330	330	330
Emergency Stop Torque	[Nm]	*3	625	625	625	625
Nominal Input Speed	[rpm]	*4	3000			
Maximum Input Speed	[rpm]	*5	6000			
No Load Running Torque	[Nm]	*6	0.17			
Permitted Radial Load	[N]	*7	7100	7600	8200	8500
Permitted Axial Load	[N]	*8	4800	5200	5500	5700
Maximum Radial Load	[N]	*9	12000			
Maximum Axial Load	[N]	*10	8800			
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	1.000	0.800	0.700	0.900
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.500	1.200	1.200	1.400
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	3.400	3.100	3.100	3.300
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	11.000	11.000	11.000	11.000
Efficiency	[%]	*11	90			
Torsional Rigidity	[Nm/arc-min]	*12	60			
Maximum Torsional Backlash	[arc-min]	--	≤ 3			
Noise Level	dB [A]	*13	≤ 71			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	8.6			

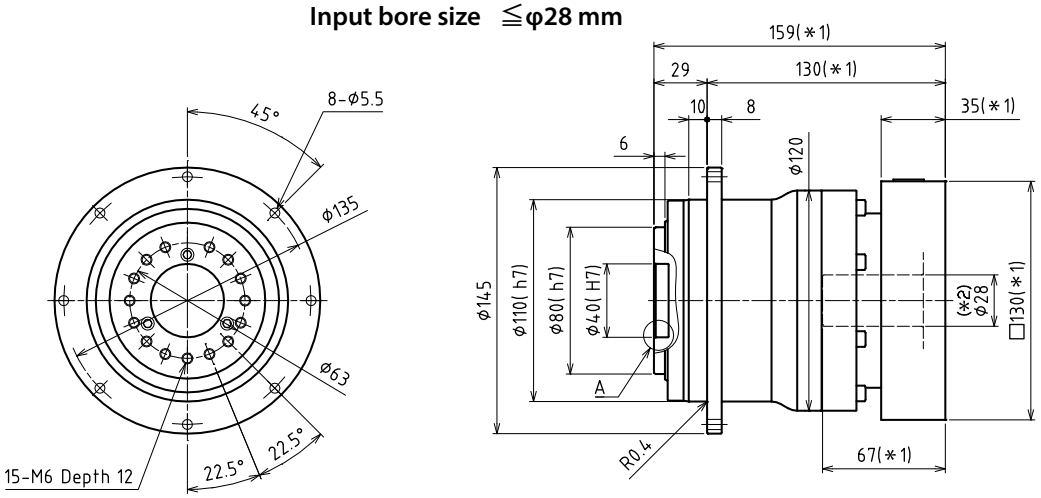
Frame Size	110						
Stage	2-Stage						
Ratio	Unit	Note	35	40	50	70	100
Nominal Output Torque	[Nm]	*1	280	270	280	280	220
Maximum Acceleration Torque	[Nm]	*2	390	390	390	390	292
Maximum Torque	[Nm]	*3	390	390	390	390	292
Emergency Stop Torque	[Nm]	*4	625	625	625	625	500
Nominal Input Speed	[rpm]	*5	3100	3100	3500	4200	4200
Maximum Input Speed	[rpm]	*6	6500	6500	6500	6500	6500
No Load Running Torque	[Nm]	*7	0.17				
Maximum Radial Load	[N]	*8	12000				
Maximum Axial Load	[N]	*9	8800				
Maximum Tilting Moment	[Nm]	*10	990				
Moment of Inertia (≤ Ø 8)	[kgcm^2]	--	--	--	0.20	0.19	0.19
Moment of Inertia (≤ Ø 14)	[kgcm^2]	--	0.70	0.38	0.37	0.36	0.36
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	1.1	0.78	0.77	0.76	0.76
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	2.8	2.5	2.5	2.5	2.5
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	9.1	8.8	8.8	8.8	8.8
Efficiency	[%]	*11	90				
Torsional Rigidity	[Nm/arc-min]	*12	82	76	80	71	60
Maximum Torsional Backlash	[arc-min]	--	Standard ≤ 3 / Reduced ≤ 1				
Noise Level	dB [A]	*13	≤ 71				
Protection Class	--	*14	IP54 (IP65)				
Ambient Temperature	[°C]	--	0 - 40				
Permitted Housing Temperature	[°C]	--	90				
Weight	[kg]	*15	8.6				

