VIGO DRIVE™

Maximum Precision
for Every Movement

Nabtesco
High Precision Gears


RV-C
Hollow shaft
T up to 11.760 Nm
i up to 283

The Best Choice for Precision Movement and a High Level of Energy Efficiency

Two extremes must be harmonised when it comes to machine and plant construction, particularly in the area of robotics and the machine tool industry: high torques and high reduction ratios. Precision gears from Nabtesco Precision represent the ideal solution in this respect. The crankshaft cam technology employed means that Nabtesco gears can withstand extremely high accelerating forces and torques. This simultaneously enables the achievement of movements and positioning characterised by maximum precision.

Our eccentric gears realise these characteristics in the most confined installation spaces, making them optimum components for versatile operational areas and innovative applications, such as in medical technology, high-end machine tools, solar technology, handling applications and much more. Nabtesco Precision Europe GmbH, part of the Nabtesco Group, is the world's largest and most widely recognised manufacturer of precision gears.

Nabtesco gears achieve an efficiency level of up to 85%

Internationally successful

- over 60% of all industrial robots use Nabtesco gears
- more than 4.000.000 RV gears are in use
- individual customer service worldwide
- over 30 years of development and design experience
- maximum production and service quality
- efficiency level up to 85%

Contents

Advantages of Nabtesco eccentric gears

- high rated torque of up to 14.715 Nm
- minimum space requirement
- high shock-load capability (5 times the rated torque)
- high rigidity
- extreme precision (hysteresis loss < 1 arcmin)
- low inertia
- insensitive to vibration
- extremely low wear
- long service life

Convincing performance

RV-E
Solid shaft
T up to 14.715 Nm
i up to 257

Eccentric Gears Offer Unbeatable Advantages

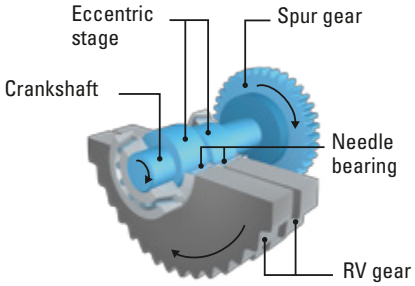
The two-stage reduction of eccentric gears makes solutions from Nabtesco Precision so successful. The reason is that the speed is reduced by the double cams. Vibration is reduced by the two-stage reduction principle and low inertia. The force is also distributed very evenly, thanks to the roller cam design, and this contributes to the minimum hysteresis loss and enormous resistance to shock loading. Consequently, eccentric gears are as versatile as they are resilient.

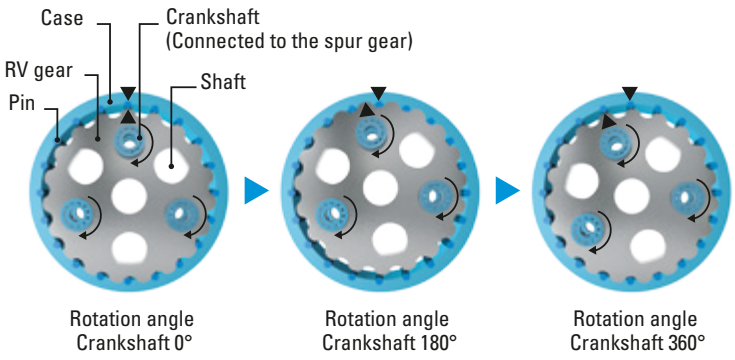
Mode of operation of eccentric gearboxes

The drive or servomotor is connected to the spur gear stage of the gearbox via a pinion. The rotating speed reduces at this point relative to the reduction ratio between the pinion and planetary gear. The planetary gears are connected to crankshafts which drive the cams using needle bearings. These cams rotate inside the case which is lined with pins.

The cam has exactly one eccentric section less than the pin ring has pins. A 360° revolution of the crankshafts therefore causes the cams to rotate one pin farther, whereby practically all the gear teeth are in continuous contact with the pins. The rotating movement is then transmitted from the input shaft to the crankshafts via the spur gear stage, and these then shift the cams in the pin ring and, consequently, generate a reduced speed with high precision. This technology enables the RV gears to absorb five times the rated torque in emergency-stop situations without suffering any damage.

The resulting overall reduction is the same as the product of the two reduction ratios (spur gear stage and eccentric stage).





Component Sets

Nabtesco Precision component sets are, essentially, available in three versions:

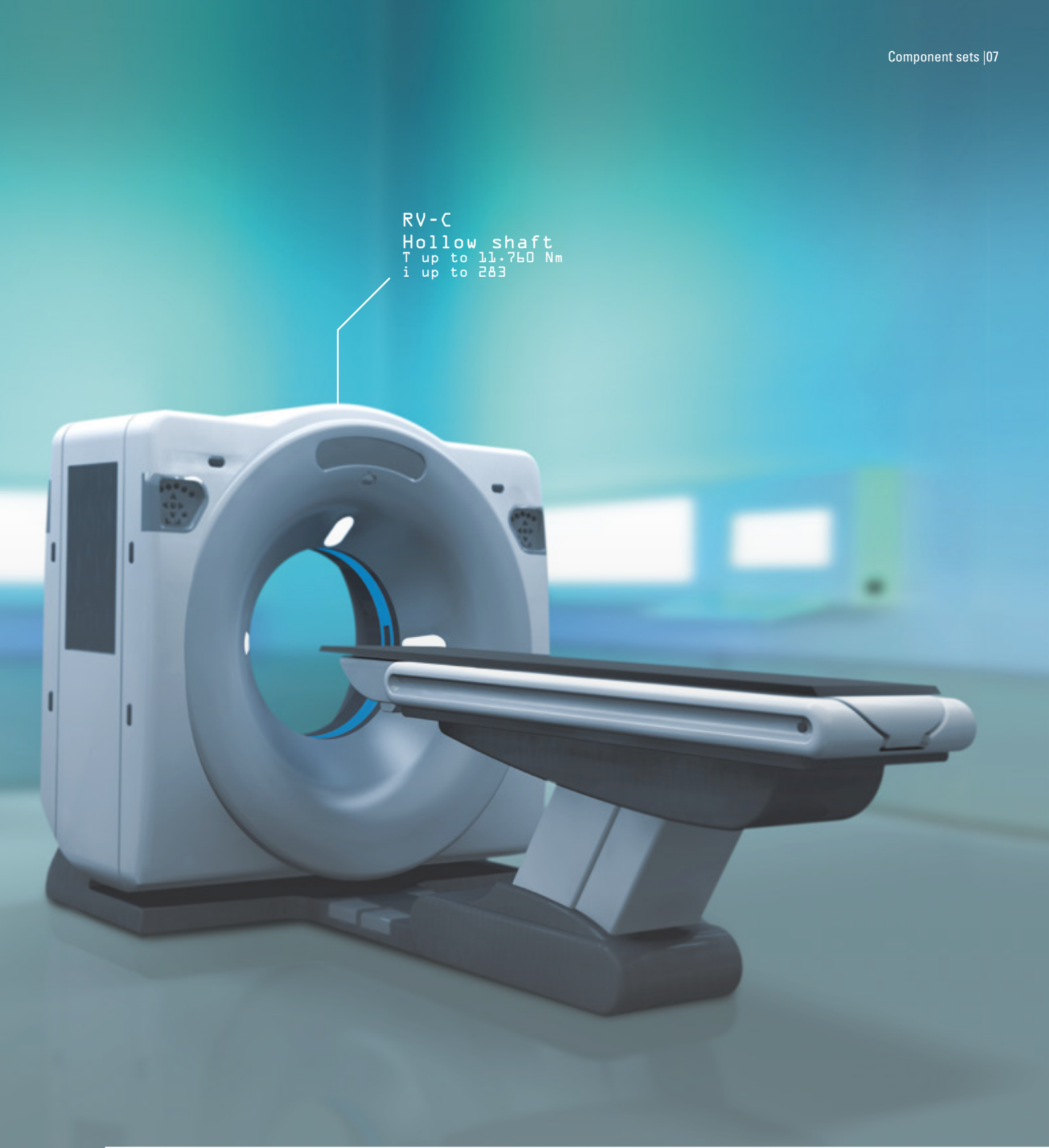
- The newly developed **RV-N solid shaft gears** with reduced weight at high output torques and high reduction ratios are optimally suited for smaller installation space.
- **RV-E solid shaft gears** provide high reduction ratios and are extremely resilient, thanks to integrated angular bearings.
- The identical **RV-C series** has a hollow shaft with a diameter of up to 138 mm which, for example, facilitates the routing of data and power supply cables and integrated output shaft support.
- The **RV series** is the basic version and can be combined with different output supports.

