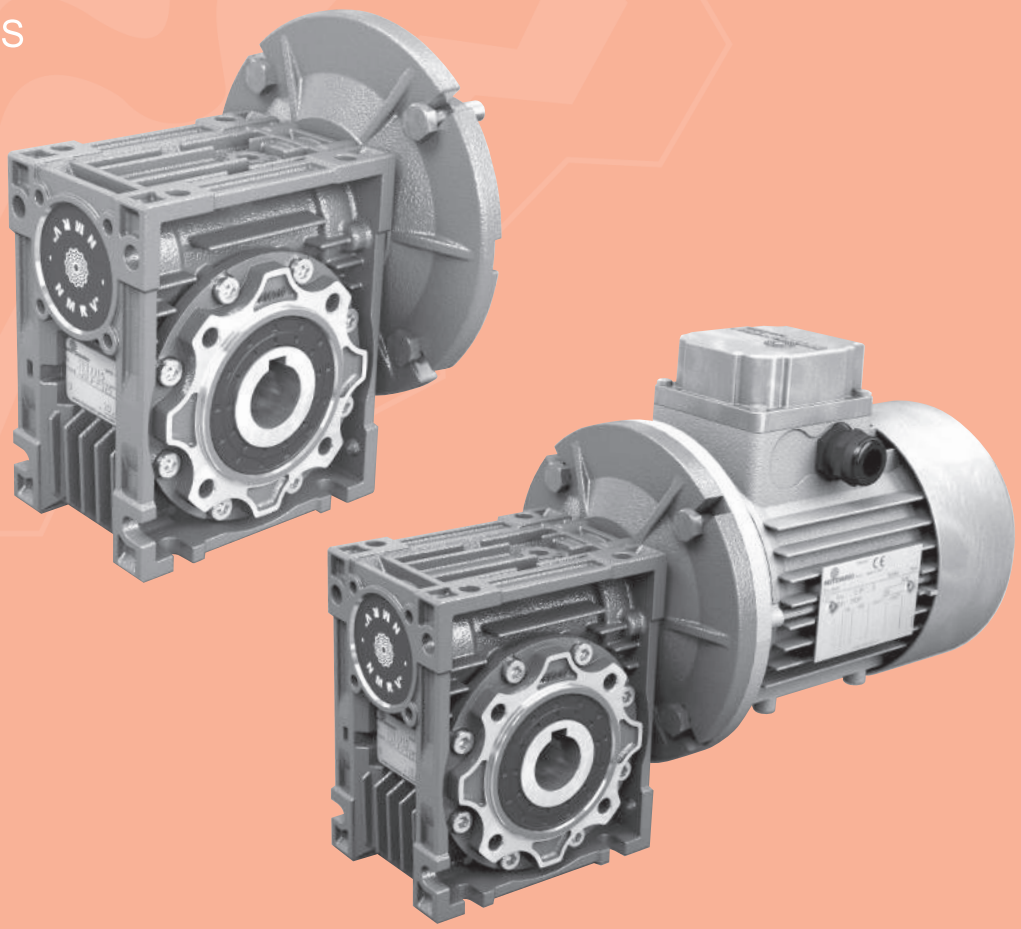
NMRV

웜 기어드 모터

Worm geared motors

VSF SERIES



MOTOVARIO®

HEART OF MOTION

명칭 / Designation

NMRV	050	FA	30	160×14	VS	125	25	B3	···
NMRV	025	FA	5	PAM				B3	
NRV	030	FB	7,5	ECE				B8	
	040	FC	10					B6	
	050	FD	15					B7	
	063	FE	20					V5	
	075		25					V6	
	090		30						
	105		40						
	130		50						
	150		60						
			80						
			100						

기어박스 타입
Gearbox type

사이즈
Size

출력프랜지
Output flange

감속비
Reduction ratio

입력 사이즈
Input dimensions

모터취부용 커플링
Fitted for motor coupling
P (PAM)
(160x14)

입력 샤프트 직경
Input shaft diameter
E (ECE)
(28)

