



Precision gears
for highest demands

Nabtesco
High Precision Gears

Find the right gear solution for your individual application

QUICKFINDER

COMPONENT SETS



RV-N



RV-C



RF-P



RV

Solid shaft

T: 245 – 28,000 Nm
i: 41 – 203.52

PAGE **12**

Hollow shaft

T: 98 – 11,760 Nm

14

Solid shaft
High output speed

T: 190 – 320 Nm
i: 31 – 56
n: up to 200 rpm

16

Solid shaft
Without bearing support

T: 137 – 5,390 Nm
i: 57 – 192.4

18

GEARHEADS



RH-N



RDR-E



RDS-E

Solid shaft

T: 245 – 7,000 Nm
i: 41 – 203.52

22

Solid shaft

T: 58 – 3,136 Nm
i: 31 – 185

24

Solid shaft

T: 58 – 3,136 Nm
i: 31 – 185

24

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RDP-E	RDR-C	RDS-C	RDP-C	RS	RA-EA/EC	GH
Solid shaft	Hollow shaft	Hollow shaft	Hollow shaft	Hollow shaft Integrated rectangular gear	Solid shaft For magazines and change systems	Solid shaft High output speed
T: 167 – 3,136 Nm i: 57 – 81	T: 98 – 3,136 Nm i: 81 – 258	T: 98 – 3,136 Nm i: 81 – 258	T: 98 – 3,136 Nm i: 100 – 157	T: 480 – 8,820 Nm i: 100 – 240	T: 167 – 1,568 Nm i: 80 – 171	T: 69 – 980 Nm i: 10.74 – 31.43 n: up to 270 rpm
24	26	26	26	28	30	32

More than 8 million references for excellent work

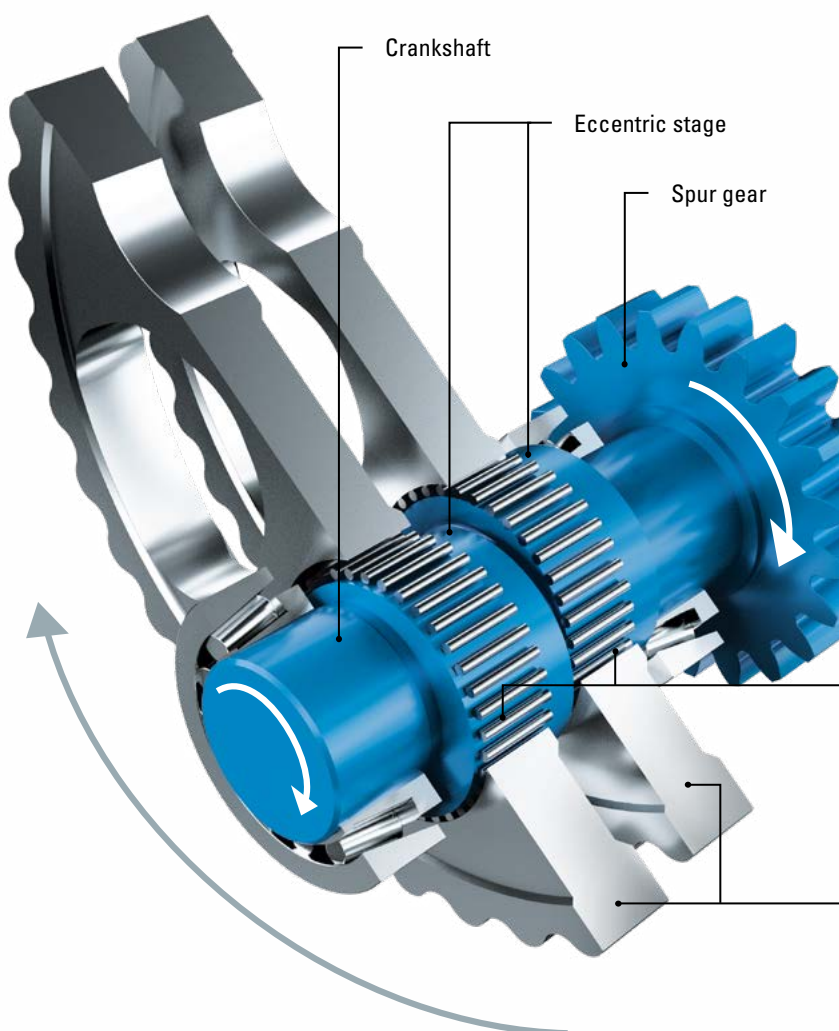
Nabtesco Precision Europe GmbH – part of the Nabtesco Group – is the world's largest and most recognised manufacturer of cycloidal gears. Thanks to their special technology, these precision gears are extremely robust and, simultaneously, highly precise. The combined engineering expertise of more than three decades is incorporated in these high-quality gears.

All of this makes them ideal for applications in many high-tech fields. More than 8 million gears from Nabtesco are in use around the world. They are used in more than 60 % of the world's industrial robots.

Apart from its proven gear series, a special strength of Nabtesco lies in its engineering services, with special customer-specific products and finishes.



"RV" stands for our gear's "rotor vector" type of construction, and thus also for their extremely high resilience and precision.



Cycloidal gears offer unbeatable advantages

ADVANTAGES

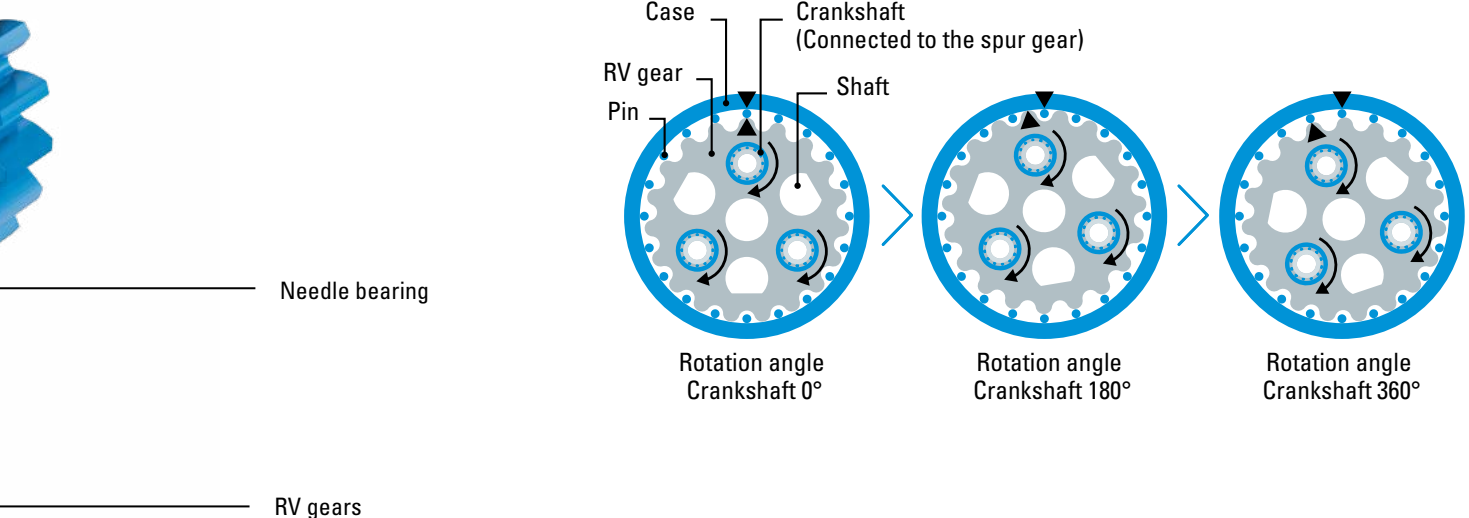
- High rated torque of up to 14,715 Nm
- Minimum space requirement
- High shock-load capability (5 times the rated torque)
- High rigidity
- Extreme precision (hysteresis loss < 1 arcmin)
- Low inertia
- Insensitive to vibration
- Extremely low wear
- Long service life

The two-stage reduction of cycloidal 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, cycloidal gears are as versatile as they are resilient.

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 5 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).