VRT 110 1-Stage Dimensions

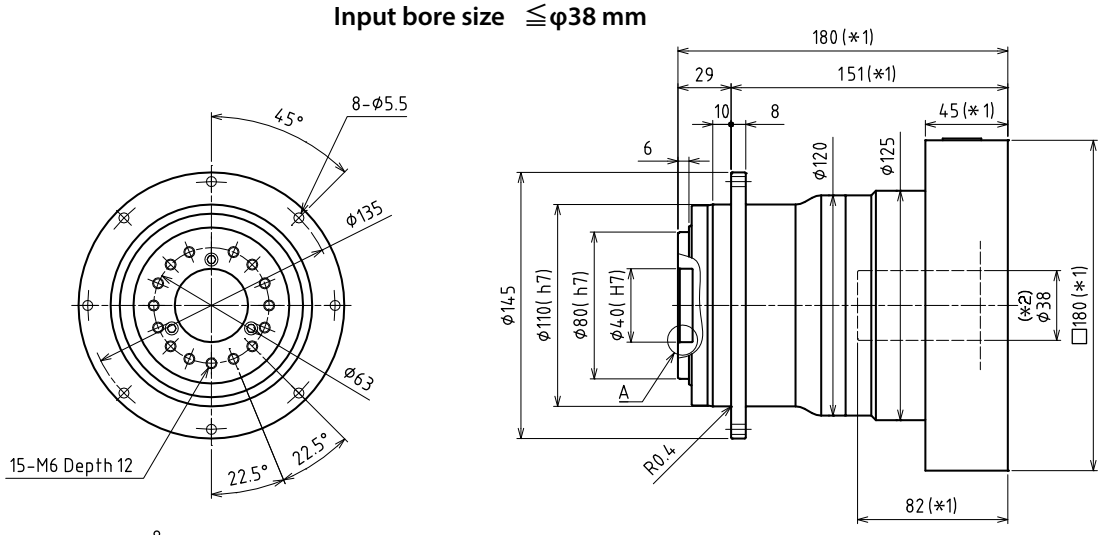
Input bore size ≦φ19 mm

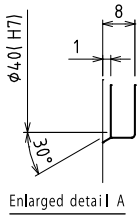


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm



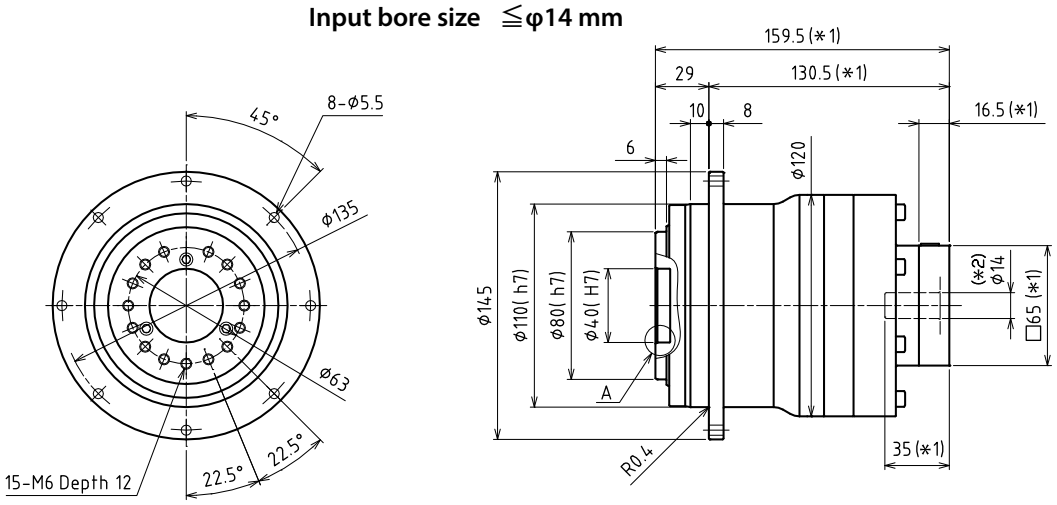


*1) Length will vary depending on motor

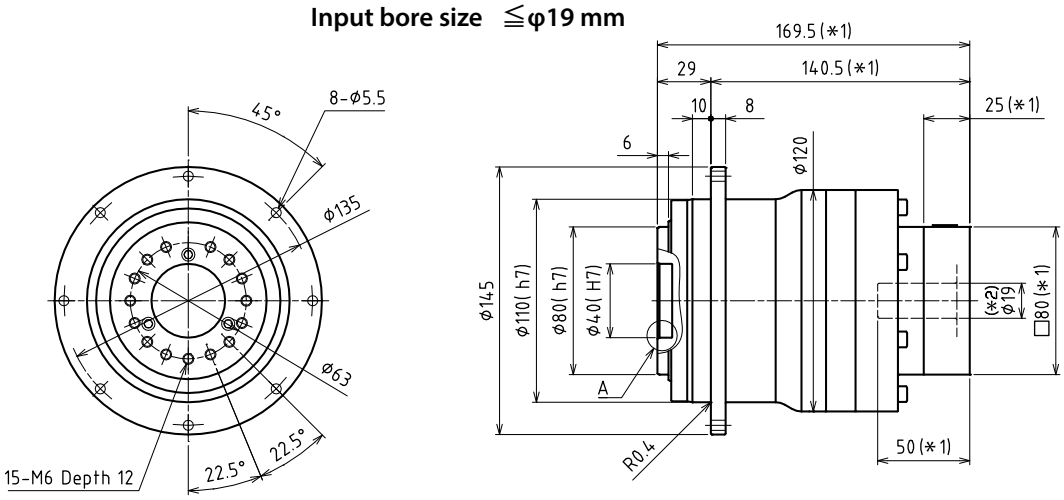
*2) Bushing will be inserted to adapt to motor shaft

VRT 110 2-Stage Dimensions

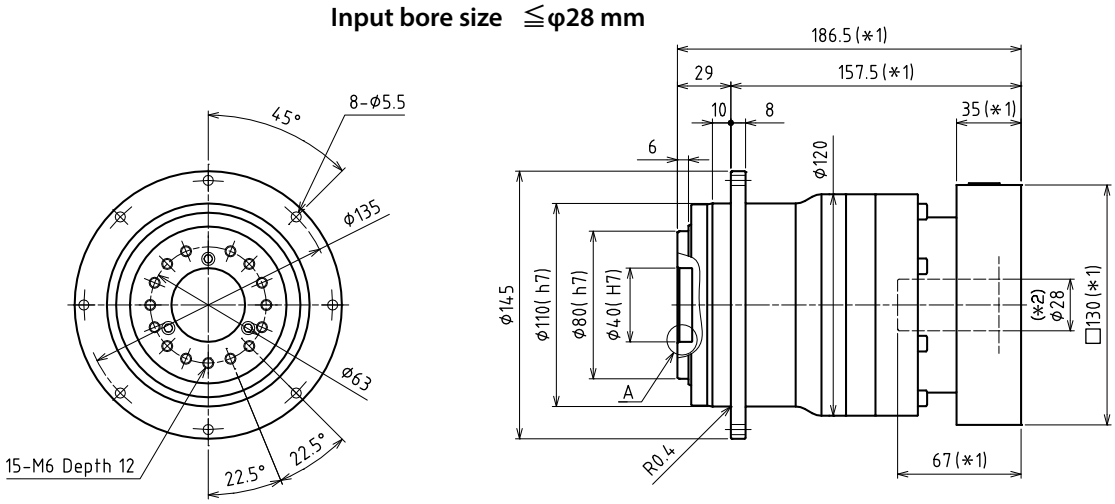
Input bore size ≦φ14 mm

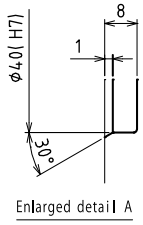


Input bore size ≦φ19 mm



Input bore size ≦φ28 mm





*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 140 1-Stage Specifications

Frame Size	140					
Stage	1-Stage					
Ratio	Unit	Note	4	5	7	10
Nominal Output Torque	[Nm]	*1	280	380	380	380
Maximum Acceleration Torque	[Nm]	*2	840	840	840	610
Maximum Torque	[Nm]	*3	1000	1000	950	730
Emergency Stop Torque	[Nm]	*4	1250	1250	1250	1000
Nominal Input Speed	[rpm]	*5	2100	2100	2600	2600
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.00			
Maximum Radial Load	[N]	*8	19000			
Maximum Axial Load	[N]	*9	14000			
Maximum Tilting Moment	[Nm]	*10	2000			
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	11	7.7	5.1	3.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	18	14	12	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	33	29	27	25
Efficiency	[%]	*11	95			
Torsional Rigidity	[Nm/arc-min]	*12	190	187	159	140
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1			
Noise Level	dB [A]	--	≤ 67			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	15			

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

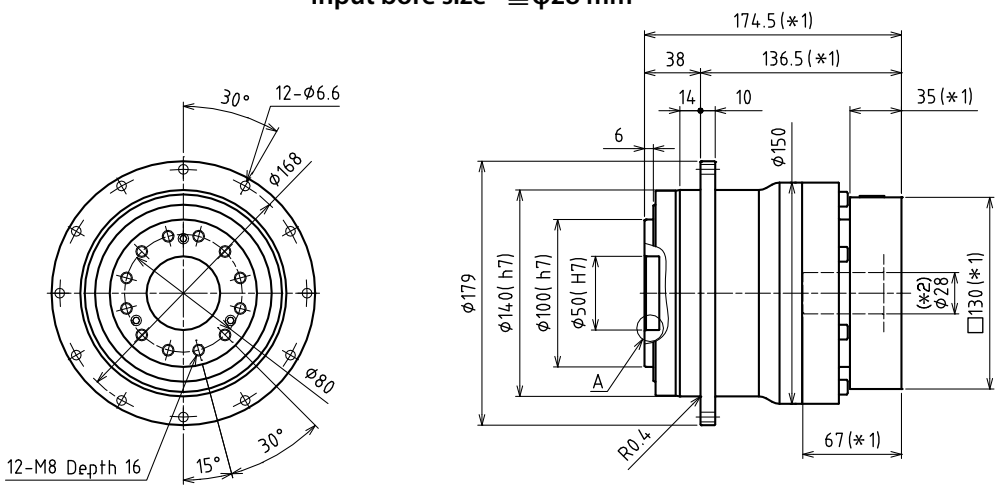
VRT 140 2-Stage Specifications

Frame Size			140			
Stage			2-Stage			
Ratio	Unit	Note	16	20	25	28
Nominal Output Torque	[Nm]	*1	380	410	590	590
Maximum Acceleration Torque	[Nm]	*2	840	840	840	840
Maximum Torque	[Nm]	*3	840	840	840	840
Emergency Stop Torque	[Nm]	*4	1250	1250	1250	1250
Nominal Input Speed	[rpm]	*5	2900	2900	2900	2900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.54			
Maximum Radial Load	[N]	*8	19000			
Maximum Axial Load	[N]	*9	14000			
Maximum Tilting Moment	[Nm]	*10	2000			
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	3.8	2.6	2.5	3.4
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	5.5	4.3	4.2	5.1
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	12	11	11	11
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	27	26	25	26
Efficiency	[%]	*11	90			
Torsional Rigidity	[Nm/arc-min]	*12	180	185	180	180
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1			
Noise Level	dB [A]	--	≤ 67			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	17			