양축 입력 샤프트
Double input shaft

Ø 출력프랜지
Ø Output flange

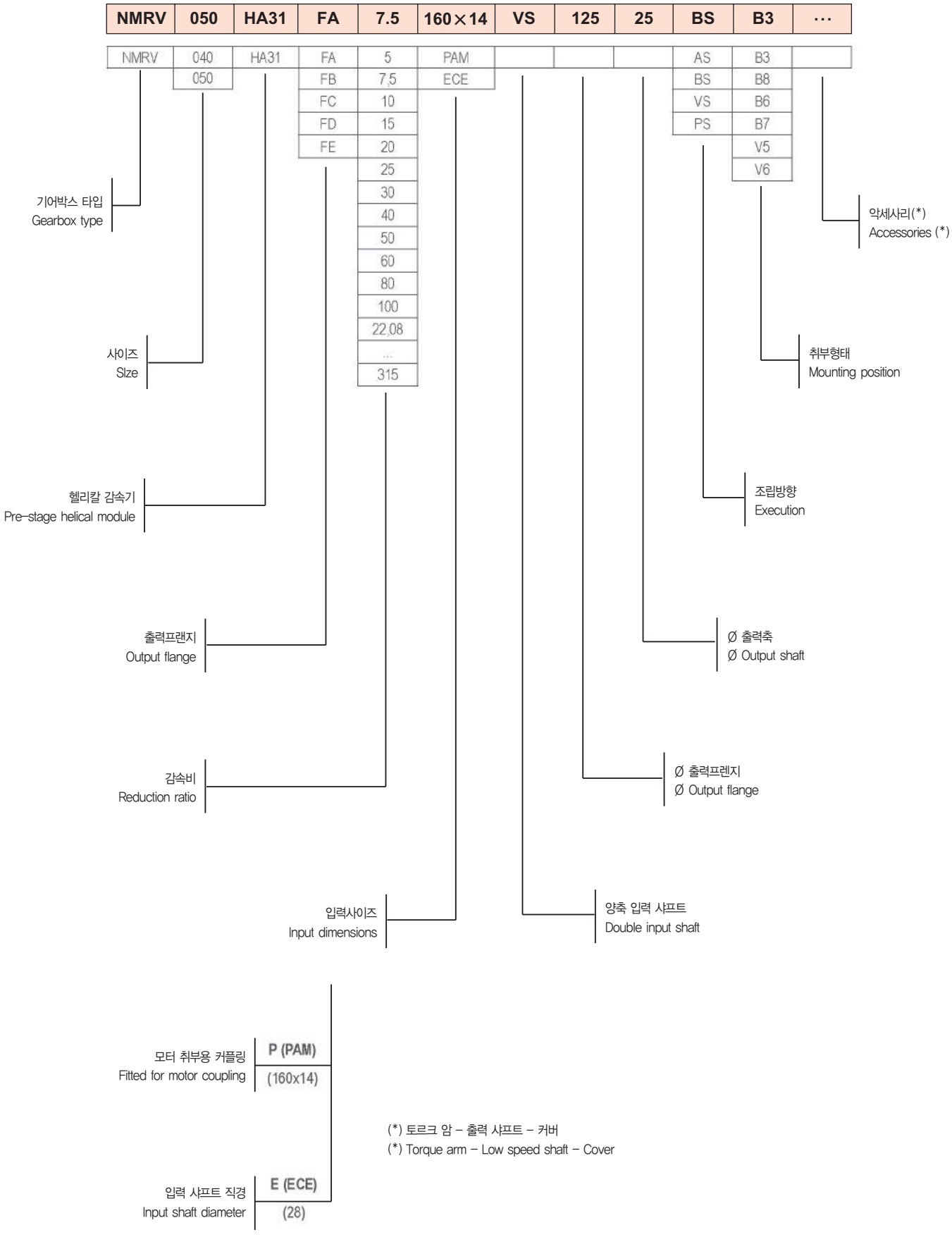
Ø 출력축
Ø Output shaft

취부형태
Mounting position

악세사리(*)
Accessories (*)

