

CATALOG VARIATOARE MECANICE DE TURATIE



ALL INDUSTRIAL



Principiul de functionare a variatorului

Variatorul mecanic se bazeaza pe o transmisie epicyclica pentru rapoarte variabile. Motorul antreneaza inelele solare (5-6), care la randul lor pun in miscare satelitul (8). Acestia sunt in contact cu inelul exterior fix (7) si cu inelul exterior mobil (9). Satelitul se rotesc in jurul propriilor axe, generand simultan rotatia port-satelitului (arborele de iesire). Atunci cand punctul de contact prin rulare cu inelele exterioare (7, 9) se afla in apropierea centrului satelitilor (8), turatia de iesire scade: arborele de iesire se roteste mai lent, crescand astfel valoarea cuplului la iesire.

Variator operating principle

The mechanical variator is based on an epicyclic transmission for variable ratios. The motor rotates the solar rings (5-6) which rotate the satellites (8). In turn these are in contact with the fixed outer ring (7) and external mobile ring (9). The satellites rotate around their axes while simultaneously originate the rotation of the satellite carrier (output shaft). When the rolling contact point of the outer rings (7) (9) is near the center of satellites (8) the output speed will reduce: the output shaft will rotate more slowly thus increasing the output torque value.

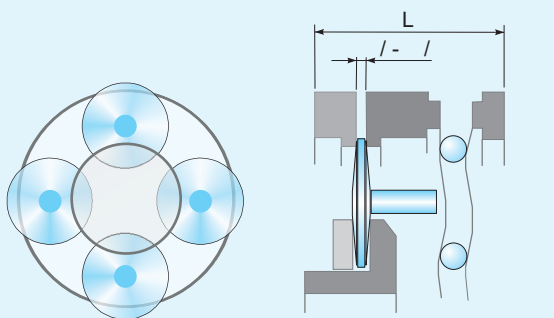
Avertisment

Reglarea turatiei este posibila numai in timpul functionarii variatorului; nu reglati niciodata turatia atunci cand variatorul este oprit. Acest lucru va duce la deteriorarea variatorului.

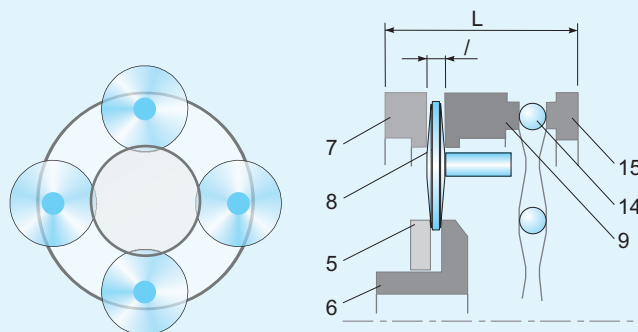
Warning

Speed adjustment is only possible when variator is running, never adjust speed while variator is stationary. This will result in damage to the variator.

La viteza maxima
At the max. speed



La viteza minima
At the min. speed



Variatoare

Variatoarele mecanice din seria N – disponibile in marimile 003, 005, 010, 020, 030 si 050, cu o plaja de putere cuprinsa intre 0,18 kW si 4 kW – sunt construite din aluminiu.

Caracteristici

- Carcasa din aluminiu contribuie la reducerea greutatii, facilitand utilizarea si transportul.
- Designul simplu permite montarea unitatii standard atat pe talpa, cat si pe flansa, reducand necesarul de stocuri si permitand livrarea rapida.
- Flansa de intrare inchisa este parte integranta a carcasei variatorului, facilitand instalarea si prevenind eventualele scurgeri de ulei.
- Conectarea motoarelor conform standardului IEC B5 este disponibila in varianta standard.
- Busonul de aerisire magnetic mentine lubrifianul curat si prelungeste intervalele de intretinere.
- Functionarea in baie de ulei asigura o eficienta ridicata, precum si o functionare silentioasa si fara vibratii.
- Unitatea poate functiona in ambele sensuri; arborii de intrare si de iesire se rotesc in aceeasi directie.
- Raport de variatie 6:1.
- Roata de reglaj poate fi montata pe oricare dintre laturile carcasei de comanda, pentru o instalare convenabila.

Variators

The series N mechanical variators consist of size 003, 005, 010, 020, 030 and 050 with power ranges of 0.18 kW to 4 kW are constructed from aluminium.

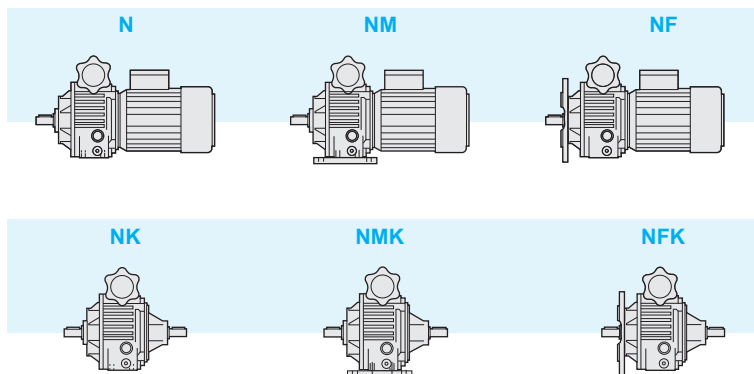
Features

- *Alluminium construction of housing benefits weight reduction for more convenient applications and transportation.*
- *The simple design allows both foot or flange mounting to standard unit, reducing stocking levels and allowing quick delivery.*
- *The closed input flange is an integral part of the variator casing for easy installation and prevents possibility of oil leaks.*
- *IEC B5 motor connections available as standard.*
- *The magnetic breather plug maintains clean lubricant and extends maintenance intervals.*
- *The oil bath operation provides high efficiency for noiseless, vibration free running.*
- *The unit can operate in both directions, input and uotput shafts rotate in same direction.*
- *Range of variation 6 - 1 reduction.*
- *Hand wheel can be fitted to both sides of control box for convenient installation.*

