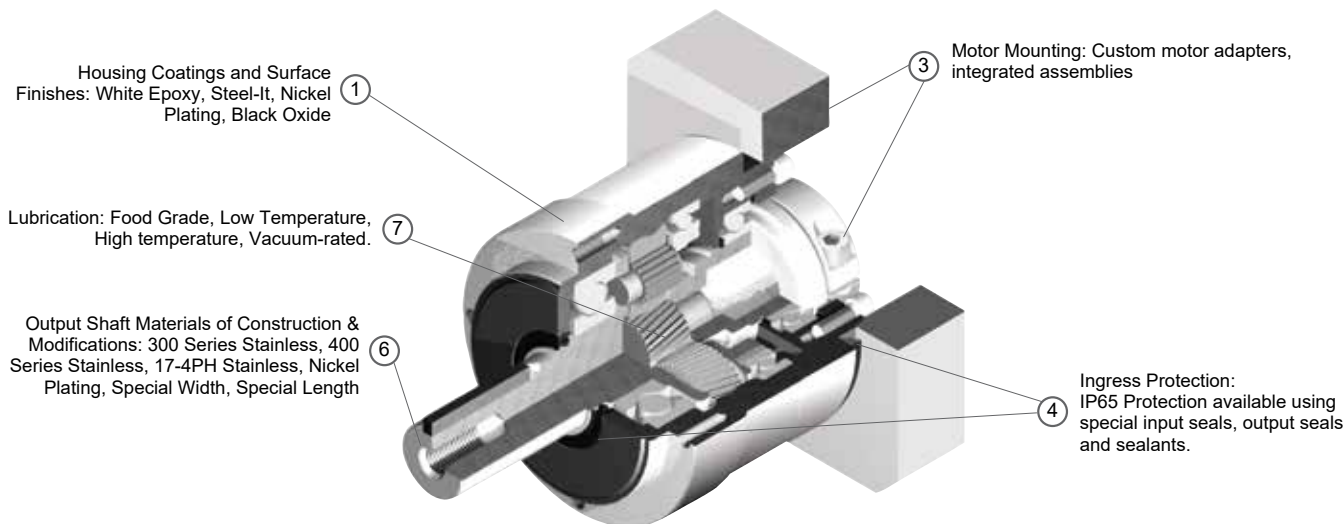


Options & Modifications

Build Your Ideal Gearbox

NIDEC-SHIMPO realizes that even with our vast range of products, you may not find exactly what you need for your application. We are highly capable of supplying custom solutions for OEMs, which include completely customized gearboxes or gear sets, modified standard designs and integrated product assemblies to meet unique application requirements. We work closely with our OEM customers during early phases

of development to create special designs that can overcome the harshest environments, tightest space constraints and most demanding positioning requirements. Whether your application requires weight relief, cost-down considerations, special coatings or materials of construction, NIDEC-SHIMPO can develop a product to meet your target.



Note: The following options and modifications may require minimum order quantities. Contact SIT S.p.A. for additional details.

Standard Planetary Washdown and Food Grade Options

Food, beverage, pharmaceutical and cosmetics equipment builders compete on their ability to deliver more innovative processing and packaging, with higher throughput and less downtime. Strict hygiene regulations require equipment to be cleaned often with water, steam and harsh chemicals that can quickly destroy ordinary machine components. These operating conditions pose challenges for gearbox manufactures and

NIDEC-SHIMPO is up to the task. NIDEC-SHIMPO offers standard, readily available wash-down and food grade options for our VRL and VRB planetary product lines in a select group of configurations. These options include stainless steel output shaft and fasteners, white epoxy or Steel-it paint and IP65 environmental protection. These readily available options are shown in the chart below:

Series	VRL		
Frame Size	070	090	120
1-Stage	3, 5, 7, 10:1		
2-Stage	15, 25, 28, 30, 35, 50, 70, 100:1		