(*) 토르크 암 – 출력 샤프트 – 커버
(*) Torque arm – Low speed shaft – Cover

명칭 / Designation

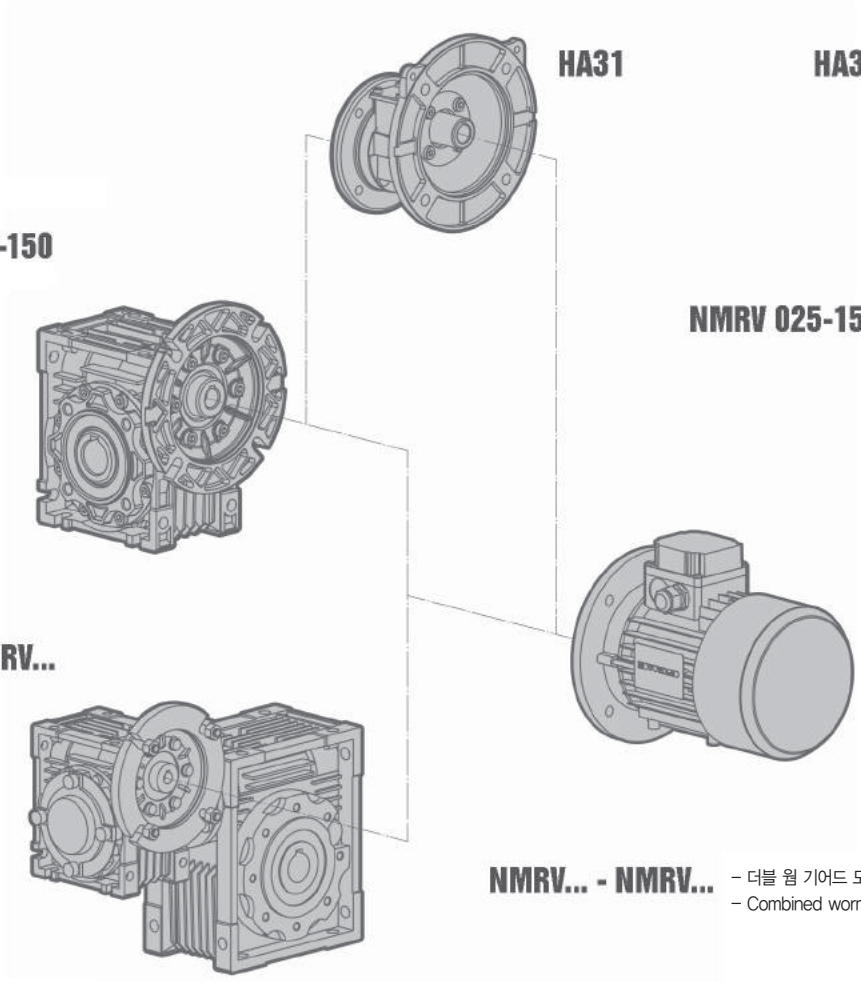


명칭 / Designation

NMRV+NMRV	050+105	FA	900	160×14	40	BS1	B3
NMRV+NMRV	025+030	FA		PAM		AS1	
NRV+NMRV	025+040	FB		ECE		AS2	
	030+040	FC				BS1	
	030+050	FD				BS2	
	030+063	FE				VS1	
	040+075					VS2	
	040+090					PS1	
	050+105					PS2	
	063+105						
	063+130						
	063+150						

- 기어박스 타입 / Gearbox type
- 2단 기어드 모터 / Combined geared motor
- 2단 감속기 / Combined gear reducer
- 사이즈 / Size
- 출력프랜지 / Output flange
- 감속비 / Reduction ratio
- 입력 사이즈 / Input dimensions
  - P(PAM) (160×14): 모터 취부용 커플링 / Fitted for motor coupling
  - E(ECE) (28): 입력 샤프트 직경 / Input shaft diameter
- Ø 출력축 / Ø Output shaft
- 조립방향 / Execution
- 취부형태 / Mounting position

NMRV 모듈방식 / NMRV-Modularity

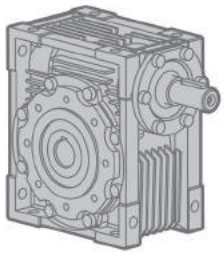


HA31 – Pre-stage 감속기(NMRV 040-050)
– Pre-stage reduction unit(NMRV 040-050)

NMRV 025-150 – 웜 기어드 모터
– Worm geared motor

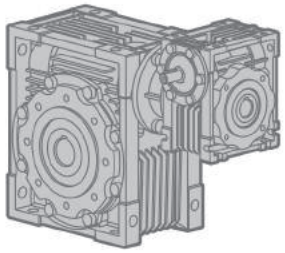
NMRV... - NMRV... – 더블 웜 기어드 모터
– Combined worm geared motor

NRV 030-150



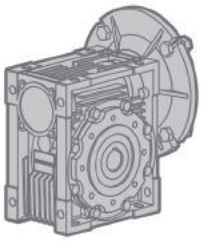
NRV 030-150 – 웜 기어 감속기
– Worm gear reducer

NRV-NMRV...