DENUMIRE

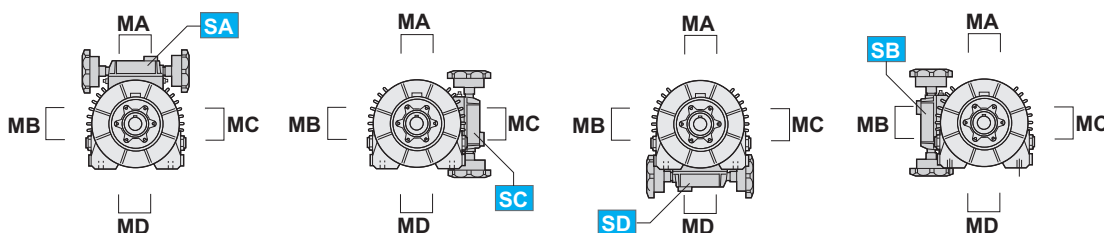
NAMES

Tip Type	Dimensiune Size	Diametru arbore de iesire mm A Output shaft diam. mm A	Diametru flansa de iesire mm Output flange diam. mm	Adaptor motor IEC IEC motor adaptor	Pozitie de montare Mounting position	Pozitie cutie de control al vitezei Speed control box position	Putere motor Motor power	Numar de poli Poles number	Versiune motor Motor version	Tensiune Voltage	Frecventa Frequency	Pozitia cutiei de borne Terminal box position
NF	030	AU28	F250	100B5	B5	SA	2.2 kW	4	B5	230/400	50Hz	MA
N NM NF NK NMK NFK	003 005 010 020 030 050	Vezi tabelele See tables	Vezi tabelele See tables	Vezi tabelele See tables	B3 B6 B7 B8 V5 V6 B5 V1 V3	SA SB SC SD	Vezi tabelele See tables	2 4 6	B5			MA MB MC MD



Pozitia cutiei de borne si a cutiei de comanda a vitezei

Terminal box and speed control box position



MA, MB, MC, MD
Pozitia cutiei de borne
Terminal box position

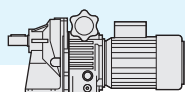
SA, SB, SC, SD
Pozitia cutiei de comanda a vitezei
Speed control box position

DENUMIRE

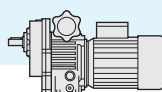
NAMES

Tip Type	Dimensiune Size	Raport de reducere (i) Reduction ratio (i)	Diametru arbore de iesire mm Output shaft diam. mm	Diametru flansa de iesire mm Output flange diam. mm	Adaptor motor IEC IEC motor adaptor	Pozitie de montare Mounting position	Pozitie cutie de control al vitezei Speed control box position	Putere motor Motor power	Numar de poli Poles number	Versiune motor Motor version	Tensiune Voltage	Frecventa Frequency	Pozitie cutie de borne Terminal box position
NFR	003/1	5	AU19	F160	63B5	B5	SA	0.25 kW	4	B5	230/400	50Hz	MA
NRT NRM NRF NRTK NRMK NRFK	003/1 005/1 010/1 020/1 030/1 050/1	2.5 5	Vezi tabelele See tables	Vezi tabelele See tables	Vezi tabelele See tables	B3 B6 B7 B8 V5 V6 B5 V1 V3	SA SB SC SD	Vezi tabelele See tables	2 4 6	B5			MA MB MC MD

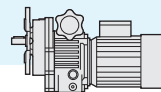
NRT



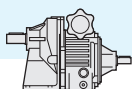
NRM



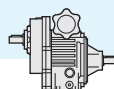
NRF



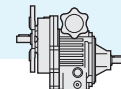
NRTK



NRMK

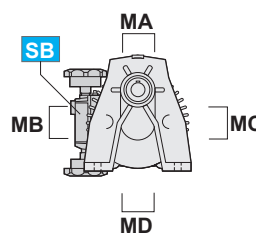
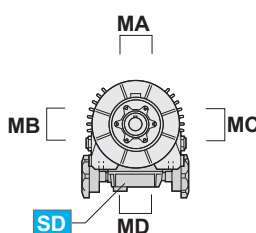
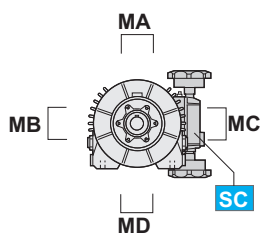
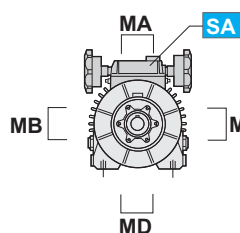