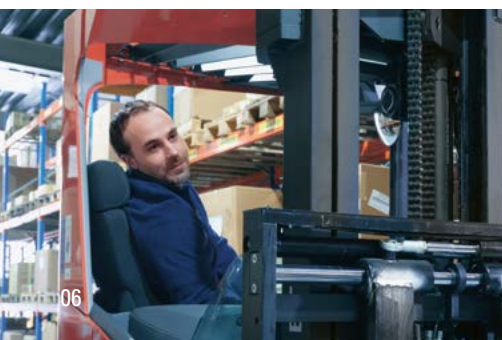
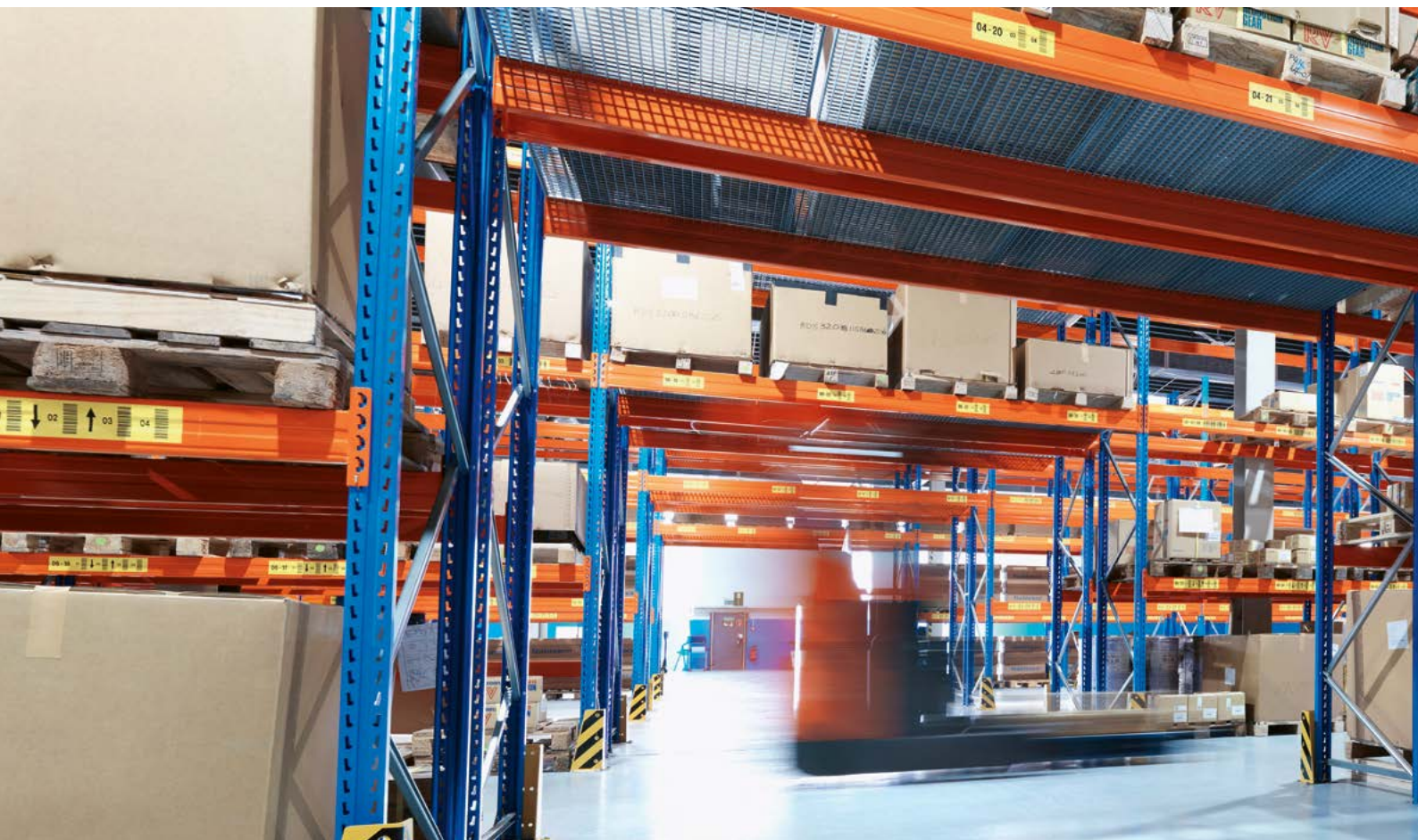


Our service is similar to our gears: fast, resilient and effective

We have expanded our European centre in Düsseldorf to make it into a unique service hub for you.

- Large warehouse for the fastest deliveries possible
- Fast-response, professional service team
- Production shop for finishing, final assembly and custom products on location
- Prototype construction, test series and live demonstrations

With this range of services, we can help you with any questions which arise concerning drives and gears and the development of your application. Our specialists are capable of producing a prototype on location for your own test series or carrying out trials for you.





Precisely what
you need,
in the shortest
of time frames





Developing special solutions and manufacturing custom products is something we have always done for our clients. Today, we are going even one step further with customising.

Whether it is a drive train or a cover, a motor flange or an input gear: there are many details which one can adapt in order to match our gears exactly to your application. With a team of experienced development engineers and our service team in Düsseldorf, we can implement all these requests professionally and quickly.

Often the right combination of existing components is all you need. In such cases, we can supply you with installation-ready configurations directly from our warehouse.

In other cases it is necessary to alter spurs, holding bores, covers or drives in order to satisfy the special requirements of your machine or robotics application. Here, our designers take responsibility for the engineering and develop a custom solution together with you.



Fast and precise for heavy loads

Nabtesco component sets work with extreme precision, extremely low vibrations, and low inertia. Their special construction means they are particularly immune to shock loads and permit high levels of torque.



RV-N series

The RV-N solid shaft gears with reduced weight at high output torques and high reduction ratios are optimally suited for smaller installation spaces.



RV-C series

The 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.



RV series

The RV series is the basic version and can be combined with different output supports.

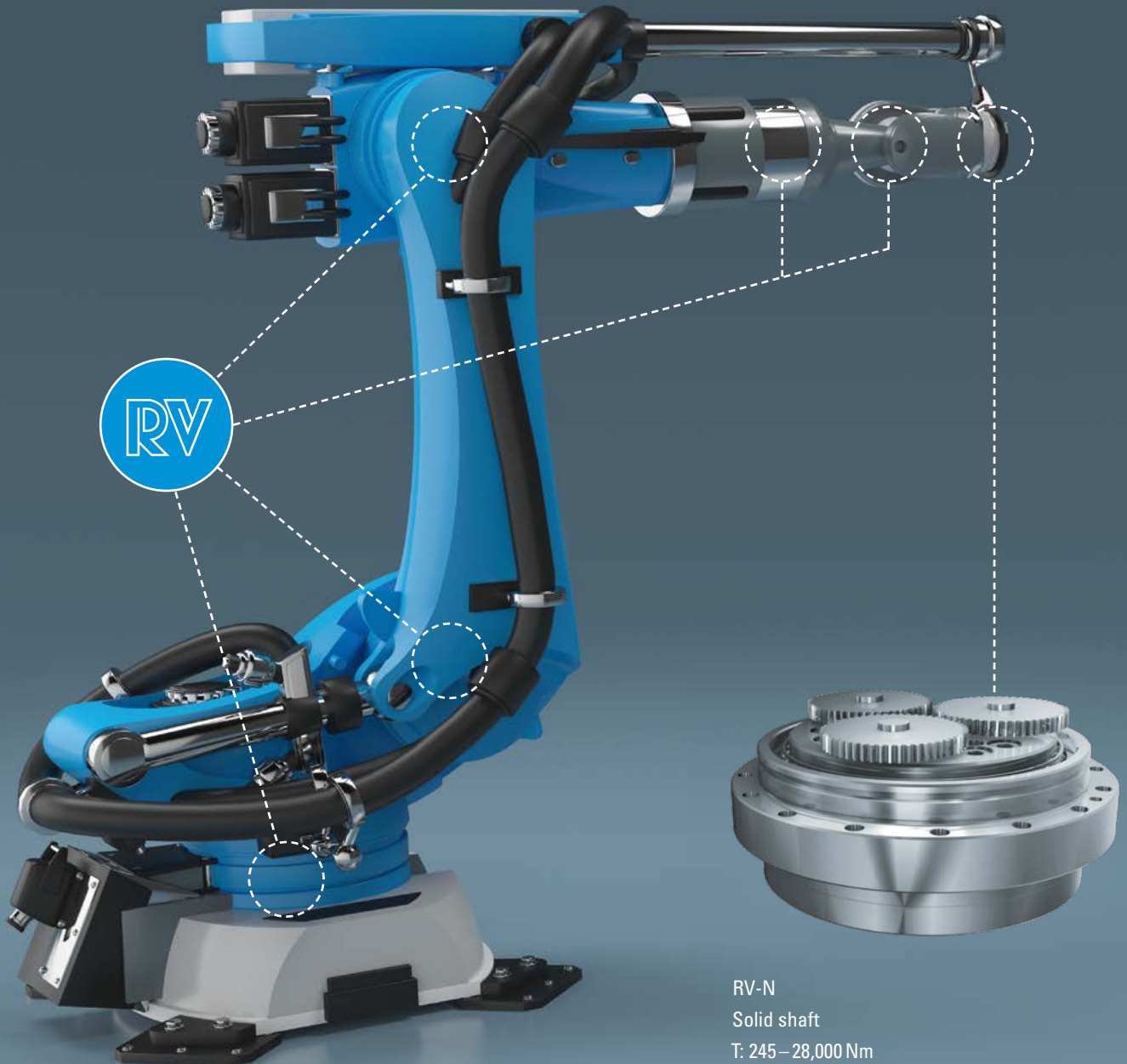
New: the RF-P series

The completely newly developed gears of the RF-P series are particularly suitable for fast applications in very small installation spaces. They are eminently suitable for use in arm axes of delta or scara robots or in wheel drives of automated guided vehicles (AGV), for example.



Compact construction, reduced weight: ideal for robotics

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 an integrated inner ring. The reinforcement of the crankshaft bearing produces a very high power density. In addition, all gear components have been optimised using FEM analysis and subjected to the latest manufacturing processes.