RV-N Page 8
T 245 – 7.000 Nm | i 41 – 203,52

RV-E Page 10
T 58 – 14.715 Nm | i 31 – 257

RV-C Page 12
T 98 – 11.760 Nm | i 27 – 283

RV Page 14
T 137 – 5.390 Nm | i 57 – 192,4



Type designation

RV — Type designation

80 — Size

E — N = solid shaft
E = solid shaft
C = hollow shaft
without = original type
(no output shaft support)

121 — Ratio

A — Input shaft
A = narrow shaft end (standard)
B = wide shaft end (standard)
Z = customised

B — Output shaft: Mounting method
B = bolts
P = bolts & tapered pins
T = through bolts

RV-N
Component Sets – Solid Shaft

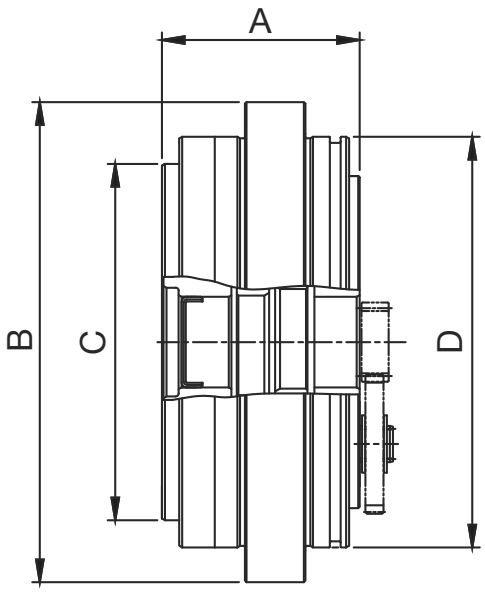
Areas of use

- Robotics
- Medical technology
- Machine tools
- Positioning

Based on the RV-E series, Nabtesco has developed especially compact, lightweight and powerful gear units: the RV-N series. They are used wherever high torque ratings are required, yet little space is available. The compact design is achieved by a main bearing with integrated inner ring. The reinforcement of the crankshaft bearing produces a very high power density. In addition, all gear components were optimised using FEM analysis and subjected to the latest manufacturing processes.

Advantages

- Less installation space – same output
- Efficiency level up to 85%, shock load max. 5 times rated torque
- 40% lighter than comparable gear units of the RV-E series, less mass inertia and improved load conditions
- Extremely precise and low wear hysteresis loss < 1 arcmin, long service life
- Finely graduated sizes rated torques from 245 Nm to 7000 Nm



Specifications

Model	Standard ratio	Rated torque (Nm)	Allowable torque (Nm)	Emgergancy stop torque (Nm)	Hysteresis loss (arcmin)	Torsinal rigidity (Nm /arcmin)	Main Bearing Capacity	
							Allowable Moment (Nm)	Axial load (N)
25N	41 / 81 / 107,66 126 / 137 / 164,07	245	612	1.225	1,0	61	784	2.610
42N	41 / 81 / 105 126 / 141 / 164,07	412	1.029	2.058	1,0	113	1.660	5.220
60N	41 / 81 / 102,17 121 / 145,61 / 161	600	1.500	3.000	1,0	200	2.000	5.880
80N	41 / 81 / 101 129 / 141 / 171	784	1.960	3.920	1,0	212	2.150	6.530
100N	41 / 81 / 102,17 121 / 141 / 161	1.000	2.500	5.000	1,0	312	2.700	9.000
125N	41 / 81 / 102.17 121 / 145,61 / 161	1.225	3.062	6.125	1,0	334	3.430	13.000
160N	41 / 81 / 102,81 125,21 / 156 / 201	1.600	4.000	8.000	1,0	490	4.000	14.700
380N	75 / 93 / 117 139 / 162 / 185	3.724	9.310	18.620	1,0	948	7.050	25.000
500N	81 / 105 / 123 144 / 159 / 192,75	4.900	12.250	24.500	1,0	1.620	11.000	32.000
700N	105 / 118 / 142,44 159 / 183 / 203,52	7.000	17.500	35.000	1,0	2.600	15.000	44.000

Dimensions

Model	Weight (kg)	A (mm)	B (ømm)	C (ømm)	D (ømm)
25N	3,8	62	133	94	113
42N	6,3	65,5	159	118	136
60N	8,9	69,5	183	140	160
80N	9,3	74	189	140	160
100N	13	80	208	160	179
125N	13,9	80	221	160	186
160N	22,1	104,0	238	179	202
380N	44	131	295	222	252
500N	61	137,5	325	253	284
700N	106	170	395	315	350

RV-E
Component Sets – Solid Shaft

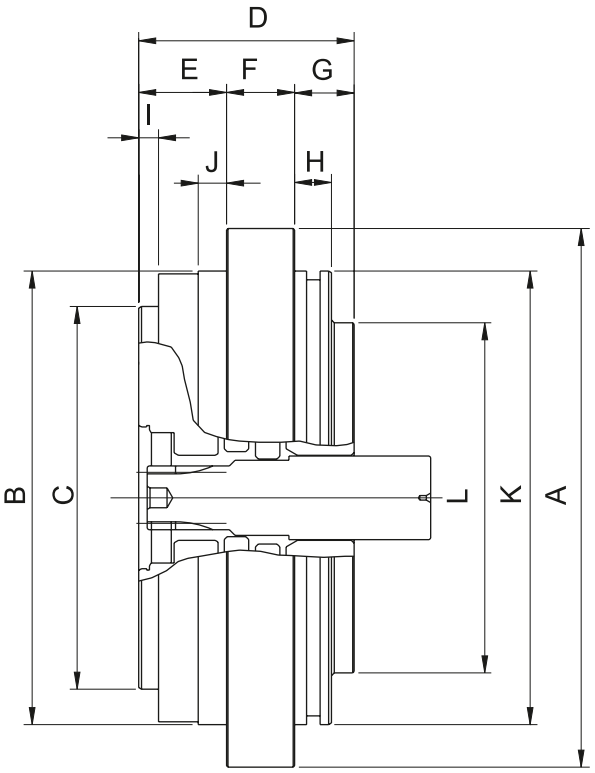
Areas of use

- **Robotics**
- **Machine tools**
- **Positioning**
- **Palletising**

The RV-E series is extremely versatile, providing the advantages of high reduction ratios and minimum space requirements. RV-E gears operate with maximum reliability and precision, thanks to high torsional and tilting rigidity. The integrated angular bearings additionally minimise the outlay for installation and extension of the service life.