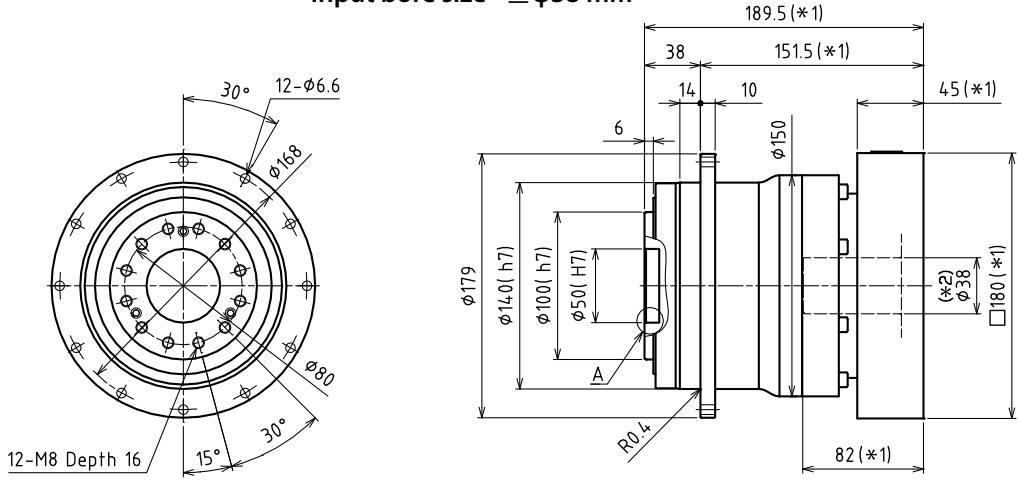
Frame Size			140				
Stage			2-Stage				
Ratio	Unit	Note	35	40	50	70	100
Nominal Output Torque	[Nm]	*1	590	500	590	590	440
Maximum Acceleration Torque	[Nm]	*2	840	840	840	840	610
Maximum Torque	[Nm]	*3	840	840	840	840	610
Emergency Stop Torque	[Nm]	*4	1250	1250	1250	1250	1000
Nominal Input Speed	[rpm]	*5	2900	2900	3200	3900	3900
Maximum Input Speed	[rpm]	*6	6000	6000	6000	6000	6000
No Load Running Torque	[Nm]	*7	0.54				
Maximum Radial Load	[N]	*8	19000				
Maximum Axial Load	[N]	*9	14000				
Maximum Tilting Moment	[Nm]	*10	2000				
Moment of Inertia (≤ Ø 14)	[kgcm²]	--	--	--	0.68	0.65	0.64
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	2.4	1.1	1.1	1.1	1.1
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	4.1	2.9	2.9	2.8	2.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	10	9.2	9.1	9.1	9.1
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	25	24	24	24	24
Efficiency	[%]	*11	90				
Torsional Rigidity	[Nm/arc-min]	*12	175	175	175	145	140
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1				
Noise Level	dB [A]	--	≤ 67				
Protection Class	--	*14	IP54 (IP65)				
Ambient Temperature	[°C]	--	0 - 40				
Permitted Housing Temperature	[°C]	--	90				
Weight	[kg]	*15	17				

VRT 140 1-Stage Dimensions

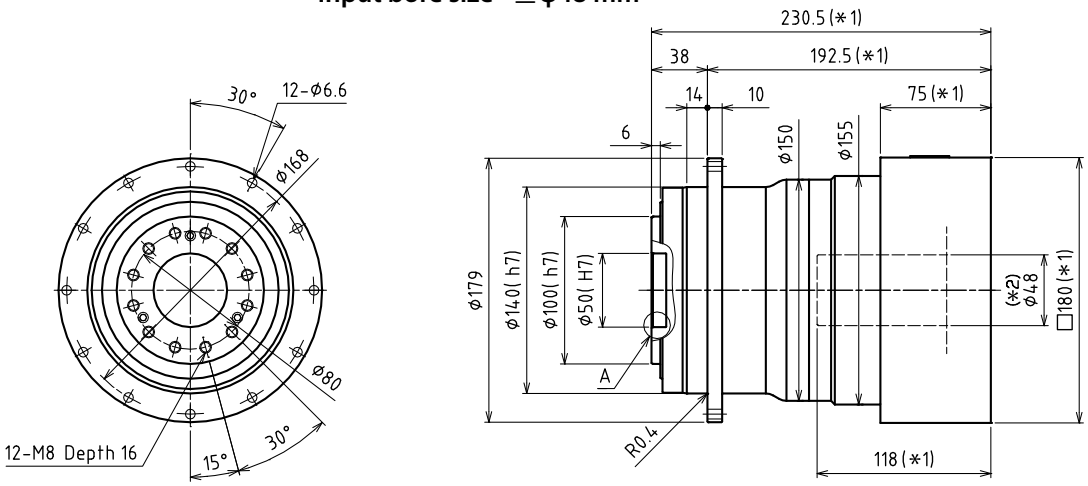
Input bore size ≦φ28 mm

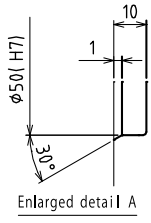


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm



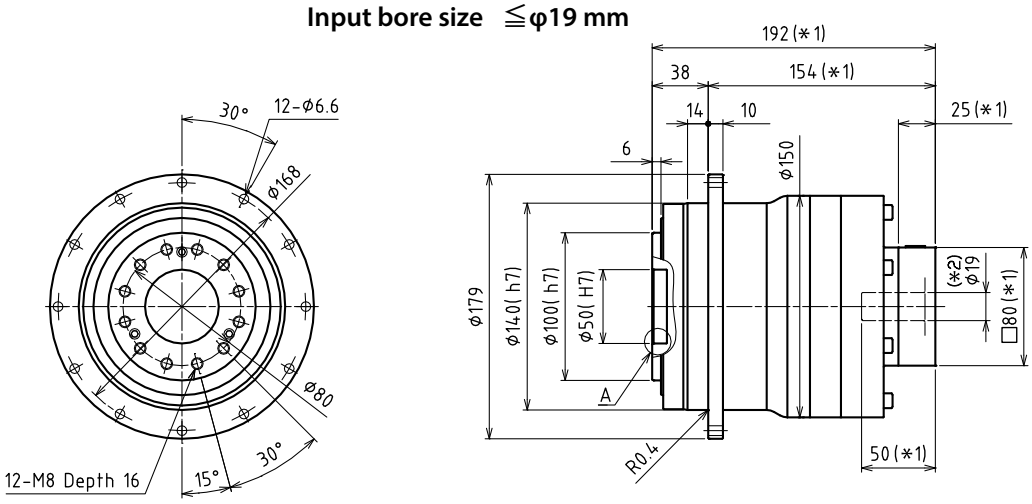


*1) Length will vary depending on motor.