NRFK



Pozitia cutiei de borne si a cutiei de comanda a vitezei

Terminal box and speed control box position



MA, MB, MC, MD
Pozitia cutiei de borne
Terminal box position

SA, SB, SC, SD
Pozitia cutiei de comanda a turatiei
Speed control box position

Date tehnice

Technical data

Tip Type	P ₁ kW	Poli Poles	Adaptor pentru motor IEC motor adaptor	n ₂ max min ⁻¹	n ₂ min min ⁻¹	i	T ₂ min Nm	T ₂ max Nm
N003	0.25	4	63 B5	950	190	—	1.9	3.8
	0.37	2	63 B5	1900	380	—	1.5	3
NR 003/1	0.25	4	63 B5	380	76	2.5	4.7	9.3
				190	38	5	9.3	18.6
N005	0.37	4	71 B5	1000	167	—	3	6
	0.75	2	71 B5	2000	333	—	3	6
NR 005/1	0.37	4	71 B5	400	67	2.5	7.3	14.7
				200	33	5	14.7	29.4
N010	0.75	4	80 B5	1000	167	—	6	12
	1.5	2	80 B5	2000	333	—	6	12
NR 010/1	0.75	4	80 B5	400	67	2.5	14.7	29.4
				200	33	5	29.4	58.8
N020	1.5	4	90 B5	1000	167	—	12	24
	2.2	2	90 B5	2000	333	—	9	18
NR 020/1	1.5	4	90 B5	400	67	2.5	29.4	58.8
				200	33	5	58.8	118
N030	2.2	6	100 B5	660	125	—	27	54
	2.2	4	100 B5	1000	167	—	18	36
NR 030/1	2.2	4	100 B5	400	67	2.5	44.1	88.2
				200	33	5	88.2	176
N050	3.6	4	112 B5	1000	167	—	32	64
NR 050/1	3.6	4	112 B5	400	67	2.5	78.4	157
				200	33	5	157	314

Simboluri:

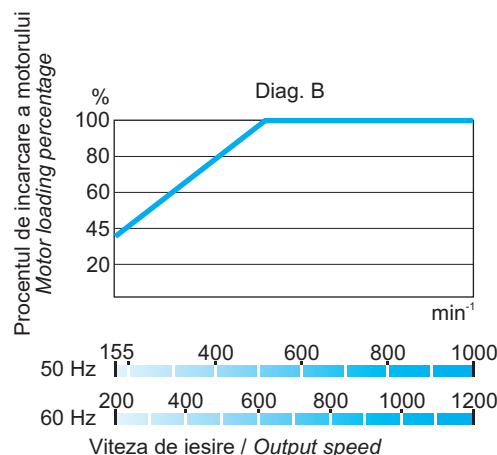
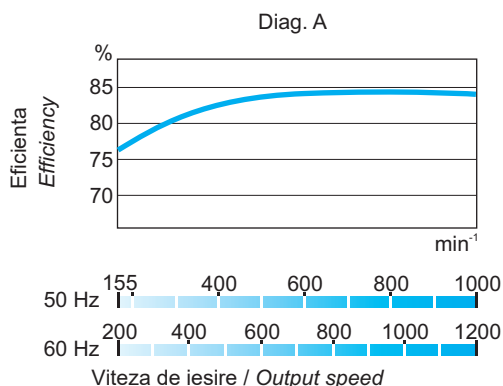
- P₁ [kW]** - Puterea motorului
poli - Numarul de poli
n₂ max [min⁻¹] - Turatia maxima la iesire
n₂ min [min⁻¹] - Turatia minima la iesire
T₂ min [Nm] - Momentul de torsiune la iesire la turatie ridicata
T₂ max [Nm] - Momentul de torsiune la iesire la turatie redusa
i - Raport de reducere

Diagrama A prezinta valoarea orientativa a randamentului in functie de turatia de iesire n₂ exprimata in min⁻¹. Diagrama B prezinta procentul din puterea de iesire a motorului care este utilizat.

Symbols:

