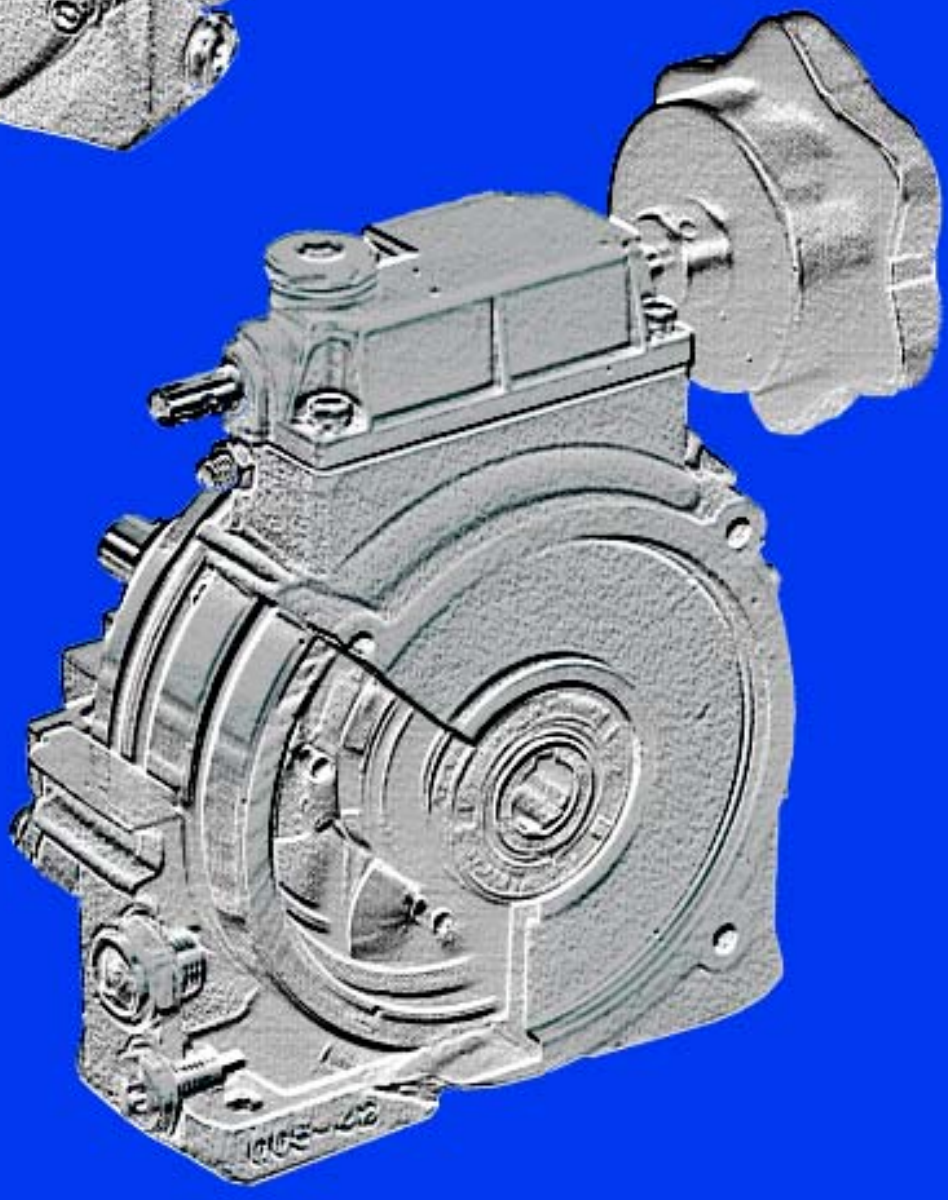
VARIATORS

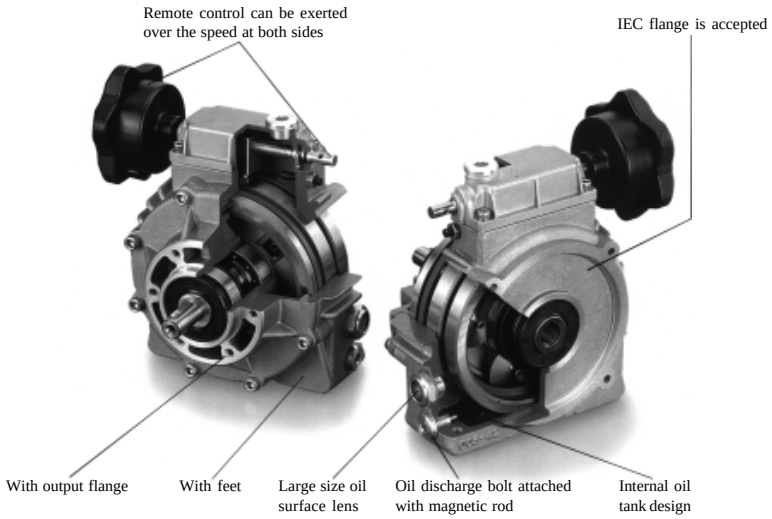


7.0 VARIATORS

The Series N mechanical variators consist of sizes 003, 005, 010 and 020 with power ranges of 0.18 kW to 1.5 kW are constructed from aluminum. Larger sizes are made from cast iron.

FEATURES

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

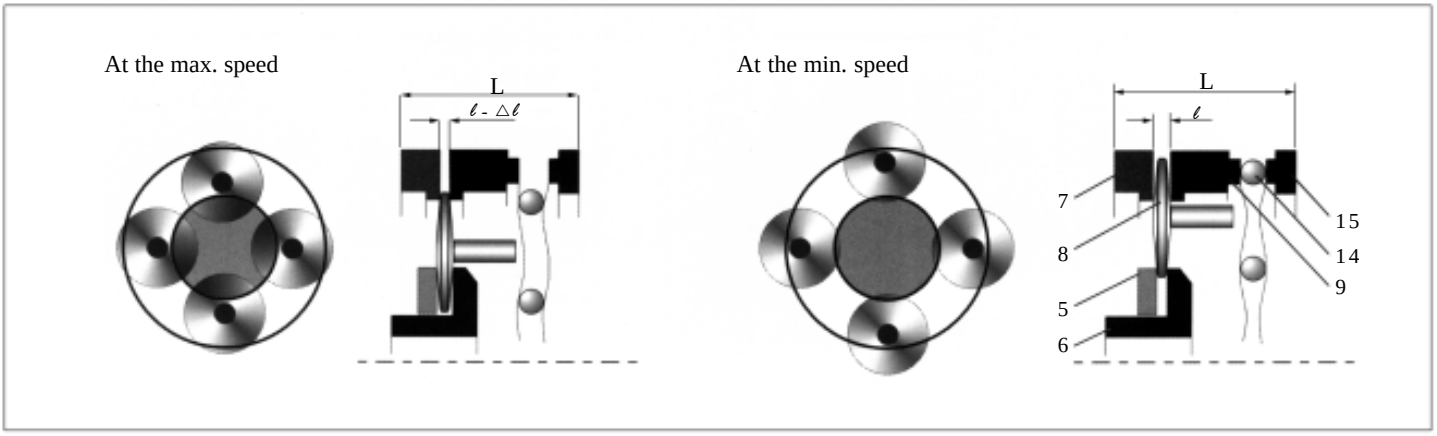


7.1 OPERATING PRINCIPLE

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.

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.



7.2 DESIGNATION

Type	Size	Output Shaft Diameter (mm)	Output Flange Diameter (mm)	IEC Motor Adaptor	Mounting Position	Speed Control Box Position	Motor Power	No. of Poles	Motor Version	Voltage	Frequency	Terminal Box Position
NF	**030**	**AU28**	**F250**	**100B5**	**B5**	**SA**	**2.2kW**	**4**	**B5**	**230/400**	**50Hz**	**MA**
N	003	See Tables	See Tables	See Tables	B3	SA	See Tables	2	B5			MA
NM	005				B6	SB		4				MB
NF	010				B7	SC		6				MC
	020				B8	SD						MD
NK	030				V5							
NMK	050				V6							
NFK	075				B5							
	100				V1							
					V3							

	Variator						Motor					
N												
NM												
NF												
NK												
NMK												
NFK												

The above table depicts details required for the designation of different products.