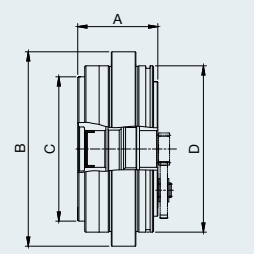
RV-N
Solid shaft
T: 245 – 28,000 Nm
i: 41 – 203.52

SPECIFICATIONS

Model RV-		25N	42N	60N	80N	100N	125N	160N	380N	500N	700N	900N	1500E	2800N
Standard ratio		41	41	41	41	41	41	41	75	81	105	137.5	65	273
		81	81	81	81	81	81	81	93	105	118	248	156	211
		107.66	105	102.17	101	102.17	102.17	102.81	117	123	142.44	316.71	236.29	232.72
		126	126	121	129	121	121	125.21	139	144	159		564	
		137	141	145.61	141	141	145.61	156	162	159	183			
		164.07	164.07	161	171	161	161	201	185	192.75	203.52			
Rated torque (Nm)		245	412	600	784	1,000	1,225	1,600	3,724	4,900	7,000	9,000	14,700	28,000
Allowable acc./dec. torque (Nm)		612	1,029	1,500	1,960	2,500	3,062	4,000	9,310	12,250	17,500	22,500	36,750	70,000
Emergency stop torque (Nm)		1,225	2,058	3,000	3,920	5,000	6,125	8,000	18,620	24,500	35,000	45,000	73,500	140,000
Hysteresis loss (arcmin)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
Torsional rigidity (Nm/arcmin)		61	113	200	212	312	334	490	948	1,620	2,600	3,685	6,320	15,600
Main bearing capacity	Allowable moment (Nm)	784	1,660	2,000	2,150	2,700	3,430	4,000	7,050	11,000	15,000	12,740	44,100	62,000
	Axial load (N)	2,610	5,220	5,880	6,530	9,000	13,000	14,700	25,000	32,000	44,000	39,200	51,000	70,400

DIMENSIONS

Model RV-	25N	42N	60N	80N	100N	125N	160N	380N	500N	700N	900N	1500E	2800N
Weight (kg)	3.8	6.3	8.9	9.3	13	13.9	22.1	44	57.2	102	157	280	544
A (mm)	62	65.5	69.5	74	80	80	104	131	137.5	170	195.5	220	270
B (ø mm)	133	159	183	189	208	221	238	295	325	395	440	570	720
C h7 (ø mm)	94	118	140	140	160	160	179	222	253	315	335	390	560
D (ø mm)	113	136	160	160	179	186	202	252	284	350	364	483	633



AREAS OF USE

- Robotics
- Medical technology
- Machine tools
- Positioning

ADVANTAGES

- Efficiency level up to 85 %
- Shock load max. 5 times rated torque
- Extremely precise and low wear, hysteresis loss < 1 arcmin, long service life
- Finely graduated sizes rated torques from 245 Nm to 28,000 Nm



The powerhouse with open centre

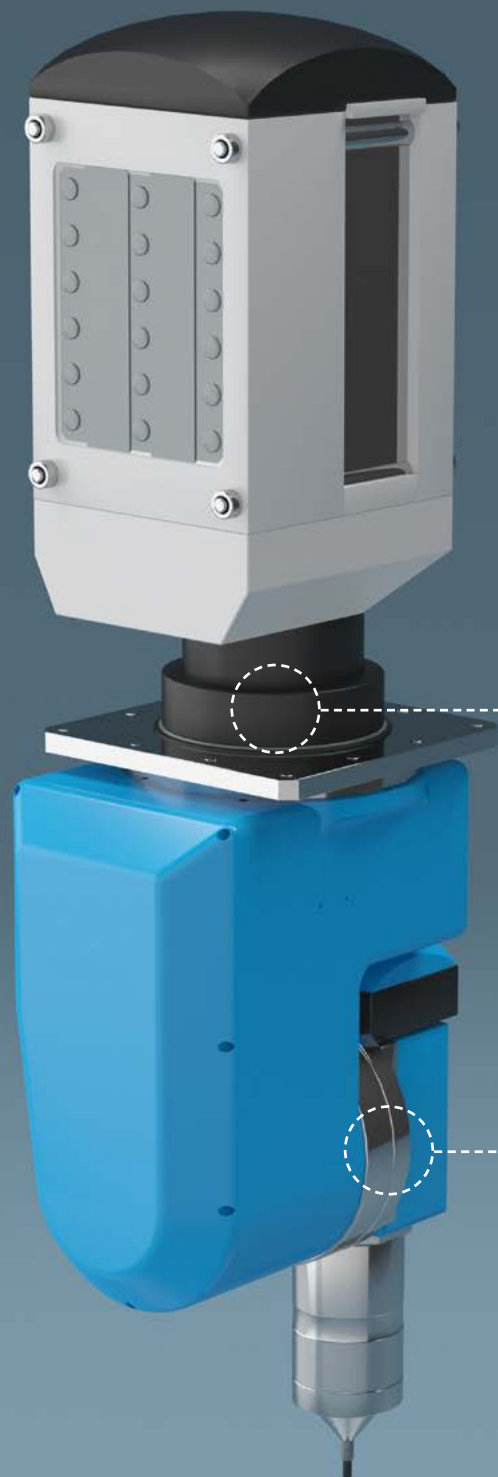
RV-C gears are your ideal choice for very demanding applications. They have a hollow shaft through which power supply cables, drive shafts, etc. can be fed. The RV-C component sets are compact, lightweight and offer high torsional and moment rigidity. Thus, the RV-C gear series reaches exceptional repeat and path accuracy.

AREAS OF USE

- 5-axis CNC machining centers
- Robotics
- Medical technology
- Antenna systems

ADVANTAGES

- Hollow shaft (for routing cables, etc.)
- High precision (hysteresis loss < 1 arcmin)
- Less vibration

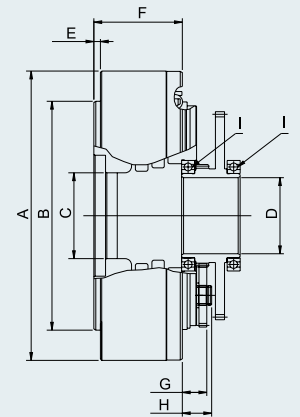


SPECIFICATIONS

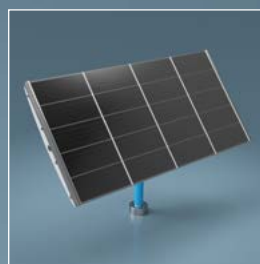
Model RV-	10C	27C	50C	100C	155C	200C	320C	400C	500C	900C	1200C
Standard ratio	27	36.57 (1.390/38)	32.54 (1.985/61)	36.75	33.62	34.86 (1.499/43)	35.61 (2.778/78)	35.61 (2.778/78)	37.34 (3.099/83)	42.84	42.84
Rated torque (Nm)	98	265	490	980	1,470	1,961	3,136	3,920	4,900	8,820	11,760
Allowable acc./dec. torque (Nm)	245	662	1,225	2,450	3,675	4,900	7,840	9,800	12,250	22,050	29,400
Emergency stop torque (Nm)	490	1,323	2,450	4,900	7,350	9,800	15,680	19,600	24,500	44,100	58,800
Max. speed switching operation (rpm)	80	60	50	40	30	30	25	20	20	15	12
Hysteresis loss (arcmin)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Torsional rigidity (Nm/arcmin)	47	147	255	510	735	980	1,960	2,450	3,430	4,900	5,880
Moment rigidity (Nm/arcmin)	421	1,068	1,960	2,813	4,900	9,800	12,740	19,600	24,500	34,300	34,300
Main bearing capacity	Allowable moment (Nm)	686	980	1,764	2,450	7,056	8,820	20,580	24,500	34,300	44,150
	Axial load (N)	5,880	8,820	11,760	13,720	15,680	19,600	29,400	34,300	39,200	51,000

DIMENSIONS

Model RV-	10C	27C	50C	100C	155C	200C	320C	400C	500C	900C	1200C
Weight (kg)	4.6	8.5	15	19.5	37	57	80	108	154	225	235
A (φmm)	147	182	222.5	250.5	293	347	438	485	520	543	570
B h7 (φmm)	110	140	176	199	234	260	340	350	390	390	490
C H7 (φmm)	34	47	66	73	90	100	140	140	150	135	135
D (φmm)	31	43	57	71	80.5	90	138	138	138	—	—
E (mm)	4	5	5	5	6	7	5.5	6.5	7.5	22.5	—
F (mm)	49.5	57.5	68	72.6	89	102	101	111	130.5	144	136
G (mm)	17	16.6	20.2	19.9	28.6	31.2	38	39	47.5	80.8	105
H (mm)	19.2	19.5	23.8	21.15	32.5	33.2	43.5	43.5	50	82.6	—
I [no.]	6807	6810	6813	6816	6818	6820	6830	6830	6832	6828	6828



RV-C
Hollow shaft
T: 98 – 11,760 Nm



High speed in the smallest of spaces

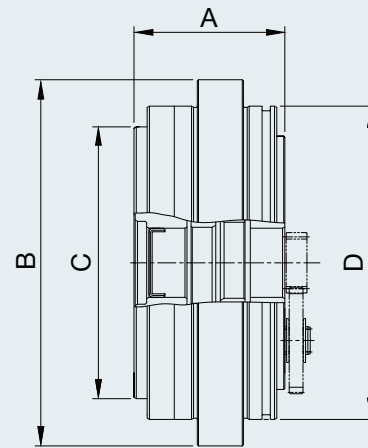
RF-P gears were developed for fast applications in small spaces. They are immune to high shock loads, are low-maintenance, and designed for high speeds. That makes them the ideal candidate for pick & place, handling or positioning applications.