Series	VRB		
Frame Size	060	090	115
1-Stage	3, 5, 7, 10:1		
2-Stage	15, 25, 28, 30, 35, 50, 70, 100:1		

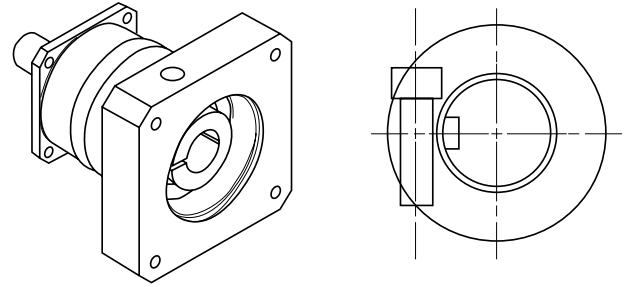
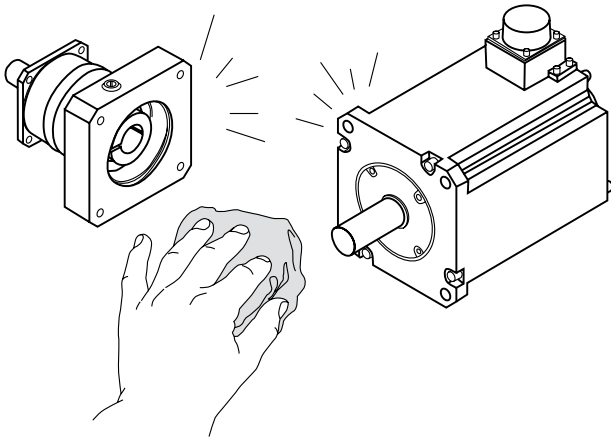
Part Number	VRB	-090	7	K	3	19HB16	XV
Model name - VRB series							
Size							
Ratio							
Output shaft style							
Backlash							
Adapter code							
Washdown, Food Grade Options							

Order Code	Description of Features	
X	V	Food Grade Grease; Food Grade White Epoxy; IP 65; SS shaft
-		Standard Grease; Standard Paint
W		Standard Grease; Food Grade White Epoxy
S		Standard Grease; Steel - It™
F		Food Grade Grease; Standard Paint
X		Food Grade Grease; Food Grade White Epoxy
G		Food Grade Grease; Steel - It™
-		Standard Protection; Standard Shaft, Fasteners
I		Standard Protection; Stainless Steel Shaft, Fasteners
V		IP65 Protection; Stainless Steel Shaft, Fasteners

Installation Instructions and Safety Precautions

Inspection and Preparations

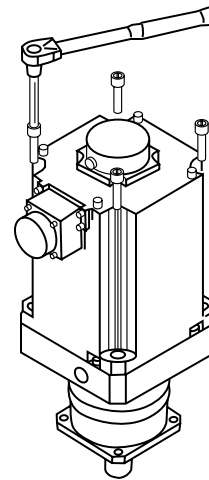
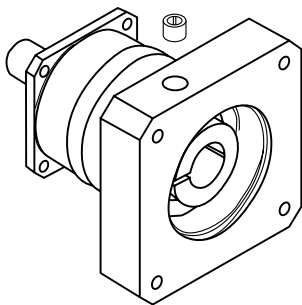
- A. Upon delivery of the gearbox, confirm that you received the exact model that was specified on your purchase order.
- B. Inspect for shipping damage. Notify the shipping agent immediately if any damage is discovered.
- C. Remove the protective covering from the output shaft.
- B. Carefully align the shaft bushing (if included) so that the opening in the bushing aligns with the opening in the input hub. It is also recommended that the motor shaft keyway (if present) aligns with the opening in the input hub clamp.



- D. Clean and de-grease the motor mounting surface and shaft, as well as the gearbox mounting surface, input hub bore, and shaft bushing (if included). This cleaning is very important for the shaft and bushing, to prevent slip during motion.