7.3 TECHNICAL DATA

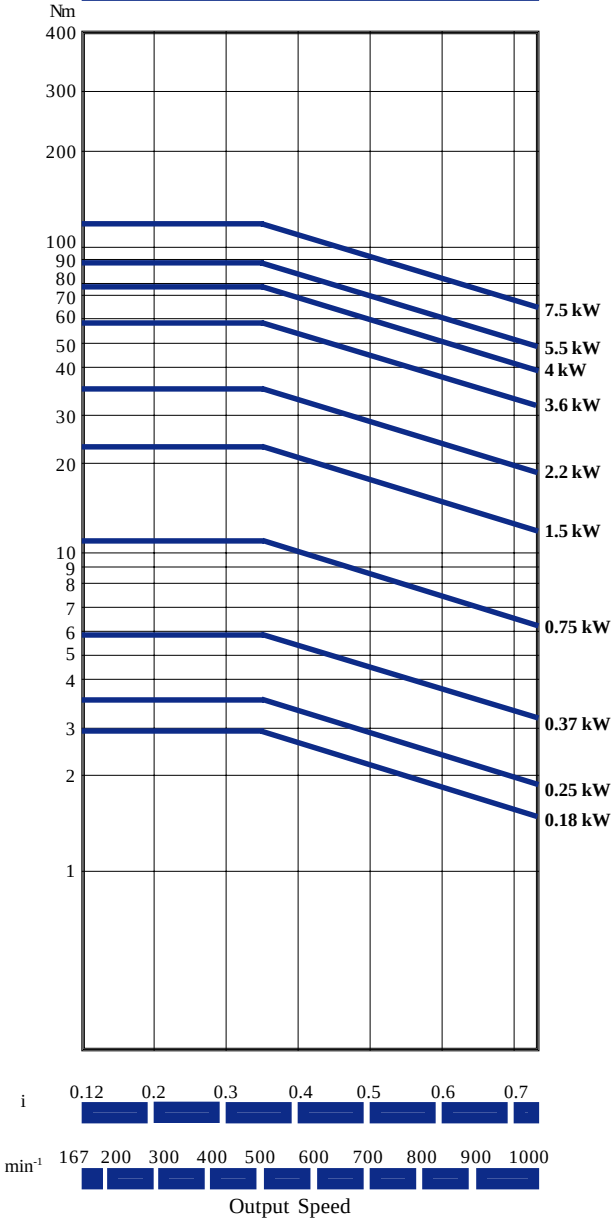
Type	P_1 kW	Poles	IEC Motor Adaptor	n_2 max min^{-1}	n_2 min min^{-1}	T_2 min Nm	T_2 max Nm
N003	0.25	4	63 B5	950	190	1.9	3.8
	0.37	2	63 B5	1900	380	1.5	3
N005	0.37	4	71 B5	1000	167	3	6
	0.75	2	71 B5	2000	333	3	6
N010	0.75	4	80 B5	1000	167	6	12
	1.5	2	80 B5	2000	333	6	12
N020	1.5	4	90 B5	1000	167	12	24
	2.2	2	90 B5	2000	333	9	18
N030	2.2	6	100 B5	660	125	27	54
	2.2	4	100 B5	1000	167	18	36
N050	3.6	4	112 B5	1000	167	32	64
N075	5.5	6	132 B5	660	125	72	144
	5.5	4	132 B5	1000	190	43	86
N100	7.5	4	132 B5	1000	190	58	116

Symbols:

P_1 [kW]	Motor Power
poles	Number of Poles
n_2 max [min^{-1}]	Max output speed of variator
n_2 min [min^{-1}]	Min output speed of variator
T_2 min [Nm]	Min output torque
T_2 max [Nm]	Max output torque