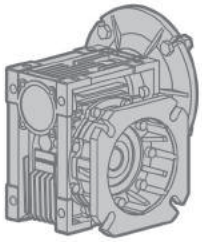


NRV... - NMRV... – 더블 웜 기어 감속기
– Combined worm gear reducer

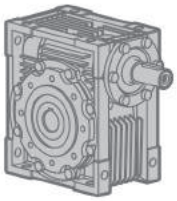
버전 / Versions



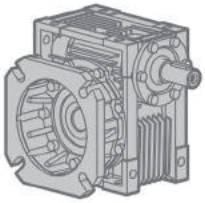
NMRV 025-150



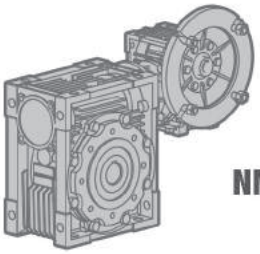
NMRV 025-150 F



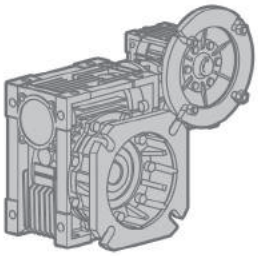
NRV 030-150



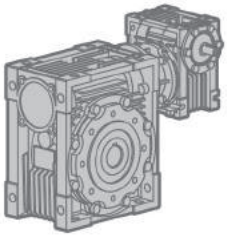
NRV 030-150 F



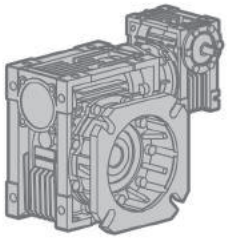
NMRV-NMRV...



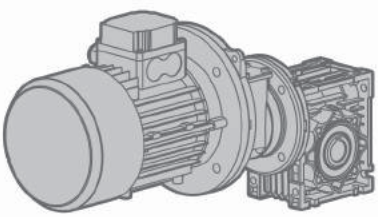
NMRV-NMRV... F



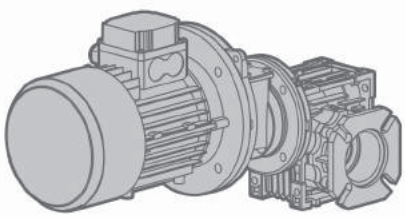
NRV-NMRV...



NRV-NMRV... F



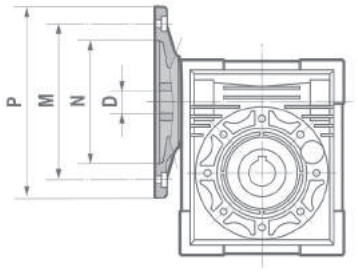
HA31+NMRV...