- C. Rotate the gearbox input hub so that the clamp bolt is aligned with the access hole. Loosen the clamp bolt.
- D. Remove the motor key (if supplied), as it is not required for proper installation and operation.

Motor Mounting



- A. Remove the access hole plug, allowing access to the motor shaft clamp.

- E. Slowly slide the motor into the gearbox, so that the motor shaft enters the gearbox input hub with motor shaft keyway (if present) aligned with gearbox input shaft clamp opening. Install the four motor flange bolts in a cross-wise pattern, to ensure proper alignment of motor to gearbox. Tighten the bolts to the proper torque using a torque wrench (see Table A).

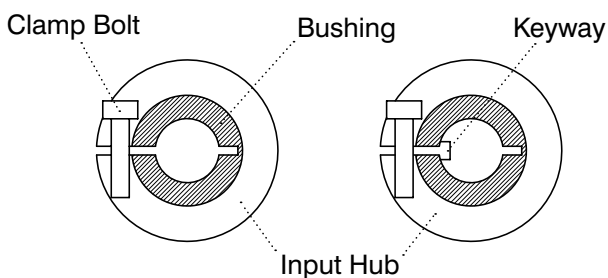
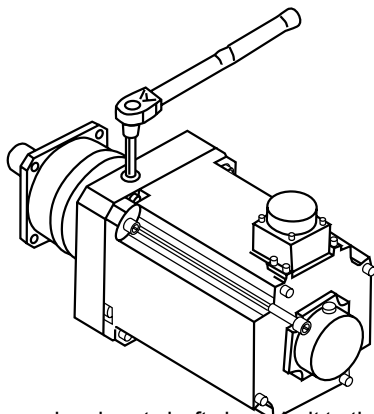


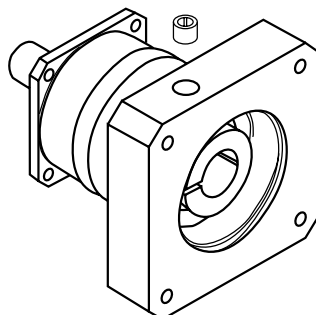
Table A

Motor Installation Bolt Size	Tightening Torque	
	(Nm)	(in lbs)
M3	1.3	12
M4	3.0	27
M5	6.0	53
M6	10	89
M8	20	171
M10	38	338
M12	67	596



F. Tighten the gearbox input shaft clamp bolt to the proper torque using a torque wrench (see Table B).

Clamp Bolt Size	Tightening Torque	
	(Nm)	(in lbs)
M3	2.0	18
M4	4.5	40
M5	9.0	80
M6	16	142
M8	36	318
M10	27	637
M12	125	1106



G. Re-install the access hole plug into the motor adapter plate. Assembly is complete.

Safety Precautions

- A. Avoid use in wet or corrosive areas, unless the gearbox is specified for these environments.
- B. Ambient temperature in the area of the gearbox must be in the range of 0° -40 °C, unless the gearbox is built to withstand a different temperature range.
- C. The gearbox (with motor) must be firmly attached to a vibration-free frame or fixture.
- D. The gearbox has been lubricated and can be operated immediately.
- E. At initial operation, check the direction of shaft rotation, then apply the load gradually.
- F. Avoid excessive loads.
- G. Ensure that the motor speed does not exceed the maximum RPM specified for the gearbox.
- H. Watch for the following problems and discontinue motion immediately:
 - a. Sharp increase in temperature
 - b. Abnormal noise
 - c. Unstable output speed
- I. The gearbox is not designed to be disassembled.
- J. The gearbox is lubricated for its lifetime with appropriate grease. No re-lubrication is required.

IP 65 Versions

If you have received an IP65 version of the gearbox, be sure to seal between the gearbox and motor interface with a sealant to ensure an IP65 rating of the gearbox / motor assembly. Also apply sealant to the access hole plug during step "G". Please contact SIT S.p.A. with any questions.