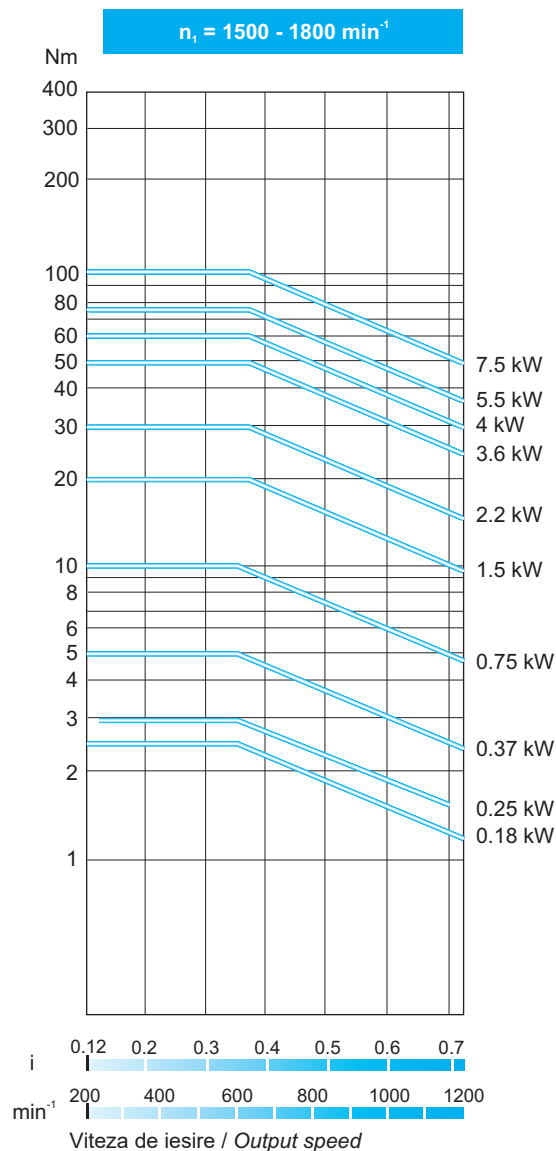
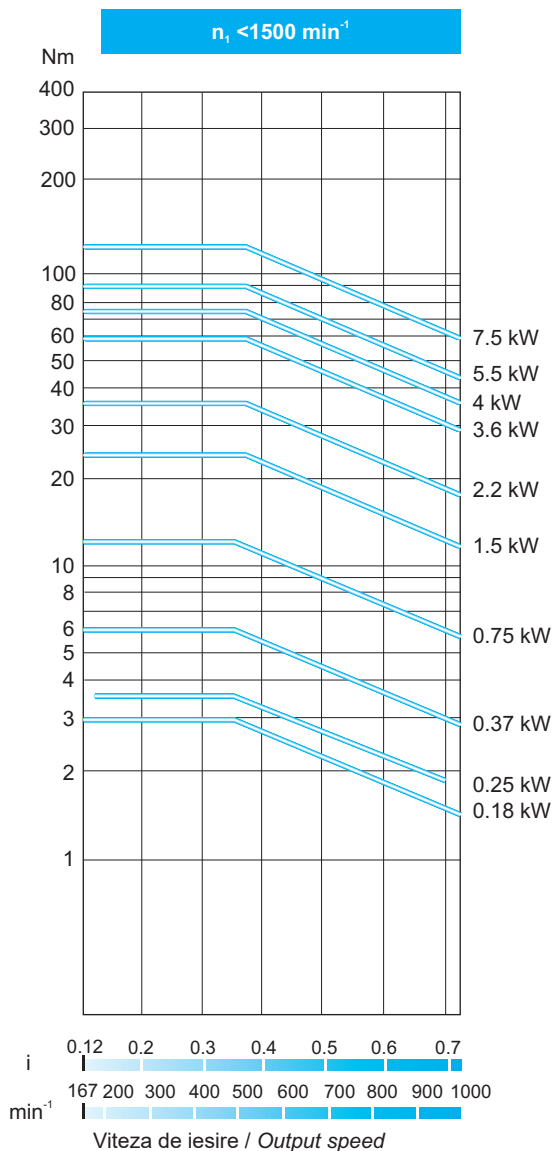
- P₁ [kW]** Motor power
poles Number of poles
n₂ max [min⁻¹] Max output speed
n₂ min [min⁻¹] Min output speed
T₂ min [Nm] Output torque at the high speed
T₂ max [Nm] Output torque at the low speed
i Reduction ratio

Diagram A shows the indicative value of efficiency in relation to output speed n₂ expressed in min⁻¹. Diagram B shows the percentage of motor output power utilized.



Urmatoarele diagrame prezinta performanta cuplului de iesire in raport cu puterea de intrare si turatia de intrare n_1 (min^{-1}).

The following diagrams show the performance for output torque in relation to input power and input speed n_1 (min^{-1}).



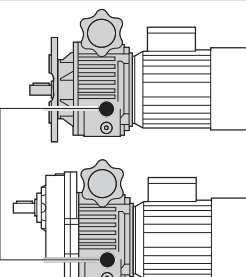
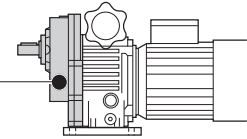
Lubrifiere

Variatoarele sunt livrate cu lubrifiantul inclus. Este important sa se asigure nivelul corect de lubrifiere pentru pozitia de montaj finala aleasa. Asigurati-va ca uleiul este vizibil prin busonul de nivel, pentru a permite completarea acestuia, daca este necesar.