Advantages

- high torque and minimum installation space requirements
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia
- integrated angular bearings
  - low wear
  - longer service life
  - low breakaway torque
  - high efficiency



Specifications

Model	Standard ratio		Rated torque (Nm)	Allowable torque		Max. speed	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)	Bearing support capacity		
				Acceleration/ deceleration (Nm)	Emergency stop (Nm)	Intermittent drive (min^{-1})			Tilting rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
6E	31	59	58	117	294	100	<1,5	20	118	196	1.470
	43	79									
	53,5	103									
20E	57	121	167	412	833	75	<1,0	49	372	882	3.920
	81	141									
	105	161									
25E	57	121	216	540	1.080	75	<1,0	59	353	882	3.920
	81	141									
	105,0	161									
40E	57	121	412	1.029	2.058	70	<1,0	108	931	1.666	5.194
	81	153									
	105	–									
50E	57	121	491	1.226	2.453	70	<1,0	147	931	1.666	5.194
	81	153									
	105	–									
80E	57	121	784	1.960	3.920	70	<1,0	196	1.176	2.156	7.840
	81	153									
	105	–									
110E	81	175,28	1.078	2.695	5.390	50	<1,0	294	1.470	2.940	10.780
	111	–									
	161	–									
160E	81	145	1.568	3.920	7.840	45	<1,0	392	2.940	3.920	14.700
	101	171									
	121	–									
320E	81	141	3.136	7.840	15.680	35	<1,0	980	4.900	7.056	19.600
	101	171									
	118,5	185									
	129	–									
450E	81	154,85	4.410	11.025	22.050	25	<1,0	1.176	7.448	8.820	24.500
	101	171									
	118,5	192,43									
	129	–									
550E	96	163,5	5.390	13.475	26.950	20	<1,0	2.260	9.600	10.780	34.300
	123	192,43									
	141	242,74									
1500E	156	–	14.715	36.788	73.575	10	<1,0	6.320	19.800	44.145	51.000
	221	–									
	236	–									

Dimensions

Model	A (ømm)	B h7 (ømm)	C h7 (ømm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K h7 (ømm)	L (ømm)	Weight (kg)
6E	122	103	86	53	24	12	17	8	4	8	103	78	2,5
20E	145	124	105	65	30	20	15	8	5,5	10	123	91,5	4,4
25E	145	124	105	68	33	20	15	8	8,5	10	123	96,6	4,6
40E	190	160	135	76	31	24	21	13	7	10	160	123	9,5
50E	190	160	135	76	31	24	21	13	7	10	160	127	9,5
80E	222	190	160	84	48	15	21	12	11	10	190	139	12,7
110E	244	208	182	92,5	67	19	6,5	–	14	15	–	154	18
160E	280	240	204	104	68,5	25	10,5	–	8	15	–	178	28
320E	325	284	245	125	79,5	30	15,5	–	8	20	–	214	47
450E	370	328	275	140	84	38	18	–	8	20	–	248	69
550E	395	353	315	159	95	45	19	7	24	15	325	275	88
1500E	570	494	390	220	61	95	64	–	–	–	–	–	280

RV-C
Component Sets – Hollow Shaft

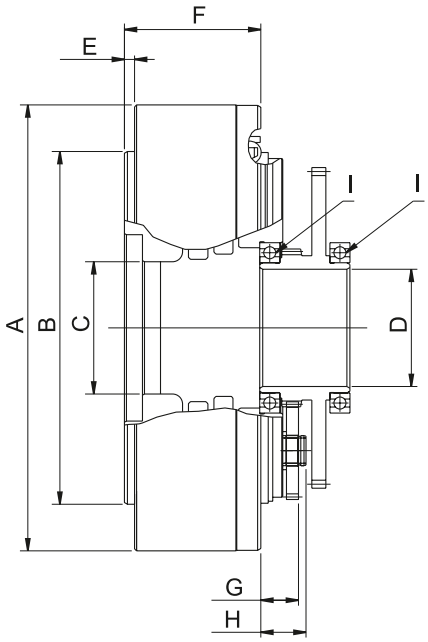
Areas of use

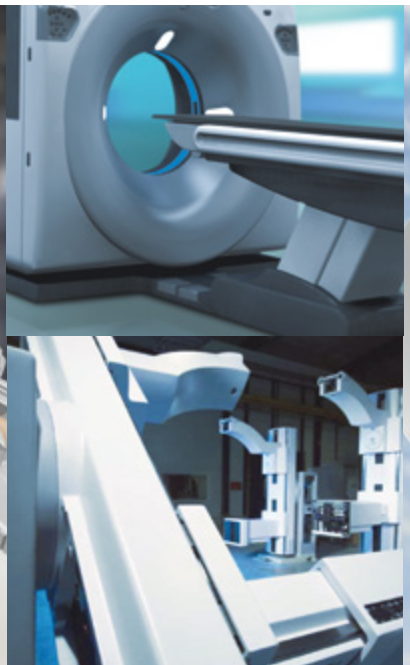
- 5-axis pivoting heads (CNC)
- Robotics
- Medical technology
- Antenna systems

RV-C gears have a hollow shaft through which power supply cables, drive shafts, etc. can be fed. Their design is otherwise identical to that of the RV-E series. RV-C component sets are therefore just as compact and efficient as RV-E gears.

Advantages

- hollow shaft (for routing cables, etc.)
- high torque and minimum installation space requirements
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia
- integrated angular bearings
  - low wear
  - longer service life
  - low breakaway torque
  - high efficiency





Specifications

Model	Standard ratio	Rated torque (Nm)	Allowable torque		Max. speed	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)	Bearing support capacity		
			Acceleration/ deceleration (Nm)	Emergency stop (Nm)	Intermittent drive (min^{-1})			Tilting rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
10C	27	98	245	490	80	<1,0	47	421	686	5.880
27C	36,57 (1,390/38)	265	662	1.323	55	<1,0	163	1.068	980	8.820
50C	32,54 (1,985/61)	490	1.225	2.450	50	<1,0	255	1.960	1.764	11.760
100C	36,75	980	2.450	4.900	40	<1,0	510	2.813	2.450	13.720
155C	33,62	1.470	3.675	7.350	30	<1,0	735	4.900	7.056	15.680
200C	34,86 (1,499/43)	1.961	4.900	9.800	30	<1,0	980	9.800	8.820	19.600
320C	35,61 (2,778/78)	3.136	7.840	15.680	25	<1,0	1.960	12.740	20.580	29.400
400C	35,61 (2,778/78)	3.920	9.800	19.600	20	<1,0	2.450	19.600	24.500	34.300
500C	37,34 (3,099/83)	4.900	12.250	24.500	20	<1,0	3.430	24.500	34.300	39.200
900C	42,84	8.820	22.050	44.100	15	<1,0	4.900	34.300	44.150	51.000
1200C	42,84	11.760	29.400	58.800	12	<1,0	5.880	34.300	44.150	51.000

Dimensions

Model	A (ø mm)	B h7 (ø mm)	C H7 (ø mm)	D (ø mm)	E (mm)	F (mm)	G (mm)	H (mm)	I	Weight (kg)
10C	147	110	34	31	4	49,5	17	19,2	6807	4,6
27C	182	140	47	43	5	57,5	16,6	19,5	6810	8,5
50C	222,5	176	66	57	5	68	20,2	23,8	6813	15
100C	250,5	199	73	71	5	72,6	19,9	21,15	6816	19,5
155C	293	234	90	80,5	6	104,5	29,1	33	6818	37
200C	347	260	100	90	7	102	31,2	33,2	6820	57
320C	440	340	140	138	5,5	101	38	43,5	6830	80
400C	485	350	140	138	6	110,5	39	43,5	6830	108
500C	520	390	150	138	7,5	130,5	47,5	50	6832	160
900C	543	390	135	–	22,5	144	80,8	82,6	6828	225
1200C	570	490	135	–	–	136	105	–	6828	235

RV
Component Sets – Solid Shaft without Bearing Support

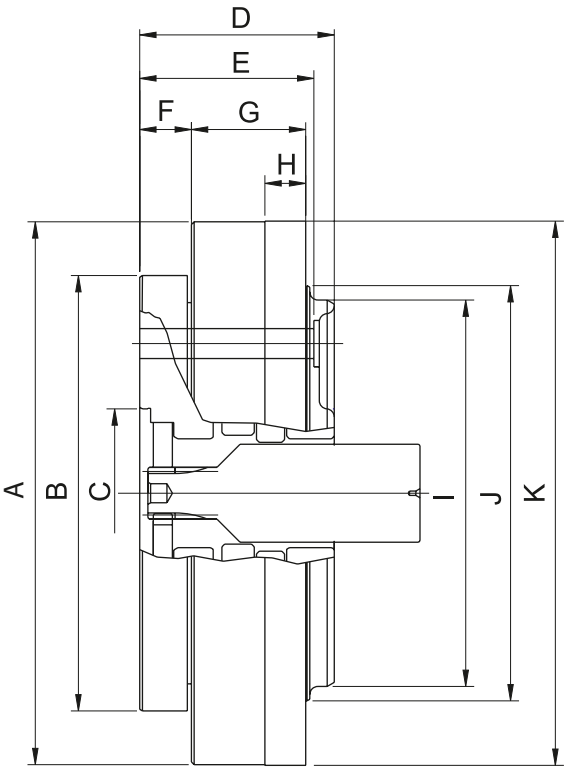
Areas of use

- **Robotics**
- **Machine tools**
- **Positioning**
- **Palletising**
- **Solar technology**

The RV series is the basic version of our precision gears. It enables the achievement of high reduction ratios. As the force is transmitted via rollers, RV gears are characterised by higher precision and low hysteresis loss. RV gears are especially compact, thanks to the external bearing support, and are capable of determining the output support themselves. This makes them the ideal solution for integrated applications which exactly reflect your specifications.