HA31+NMRV... F

비율에 따른 분류 / Predisposition

(*) Low profile key는 모토바리오에서 공급함.
(*) Low profile key supplied by Motovario



NMRV	PAM IEC	N	M	P	D											
					5	7.5	10	15	20	25	30	40	50	60	80	100
025	56B14	50	65	80	9	9	9	9	9	-	9	9	9	9	-	-
030	63B5	95	115	140	11	11	11	11	11	11	11	11	11	-	-	-
	63B14	60	75	90												
	56B5	80	100	120	9	9	9	9	9	9	9	9	9	9	9	-
	56B14	50	65	80												
040	71B5	110	130	160	14	14	14	14	14	14	14	14	-	-	-	-
	71B14	70	85	105												
	63B5	95	115	140	11	11	11	11	11	11	11	11	11	11	11	11
	63B14	60	75	90												
	56B5	80	100	120	-	-	-	-	-	-	-	-	9	9	9	9
050	80B5	130	165	200	19	19	19	19	19	19	19	-	-	-	-	-
	80B14	80	100	120												
	71B5	110	130	160	14	14	14	14	14	14	14	14	14	14	14	-
	71B14	70	85	105												
	63B5	95	115	140	-	-	-	-	-	-	-	11	11	11	11	11
063	90B5	130	165	200	-	24	24	24	24	24	24	-	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	19	19	19	19	19	19	19	19	19	-	-
	80B14	80	100	120												
	71B5	110	130	160	-	-	-	-	-	-	-	14	14	14	14	14
	71B14	70	85	105												
075	100/112B5	180	215	250	-	28	28	28	-	-	-	-	-	-	-	-
	100/1121B4	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	19	19	19	19	19	19	19	19
	80B14	80	100	120												
	71B5	110	130	160	-	-	-	-	-	-	-	-	14	14	14	14
090	100/112B5	180	215	250	-	28	28	28	28	28	28	-	-	-	-	-
	100/112B14	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	24	24	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	-	-	-	19	19	19	19	19
	80B14	80	100	120												
105	132B5	230	265	300	-	38*	38*	38*	38*	-	-	-	-	-	-	-
	100/112B5	180	215	250	-	28	28	28	28	28	28	28	28	28	-	-
	90B5	130	165	200	-	-	-	-	-	24	24	24	24	24	24	24
	80B5	130	165	200	-	-	-	-	-	-	-	-	-	-	19	19
130	132B5	230	265	300	-	38*	38*	38*	38*	38*	38*	38*	-	-	-	-
	100/112B5	180	215	250	-	-	-	-	-	28	28	28	28	28	28	28
	90B5	130	165	200	-	-	-	-	-	-	-	-	-	-	24	24
150	160B5	250	300	350	-	42	42	42	42	42	-	-	-	-	-	-
	132B5	230	265	300	-	-	-	-	38	38	38	38	38	38	-	-
	100/112B5	180	215	250	-	-	-	-	-	-	-	-	28	28	28	28

효율

KO

효율은 특정한 용도와 관련한 사이즈를 결정하는 것에 결정적 영향을 미치는 변수이며, 기본적으로 기어들의 설계적 요소에 결정된다. 20페이지에 제시한 메시 데이터 도표(Mesh Data Table)에는 동적(역학적) 효율성(Dynamic efficiency)의 값(n1=1400)과 정적 효율(static efficiency)의 값을 명시한다. 이러한 값들은 가동 후 입수하게 된다는 점에 유의하여야 한다.

동적 비역회전(Dynamic Irreversibility)
동적 비역회전(철회 불가능성)은 웜 샤프트를 통하여 더 이상 전달되는 동력이 없어, 출력 축이 즉시 중지하게 되는 경우에 달성된다. 이러한 상황은 ηd〈0.5의 동적 효율성을 필요로 한다.(20페이지 도표 참조)

정적 비역회전(Static Irreversibility)
정적 비역회전은(철회 불가능성), 감속기가 정지된 상태에서 출력 축에 대한 부하 적용이 동작중인 웜 샤프트에 대하여 설정되어 있지 않은 경우에 달성된다.
이러한 상황은 ηS〈0.5의 정적 효율성 필요로 한다.
(20페이지 도표 참조)

참조 : 진동과 충격은 기어 감속기의 비역회전에 영향을 미칠 수 있다.

Efficiency

UK

Efficiency is a parameter which has a major influence on the sizing of certain applications, and basically depends on gear pair design elements. The mesh data table on page20 shows dynamic efficiency(n1=1400)and static efficiency values. Remember that these values are only achieved after the unit has been run in.

Dynamic irreversibility
Dynamic irreversibility is achieved when the output shaft stops instantly when drive is no longer transmitted through the worm shaft. This condition requires a dynamic efficiency of $\eta d < 0.5$(see table on page 20).

Static irreversibility
Static irreversibility is achieved when, with the gear reducer at a standstill, the application of a load to the output shaft does not set in motion the worm shaft. This condition requires a static efficiency of $\eta d < 0.5$(see table on page 20).

N.B.:Vibrations and shocks can affect a gear reducer's irreversibility.