SPECIFICATIONS

Model RF-	19P	32P
Standard ratio	31	32.2 / 56
Rated torque (Nm)	190	320
Allowable acc./dec. torque (Nm)	570	960
Emergency stop torque (Nm)	570	960
Max. output speed (rpm)	200	92
Hysteresis loss (arcmin)	<2.0	<2.0
Torsional rigidity (Nm/arcmin)	66	149
Lifetime L_{10} (h)	20,000	20,000
Allowable moment (Nm)	650	1,960
Momentary max. allowable moment (Nm)	1,300	3,920

DIMENSIONS

Model RF-	19P	32P
Weight (kg)	5.6	9.5
A (mm)	71	78
B (ø mm)	148	183
C h7 (ø mm)	110	140
D (ø mm)	127	160



AREAS OF USE

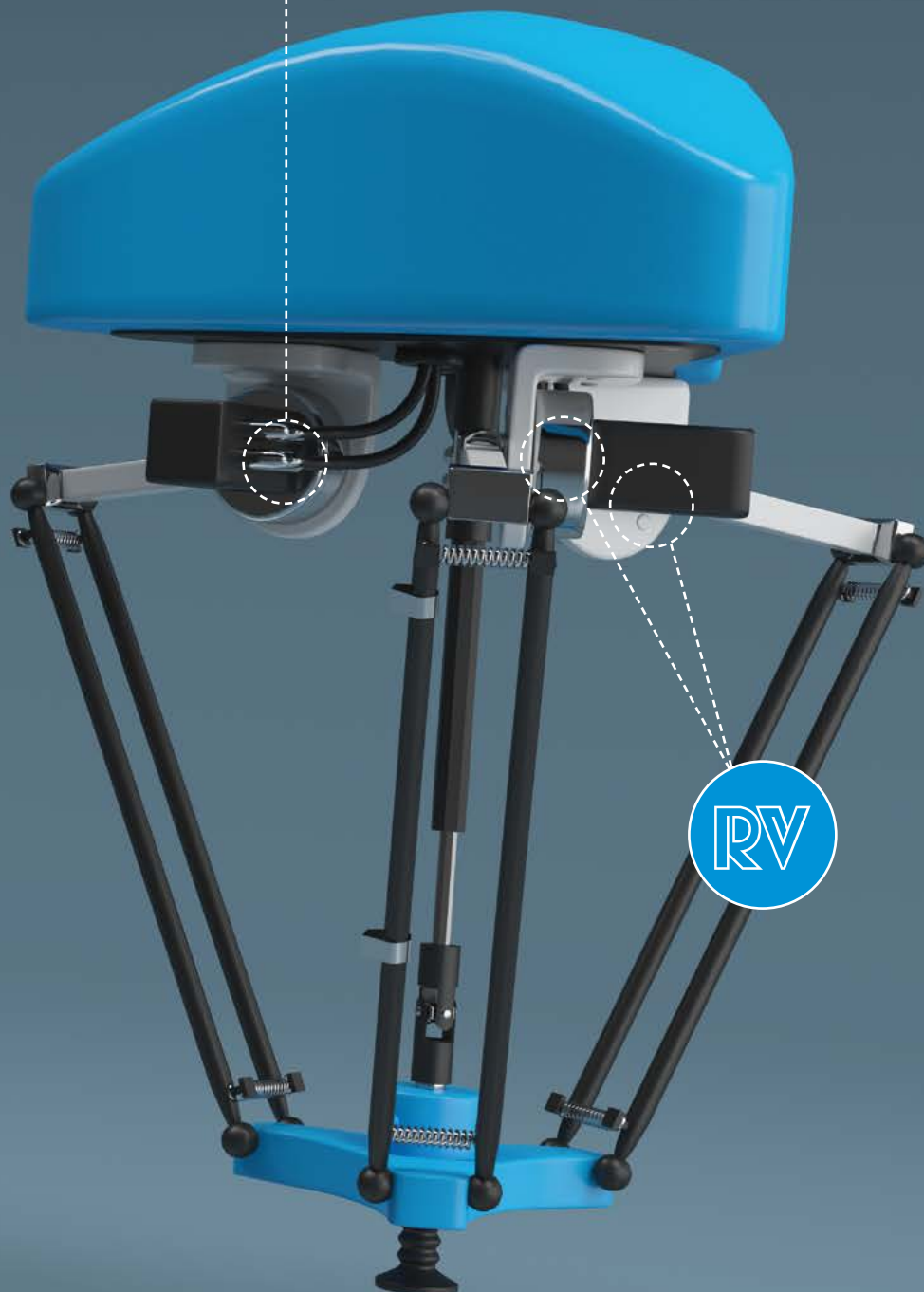
- Robotics (particularly delta and scara robots)
- Automated Guide Vehicle (AGV)
- Pick & place applications
- Handling and positioning systems

ADVANTAGES

- High output speeds of up to 200 rpm
- Fast cycle times
- High precision (hysteresis loss <2 arc min.)
- Long service life 20,000 h



RF-P
Solid shaft
T: 190–320 Nm
i: 31–56
n: up to 200 rpm



Minimal backlash and high reduction ratios

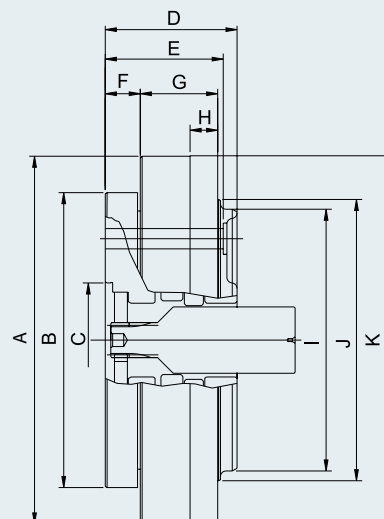
The RV series is the basic version of our precision gears. It enables the achievement of high reduction ratios. As the force is transmitted via rollers, RV gears are characterised by higher precision and low hysteresis loss. RV gears are especially compact, thanks to the external bearing support, and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

SPECIFICATIONS

Model RV-	15	30	60	160	320	450	550
Standard ratio	57 81 105 121 141	57 81 105 121 153	57 81 101 121 153	81 101 129 145 171	81 101 118.5 129 141 171 185	81 101 118.5 129 154.8 171 192.4	123 141 163.5 192.4
Rated torque (Nm)	137	333	637	1,568	3,136	4,410	5,390
Allowable acc./dec. torque (Nm)	274	833	1,592	3,920	7,840	11,025	13,475
Emergency stop torque (Nm)	686	1,666	3,185	6,615	12,250	18,620	26,950
Max. speed switching operation (rpm)	60	50	40	45	35	25	20
Hysteresis loss (arcmin)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Torsional rigidity (Nm/arcmin)	39	98	196	392	980	1,176	1,666

DIMENSIONS

Model RV-	15	30	60	160	320	450	550
Weight (kg)	3.6	6.2	9.7	19.5	34	47	72
A (∅ mm)	129.9	159.5	199.5	239.5	289.5	324.5	369.5
B h6 (∅ mm)	105	135	160	204	245	275	316
C H6 (∅ mm)	32	50	62	110	130	154	180
D (mm)	65	71.5	71.5	96	117.6	128.5	147
E (mm)	55	60	64	82	102	109.5	128
F (mm)	16	22	19	27	33	35	41
G (mm)	32	34	42	52	63	72.5	82
H (mm)	12	15	15	30	25	30	30
I (∅ mm)	90	120	142	175	208	232	260
J (∅ mm)	100	129	152.6	190	224	252	290
K h7 (∅ mm)	130	160	200	239.9	290	325	370



AREAS OF USE

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

ADVANTAGES

- Extremely compact design
- High rigidity
- High precision (hysteresis loss < 1 arcmin)





Quick start with installation-ready gears

Nabtesco gearheads are fully-enclosed, filled with lubricant and encapsulated. Because of the pre-installed motor adapter plate and the motor shaft coupling for servomotors, the amount of construction and assembly work required is reduced considerably.



RD-E

The gearheads have a very lightweight and compact construction. They can also be run with a belt drive or with an attached rectangular pre-stage.



RD-C

These gearheads have a large hollow shaft to run cable lines through. The hollow shaft rotates at the speed of the drive.



RS

RS gears were developed specifically for reliable and precise positioning of heavy loads (up to 9t).



RA-EA/EC

RA-EA/EC solid shaft gears were developed specifically for the exact positioning of chain or disc magazines.



GH

These gearheads for high output speeds are ideal for the automation of robot travel axes, machine tools and conveyor systems.

New: the RH-N series

The locally-produced, installation-ready gearheads already have an integrated drive pinion and motor flange for all current motor types. That is why they are especially suitable for use in machine tools, modern rotary positioners, and numerous handling applications.



Highest flexibility and precision, the way you want it

The newest generation of Nabtesco gearheads is based on the compact RV-N component sets. They were developed specifically for the European market and are produced locally. The torque rating and precision of the gears is outstanding, but they are still very compact. Since the drive pinion and a motor flange for all current motor types are already integrated in the gearhead, it is possible to integrate them in the drive train quickly and simply. Plug & play!