Lubrication

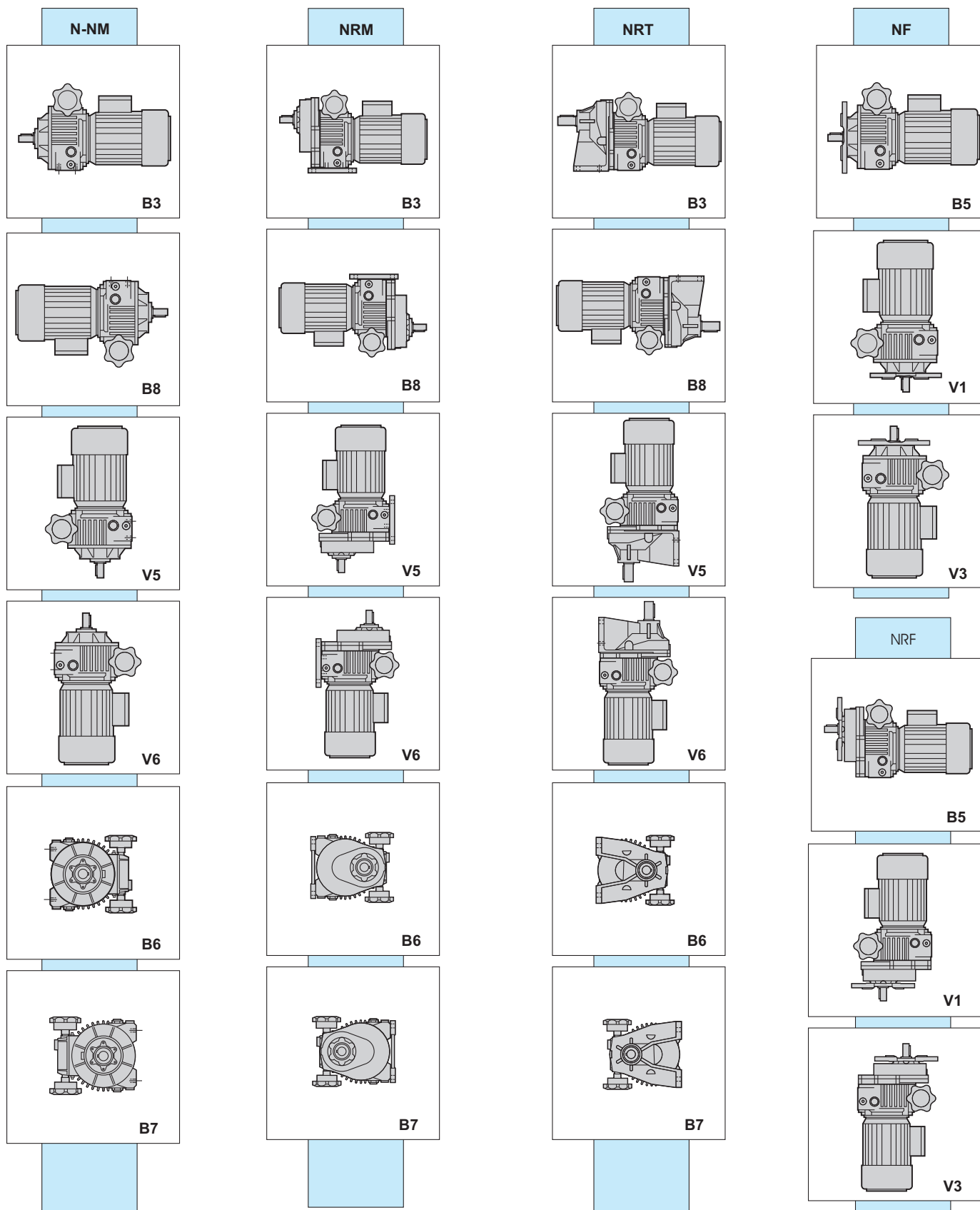
The variators are supplied complete with lubricant. It is important to have the correct level of lubrication for the final mounting position choosen. Ensure the oil can be seen through the oil level plug this to allow the filling up if necessary.

Lubrifianti recomandati / Recommended lubricants

Dexron fluid II	IP		Vaselina Atina 0	IP	
A.T.F. Dexron fluid DIII	SHELL				
A.T.F. 200 RED	MOBIL				
A.T.F. Dexron	FINA				
BP Autran DX	BP				
A.T.F. Dexron	ESSO				
A.T.F. Dexron	CHEVRON				
A.T.F. Dexron	AGIP				
			Tivela Compus A	SHELL	