Advantages

- extremely compact design
- external output support (freely selectable)
- high torque
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia



Specifications

Model	Standard ratio		Rated torque (Nm)	Allowable torque		Max. speed	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)
				Acceleration / deceleration (Nm)	Emergency stop (Nm)	Intermittent drive (min^{-1})		
15	57	121	137	274	686	60	< 1,0	39
	81	141						
	105	–						
30	57	121	333	833	1.666	50	< 1,0	98
	81	153						
	105	–						
60	57	121	637	1.592	3.185	40	< 1,0	196
	81	141						
	101	161						
160	81	145	1.568	3.920	6.615	45	< 1,0	392
	101	171						
	129	–						
320	81	141	3.136	7.840	12.250	35	< 1,0	980
	101	171						
	118,5	185						
	129	–						
450	81	154,8	4.410	11.025	18.620	25	< 1,0	1.176
	101	171						
	118,5	192,4						
	129	–						
550	123	192,40	5.390	13.475	26.950	20	< 1,0	1.666
	141	–						
	163,5	–						

Dimensions

Model	A (⌀mm)	B h6 (⌀mm)	C H6 (⌀mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (⌀mm)	J (⌀mm)	K h7 (⌀mm)	Weight (kg)
15	129,9	105	32	65	55	16	32	12	90	100	130	3,5
30	159,5	135	50	71,5	60	22	34	15	120	129	160	6,5
60	199,5	160	62	71,5	64	19	42	15	142	152,6	200	10
160	239,5	204	110	96	82	27	52	30	175	190	239,9	20
320	289,5	245	130	117,6	102	33	63	25	208	224	290	36,5
450	324,5	275	154	128,5	109,5	35	72,5	30	232	252	325	50
550	369,5	316	180	147	128	41	82	30	260	290	370	71

Gearheads

The ready-to-install solution from Nabtesco: completely enclosed gearheads filled with lubricant and sealed tightly through encapsulation. The gear-heads can absorb very high forces, thanks to the integrated angular bearings. An additional output bearing is generally unnecessary.

All gearheads have an integrated adapter plate for the motor and a motor shaft coupling for servomotors. This enables you to reduce the time required for construction and installation.

Main areas of application

- Robotics
- Machine tools
- Packaging machinery
- Medical technology
- Handling applications
- Positioning
- Antenna systems
- Woodworking machinery

RD_-E **Page 18**
T 58 – 3.136 Nm | i 31 – 185

RD_-C **Page 20**
T 98 – 3.136 Nm | i 81 – 258

GH **Page 22**
T 69 – 980 Nm | i 10,7436 – 31,4348 | n 150 min^{-1}

RD	S	160	E	101	B5	JB	4D
Type designation	Input S = straight R = right angle P = pulley	Size	E = solid shaft C = hollow shaft	Ratio	Motor coupling	Motor flange	Bushing

GH	24	31	A	B	P
Type designation	Size	Ratio	Input shaft	Motor flange	Mounting method P = flange type S = shaft type

Type designation

RD_-E
Gearheads – Solid Shaft

RDR-E RDS-E

RDP-E

Areas of use

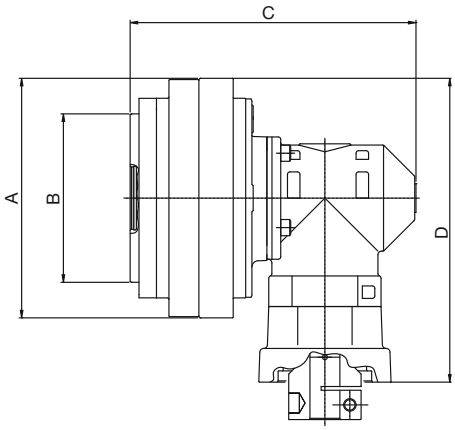
- Machine tools
- Positioning
- Palletising
- Solar technology

The gearheads of the new RD2-E series are more compact and versatile than ever. Three different models allow for numerous types of use, e.g. in servomotors. The gearheads are entirely enclosed, are pre-filled with lubricants ex-works and ready for immediate installation. A high-precision, extremely resistant and extra durable, latest-generation RV-E gearbox is concealed in the interior.

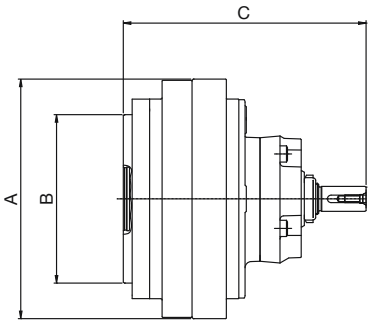
Advantages

- fast and cost-effective installation
- three mounting options: straight, right angle, pulley
- completely enclosed, pre-filled with lubricant
- the RD series delivery includes a motor coupling and motor flange for conventional servomotors
- high torque and minimum installation space requirements
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia
- integrated angular bearings
  - low wear
  - longer service life
  - low breakaway torque
  - high efficiency

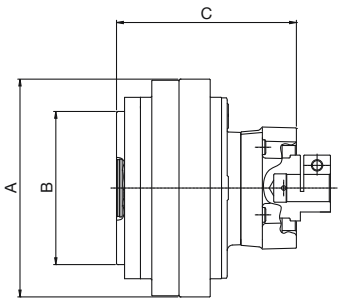
RDR-E

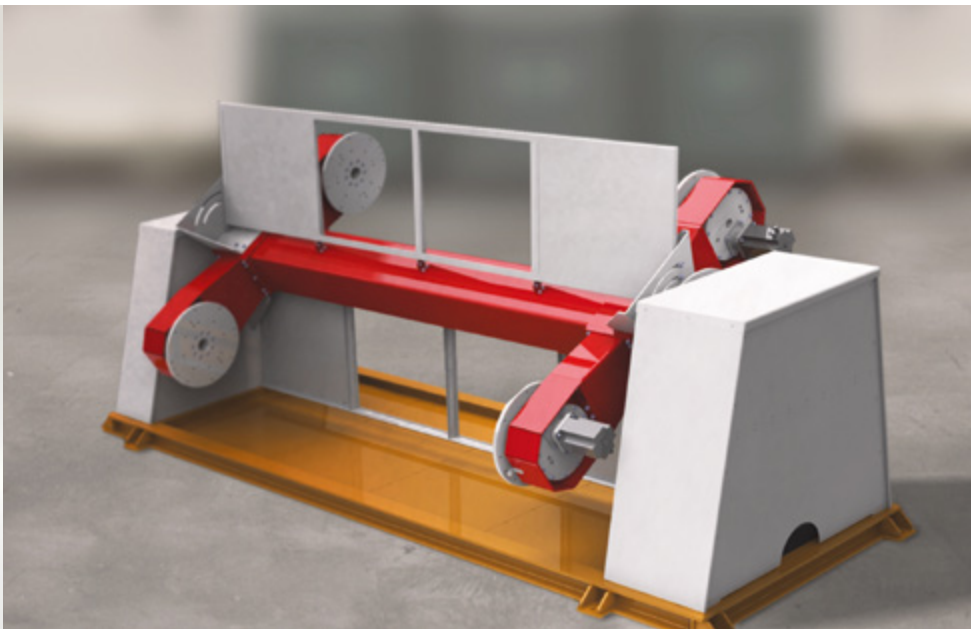


RDP-E



RDS-E





Specifications RDS (straight input) and RDR (right angle input)