SPECIFICATIONS

Model RH-		25N	42N	60N	80N	125N	160N	380N	500N	700N
Standard ratio		41 81 107.66 126 137 164.07	41 81 105 126 141 164.07	41 81 102.17 121 145.61 161	41 81 101 129 141 171	41 81 102.17 121 145.61 161	41 81 102.81 125.21 156 201	75 93 117 139 162 185	81 105 123 144 159 192.75	105 118 142.44 159 183 203.52
Rated torque (Nm)		245	412	600	784	1,225	1,600	3,724	4,900	7,000
Allowable acc./dec. torque (Nm)		612	1,029	1,500	1,960	3,062	4,000	9,310	12,250	17,500
Emergency stop torque (Nm)		1,225	2,058	3,000	3,920	6,125	8,000	18,620	24,500	35,000
Hysteresis loss (arcmin)		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Torsional rigidity (Nm/arcmin)		61	113	200	212	334	490	948	1,620	2,600
Main bearing capacity	Allowable moment (Nm)	784	1,660	2,000	2,150	3,430	4,000	7,050	11,000	15,000
	Axial load (N)	2,610	5,220	5,880	6,530	13,000	14,700	25,000	32,000	44,000

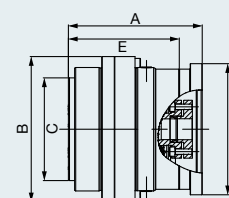
DIMENSIONS

Model RH-		25N	42N	60N	80N	125N	160N	380N	500N	700N
Weight *		7	11	16	17	23	33	On request	77	On request
A (mm)	1FK703 □-... ⁽¹⁾	112.5	117.5	—	—	—	—		—	
	1FK704 □-... ⁽¹⁾	122.5	127.5	134	141	—	—		—	
	1FK706 □-... ⁽¹⁾	132.5	137.5	144	151	155.4	181.5		219	
	1FK708 □-... ⁽¹⁾	—	145.5	152	159	163.4	189.5		227	
	1FK710 □-... ⁽¹⁾	—	—	—	—	185.4	211.5		249	
B (ø mm)		133	159	183	189	221	238		325	
C h7 (ø mm)		94	118	140	140	160	179		253	
D (mm)	1FK703 □-... ⁽¹⁾	ø 90	ø 90	—	—	—	—		—	
	1FK704 □-... ⁽¹⁾	ø 120	ø 120	□ 138	□ 138	—	—		—	
	1FK706 □-... ⁽¹⁾	□ 126	□ 126	□ 138	□ 138	□ 126	□ 126		□ 126	
	1FK708 □-... ⁽¹⁾	—	□ 155	□ 155	□ 155	□ 175	□ 175		□ 175	
	1FK710 □-... ⁽¹⁾	—	—	—	—	□ 192	□ 192		□ 192	
E (mm) **		101.5	106.5	113	120	127.9	154		191.5	

* Reference value unlubricated, dependent on model and choice of motor. Optional: aluminium flange design

** Optional: gear without predefined motor flange with predefined interface for customer design

⁽¹⁾ This table was prepared based on Siemens servomotors. Combination with other servomotors possible on request.



AREAS OF USE

- Medical technology
- Palletising robots
- Milling heads

ADVANTAGES

- Quick and low-cost installation
- Already integrated: drive pinion and motor flange for current motor types
- Fully enclosed, pre-filled with lubricant, low-maintenance
- Can be adapted to specific customer needs



RH-N
Solid shaft
T: 245 – 7,000 Nm
i: 41 – 203.52



Precise and flexible, straight from the construction kit

The gearheads of the RD_-E series are more compact and versatile than ever. Three different models allow for numerous types of use, e. g. with the choice of the servomotor. A high-precision, extremely resistant and extra durable, latest-generation gearbox is concealed in the interior.

RDP-E

Solid shaft

T: 167–3,136 Nm

i: 57–81

AREAS OF USE

- Machine tools
- Positioning
- Palletising
- Solar technology

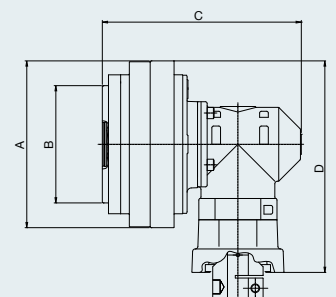
ADVANTAGES

- Fast and cost-effective installation
- Three mounting options: straight, right angle, pulley
- Completely enclosed, pre-filled with lubricant
- The RD_-E series delivery includes a motor coupling and motor flange for conventional servomotors

DIMENSIONS RDR-E, RDS-E, RDP-E

Model RD_-		6E	20E	40E	80E	160E	320E
A (∅ mm)		125.5	150	192	222	280	325
B h7 (∅ mm)		86	105	135	160	204	245
C (mm)	RDR-E	178.4	184.1	229.1	243.5	352.5	377
	RDS-E	118.9 / 129.9	124.6 / 135.6	158.6 / 182.6	173 / 197	216.5 / 213.5	241 / 238
	RDP-E	–	152.1	194.6	209	257	281.5
D (mm)	RDR-E	182.55	194.8	243.5	258.5	353.5	376

RDR-E



SPECIFICATIONS RDR-E (RIGHT ANGLE INPUT) AND RDS-E (STRAIGHT INPUT)

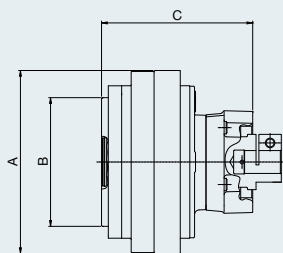
Model RDR- / RDS-		6E	20E	40E	80E	160E	320E
Standard ratio		31 / 43 / 54 / 79 / 103	41 / 57 / 81 / 105 / 121 / 161	41 / 57 / 81 / 105 / 121 / 153	41 / 57 / 81 / 101 / 121 / 153	66 / 81 / 101 / 121 / 145 / 171	66 / 81 / 101 / 121 / 141 / 185
Rated torque (Nm)	RDR-E	58	108 at i: 41 151 at i: 57 167 at i: 81, 105, 121, 161	400 at i: 41 412 at i: 57, 81, 105, 121, 153	400 at i: 41 556 at i: 57 784 at i: 81, 101, 121, 153	1,568	1,800 at i: 66 2,209 at i: 81 2,755 at i: 101 3,136 at i: 121, 141, 185
	RDS-E	58	167	412	784	1,568	3,136
Allowable acc./dec. torque (Nm)	RDR-E	117	271 at i: 41 378 at i: 57 412 at i: 81, 105, 121, 161	1,000 at i: 41 1,029 at i: 57, 81, 105, 121, 153	1,000 at i: 41 1,390 at i: 57 1,930 at i: 81, 101, 121, 153	3,920	4,503 at i: 66 5,527 at i: 81 6,892 at i: 101 7,840 at i: 121, 141, 185
	RDS-E	117	412	1,029	1,960	3,920	7,840
Emergency stop torque (Nm)	RDR-E	294	543 at i: 41 755 at i: 57 833 at i: 81, 105, 121, 161	2,000 at i: 41 2,058 at i: 57, 81, 105, 121, 153	2,000 at i: 41 2,781 at i: 57 3,920 at i: 81, 101, 121, 153	7,840	9,002 at i: 66 11,048 at i: 81 13,776 at i: 101 15,680 at i: 121, 141, 185
	RDS-E	294	833	2,058	3,920	7,840	15,680
Hysteresis loss (arcmin)	RDR-E	2	1.5	1.5	1.5	1.5	1.5
	RDS-E	1.5	1.0	1.0	1.0	1.0	1.0
Torsional rigidity (Nm/arcmin)		20	49	108	196	392	980
Main bearing capacity	Allowable moment (Nm)	196	882	1,666	2,156	3,920	7,056
	Axial load (N)	1,470	3,920	5,194	7,840	14,700	19,600

SPECIFICATIONS RDP-E (PULLEY INPUT)

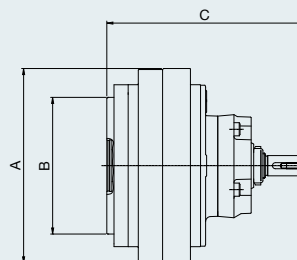
Model RDP-		20E	40E	80E	160E	320E
Standard ratio		81	57	81	66	81
Rated torque (Nm)		167	412	784	1,568	3,136
Allowable acc./dec. torque (Nm)		412	1,029	1,960	3,920	7,840
Emergency stop torque (Nm)		833	2,058	3,920	7,840	15,680
Hysteresis loss (arcmin)		1.0	1.0	1.0	1.0	1.0
Torsional rigidity (Nm/arcmin)		49	108	196	392	980
Main bearing capacity	Allowable moment (Nm)	882	1,666	2,156	3,920	7,056
	Axial load (N)	3,920	5,194	7,840	14,700	19,600



RDS-E



RDP-E



High performance design for supply lines

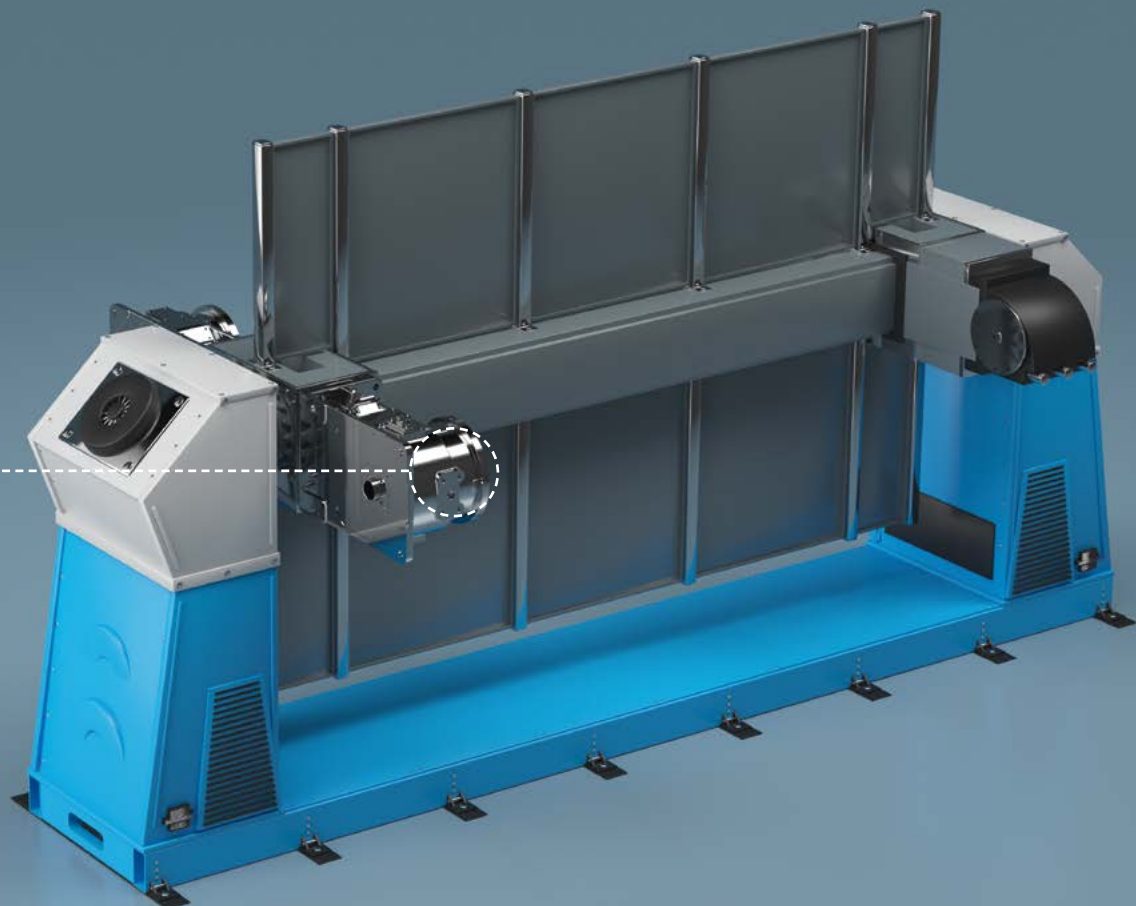
The gearheads of the new RD_-C series have a hollow shaft for routing cables, hoses and lines. An extremely compact and efficient, state-of-the-art RV-C gearbox is concealed in the interior. RD_-C gearheads offer three mounting options and have many different areas of use.