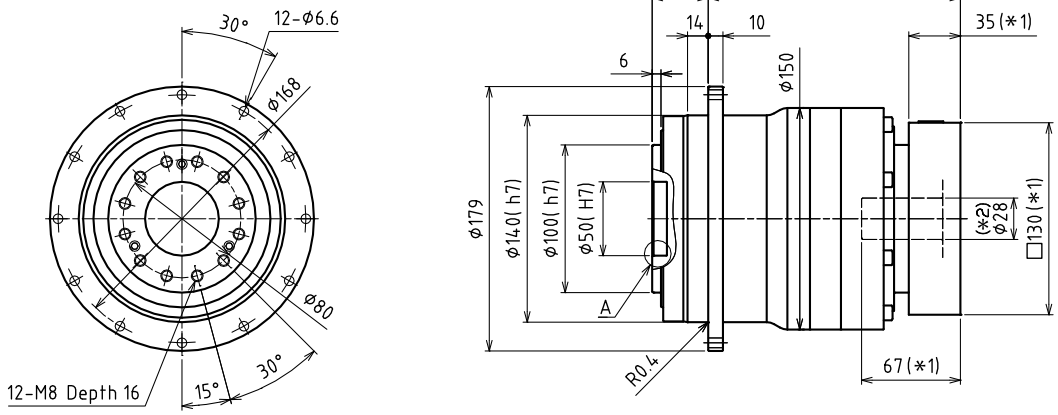
*2) Bushing will be inserted to adapt to motor shaft

VRT 140 2-Stage Dimensions

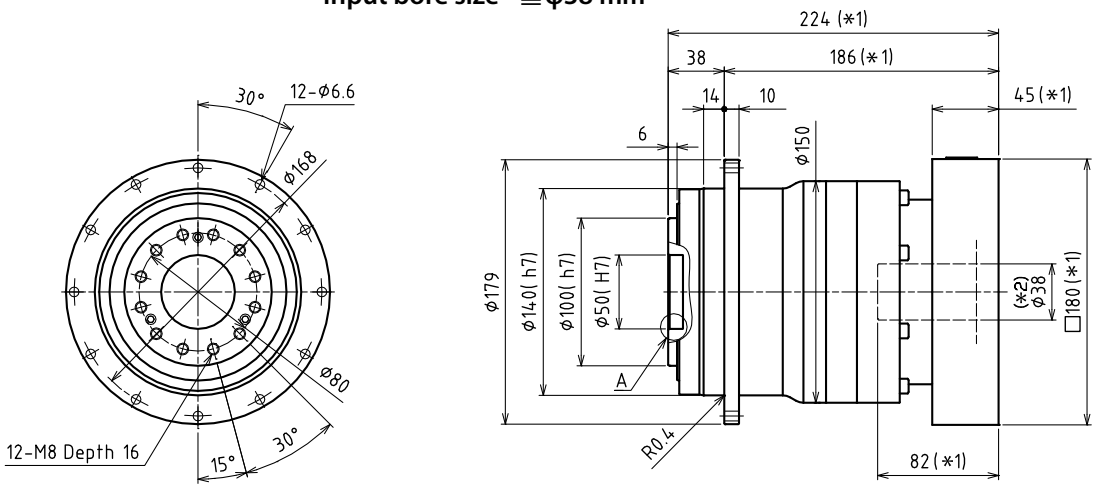
Input bore size ≦φ19 mm

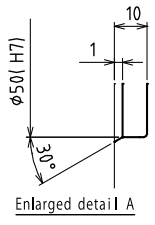


Input bore size ≦φ28 mm



Input bore size ≦φ38 mm





*1) Length will vary depending on motor.

*2) Bushing will be inserted to adapt to motor shaft

VRT 200 1-Stage Specifications

Frame Size	200					
Stage	1-Stage					
Ratio	Unit	Note	4	5	7	10
Nominal Output Torque	[Nm]	*1	850	910	910	910
Maximum Acceleration Torque	[Nm]	*2	1850	1850	1850	1350
Maximum Torque	[Nm]	*3	2250	2250	2150	1750
Emergency Stop Torque	[Nm]	*4	2750	2750	2750	2200
Nominal Input Speed	[rpm]	*5	1500	1500	2300	2300
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.9			
Maximum Radial Load	[N]	*8	40000			
Maximum Axial Load	[N]	*9	30000			
Maximum Tilting Moment	[Nm]	*10	5300			
Moment of Inertia (≤ Ø 19)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	53	36	23	16
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	68	51	37	31
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	110	95	81	75
Efficiency	[%]	*11	95			
Torsional Rigidity	[Nm/arc-min]	*12	610	610	550	445
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1			
Noise Level	dB [A]	--	≤ 67			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	42			

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

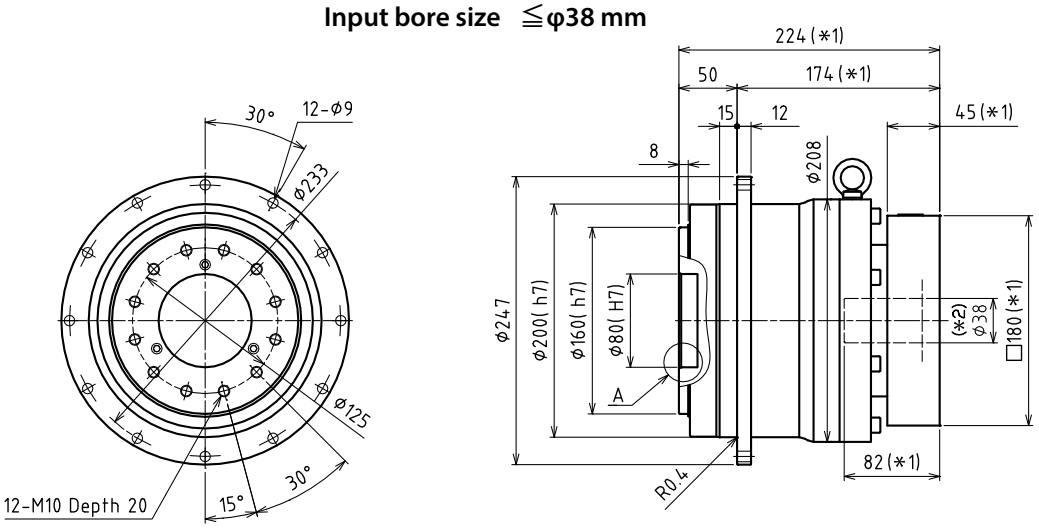
VRT 200 2-Stage Specifications

Frame Size	200					
Stage	2-Stage					
Ratio	Unit	Note	16	20	25	28
Nominal Output Torque	[Nm]	*1	850	910	1100	1300
Maximum Acceleration Torque	[Nm]	*2	1850	1850	1850	1850
Maximum Torque	[Nm]	*3	1850	1850	1850	1850
Emergency Stop Torque	[Nm]	*4	2750	2750	2750	2750
Nominal Input Speed	[rpm]	*5	2700	2700	2700	2700
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.3			
Maximum Radial Load	[N]	*8	40000			
Maximum Axial Load	[N]	*9	30000			
Maximum Tilting Moment	[Nm]	*10	5300			
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	13	9.2	8.6	11
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	19	15	15	18
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	34	30	30	32
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--
Efficiency	[%]	*11	90			
Torsional Rigidity	[Nm/arc-min]	*12	585	580	570	560
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1			
Noise Level	dB [A]	--	≤ 67			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	43			