Model	Standard ratio	Rated torque (Nm)		Allowable torque (Nm)		Emergency stop max. torque (Nm)		Hysteresis loss (arcmin)		Torsional rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
		RDS	RDR	RDS	RDR	RDS	RDR	RDS	RDR			
6E	31 / 43 / 54 79 / 103	58	58	117	117	294	294	1,5	2,0	20	196	1.470
20E	41	167	108	412	271	833	543	1,0	1,5	49	882	3.920
	57		151		378		755					
	81 / 105 121 / 161		167		412		833					
40E	41	412	400	1.029	1.000	2.058	2.000	1,0	1,5	108	1.666	5.194
	57 / 81 / 105 121 / 153		412		1.029		2.058					
80E	41	784	400	1.960	1.000	3.920	2.000	1,0	1,5	196	2.156	7.840
	57		556		1.390		2.781					
	81 / 101 121 / 153		784		1.960		3.920					
160E	66 / 81 / 101 121 / 145 / 171	1.568	1.568	3.920	3.920	7.840	7.840	1,0	1,5	392	3.920	14.700
320E	66	3.136	1.800	7.840	4.503	15.680	9.002	1,0	1,5	980	7.056	19.600
	81		2.209		5.527		11.048					
	101		2.755		6.892		13.776					
	121 / 141 / 185		3.136		7.840		15.680					

Specifications RDP (pulley input)

Model	Standard ratio	Rated torque (Nm)	Allowable torque (Nm)	Emergency stop max. torque (Nm)	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
20E	81	167	412	833	1,0	49	882	3.920
40E	57	412	1.029	2.058	1,0	108	1.666	5.194
80E	81	784	1.960	3.920	1,0	196	2.156	7.840
160E	66	1.568	3.920	7.840	1,0	392	3.920	14.700
320E	81	3.136	7.840	15.680	1,0	980	7.056	19.600

Dimensions

Model	A (⌀mm)	B h7 (⌀mm)	C (mm)			D (mm)
			RDS	RDR	RDP	
6E	125,5	86	118,9 / 129,9	178,4	-	182,55
20E	150	105	124,6 / 135,6	184,1	152,1	194,8
40E	192	135	158,6 / 182,6	229,1	194,6	243,5
80E	222	160	173 / 197	243,5	209	258,5
160E	280	204	216,5 / 213,5	352,5	257	353,5
320E	325	245	241 / 238	377	281,5	376

RD_-C
Gearheads – Hollow Shaft

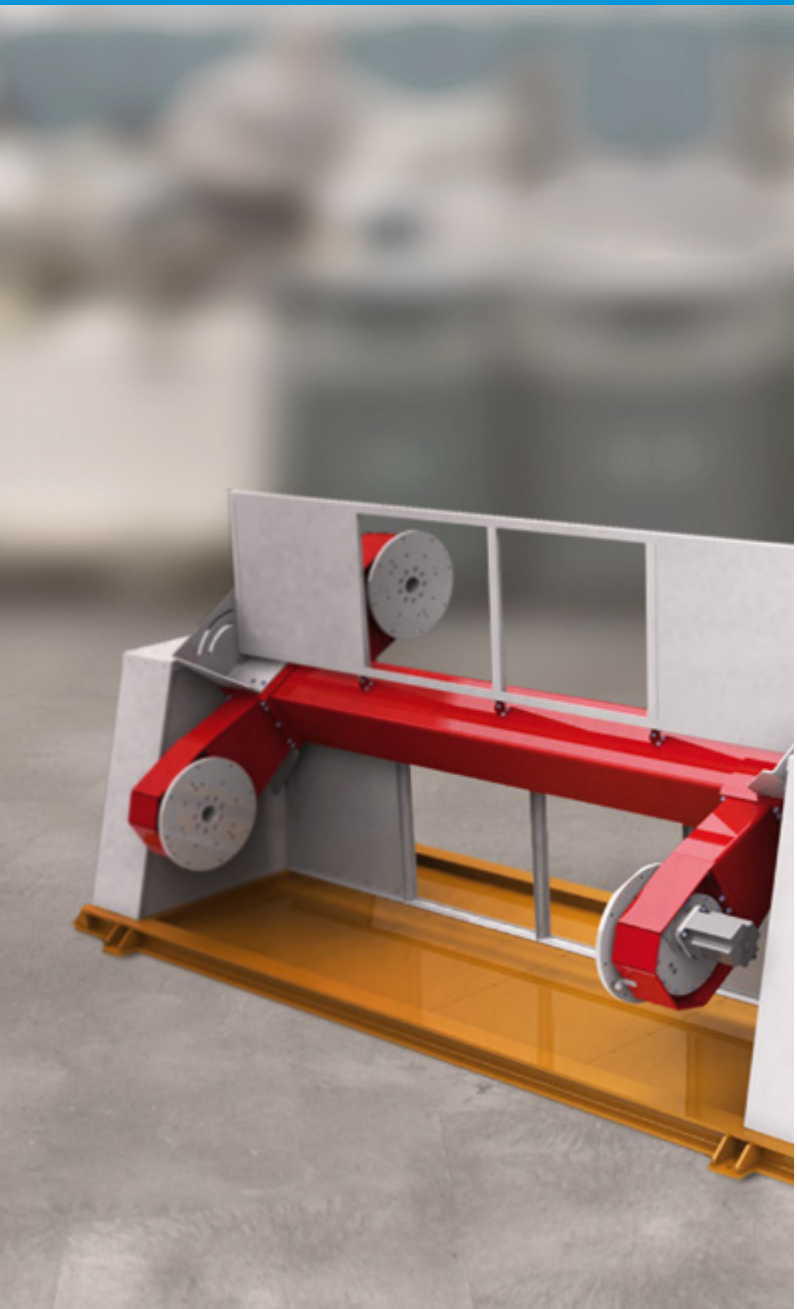
RDR-C

RDS-C

RDP-C

Areas of use

- Robots
- Tool magazines
- Tool-change arms
- Welding table positioning
- Rotary tables
- Palletising robots
- Bending machinery
- Woodworking machinery

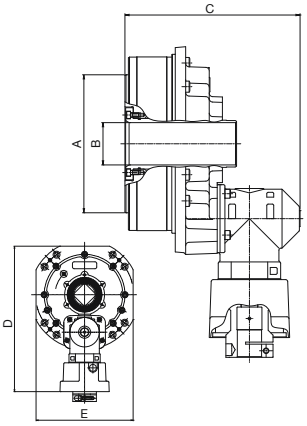


The gearheads of the new RD2-C series have a solid shaft for routing cables, hoses and lines. An extremely compact and efficient, state-of-the-art RV-C gearbox is concealed in the interior. RD2-C gearheads offer three mounting options and have many different areas of use. They are entirely enclosed and ready for immediate installation.

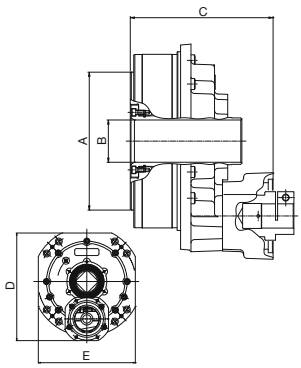
Advantages

- solid shaft (for routing cables, etc.)
- quick and cost-effective installation
- three mounting options: straight, right angle, pulley
- completely enclosed, pre-filled with lubricant
- the RD series delivery includes a motor coupling and motor flange for conventional servomotors
- high torque and minimum installation space requirements
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia
- integrated angular bearings
  - low wear
  - longer service life
  - low breakaway torque
  - high efficiency

RDR-C



RDS-C



Specifications RDS (straight input) and RDR (right angle input)

Model	Standard ratio	Rated torque (Nm)		Allowable torque (Nm)		Emergency stop max. torque (Nm)		Hysteresis loss (arcmin)		Torsional rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
		RDS	RDR	RDS	RDR	RDS	RDR	RDS	RDR			
10C	81 / 108 / 153 189 / 243	98	98	245	245	490	490	1,0	1,5	47	686	5.880
27C	100 / 142 184 / 233	265	265	662	662	1.323	1.323	1,0	1,5	147	980	8.820
50C	109 / 153 196 / 240	490	490	1.225	1.225	2.450	2.450	1,0	1,5	255	1.764	11.760
100C	101 / 150 210 / 258	980	980	2.450	2.450	4.900	4.900	1,0	1,5	510	2.450	13.720
200C	106 / 156 206 / 245	1.960	1.960	4.900	4.900	9.800	9.800	1,0	1,5	980	8.820	19.600
320C	115 / 157 207 / 253	3.136	3.136	7.840	7.840	15.680	15.680	1,0	1,5	1.960	20.580	29.400