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

n_1 < 1500 min^{-1}



n_1 = 1500 - 1800 min^{-1}

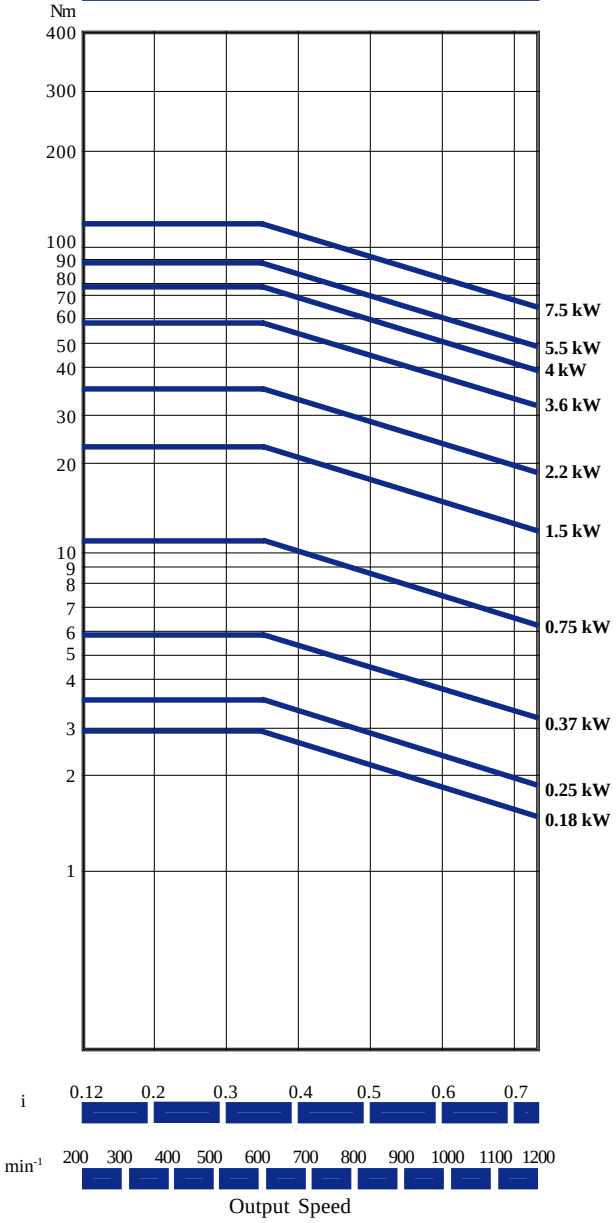
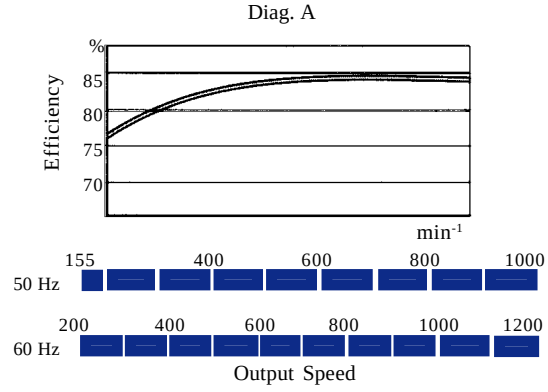
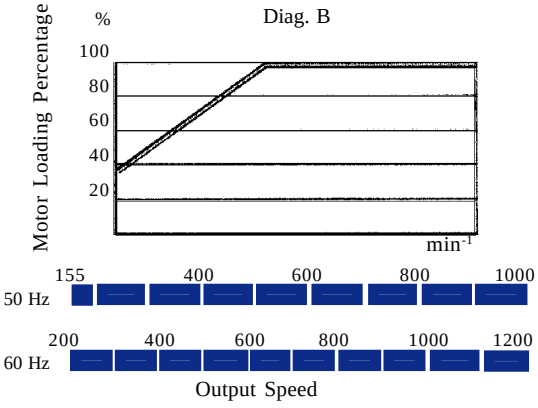


Diagram A shows the indicative value of efficiency in relation to output speed n_2 expressed in min^{-1}. Diagram B shows the percentage of motor output power utilized.