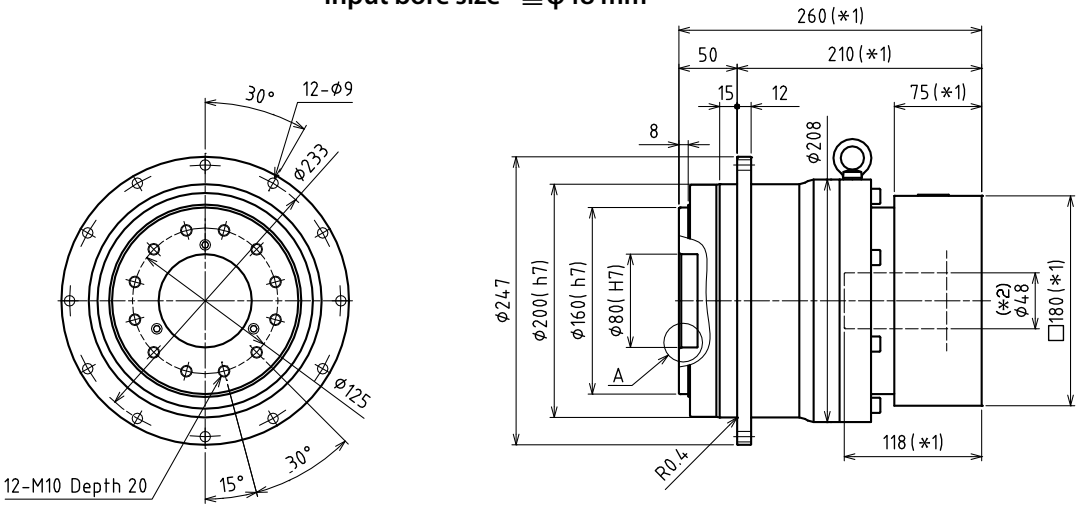
Frame Size	200						
Stage	2-Stage						
Ratio	Unit	Note	35	40	50	70	100
Nominal Output Torque	[Nm]	*1	1300	1200	1300	1300	930
Maximum Acceleration Torque	[Nm]	*2	1850	1850	1850	1850	1350
Maximum Torque	[Nm]	*3	1850	1850	1850	1850	1350
Emergency Stop Torque	[Nm]	*4	2750	2750	2750	2750	2200
Nominal Input Speed	[rpm]	*5	2700	2700	2900	3400	3400
Maximum Input Speed	[rpm]	*6	5000	5000	5000	5000	5000
No Load Running Torque	[Nm]	*7	1.3				
Maximum Radial Load	[N]	*8	40000				
Maximum Axial Load	[N]	*9	30000				
Maximum Tilting Moment	[Nm]	*10	5300				
Moment of Inertia (≤ Ø 19)	[kgcm²]	--	--	--	2.1	1.9	1.9
Moment of Inertia (≤ Ø 28)	[kgcm²]	--	8.0	4.1	4.0	3.8	3.8
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	14	10	10	10	10
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	29	25	25	25	25
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--
Efficiency	[%]	*11	90				
Torsional Rigidity	[Nm/arc-min]	*12	560	520	525	480	395
Maximum Torsional Backlash	[arc-min]	*13	Standard ≤ 3 / Reduced ≤ 1				
Noise Level	dB [A]	--	≤ 67				
Protection Class	--	*14	IP54 (IP65)				
Ambient Temperature	[°C]	--	0 - 40				
Permitted Housing Temperature	[°C]	--	90				
Weight	[kg]	*15	43				