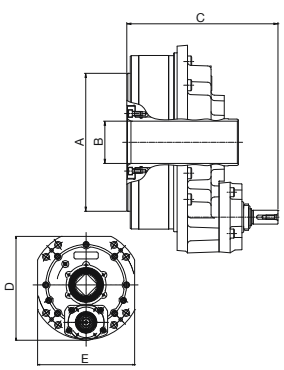
Specifications RDP (pulley input)

Model	Standard ratio	Rated torque (Nm)	Allowable torque (Nm)	Emergency stop max. torque (Nm)	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
10C	108	98	245	490	1,0	47	686	5.880
27C	100	265	662	1.323	1,0	147	980	8.820
50C	109	490	1.225	2.450	1,0	255	1.764	11.760
100C	101	980	2.450	4.900	1,0	510	2.450	13.720
200C	106	1.960	4.900	9.800	1,0	980	8.820	19.600
320C	157	3.136	7.840	15.680	1,0	1.960	20.580	29.400

Dimensions

Model	A h7 (ø mm)	B (ø mm)	C (mm)			D (mm)			E (mm)		
			RDS	RDR	RDP	RDS	RDR	RDP	RDS	RDR	RDP
10C	110	26	132 / 143	191,5	159,5	185 / 196,5	253,3 / 265,3	186	170	170	170
27C	140	37	141 / 152	200,5	168,5	227,2 / 237,7	294,5 / 306,5	227,2	207,5	207,5	207,5
50C	176	48	158,6 / 182,6	229,1	194,6	270 / 278,5	363,5 / 387,5	268	252	252	252
100C	199	61	173 / 197	243,5	209	302 / 310,5	395,5 / 419,5	300	280	280	280
200C	260	76	246 / 243	382	286,5	403 / 413	550,5 / 541,5	402,7	368	368	368
320C	340	121	256,5 / 253,5	392,5	297	478,5 / 488,5	626 / 617	478,4	447	447	447

RDP-C



GH
Gearheads for High Output Speeds

Areas of use

- **Machine tools**
- **Pallet magazines**
- **Portal robots (output)**
- **Robot periphery**

GH gearheads are specially designed for high speeds up to 250 min^{-1} on the output side. This makes them ideal for use in robots, machine tools and conveyor systems. The technology in the GH series is based on the RV reduction gears. They are therefore compact, robust and resilient.

Advantages

- high output speeds (up to 250 min^{-1})
- low reduction ratio (1/11–1/31)
- high torque and minimum installation space requirements
- high shock-load capability (up to 7 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 6 arcmin)
- less vibration
- low inertia
- completely enclosed, pre-filled with lubricant
- easier and quicker mounting
- installation is more cost-effective

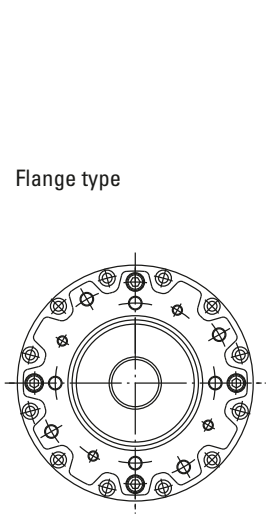
Specifications

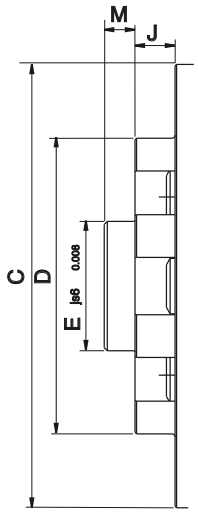
Model	Standard ratio	Rated torque (Nm)	Allowable torque		Max. speed		Hysteresis loss (arcmin)	Bearing support capacity	
			Acceleration / deceleration (Nm)	Emergency stop (Nm)	Intermittent drive (min^{-1})	Continuous operation (min^{-1})		Allowable tilting torque (Nm)	Axial load (N)
7	461 /41	69	206	480	270	150	<6	460	1.372
	21								
	153/5								
17	11	166	500	1.166	270	150	<6	804	1.960
	21								
	31								
24	11	235	705	1.646	250	150	<6	843	2.940
	21								
	31								
40	419/39	392	1.176	2.744	250	150	<6	1.823	2.940
	21								
	723/23								
100	20,375	980	2.942	6.865	135	65	<10	4.900	5.586
	31,4								

Dimensions

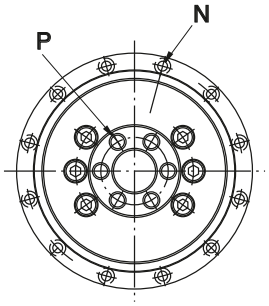
Model	A (ø mm)	B h7 (ø mm)	C (ø mm)	D h7 (ø mm)	E h7 (ø mm)	F h7 (ø mm)	G (ø mm)	H (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (ø mm)	P (ø mm)	Weight (kg)
7	140	120	110	55	25	80	133	136,2	20	46,2	20	5	129 12×ø5,8	40 6×M10	8
17	180	151	–	72	35	110	170	157	19,8	52,2	17	5	129 12×ø5,8	55 8×M12	15,5
24	195	160	144	96	42	110	186	146	13	65	26	10	129 12×ø5,8	72 8×M12	15,5
40	240	200	–	108	50	114,3	229	202,2	27	63,7	23	6	129 12×ø5,8	85 12×M12	35,5
100	374	310	255	144	70	114	290	237	25	123	18	8	129 12×ø5,8	115 8×M16	90

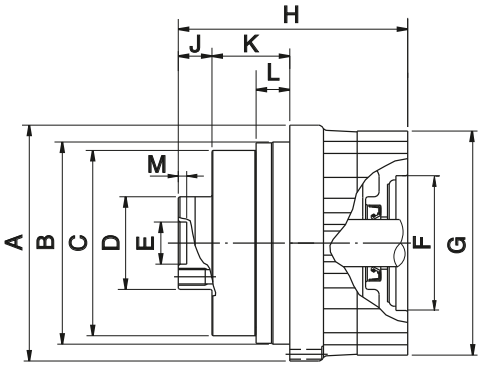
Flange type





Shaft type





RA-EA/EC
Solid Shaft Gears for Tool Magazines

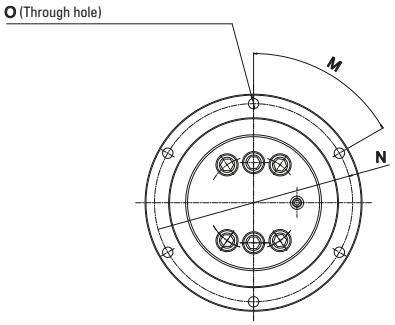
Areas of use

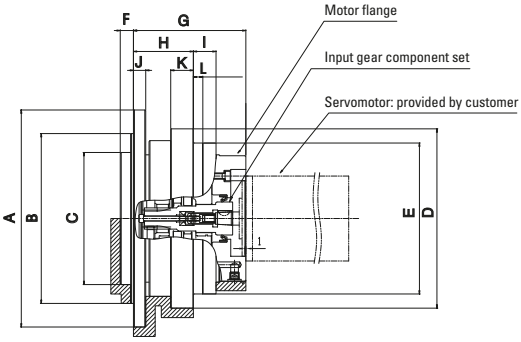
- **Tool magazines**
- **Machine tools**
- **ATC – Automatic Tool Changer**
- **APC – Automatic Pallet Changer**

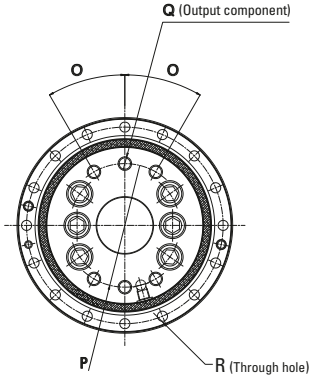
RA-EA and RA-EC gears are specially designed for positioning magazines in machine tools. A motor flange or pinion enables their rapid and simple integration in tool-changing systems for disc and chain magazines (ATC = automatic tool changer). All RA gears are completely enclosed, pre-filled with lubricant and ready for immediate installation.