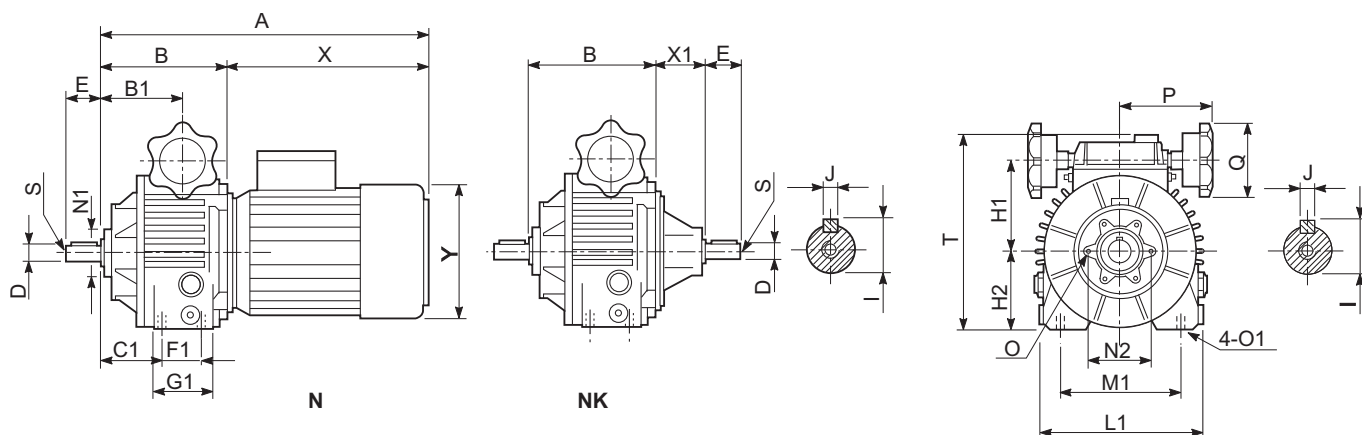
Pozitii de montare

Mounting positions

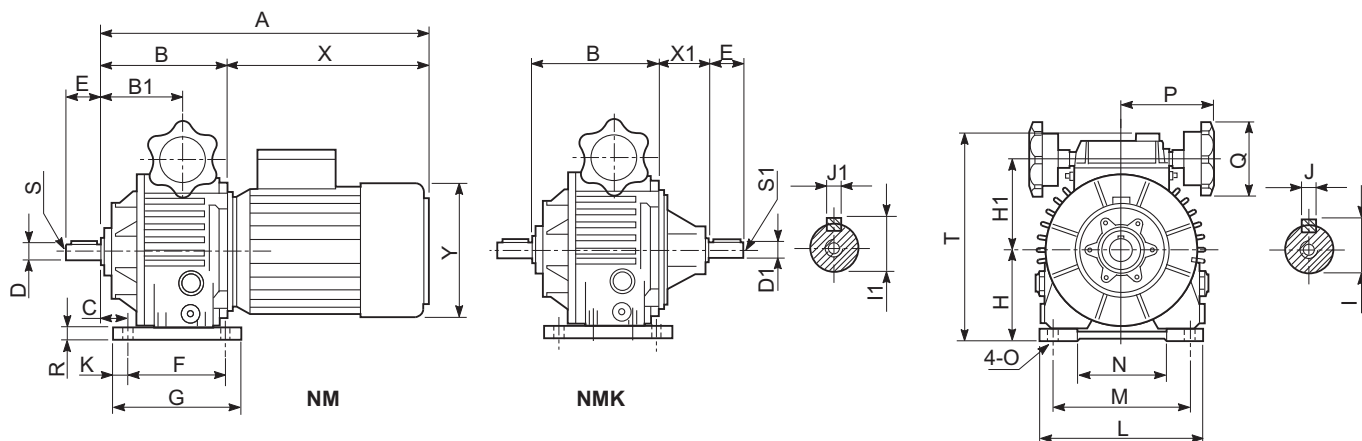


Dimensiuni

Dimensions



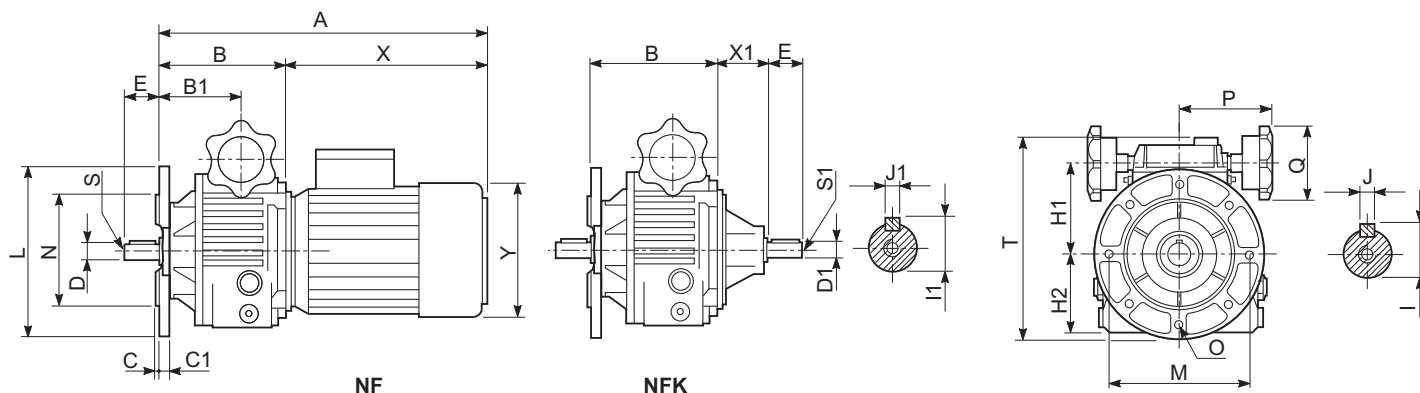
Tip Type	A	B	B1	C1	D	E	F1	G1	H1	H2	I	J	L1	M1	N1	N2	O	O1	P	Q	S	T	X	X1	Y	Kg
N003	302	110	66	44	11	23	36	55	79	58	12.5	4	128	100	42	56	M6	M8	97	89	M5	160	192	42	122	5
N005	336	118	78	61	14	30	36	55	88	73	16	5	153	120	56	75	M6	M8	97	89	M6	185	218	50	137	7
N010	383	145	95	75	19	40	45	82	107	91	21.5	6	187	140	56	75	M6	M10	107	89	M6	222	239	65	158	13
N020	450	172	105	82	24	50	58	82	126	108	27	8	220	190	75	100	M8	M10	107	89	M8	264	278	70	177	20