비역회전 / Irreversibility

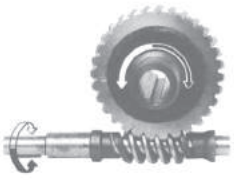
ηd	동적 비역회전	DYNAMIC IRREVERSIBILITY
〉0.6	동적역회전	dynamic reversibility
0.5÷0.6	낮은 동적역회전	low dynamic reversibility
0.4÷0.5	낮은 동적비역회전	good dynamic irreversibility
〈0.4	동적 비역회전	dynamic irreversibility

ηS	정적 비역회전	STATIC IRREVERSIBILITY
〉0.55	정적역회전	static reversibility
0.5÷0.55	낮은 정적역회전	low static reversibility
〈0.5	정적 비역회전	static irreversibility

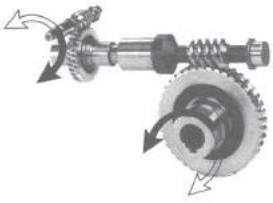
- 도표는 개략적인 비역회전 등급(Irreversibility Classes)을 제시한 것이다.
- The table shows approximate irreversibility classes.

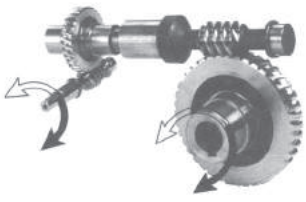
- 결속된 기어 감속기의 비역회전 상황은 가장 효율이 낮은 감속기에 의하여 주어진다.
- The irreversibility condition of combined gear reducers is given by the units with the lowest efficiency.

회전력의 방향 / Direction of rotation



NMRV-NRV





NMRV+NMRV - NRV+NMRV

- 나선(Helix)은 오른나사(right – handed)로 되어 있다.
- The helix is right-handed.