VRT 200 1-Stage Dimensions

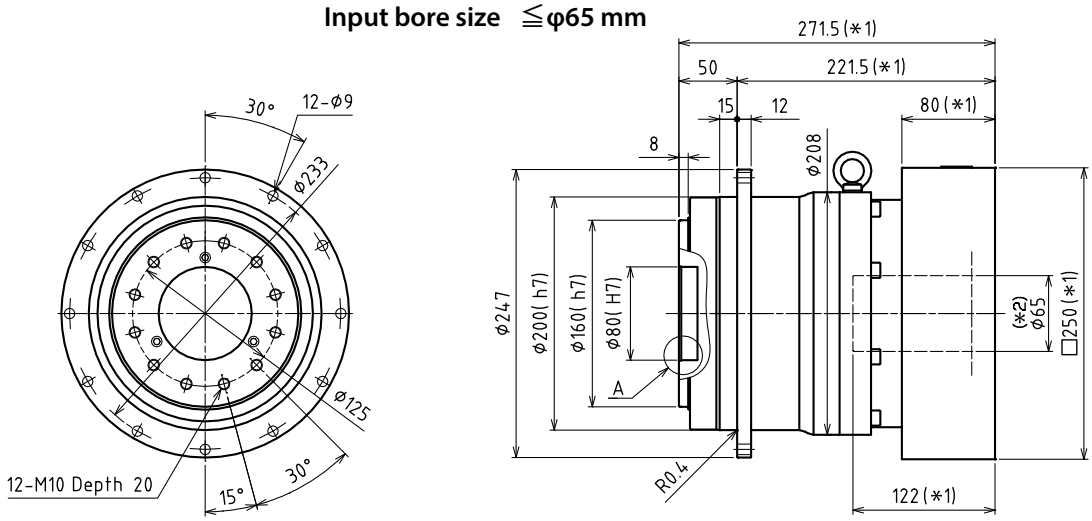
Input bore size ≦φ38 mm

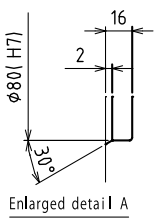


Input bore size ≦φ48 mm



Input bore size ≦φ65 mm



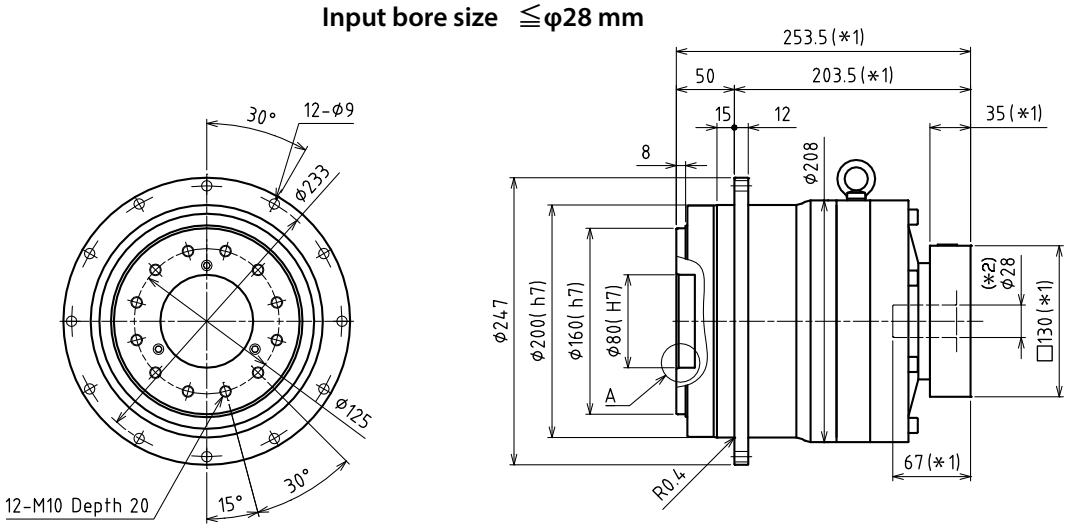


*1) Length will vary depending on motor

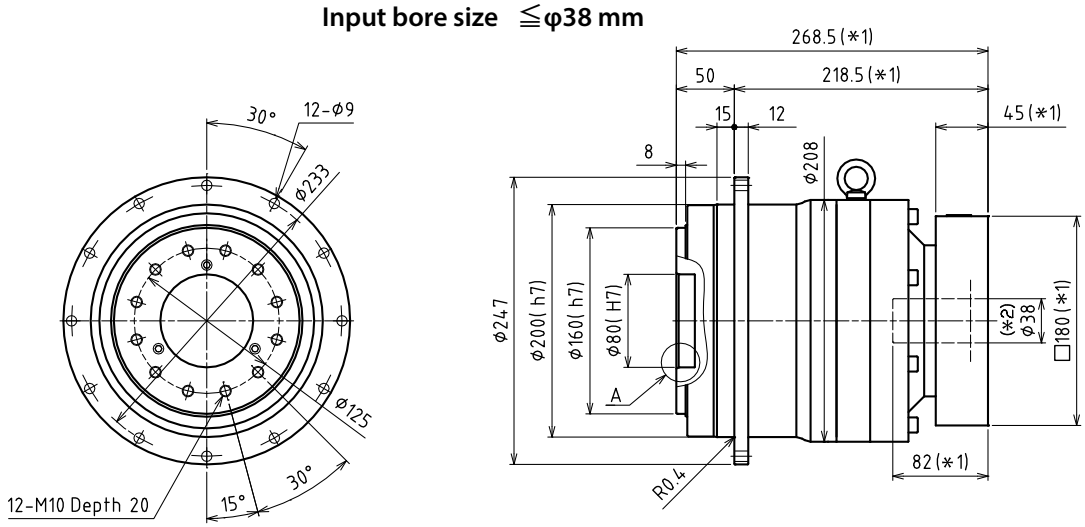
*2) Bushing will be inserted to adapt to motor shaft

VRT 200 2-Stage Dimensions

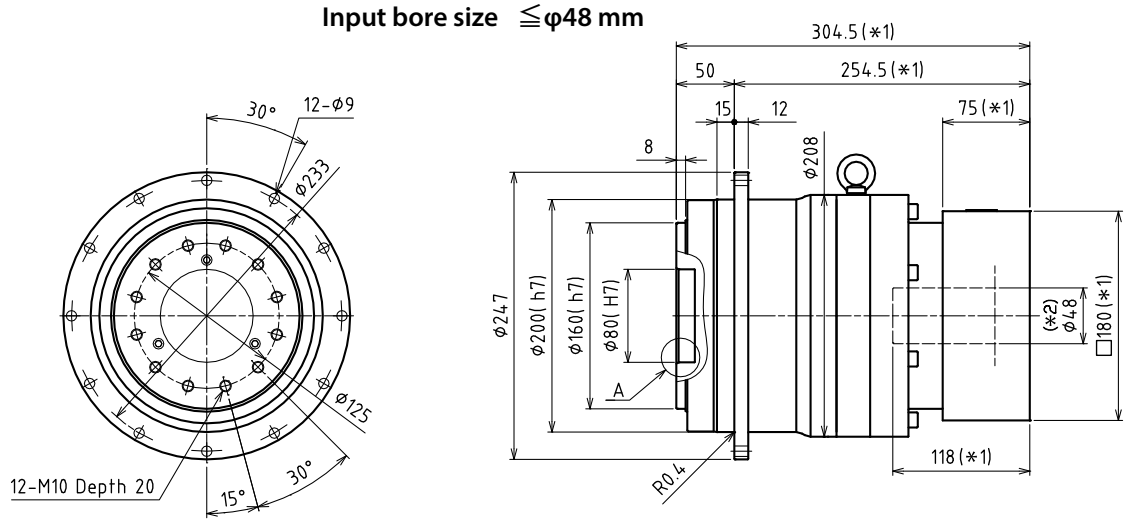
Input bore size ≦φ28 mm

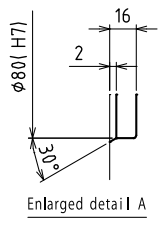


Input bore size ≦φ38 mm



Input bore size ≦φ48 mm





*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 255 1-Stage Specifications

Frame Size	255					
Stage	1-Stage					
Ratio	Unit	Note	4	5	7	10
Nominal Output Torque	[Nm]	*1	2400	2400	2700	2700
Maximum Acceleration Torque	[Nm]	*2	5100	5100	4800	3600
Maximum Torque	[Nm]	*3	5700	5700	5400	4100
Emergency Stop Torque	[Nm]	*4	8000	8000	8000	6000
Nominal Input Speed	[rpm]	*5	1000	1200	1500	1700
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	2.5			
Maximum Radial Load	[N]	*8	64000			
Maximum Axial Load	[N]	*9	48000			
Maximum Tilting Moment	[Nm]	*10	11000			
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	180	130	100	84
Efficiency	[%]	*11	95			
Torsional Rigidity	[Nm/arc-min]	*12	840	1000	900	840
Maximum Torsional Backlash	[arc-min]	*13	≤ 3			
Noise Level	dB [A]	--	≤ 62			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	84			

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

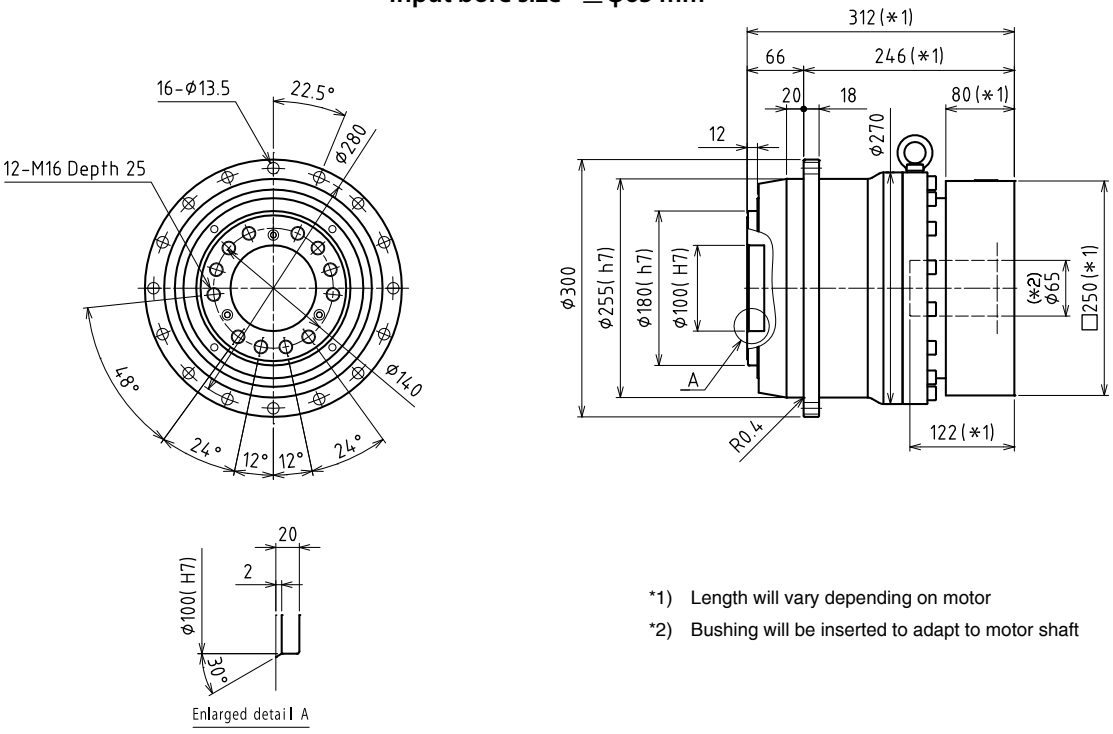
VRT 255 2-Stage Specifications

Frame Size	255					
Stage	2-Stage					
Ratio	Unit	Note	16	20	25	28
Nominal Output Torque	[Nm]	*1	2400	2600	3200	3400
Maximum Acceleration Torque	[Nm]	*2	5100	5100	5100	4900
Maximum Torque	[Nm]	*3	5100	5100	5100	4900
Emergency Stop Torque	[Nm]	*4	8000	8000	8000	8000
Nominal Input Speed	[rpm]	*5	2000	2000	2000	2000
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.0			
Maximum Radial Load	[N]	*8	64000			
Maximum Axial Load	[N]	*9	48000			
Maximum Tilting Moment	[Nm]	*10	11000			
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	58	47	45	53
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--
Efficiency	[%]	*11	90			
Torsional Rigidity	[Nm/arc-min]	*12	840	850	950	840
Maximum Torsional Backlash	[arc-min]	*13	≤ 3			
Noise Level	dB [A]	--	≤ 62			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	89			