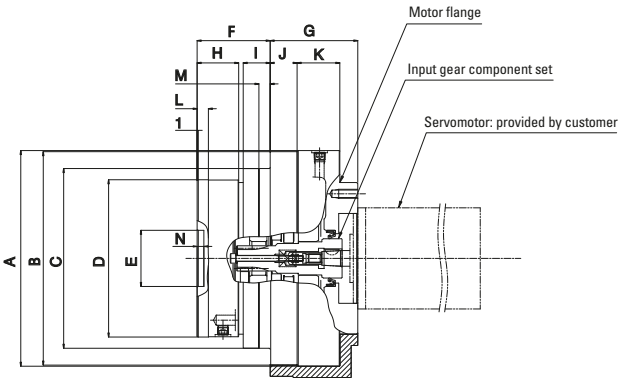
Advantages

- high torque and minimum installation space requirements
- high shock-load capability (up to 5 times the rated torque)
- high rigidity
- high precision (hysteresis loss < 1 arcmin)
- less vibration
- low inertia
- integrated angular bearings
  - low wear
  - longer service life
- completely enclosed, pre-filled with lubricant
- easier and quicker mounting
- installation is more cost-effective









Specifications

Model	Standard ratio		Rated torque (Nm)	Allowable torque		Max. speed	Hysteresis loss (arcmin)	Torsional rigidity (Nm/arcmin)	Bearing support capacity		
	EA	EC		Acceleration/ deceleration (Nm)	Emergency stop (Nm)	Intermittent drive (min^{-1})			Tilting rigidity (Nm/arcmin)	Allowable tilting torque (Nm)	Axial load (N)
RA-20	80	81	167	412	833	75	<1,0	49	882	1.764	3.920
	104	105									
	120	121									
	160	161									
RA-40	80	81	412	1.029	2.058	70	<1,0	108	1.666	3.332	5.194
	104	105									
	120,0	121									
	152,0	153									
RA-80	80	81	784	1.960	3.920	70	<1,0	196	2.156	4.312	7.840
	100	101									
	120	121									
	152	153									
RA-160	80	81	1.568	3.920	7.840	45	<1,0	392	3.920	7.840	14.700
	100	101									
	128	129									
	144	145									
	170	171									

EA = case rotation
EC = shaft rotation

Dimensions

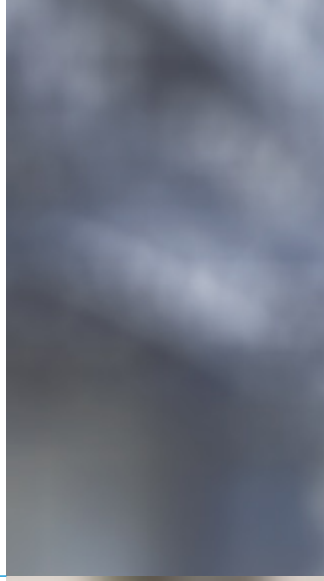
Model	A (ø mm)	B h7 (ø mm)	C (ø mm)	D (ø mm)	E h7 (ø mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (°)	N (ø mm)	O (ø mm)	Weight (kg)
RA-20EA	175	140	100	145	124	17	93,6	47,5	24,5	10	20	10	60	160	6×ø9	14
RA-40EA	230	180	140	190	160	14	119,1	63,5	24	13	24	10	60	210	6×ø11	25
RA-80EA	260	210	170	222	190	16	127	55,2	37	14	15	10	45	240	8×ø11	35
RA-160EA	325	270	180	280	240	15	171	59,9	60,5	18	38	15	30	300	12×ø13	77

Model	A (ø mm)	B h7 (ø mm)	C (ø mm)	D (ø mm)	E h7 (ø mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (mm)	O (°)	P (ø mm)	Q (ø mm)	Weight (kg)
RA-20EC	150	145	124	110	40	59,1	59	32	24,5	20	25	10	10	6	30	90	4×M10	14
RA-40EC	192	190	160	140	50	65	78	37	24	24	38	10	10	6	30	110	6×M12	25
RA-80EC	226	222	190	170	80	77	72	33	37	15	40	10	10	6	20	136	9×M12	35
RA-160EC	290	280	240	210	100	108	88,5	42,5	60,5	20	33	10	15	8	37,5	180	6×M16	71

Precision and Power for Innovative Applications

Precision movement: robotics

Installation space for industrial robots is very limited – making this the perfect location for the use of extremely compact, high-precision Nabtesco gears. Hollow shafts for the routing of cables and hoses and various output support options ensure simple integration in the layouts.



High resilience: industrial engineering

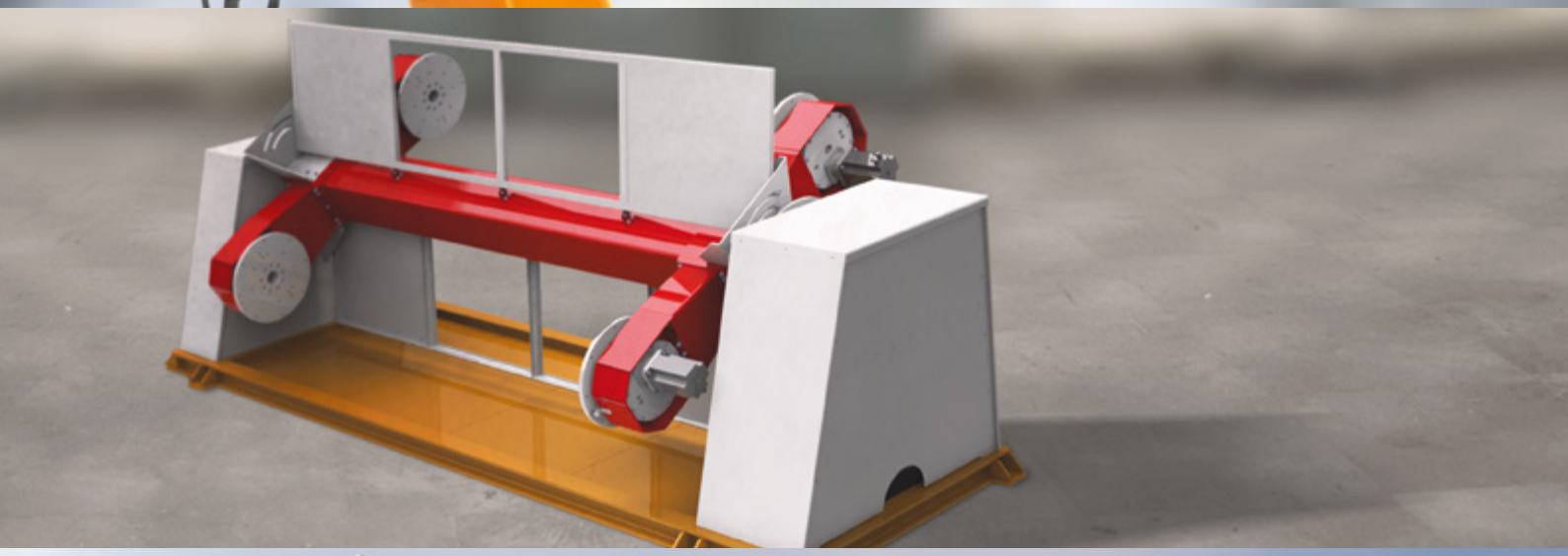
Extreme forces, complex procedures, thousands of repetitions: industry makes maximum demands on technology when it comes to precision and resilience. Nabtesco meets these demands effortlessly, providing a broad selection of component sets and gearheads. Eccentric gears have a long service life, are insensitive to shock loading and enable optimum positioning and, equally, reliable tool changing.

Exact alignment: solar technology

Solar panels need to continually adjust their position relative to that of the sun. This is essential if solar power stations are to work efficiently. Nabtesco gears are ideal for this application. They are highly accurate, even where the smallest movement increments are involved, robust and requiring minimum maintenance.

Accurate diagnosis: medical technology

The technology utilised in imaging methods and radiotherapy must move with precision around patients. Nabtesco precision gears ensure that precise positioning is achieved to ensure that this functions optimally. The result is conclusive images and targeted treatment.