AREAS OF USE

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

ADVANTAGES

- Hollow shaft (for routing cables, etc.)
- Quick and cost-effective installation
- Three mounting options: straight, right angle, pulley
- Completely enclosed, pre-filled with lubricant



RDR-C
Hollow shaft
T: 98 – 3,136 Nm
i: 81 – 258

SPECIFICATIONS RDR-C (RIGHT ANGLE INPUT) AND RDS-C (STRAIGHT INPUT)

Model RDR- / RDS-		10C	27C	50C	100C	200C	320C
Standard ratio		81 / 108 / 153 / 189 / 243	100 / 142 / 184 / 233	109 / 153 / 196 / 240	101 / 150 / 210 / 258	106 / 156 / 206 / 245	115 / 157 / 207 / 253
Rated torque (Nm)		98	265	490	980	1,960	3,136
Allowable acc./dec. torque (Nm)		245	662	1,225	2,450	4,900	7,840
Emergency stop torque (Nm)		490	1,323	2,450	4,900	9,800	15,680
Hysteresis loss (arcmin)	RDR-C	1.5	1.5	1.5	1.5	1.5	1.5
Hysteresis loss (arcmin)	RDS-C	1.0	1.0	1.0	1.0	1.0	1.0
Torsional rigidity (Nm/ arcmin)		47	147	255	510	980	1,960
Main bearing capacity	Allowable moment (Nm)	686	980	1,764	2,450	8,820	20,580
	Axial load (N)	5,880	8,820	11,760	13,720	19,600	29,400

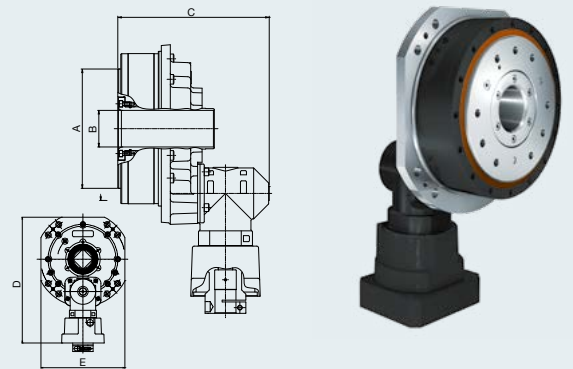
SPECIFICATIONS RDP-C (PULLEY INPUT)

Model RDP-		10C	27C	50C	100C	200C	320C
Standard ratio		108	100	109	101	106	157
Rated torque (Nm)		98	265	490	980	1,960	3,136
Allowable acc./dec. torque (Nm)		245	662	1,225	2,450	4,900	7,840
Emergency stop torque (Nm)		490	1,323	2,450	4,900	9,800	15,680
Hysteresis loss (arcmin)		1.0	1.0	1.0	1.0	1.0	1.0
Torsional rigidity (Nm/ arcmin)		47	147	255	510	980	1,960
Main bearing capacity	Allowable moment (Nm)	686	980	1,764	2,450	8,820	20,580
	Axial load (N)	5,880	8,820	11,760	13,720	19,600	29,400

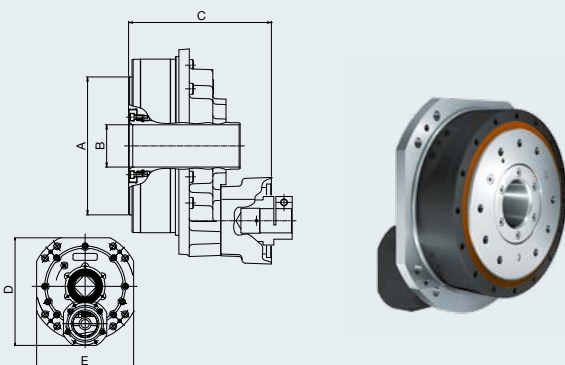
DIMENSIONS RDR-C, RDS-C, RDP-C

Model RD_-		10C	27C	50C	100C	200C	320C
A h7 (ømm)		110	140	176	199	260	340
B (ømm)		26	37	48	61	76	121
C (mm)	RDR-C	191.5	200.5	229.1	243.5	382	392.5
	RDS-C	132 / 143	141 / 152	158.6 / 182.6	173 / 197	246 / 243	256.5 / 253.5
	RDP-C	159.5	168.5	194.6	209	286.5	297
D (mm)	RDR-C	253.3 / 265.3	294.5 / 306.5	363.5 / 387.5	395.5 / 419.5	550.5 / 541.5	626 / 617
	RDS-C	185 / 196.5	227.2 / 237.7	270 / 278.5	302 / 310.5	403 / 413	478.5 / 488.5
	RDP-C	186	227.2	268	300	402.7	478.4
E (mm)		170	207.5	252	280	368	447

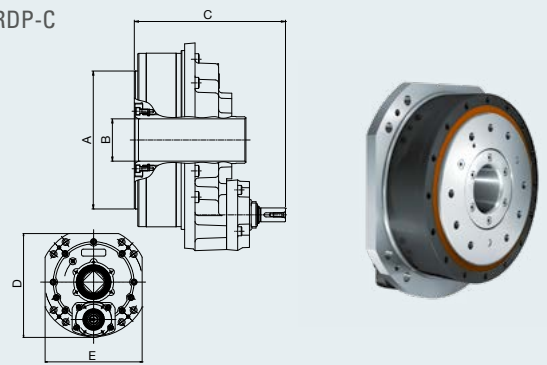
RDR-C



RDS-C



RDP-C



High-precision positioning of even the heaviest loads

The RS gears series was developed specifically for the positioning of heavy loads. They have an integrated rectangular gear and a robust, durable construction. As such, they are designed for thrust loads of up to 9 t and in terms of positioning, they are clearly superior to conventional cam shaft or worm gears.