Frame Size	255						
Stage	2-Stage						
Ratio	Unit	Note	35	40	50	70	100
Nominal Output Torque	[Nm]	*1	3400	3400	3400	3400	2000
Maximum Acceleration Torque	[Nm]	*2	4900	5100	5100	4900	2500
Maximum Torque	[Nm]	*3	4900	5100	5100	4900	2500
Emergency Stop Torque	[Nm]	*4	8000	8000	8000	8000	6000
Nominal Input Speed	[rpm]	*5	2000	2000	2200	2800	2800
Maximum Input Speed	[rpm]	*6	4500	4500	4500	4500	4500
No Load Running Torque	[Nm]	*7	1.0				
Maximum Radial Load	[N]	*8	64000				
Maximum Axial Load	[N]	*9	48000				
Maximum Tilting Moment	[Nm]	*10	11000				
Moment of Inertia (≤ Ø 38)	[kgcm²]	--	--	--	14	13	13
Moment of Inertia (≤ Ø 48)	[kgcm²]	--	44	32	32	31	31
Moment of Inertia (≤ Ø 65)	[kgcm²]	--	--	--	--	--	--
Efficiency	[%]	*11	90				
Torsional Rigidity	[Nm/arc-min]	*12	900	840	840	840	840
Maximum Torsional Backlash	[arc-min]	*13	≤ 3				
Noise Level	dB [A]	--	≤ 62				
Protection Class	--	*14	IP54 (IP65)				
Ambient Temperature	[°C]	--	0 - 40				
Permitted Housing Temperature	[°C]	--	90				
Weight	[kg]	*15	89				

VRT 255 1-Stage Dimensions

Input bore size ≦φ65 mm

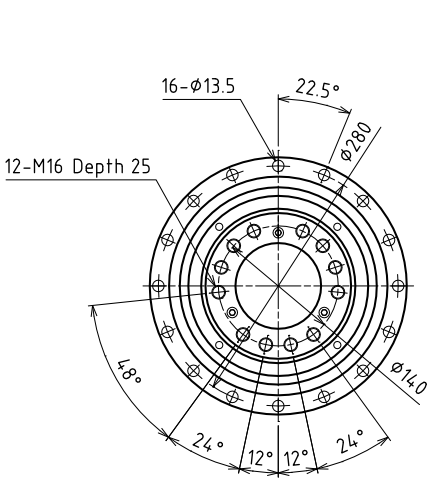


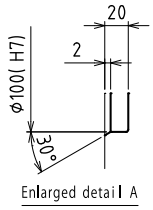
*1) Length will vary depending on motor

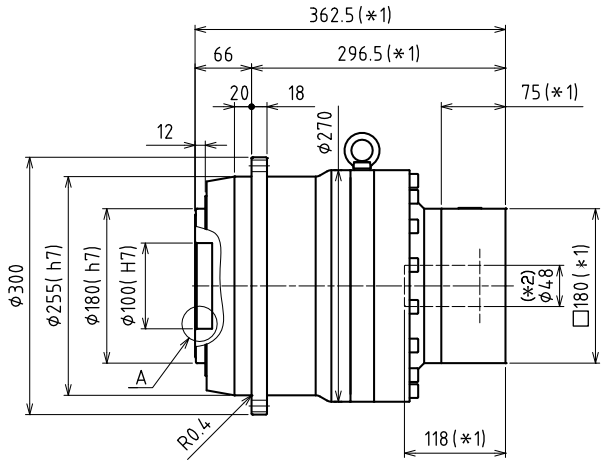
*2) Bushing will be inserted to adapt to motor shaft

VRT 255 2-Stage Dimensions

Input bore size ≦φ48 mm







*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 285 1-Stage Specifications

Frame Size	285					
Stage	1-Stage					
Ratio	Unit	Note	4	5	7	10
Nominal Output Torque	[Nm]	*1	3400	3400	3400	3400
Maximum Acceleration Torque	[Nm]	*2	6700	6700	6700	5100
Maximum Torque	[Nm]	*3	7500	7500	7500	5900
Emergency Stop Torque	[Nm]	*4	12000	12000	12000	10000
Nominal Input Speed	[rpm]	*5	900	1100	1300	1300
Maximum Input Speed	[rpm]	*6	3000	3000	3000	3000
No Load Running Torque	[Nm]	*7	2.7			
Maximum Radial Load	[N]	*8	86000			
Maximum Axial Load	[N]	*9	64000			
Maximum Tilting Moment	[Nm]	*10	18000			
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	270	190	130	96
Efficiency	[%]	*11	95			
Torsional Rigidity	[Nm/arc-min]	*12	1200	1450	1300	1200
Maximum Torsional Backlash	[arc-min]	*13	≤ 3			
Noise Level	dB [A]	--	≤ 63			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	110			

*1) At nominal input speed, service life is 20,000 hours.
*2) The maximum torque when starting or stopping operation. Apply Cycle Factor $\mathbf{f_0}$, for higher duty cycle applications.
*3) Permitted 10,000 times during service life. Based on 10% of maximum radial load and smooth output shaft.
*4) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.
*5) The average input speed at nominal input torque. Maintain housing temperature below permitted value.
*6) The maximum intermittent input speed.
*7) Torque at no load applied to the input shaft at nominal input speed.
*8) The maximum radial load that the gearbox can accept.
*9) The maximum axial load that the gearbox can accept.
*10) The maximum load at output flange surface.
*11) The efficiency at the nominal output torque rating.
*12) This does not include lost motion.
*13) Contact SIT S.p.A. for the testing conditions and environment.
*14) IP65 (wash-down) is available as an option. Contact SIT S.P.A. for more details.
*15) Weight may vary slightly between models.