Diag. A



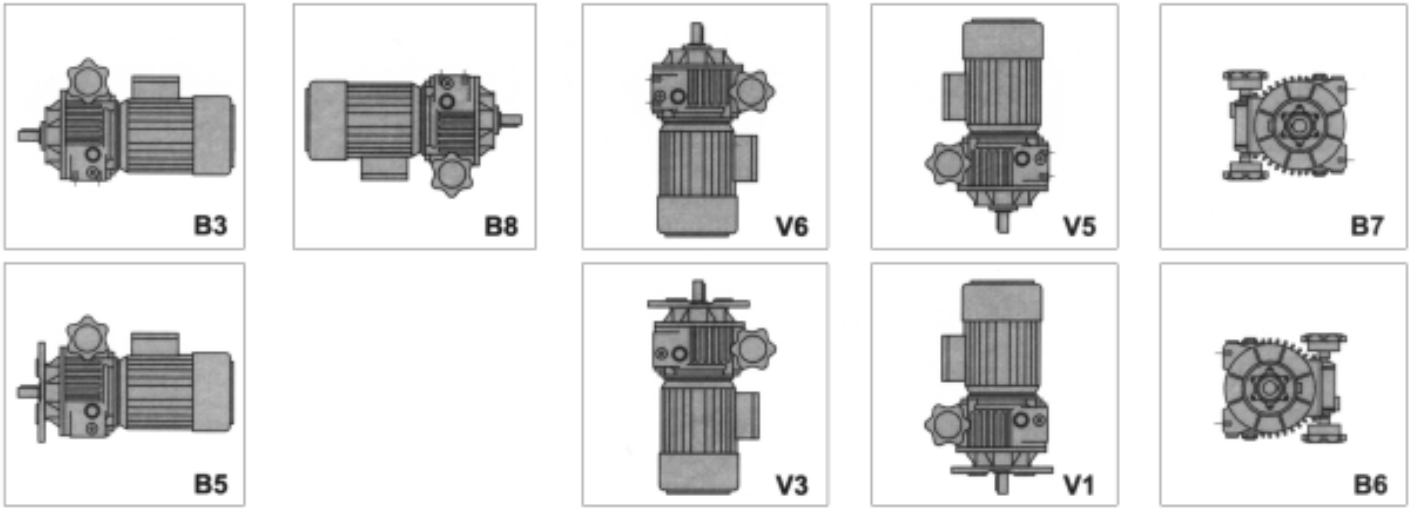
Diag. B



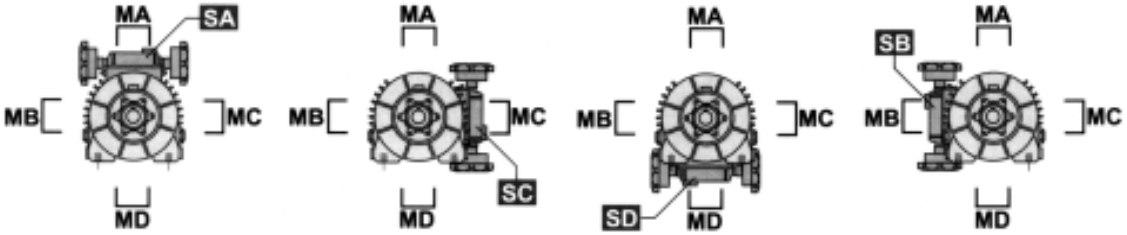
7.4 LUBRICATION

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

7.5 MOUNTING POSITIONS



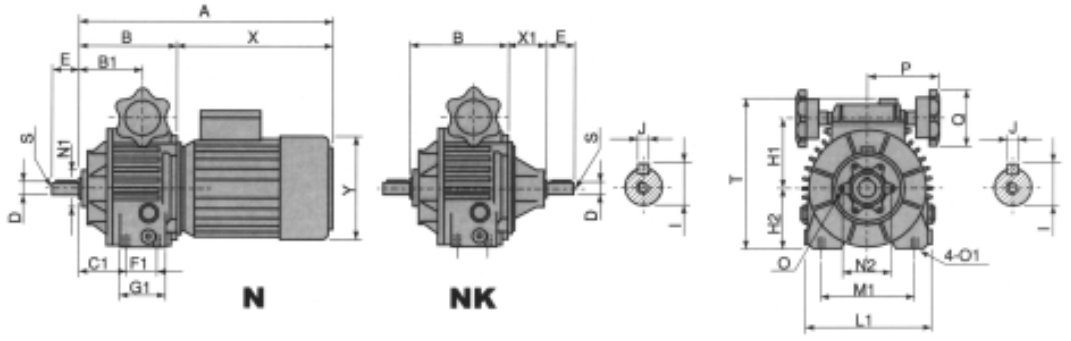
7.6 TERMINAL BOX AND SPEED CONTROL BOX POSITION



MA, MB, MC, MD
Terminal Box Position

SA, SB, SC, SD
Speed Control Box Position

7.7 DIMENSIONS



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	Weight kg
N003	302	110	66	44	11	23	36	55	76	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