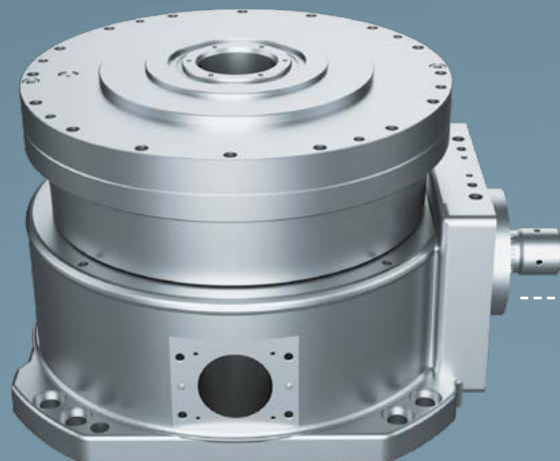
AREAS OF USE

- Robotics
- Machine tools
- Welding table positioning
- Rotary tables

ADVANTAGES

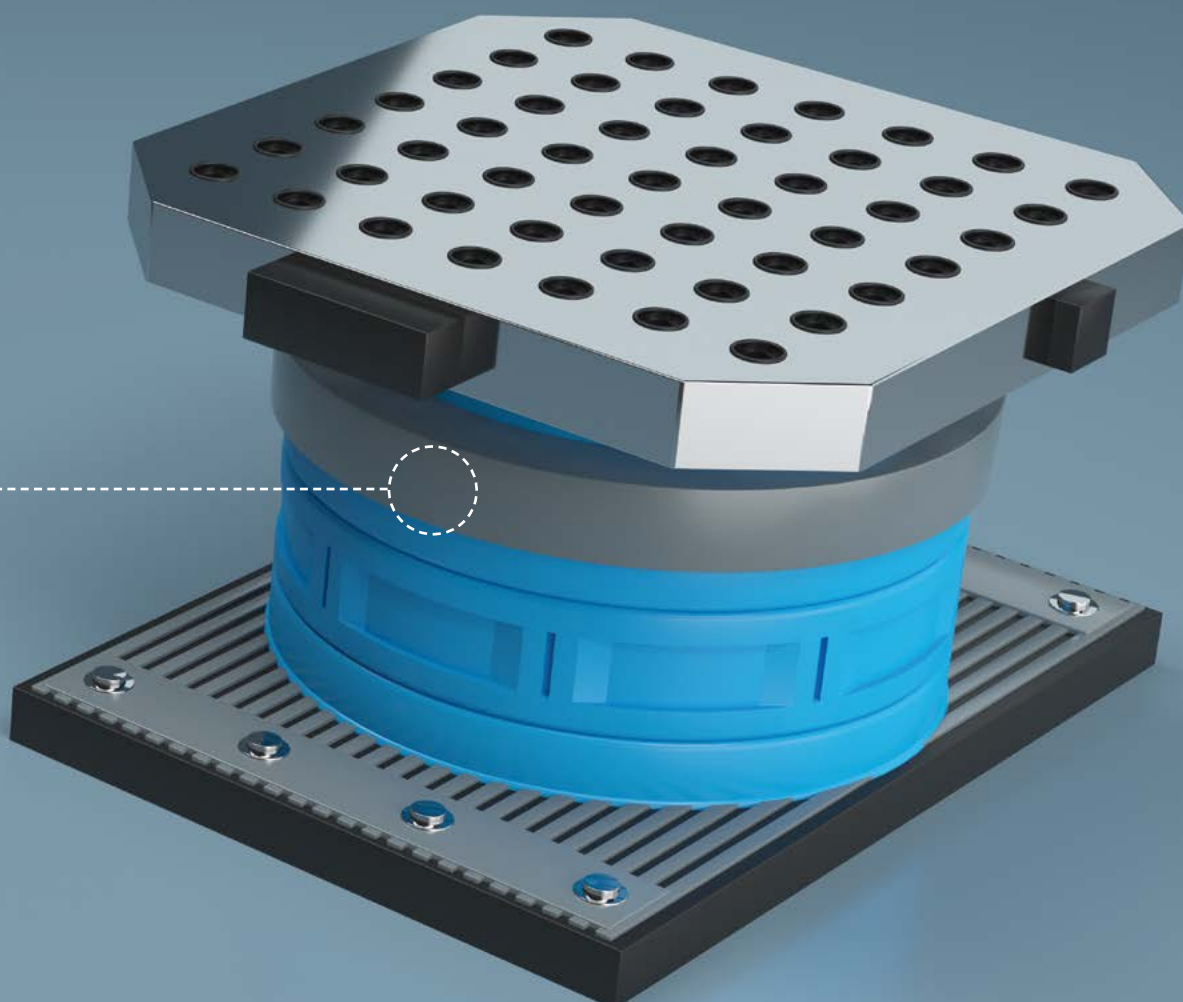
- Reliable and precise positioning of heavy loads
- Main bearing permits thrust loads of up to 1.5 t (RS-50A), 2.5 t (RS-260A), 5 t (RS-320A), 7 t (RS-400A) or up to 9 t (RS-900A)
- Hollow shaft (for placement of cables, etc.)
- Cast iron base for robust floor installation
- Easily accessible, right-angle attachment of motor

RS-A
Hollow shaft
T: 480 – 8,820 Nm
i: 100 – 240



SPECIFICATIONS

Model RS-	50A	260A	320A	400A	900A
Standard ratio	100	120	170	170	193.6 / 240
Max. axial load (kg)	1,000	2,500	5,000	7,340	9,000
Rated torque (Nm)	480	2,548	3,136	3,920	8,820
Allowable acc./dec. torque (Nm)	1,225	6,370	7,840	9,800	17,640
Emergency stop torque (Nm)	2,450	12,740	15,680	19,600	35,280
Max. output speed (rpm)	30	21.5	20	20	10
Hysteresis loss (arcmin)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Allowable moment (Nm)	2,480	12,740	20,580	24,500	44,100



Powerhouse for machine tools

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).

SPECIFICATIONS RA-EA, RA-EC

Model RA-		20EA / 20EC	40EA / 40EC	80EA / 80EC	160EA / 160EC
Standard ratio	EA ¹	80 / 104 / 120 / 160	80 / 104 / 120 / 152	80 / 100 / 120 / 152	80 / 100 / 128 / 144 / 170
	EC ²	81 / 105 / 121 / 161	81 / 105 / 121 / 153	81 / 101 / 121 / 153	81 / 101 / 129 / 145 / 171
Rated torque (Nm)		167	412	784	1,568
Allowable acc./dec. torque (Nm)		412	1,029	1,960	3,920
Emergency stop torque (Nm)		833	2,058	3,920	7,840
Max. speed switching operation (rpm)		75	70	70	45
Hysteresis loss (arcmin)		< 1.0	< 1.0	< 1.0	< 1.0
Torsional rigidity (Nm/arcmin)		49	108	196	392
Moment rigidity (Nm/arcmin)		882	1,666	2,156	3,920
Main bearing capacity	Allowable moment (Nm)	1,764	3,332	4,312	7,840
	Axial load (N)	3,920	5,194	7,840	14,700
¹ EA = case rotation ² EC = shaft rotation					

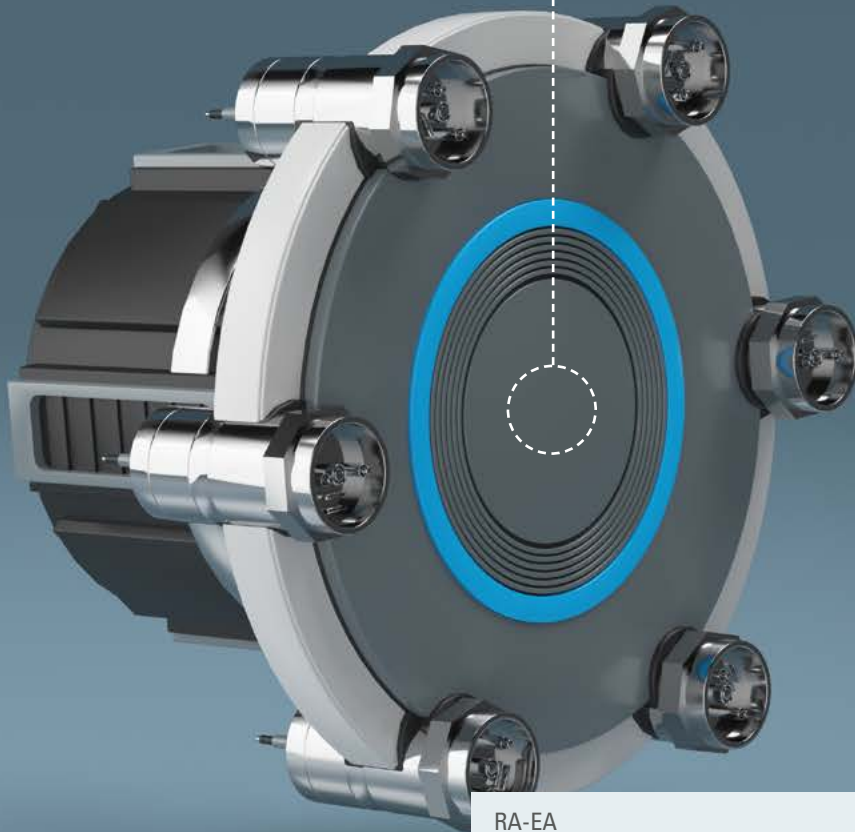
DIMENSIONS RA-EA

Model RA-	20EA	40EA	80EA	160EA
Weight (kg)	14	25	35	77
A (ø mm)	175	230	260	325
B h7 (ø mm)	140	180	210	270
C (ø mm)	100	140	170	180
D (ø mm)	145	190	222	280
E h7 (ø mm)	124	160	190	240
F (mm)	17	14	16	15
G (mm)	93.6	119.1	127	171
H (mm)	47.5	63.5	55.2	59.9
I (mm)	24.5	24	37	60.5
J (mm)	10	13	14	18
K (mm)	20	24	15	38
L (mm)	10	10	10	15
M (°)	60	60	45	30
N (ø mm)	160	210	240	300
O (ø mm)	6 × ø9	6 × ø11	8 × ø11	12 × ø13

DIMENSIONS RA-EC

Model RA-	20EC	40EC	80EC	160EC
Weight (kg)	14	25	35	71
A (ø mm)	150	192	226	290
B h7 (ø mm)	145	190	222	280
C (ø mm)	124	160	190	240
D (ø mm)	110	140	170	210
E h7 (ø mm)	40	50	80	100
F (mm)	59.1	65	77	108
G (mm)	59	78	72	88.5
H (mm)	32	37	33	42.5
I (mm)	24.5	24	37	60.5
J (mm)	20	24	15	20
K (mm)	25	38	40	33
L (mm)	10	10	10	10
M (mm)	10	10	10	15
N (mm)	6	6	6	8
O (°)	30	30	20	37.5
P (ø mm)	90	110	136	180
Q (ø mm)	4 × M10	6 × M12	9 × M12	6 × M16

RA-EA
Solid shaft
T: 167 – 1,568 Nm
i: 80 – 170



AREAS OF USE

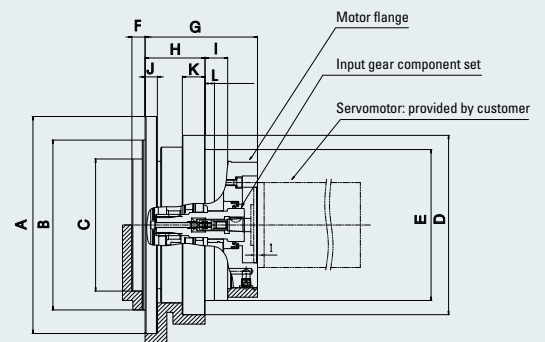
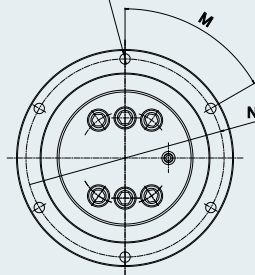
- Tool magazines
- Machine tools
- ATC – Automatic Tool Changer
- APC – Automatic Pallet Changer