Distributor network

Aratron AB
Box 20087
Smidesvägen 4
171 41 Solna
Sweden

Tel.: +46 (0) 8 40 41 600
Fax: +46 (0) 8 98 42 81
E-mail: info@aratron.se
Internet: www.aratron.se

Aratron AS
Bjornerudveien 17
1266 Oslo
Norway

Tel.: +47 (0) 23 19 16 60
Fax: +47 (0) 23 19 16 61
E-mail: firmapost@aratron.no
Internet: www.aratron.no

ATP - Antriebstechnik Peissl GmbH
Carl-Auer-von-Weisbach-Straße 6a
4614 Marchtrenk
Austria

Tel.: +43 (0) 7243 514 72 21
Fax: +43 (0) 7243 514 72 10
E-mail: office@atp-antriebstechnik.at
Internet: www.atp-antriebstechnik.at

B+K Vertrieb für Antriebstechnik und Maschinenelemente GmbH
Mittlere Straße 11
73441 Bopfingen
Germany

Tel.: +49 (0) 7363 816 325 0
Fax: +49 (0) 7362 816 325 2
E-mail: info@buk-antriebstechnik.de
Internet: www.buk-antriebstechnik.de

Chiaperotti s.p.a.
Via Ferrero 100
10090 Rivoli Cascine Vica (Turin)
Italy

Tel.: +39 (0) 11 957 635 3
Fax: +39 (0) 11 957 562 2
E-mail: informazioni@chiaperotti.com
Internet: www.chiaperotti.com

Drive Systems, Ltd.
Domodtroitelnaya 4, office 305
194292 St. Petersburg
Russia

Tel.: +7 (0) 812 702 15 82
Fax: +7 (0) 812 702 15 82
E-mail: info@drivesystem.ru
Internet: www.drivesystem.ru

Electro ABI b.v.
A. Hofmanweg 60
2031 BL Haarlem
The Netherlands

Tel.: +31 (0) 23 531 92 92
Fax: +31 (0) 23 532 65 99
E-mail: info@abi.nl
Internet: www.abi.nl

ENDO Endüstriyel Donanım ve Otomasyon Sistemleri San. ve Tic. Ltd. Şti.
No: 2 / A Merkez Carşı İş Merkezi
35110 / Yenişehir - İZMİR
Turkey

Tel.: +90 (0) 232 433 8515
Fax: +90 (0) 232 433 8881
Mobile: +90 (0) 532 794 8494
E-mail: ilker@endo.com.tr
Internet: www.endo.com.tr

GAMMATIC s.a.r.l.
11 Burospace
91572 Bièvres
France

Tel.: +33 (0) 160 191 119
Fax: +33 (0) 160 190 090
E-mail: info@gammatic.fr
Internet: www.gammatic.fr

Indutek Scandinavia A/S
Toftevej 10
3250 Gilleleje
Denmark

Tel.: +45 (0) 70 23 08 00
Fax: +45 (0) 70 23 88 00
E-mail: info@indutek.com
Internet: www.indutek.com

Oy Movetec Ab
Hannuksentie 1
02270 Espoo
Finland

Tel.: +358 (0) 9 52 59 23 0
Fax: +358 (0) 9 52 59 23 33
E-mail: info@movetec.fi
Internet: www.movetec.fi

P.P.H. Wobit E.K.J. Ober S.C.
Dęborzyce 16
62-045 Pniewy
Poland

Tel.: +48 (0) 61 2227 410
Fax: +48 (0) 61 2227 439
E-mail: wobit@wobit.com.pl
Internet: www.wobit.com.pl

RAVEO s.r.o
Trida Tomase Bati 332
Otrokovice, 765 02
Czech Republic

Tel.: +420 (0) 577 663 875
Fax: +420 (0) 577 663 875
E-mail: info@raveo.cz
Internet: www.raveo.cz

Flohr Industrietechnik GmbH
Zillstude 164
5465 Mellikon/AG
Switzerland

Tel.: +41 (0) 56 26 708 27
Fax: +41 (0) 56 26 708 25
E-mail: info@flohr-industrietechnik.ch
Internet: www.flohr.ch

Tecnopower S.L.
Poligono Industrial Moli dels Frares, Calle C n° 10
08620 Sant Vicenç dels Horts - Barcelona
Spain

Tel.: +34 (0) 93 656 80 50
Fax: +34 (0) 93 656 80 26
E-mail: info@tecnopower.es
Internet: www.tecnopower.es

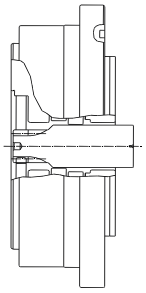
U. Hilz Ingenieurbüro
Rothemühleweg 26
38112 Braunschweig
Germany

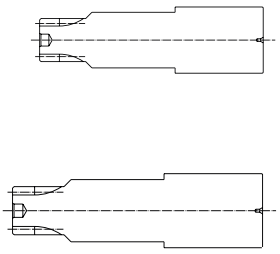
Tel.: +49 (0) 531 252 60 0
Fax: +49 (0) 531 252 60 26
E-mail: uhilz@hilz.de
Internet: www.hilz.de


NORWAY
FINLAND
ESPOO
ST. PETERSBURG
OSLO
SOLNA
SWEDEN
RUSSIA
DENMARK
GILLELEJE
HAARLEM
NETHERLANDS
BRAUNSCHWEIG
PNIEWY
POLAND
GERMANY
CZECH REPUBLIC
OTROKOVICE
BOPFINGEN
BIÈVRES
MARCHTRENK
MELLIKON
AUSTRIA
SWITZERLAND
FRANCE
TORINO
ITALY
BARCELONA
SPAIN
TURKEY
IZMIR

Input Shaft and Pinion

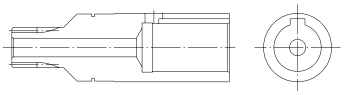
RV-N, RV-E and RV series



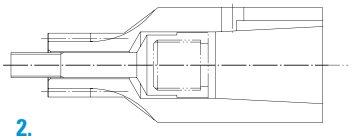


Standard

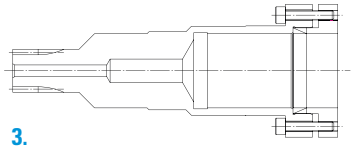
- Standard pinion available in two different dimensions
- Processing can be realised by the customer



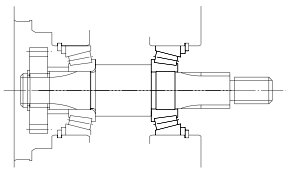
1.



2.



3.

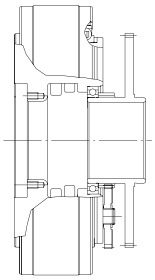


4.

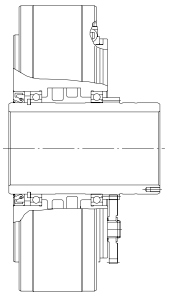
Customised

1. For motor shaft with key way
2. For conical motor shaft with key way
3. Power lock connection for straight motor shaft
4. Supported input shaft for pulley drive

RV-C series



1.



2.

Standard

1. Centre gear driven by pinion

Customised

2. Supported centre gear for pulley drive

Additional designs available on request

Precision is born of experience

Nabtesco Precision is the world's largest manufacturer of high-performance eccentric gears, and is part of the Nabtesco Group. Precision reduction gears developed by Nabtesco Precision are used by over 60% of all industrial robots worldwide. The reason is that our products are designed for maximum precision and load-bearing capacity and, consequently, are ideal for all applications requiring precise and powerful movements. We are always close to our customers, thanks to numerous production, service and sales locations. Over 4.500 employees around the world ensure that finely tuned quality is achieved for every individual gear.

Nabtesco Precision Europe GmbH
Klosterstrasse 49
40211 Düsseldorf
Germany

Tel.: +49 (0) 211 173 790
Fax: +49 (0) 211 364 677
E-mail: info@nabtesco.de
www.nabtesco.de

Nabtesco
High Precision Gears

06/2014 – Specifications are subject to change without notice – www.moon-agentur.de