메쉬데이타 도표 / Mesh data

NRV	I	5	7.5	10	15	20	25	30	40	50	60	80	100
025	Z1	6	4	3	2	2		1	1	1	1		
	Y	35° 02′	25° 03′	19° 19′	13° 09′	10° 41′		6° 40′	5° 23′	4° 31′	3° 53′		
	Mx	1.3	1.3	1.3	1.3	0.995		1.3	0.995	0.8	0.67		
	ηd(1400)	0.87	0.85	0.83	0.79	0.75		0.67	0.62	0.58	0.55		
	ηS	0.72	0.71	0.68	0.61	0.56		0.46	0.41	0.36	0.34		
030	Z1	6	4	3	2	2	1	1	1	1	1	1	
	Y	27° 04′	18° 49′	14° 20′	9° 40′	7° 42′	5° 35′	4° 52′	3° 52′	3° 12′	2° 45′	2° 07′	
	Mx	1.44	1.44	1.44	1.44	1.09	1.7	1.44	1.09	0.89	0.74	0.56	
	ηd(1400)	0.87	0.85	0.83	0.78	0.74	0.69	0.66	0.6	0.56	0.52	0.45	
	ηS	0.72	0.67	0.63	0.55	0.5	0.43	0.39	0.35	0.31	0.27	0.23	
040	Z1	6	4	3	2	2	2	1	1	1	1	1	1
	Y	34° 19′	24° 28′	18° 51′	12° 49′	10° 23′	8° 43′	6° 29′	5° 14′	4° 23′	3° 47′	2° 57′	2° 25′
	Mx	2.06	2.06	2.06	2.06	1.57	1.27	2.06	1.57	1.27	1.06	0.81	0.65
	ηd(1400)	0.89	0.87	0.85	0.83	0.79	0.76	0.71	0.66	0.63	0.59	0.53	0.48
	ηS	0.74	0.71	0.67	0.6	0.55	0.51	0.45	0.4	0.36	0.32	0.28	0.24
050	Z1	6	4	3	2	2	2	1	1	1	1	1	1
	Y	33° 37′	23° 54′	18° 23′	12° 30′	10° 06′	8° 29′	6° 19′	5° 06′	4° 16′	3° 40′	2° 52′	2° 21′
	Mx	2.56	2.56	2.56	2.56	1.95	1.58	2.56	1.95	1.58	1.32	1	0.8
	ηd(1400)	0.89	0.88	0.87	0.83	0.8	0.77	0.73	0.68	0.64	0.6	0.54	0.5
	ηS	0.74	0.7	0.66	0.59	0.55	0.51	0.44	0.39	0.35	0.32	0.27	0.23
063	Z1		4	3	2	2	2	1	1	1	1	1	1
	Y		24° 31′	18° 53′	12° 51′	10° 25′	8° 45′	6° 30′	5° 15′	4° 24′	3° 47′	2° 58′	2° 26′
	Mx		3.25	3.25	3.25	2.48	2	3.25	2.48	2	1.68	1.27	1.02
	ηd(1400)		0.89	0.87	0.84	0.82	0.79	0.75	0.71	0.67	0.63	0.58	0.52
	ηS		0.71	0.67	0.6	0.55	0.51	0.45	0.4	0.36	0.33	0.28	0.24
075	Z1		4	3	2	2	2	1	1	1	1	1	1
	Y		26° 17′	20° 20′	13° 52′	11° 18′	9° 32′	7° 02′	5° 42′	4° 48′	4° 08′	3° 14′	2° 40′
	Mx		3.94	3.94	3.94	3	2.42	3.94	3	2.42	2.03	1.54	1.24
	ηd(1400)		0.89	0.88	0.86	0.83	0.81	0.77	0.73	0.7	0.66	0.61	0.56
	ηS		0.71	0.68	0.61	0.57	0.53	0.46	0.42	0.38	0.35	0.29	0.26
090	Z1		4	3	2	2	2	1	1	1	1	1	1
	Y		29° 11′	22° 44′	15° 36′	12° 50′	10° 54′	7° 57′	6° 30′	5° 30′	4° 46′	3° 45′	3° 06′
	Mx		4.84	4.84	4.84	3.69	2.98	4.84	3.69	2.98	2.5	1.89	1.52
	ηd(1400)		0.9	0.89	0.87	0.85	0.83	0.79	0.76	0.73	0.7	0.64	0.6
	ηS		0.73	0.7	0.64	0.6	0.56	0.49	0.45	0.41	0.38	0.32	0.28
105	Z1		4	3	2	2	2	1	1	1	1	1	1
	Y		28° 15′	21° 57′	15° 02′	14° 41′	12° 34′	7° 39′	7° 28′	6° 22′	5° 32′	4° 24′	3° 39′
	Mx		5.875	5.875	5.875	4.62	3.73	5.875	4.62	3.73	3.13	2.37	1.91
	ηd(1400)		0.9	0.89	0.87	0.86	0.85	0.8	0.79	0.76	0.73	0.68	0.64
	ηS		0.72	0.69	0.63	0.62	0.59	0.48	0.48	0.44	0.41	0.36	0.32
130	Z1		4	3	2	2	2	1	1	1	1	1	1
	Y		28° 41′	22° 19′	15° 18′	13° 52′	11° 49′	7° 47′	7° 02′	5° 58′	5° 11′	4° 07′	3° 24′
	Mx		6.97	6.97	6.97	5.4	4.37	6.97	5.4	4.37	3.67	2.77	2.23
	ηd(1400)		0.91	0.89	0.87	0.87	0.85	0.81	0.79	0.76	0.73	0.69	0.65
	ηS		0.72	0.69	0.63	0.61	0.58	0.49	0.46	0.43	0.39	0.34	0.3
150	Z1		6	4	3	2	2	2	1	1	1	1	1
	Y		32° 09′	24° 35′	17° 27′	12° 53′	11° 19′	9° 50′	6° 32′	5° 43′	4° 57′	3° 55′	3° 14′
	Mx		5.5	6.155	5.5	6.155	5	4.193	6.155	5	4.193	3.17	2.55
	ηd(1400)		0.91	0.9	0.88	0.87	0.85	0.84	0.79	0.77	0.74	0.69	0.65
	ηS		0.73	0.71	0.66	0.6	0.57	0.54	0.45	0.42	0.39	0.33	0.29

디자인 특성 HA31

KO

HA31은 1단 헬리컬 기어 감속기로 NMRV040과 NMRV050에
Ø140프렌지로 결합하여 중간(pre-stage)감속기로 사용 할 수 있다.

재질(Materials)
열경화 처리를 하고 연마된 기어들 20MnCrS(UNI7846)

Design Features

UK

HA31 is the single stage helical gear reducer available
as pre-stage for the worm gear boxes NMRV040
and NMRV050 coupled with Ø140 flange.

Materials
Gears 20MnCr5 (UNI7846) hardened and tempered
with shaved profile.