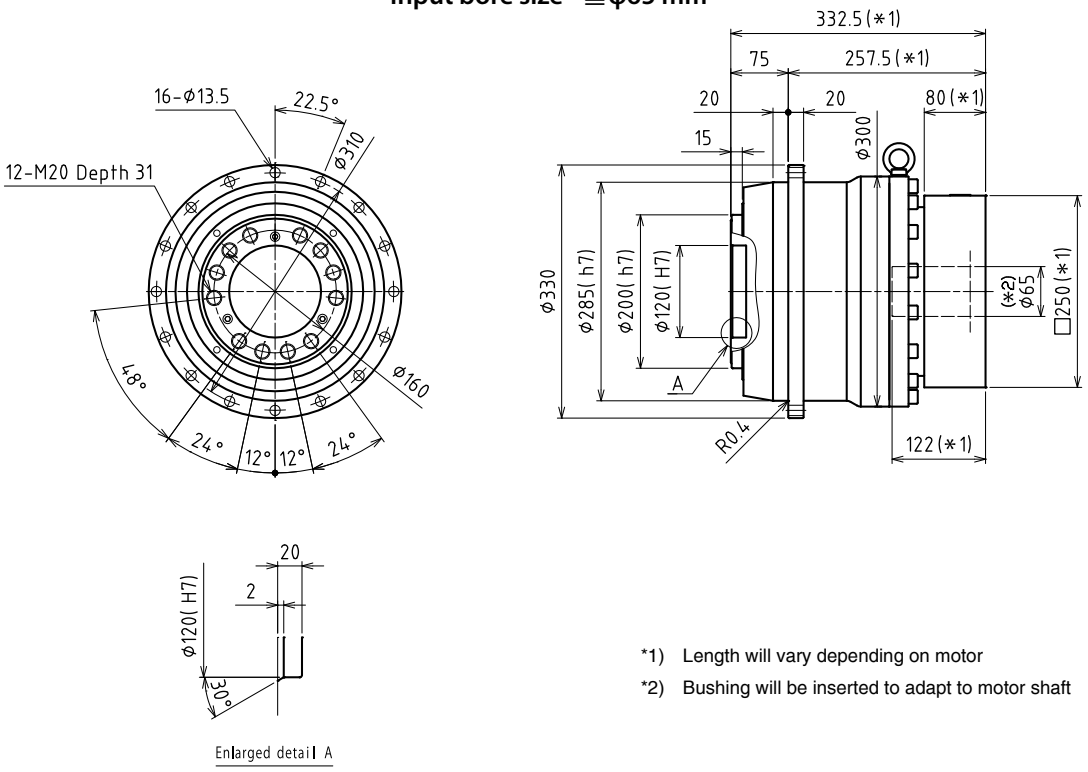
VRT 285 2-Stage Specifications

Frame Size	285					
Stage	2-Stage					
Ratio	Unit	Note	16	20	25	28
Nominal Output Torque	[Nm]	*1	2700	2900	3600	4200
Maximum Acceleration Torque	[Nm]	*2	6700	6700	6700	6700
Maximum Torque	[Nm]	*3	6700	6700	6700	6700
Emergency Stop Torque	[Nm]	*4	12000	12000	12000	12000
Nominal Input Speed	[rpm]	*5	1500	1500	1500	1500
Maximum Input Speed	[rpm]	*6	4000	4000	4000	4000
No Load Running Torque	[Nm]	*7	0.6			
Maximum Radial Load	[N]	*8	86000			
Maximum Axial Load	[N]	*9	64000			
Maximum Tilting Moment	[Nm]	*10	18000			
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	--	--
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	63	50	47	55
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--
Efficiency	[%]	*11	90			
Torsional Rigidity	[Nm/arc-min]	*12	1200	1400	1450	1200
Maximum Torsional Backlash	[arc-min]	*13	≤ 3			
Noise Level	dB [A]	--	≤ 63			
Protection Class	--	*14	IP54 (IP65)			
Ambient Temperature	[°C]	--	0 - 40			
Permitted Housing Temperature	[°C]	--	90			
Weight	[kg]	*15	120			

Frame Size	285						
Stage	2-Stage						
Ratio	Unit	Note	35	40	50	70	100
Nominal Output Torque	[Nm]	*1	4200	4200	4200	4200	2700
Maximum Acceleration Torque	[Nm]	*2	6700	6700	6700	6700	3400
Maximum Torque	[Nm]	*3	6700	6700	6700	6700	3400
Emergency Stop Torque	[Nm]	*4	12000	12000	12000	12000	10000
Nominal Input Speed	[rpm]	*5	1500	1500	2000	2200	2200
Maximum Input Speed	[rpm]	*6	4000	4000	4000	4000	4000
No Load Running Torque	[Nm]	*7	0.6				
Maximum Radial Load	[N]	*8	86000				
Maximum Axial Load	[N]	*9	64000				
Maximum Tilting Moment	[Nm]	*10	18000				
Moment of Inertia (≤ Ø 38)	[kgcm^2]	--	--	--	14	14	13
Moment of Inertia (≤ Ø 48)	[kgcm^2]	--	45	33	32	31	31
Moment of Inertia (≤ Ø 65)	[kgcm^2]	--	--	--	--	--	--
Efficiency	[%]	*11	90				
Torsional Rigidity	[Nm/arc-min]	*12	1400	1200	1300	1250	1200
Maximum Torsional Backlash	[arc-min]	*13	≤ 3				
Noise Level	dB [A]	--	≤ 63				
Protection Class	--	*14	IP54 (IP65)				
Ambient Temperature	[°C]	--	0 - 40				
Permitted Housing Temperature	[°C]	--	90				
Weight	[kg]	*15	120				

VRT 285 1-Stage Dimensions

Input bore size ≦φ65 mm

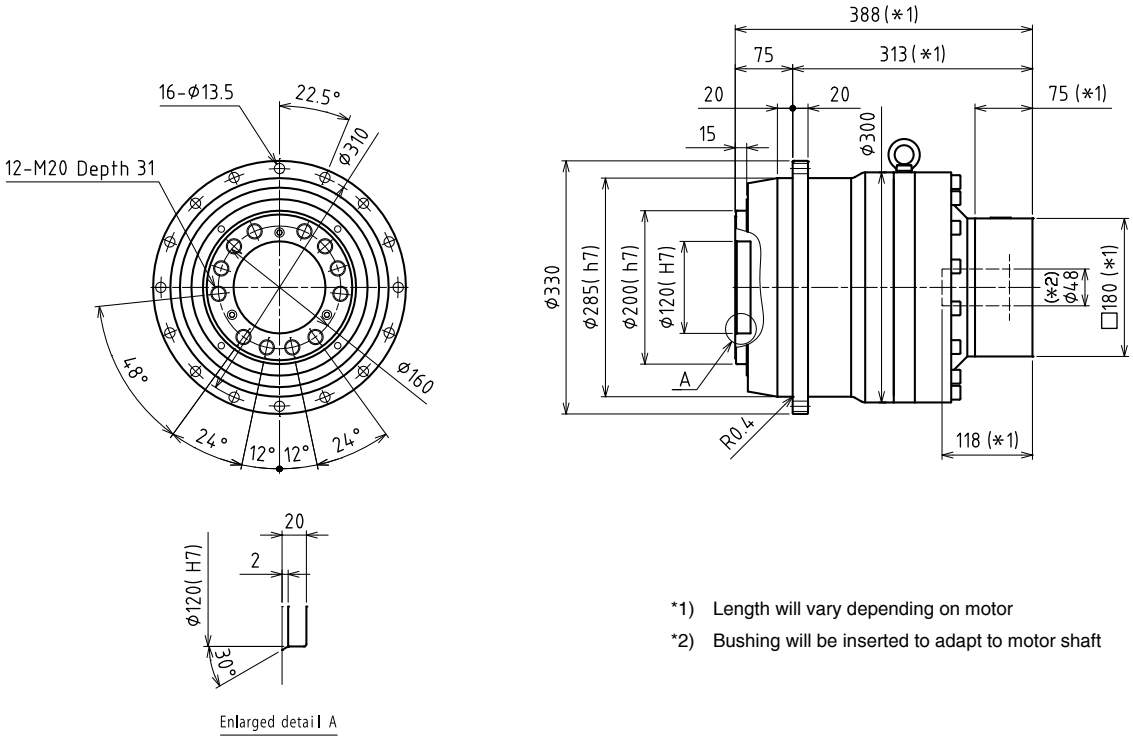


*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft

VRT 285 2-Stage Dimensions

Input bore size ≦φ48 mm



*1) Length will vary depending on motor

*2) Bushing will be inserted to adapt to motor shaft