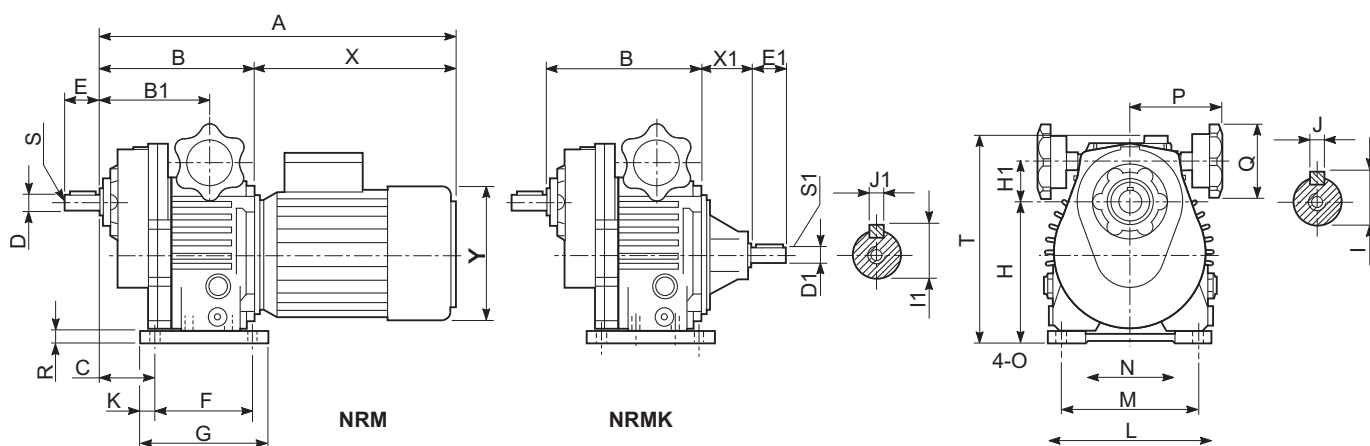
Tip Type	A	B	B1	C	D	D1	E	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NM003	302	110	66	25	11 (14)	11	23 (30)	105	130	71	76	12.5 (16)	12.5	4 (5)	4	12.5	140	110	80	9	97	89	11	M5 (M6)	M5	173	192	42	122	6
NM005	336	118	78	30	14 (19)	14	30 (40)	105	130	90	88	16 (21.5)	16	5 (6)	5	12.5	155	120	83	10	97	89	13	M6	M6	202	218	50	137	8
NM010	382	143	95	35	19 (24)	19	40 (50)	125	150	106	107	21.5 (27)	21.5	6 (8)	6	12.5	190	160	120	12	107	89	13.5	M6 (M8)	M6	242	239	65	158	14
NM020	441	171	104	50	24 (28)	24	50 (60)	140	165	125	126	27 (31)	27	8	8	12.5	230	180	130	12	107	89	16	M8 (M10)	M8	277	270	70	177	21
NM030/050	546	206	122	25	28 (38)	28	60 (80)	230	270	150	158	31 (41)	31	8 (10)	8	20	300	245	190	14	155	120	20	M10 (M12)	M10	337	340	95	197	51

Dimensiuni

Dimensions



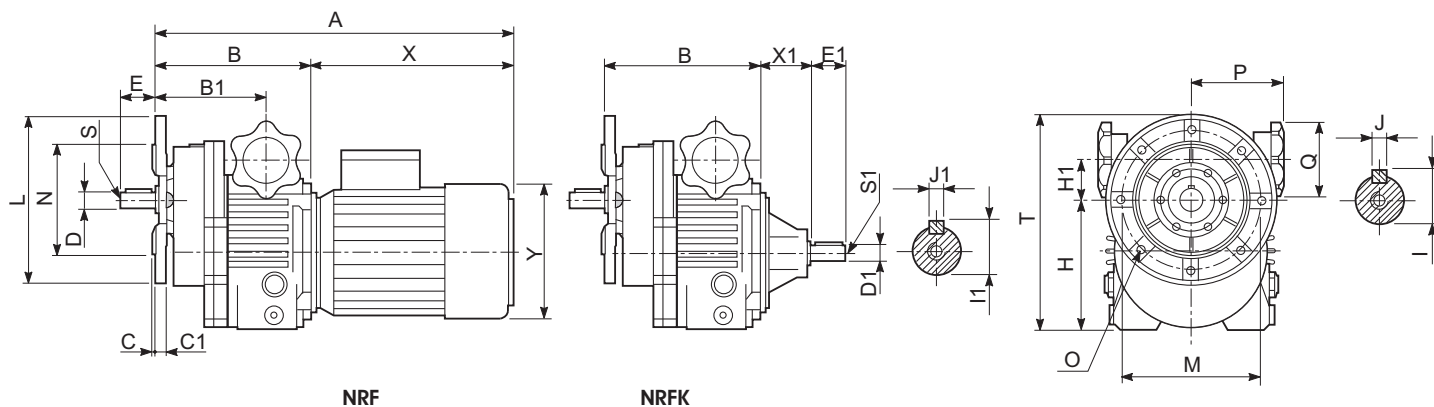
Tip Type	A	B	B1	C	C1	D	D1	E	H1	H2	I	I1	J	J1	L	M	N	O	P	Q	S	S1	T	X	X1	Y	Kg
NF003	302	110	66	3.5	8	11 (14)	11	23 (28)	76	58	12.5 (16)	12.5	4 (5)	4	140 (160)	115 (130)	95 (110)	9 (9)	97	89	M5	M5	165 (175)	192	42	122	6
NF005	338	120	80	3.5	10.5	14 (19)	14	28 (38)	88	73	16 (21.5)	16	5 (6)	5	160 (200)	130 (165)	110 (130)	9 (11)	97	89	M6	M6	188 (208)	218	50	137	8
NF010	384	145	97	3.5	13.5	19 (24)	19	38 (48)	107	91	21.5 (27)	21.5	6 (8)	6	200	165	130	11	107	89	M6 (M8)	M6	237	239	65	158	14
NF020	443	173	106	4	14	24 (28)	24	48 (58)	126	108	27 (31)	27	8	8	200 (250)	165 (215)	130 (180)	11 (14)	107	89	M8 (M10)	M8	260 (277)	270	70	177	21
NF030/050	548	208	124	4(5)	16	28 (38)	28	58 (78)	158	134	31 (41)	31	8 (10)	8	250 (300)	215 (265)	180 (230)	14	155	120	M10 (M12)	M10	336	340	95	197	51