Motor Mounting Codes

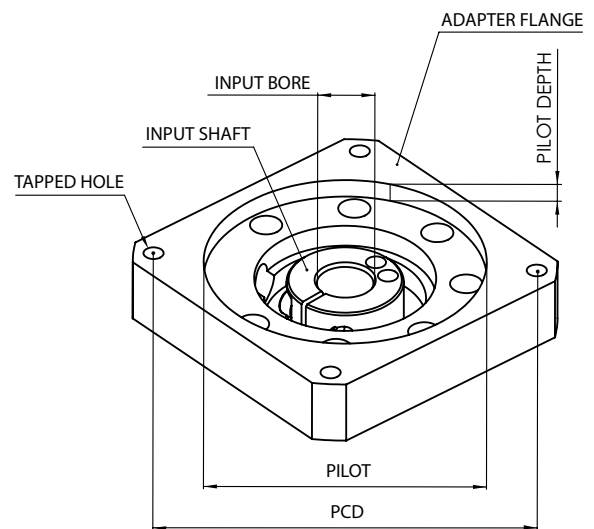
Our motor mounting codes can be configured automatically using our online selection tool. These tables supply the details behind these codes. The tables start with Input Bore measurement and the Part # Code, which are indicated at the end of every model code. For each Part # Code, the Pilot, PCD, Tapped Hole, and Pilot Depth, are explained.

Please note that even though the Part# Code may have the same letters (i.e. DC, FB, HA, etc), the Pilot and PCD dimensions may not be the same if a different input bore diameter. Locate the table by input bore diameter first, and then find the appropriate adapter Part# Code to check the dimensions. If you have any questions, Contact SIT S.P.A. for support.

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
65	MA	114.3	200	M12	8
65	MB	200	235	M12	8
65	MC	180	215	M12	8
65	MD	180	265	M12	8
65	NA	230	265	M12	8
65	NB	230	265	M12	18
65	NC	230	290	M12	8
65	ND	230	265	M20	18
65	PA	250	300	M16	8
65	PB	250	320	M16	18
65	QA	300	350	M16	8
65	QB	280	325	M16	8

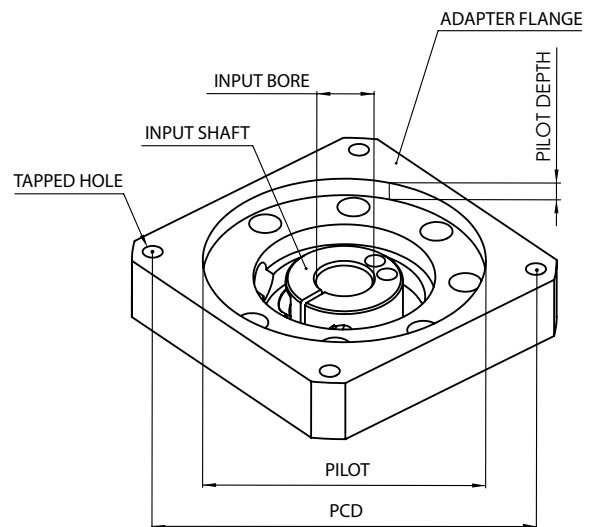
Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
48	KA	114.3	200	M12	8
48	KB	110	130	8.8	8
48	KC	130	215	M12	8
48	LA	180	215	M12	8
48	MA	180	265	M12	8
48	MB	200	235	M12	8
48	NA	230	265	M12	8
48	PA	250	300	M16	8

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
38	HA	110	130	8.8	8
38	HB	110	145	M8	8
38	HE	110	130	M8	8
38	JA	130	165	M10	8
38	KA	114.3	200	M12	8
38	KB	130	215	M10	8
38	KC	130	215	M12	8
38	KD	95	200	M10	18
38	KE	114.3	200	M12	18
38	LA	180	215	M12	8
38	LB	180	215	M12	18
38	MA	180	265	M12	8
38	MB	200	235	M12	8
38	MC	215.9	184.15	13.7	5.5
38	MD	200	250	M8	18
38	NA	230	265	M12	8



Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
28	FA	80	100	M6	8
28	FB	95	115	M6	8
28	FC	95	115	M8	8
28	FD	95	115	M6	8
28	FE	95	115	M8	8
28	GA	55.563	125.73	M6	8
28	GB	63.5	127	M6	8
28	GC	95	130	M8	8
28	GD	110	130	M8	8
28	GE	110	130	M10	8
28	GF	110	130	8.8	8
28	GG	110	135	M8	8
28	GH	95	135	M8	8
28	HA	110	145	M8	8
28	HB	110	145	M8	18
28	HC	110	145	10.5	8
28	HD	114.3	149.23	10.5	8
28	HE	95	145	M8	18
28	HF	110	145	M8	8
28	JA	110	165	M8	8
28	JB	110	165	M10	8
28	JC	130	165	M10	8
28	JD	130	174	M10	28
28	JE	130	165	M10	18
28	JF	114.3	160	M10	8
28	KA	114.3	200	M12	8
28	KB	130	215	M10	8
28	KD	114.3	200	M12	18
28	KE	150	185	M10	8
28	LA	180	215	M12	8
28	LB	180	220	M12	18
28	MA	200	235	M12	8
28	MB	200	250	M8	18

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
19 /	FC	95	115	M8	9
19 /	BK	50	70	M5	6
19	DA	60	90	M5	6
19	DB	70	90	M5	6
19	DC	70	90	M6	6
19	DD	70	90	M6	16
19	DE	70	90	M5	11
19	EA	73.025	98.43	M5	11
19	EB	80	100	M6	6
19	EC	80	100	M6	16
19	ED	60	98.99	M6	6
19	FA	95	115	M8	6
19	FB	95	115	M8	16
19	GA	55.563	125.73	M6	11
19	GB	95	130	M8	6
19	GC	110	130	M8	11
19	GD	110	130	8.8	6
19	GE	95	130	M8	16
19	GF	100	125	M8	16
19	GH	95	135	M8	11
19	HA	110	145	M8	6
19	HB	110	145	M8	21
19	HC	110	145	10.5	11
19	HD	114.3	149.23	M8	11
19	HE	114.3	149.23	10.5	11
19	JA	130	165	M10	16
19	JB	115	165	M8	21

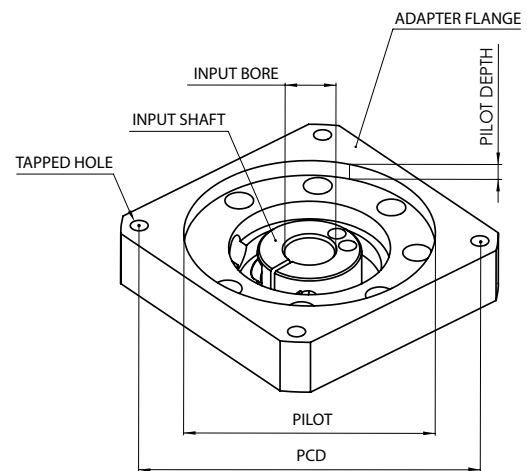


Our motor mounting codes can be configured automatically using our online selection tool. These tables supply the details behind these codes. The tables start with Input Bore measurement and the Part # Code, which are indicated at the end of every model code. For each Part # Code, the Pilot, pCD, Tapped Hole, and Pilot Depth, are explained.

Please note that even though the Part# Code may have the same letters (i.e. DC, FB, HA, etc), the Pilot and PCD dimensions may not be the same if a different input bore diameter. Locate the table by input bore diameter first, and then find the appropriate adapter Part# Code to check the dimensions. If you have any questions, Contact SIT S.p.A. for support.