ADVANTAGES

- High shock-load capability (up to 5 times the rated torque)
- High rigidity
- High precision (hysteresis loss < 1 arcmin)
- Low inertia
- Installation is more cost-effective

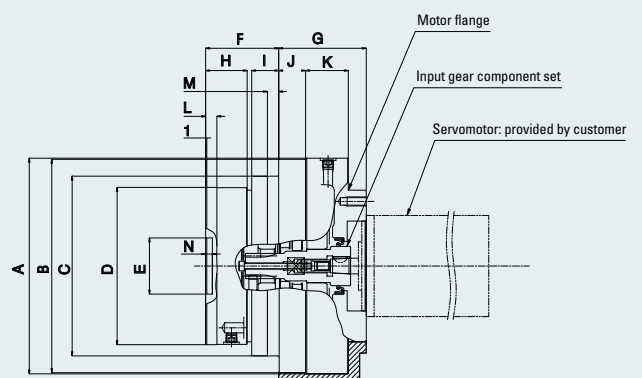
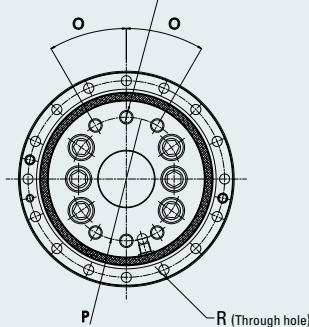
RA-EA

○ (Through hole)



RA-EC

Q (Output component)



Gearheads for high output speeds

The gearheads of the GH series are the "easy-to-use" version of the RV series. They impress with drive rates of up to 270 rpm and a shock-load capacity of up to seven times the rated torque. These gears are typically used to automate robots in travel axes and conveyor systems.

AREAS OF USE

- Machine tools
- Pallet magazines
- Gantry robots
- Robot periphery

ADVANTAGES

- High output speeds (up to 270 rpm)
- High shock-load capability (up to 7 times the rated torque)
- High rigidity
- Completely enclosed, pre-filled with lubricant
- Installation is more cost-effective



GH
Solid shaft
T: 69–980 Nm
i: 10.74–31.43
n: up to 270 rpm

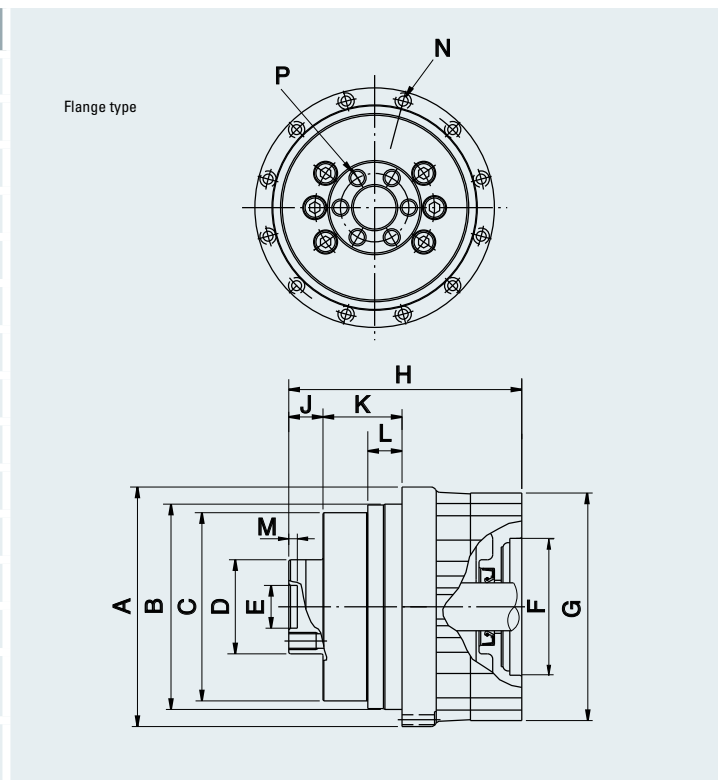


SPECIFICATIONS

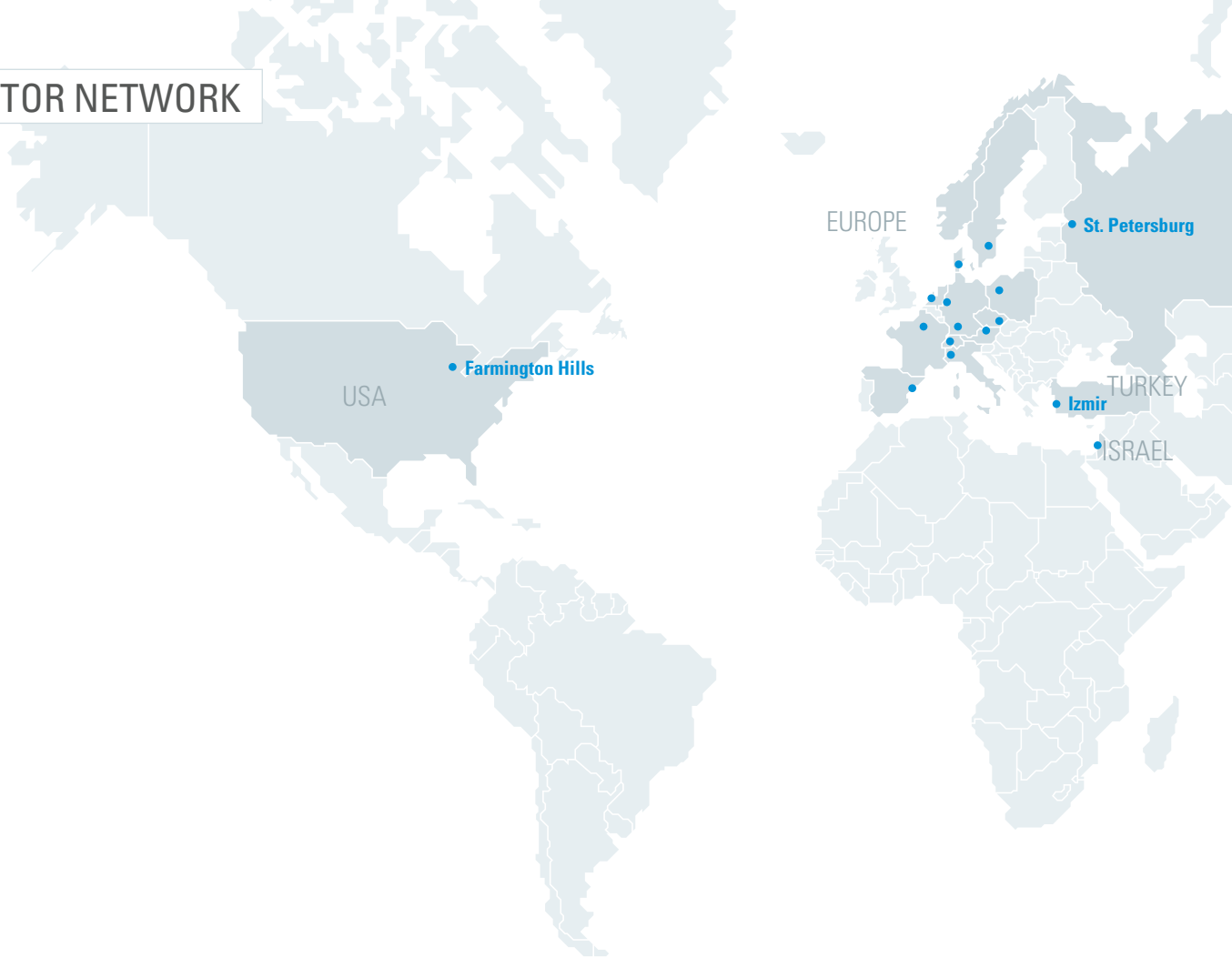
Model GH-	7	17	24	40	100
Standard ratio	461/41 21 153/5	11 21 31	11 21 31	419/39 21 723/23	20.375 31.4
Rated torque (Nm)	69	167	235	392	980
Allowable acc./dec. torque (Nm)	206	500	706	1,176	2,942
Emergency stop torque (Nm)	480	1,166	1,646	2,744	6,865
Max. speed switching operation (rpm)	270	270	250	250	135
Max. speed continuous operation (rpm)	150	150	150	150	65
Hysteresis loss (arcmin)	<6	<6	<6	<6	<10
Main bearing capacity	Allowable moment (Nm)	460	804	843	1,823
	Axial load (N)	1,372	1,960	2,940	2,940
				2,940	5,586

DIMENSIONS (FLANGE TYPE)

Model GH-	7	17	24	40	100
Weight (kg)	8	15.5	15.5	35.5	90
A (ømm)	140	180	195	240	384
B h7 (ømm)	120	151	160	200	310
C (ømm)	110	—	144	—	255
D h7 (ømm)	55	72	96	108	144
E H7 (ømm)	25	35	42	50	70
F h7 (ømm)	80	110	110	114.3	114
G (ømm)	133	170	186	229	290
H (mm)	136.2	157	146	202.2	237
J (mm)	20	19.8	13	27	25
K (mm)	46.2	52.2	65	63.7	123
L (mm)	20	17	26	23	18
M (mm)	5	5	10	6	8
N (ømm)	129 12×ø5.8	129 12×ø5.8	129 12×ø5.8	129 12×ø5.8	129 12×ø5.8
P (ømm)	40 6×M10	55 8×M12	72 8×M12	85 12×M12	115 8×M16



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