Tip Type	A	B	B1	C	D	D1	E	E1	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NRM003	331	139	108	57	19 (20)	11	30	23	105	130	111 (116)	36	21.5 (22.5)	12.5	6	4	12.5	140	110	80	9	97	89	11	M6	M5	173	192	42	122	7
NRM005	363	145	105	54	19 (20)	14	30	30	105	130	140 (135)	38	21.5 (22.5)	16	6	5	12.5	155	120	83	10	97	89	13	M6	M6	202	218	50	137	11
NRM010	418	179	131	69	24 (25)	19	35	40	125	150	169 (160)	44	27 (28)	21.5	8	6	12.5	190	160	120	12	107	89	13.5	M8	M6	242	239	65	158	9
NRM020	471	201	135	78	28 (30)	24	45	50	140	165	188 (190)	63	31 (33)	27	8	8	12.5	230	180	130	12	107	89	16	M10	M8	277	270	70	177	33
NRM030 NRM050	586	246	165	63	38 (40)	28	60	60	230	270	230 (224)	78	41 (43)	31	10 (12)	8	20	300	245	190	14	155	120	20	M12	M8	337	340	95	197	75

Dimensiuni

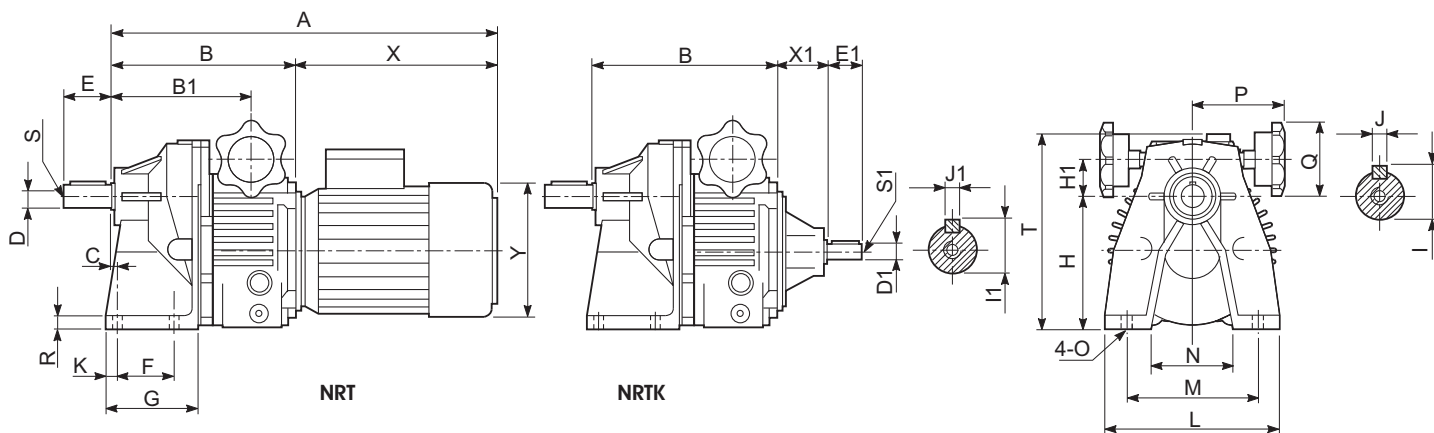
Dimensions



NRF

NRFK

Tip Type	A	B	B1	C	C1	D	D1	E	E1	H	H1	I	I1	J	J1	L	M	N	O	P	Q	S	S1	T	X	X1	Y	Kg
NRF003	333	141	112	3.5	8	19	11	28	23	98	36	21.5	12.5	6	4	160	130	110	9	97	89	M6	M5	178	192	42	122	7
NRF005	372	154	114	3.5	10.5	19	14	28	30	123	38	21.5	16	6	5	160	130	110	9	97	89	M6	M6	203	218	50	137	11
NRF010	419	180	130	3.5	13.5	24	19	33	40	154	44	27	21.5	8	6	200	165	130	11	107	89	M8	M6	254	239	65	158	19
NRF020	473	203	137	4	14	28	24	43	50	171	63	31	27	8	8	250	215	180	14	107	89	M10	M8	296	270	70	177	33
NRF030/050	588	248	167	4	16	38	28	58	60	214	78	41	31	10	8	300	265	230	14	155	120	M12	M8	364	340	95	197	75



NRT

NRTK

Tip Type	A	B	B1	C	D	D1	E	E1	F	G	H	H1	I	I1	J	J1	K	L	M	N	O	P	Q	R	S	S1	T	X	X1	Y	Kg
NRT003	376	184	140	20	19	11	40	23	45	80	110	36	21.5	12.5	6	4	14	130	105	70	9	97	89	10	M6	M5	167	192	42	122	9
NRT005	412	194	154	6	24	14	50	30	70	110	130	38	27	16	8	5	15	180	150	90	11	97	89	12	M8	M6	192	218	50	137	13
NRT010	456	218	171	7.5	28	19	60	40	70	115	163	44	31	21.5	8	6	14	215	165	100	11	107	89	15	M8	M6	231	239	65	158	21
NRT020	551	281	215	25	38	24	70	50	85	142	195	46	41	27	10	8	23	250	185	130	14	107	120	16	M10	M8	266	270	70	177	33
NRT030/050	686	346	261	19	48	28	100	60	130	178	250	59	51.5	31	14	8	17	310	240	160	17	155	120	18	M10	M8	337	340	95	197	75