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
14	BA	38.1	66.68	M4	5
14	BB	38.1	66.68	M5	5
14	BC	38.1	66.68	M5	10
14	BD	40	63	M4	5
14	BE	40	63	M5	5
14	BF	40	65	M5	5
14	BG	40	70	M4	5
14	BH	50	60	M4	10
14	BJ	50	70	M4	5
14	BK	50	70	M5	5
14	BL	50	70	M5	15
14	BM	50	70	M5	10
14	BN	50	70	M4	10
14	BP	36	70.71	M4	5
14	CA	60	75	M5	5
14	CB	60	75	M6	10
14	CC	60	80	M4	5
14	DA	50	95	M6	5
14	DB	60	85	M5	5
14	DC	60	90	M5	5
14	DD	70	85	6.5	5
14	DE	70	90	M5	10
14	DF	70	90	M6	5

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
14	DG	70	90	M6	15
14	DH	70	95	M6	5
14	DJ	60	95	M5	5
14	DK	36.8	82.024	M6	15
14	DL	62	91.924	M5	10
14	EA	50	100	M6	5
14	EB	73.025	98.43	M5	5
14	EC	80	100	M6	5
14	ED	80	100	M6	15
14	EE	73.025	98.43	M6	15
14	EF	50	98.43	M5	5
14	EG	60	98.995	M5	5
14	EH	80	105	M6	15
14	EJ	60	98.995	M6	10
14	EK	73.025	98.43	M6	5
14	EL	73	94	M6	5
14	EM	83	104	M8	10
14	FA	60	115	M6	5
14	FB	95	115	M8	15
14	GA	80	139.7	M6	5
14	GB	80	130	M5	20
14	GC	94	120	M8	10
14	JA	115	165	M8	10



Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
8	AA	20.02	46.69	M3	5
8	AB	22	43.82	4.7	10
8	AC	22	48	M3	5
8	AD	22.22	50.8	M3	5
8	AE	25.4	38.89	4	10
8	AF	30	45	M3	5
8	AG	30	46	M4	5
8	AH	30	46	M4	10
8	AJ	30	46	3.5	10
8	AK	34	48	M3	10
8	AL	30	48	M3	5
8	AM	22	43.82	3.5	5
8	AN	40	50	M4	5
8	AQ	37.6	48	M3	5
8	BA	38.1	66.68	M4	5
8	BB	38.1	66.68	M5	5
8	BC	50	60	M4	10
8	BD	50	70	M4	5
8	BE	50	70	M5	5
8	BF	50	70	M5	10
8	BG	36	70.71	M4	5
8	BH	54	70	M4	5
8	BJ	50	58	M3	5
8	CA	50	80	M4	10

Input Bore [mm]	Part# Code	Pilot [mm]	PCD [mm]	Tapped Hole	Pilot Depth [mm]
S8	ZA	20.02	46.69	M3	5
S8	ZB	22	43.82	4.7	10
S8	ZC	22	48	M3	5
S8	ZD	22.22	50.8	M3	5
S8	ZE	25.4	38.89	4	10
S8	ZF	30	45	M3	5
S8	ZG	30	46	M4	5
S8	ZH	30	46	M4	10
S8	ZJ	30	46	3.5	10
S8	ZK	34	48	M3	10
S8	ZL	30	48	M3	5
S8	ZM	22	43.82	3.5	5
S8	ZN	40	50	M4	5
S8	ZQ	37.6	48	M3	5
S8	BA	38.1	66.68	M4	5
S8	BB	38.1	66.68	M5	5
S8	BC	50	60	M4	10
S8	BD	50	70	M4	5
S8	BE	50	70	M5	5
S8	BF	50	70	M5	10
S8	BG	36	70.71	M4	5
S8	BH	54	70	M4	5
S8	BJ	50	58	M3	5