HA31+NMRV – Predisposition

HA31 i_1	NMRV 040 i_2	$i_1 \times i_2$	63	71	80
2.94	7.5	22,08	B5	B5	B5
4.75	5	23,75	B5	B5	B5
5.10	5	25,50	B5	B5	
2.94	10	29,44	B5	B5	
6.30	5	31,50	B5	B5	
4.75	7.5	35,63	B5	B5	
5.45	7.5	40,91	B5	B5	
2.94	15	44,17	B5	B5	
4.75	10	47,50	B5	B5	
5.45	10	54,55	B5	B5	
2.94	20	58,89	B5	B5	
6.30	10	63,00	B5	B5	
4.75	15	71,25	B5	B5	
7.88	10	78,75	B5		
2.94	30	88,33	B5		
6.30	15	94,50	B5		
5.10	20	102,00	B5		
5.45	20	109,09	B5		
7.88	15	118,13	B5		
5.10	25	127,50	B5		
4.75	30	142,50	B5		
3.87	40	154,67	B5		
5.45	30	163,64	B5		
6.30	30	189,00	B5		
5.10	40	204,00	B5		

HA31 i_1	NMRV 050 i_2	$i_1 \times i_2$	63	71	80
2.94	7.5	22,08	B5	B5	B5
4.75	5	23,75	B5	B5	B5
5.10	5	25,50	B5	B5	
2.94	10	29,44	B5	B5	B5
6.30	5	31,50	B5	B5	
4.75	7.5	35,63	B5	B5	B5
5.45	7.5	40,91	B5	B5	
2.94	15	44,17	B5	B5	B5
4.75	10	47,50	B5	B5	B5
5.45	10	54,55	B5	B5	
2.94	20	58,89	B5	B5	
6.30	10	63,00	B5	B5	
4.75	15	71,25	B5	B5	
7.88	10	78,75	B5	B5	
2.94	30	88,33	B5	B5	
6.30	15	94,50	B5	B5	
5.10	20	102,00	B5	B5	
5.45	20	109,09	B5	B5	
7.88	15	118,13	B5	B5	
5.10	25	127,50	B5	B5	
4.75	30	142,50	B5	B5	
3.87	40	154,67	B5	B5	
5.45	30	163,64	B5	B5	
6.30	30	189,00	B5		
5.10	40	204,00	B5		
7.88	30	236,25	B5		
6.30	40	252,00	B5		
5.45	50	272,73	B5		
4.75	60	285,00	B5		
6.30	50	315,00	B5		

NMRV 모터 취부 방법

KO

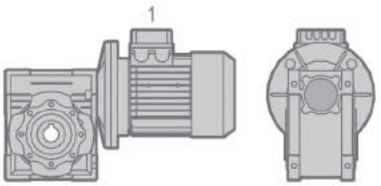
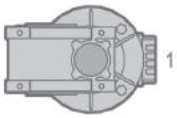
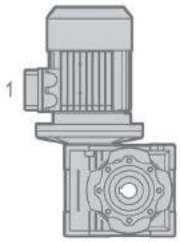
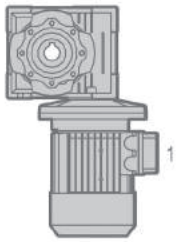
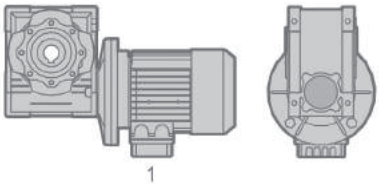
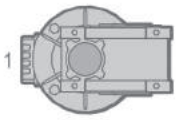
모터 없이 감속기를 공급받는 경우, 모터 취부를 정확히 하기 위해서
다음 사항을 따라야 합니다.
모터 축과 플랜지의 허용 오차가 IEC규격과 일치 하는지 확인합니다.
모터 축, spigot, 표면을 먼지나 페인트 흔적이 없도록 주의깊게 청소합니다.
모터 축에 슬리브를 장착할 때 과도한 힘에 의한 모터 축과 베어링에 손상이 가지 않도록 조립장비 사용이 필요합니다.
모터나 베어링에 손상이 가지 않도록 위해서 항상 올바른 방법으로 조립하고 사용한다.
모터 키 조정은 제공되지 않습니다.

Motor mounting with PAM flange – NMRV

UK

When the unit is supplied without motor, to ensure
the correct assembly of the electric motor, it is necessary to follow reccomendations below.
Check that the tolerances for the motor shaft and flange correspond to the latest IEC standard.
Carefully clean the motor shaft, spigot and surfaces of the flange removing any traces of paint and dirt.
Proceed to the sleeve mountage to the motor shaft taking care to ensure the motor shaft and bearings are not damaged by avoiding excessive force and where necessary using assembly equipment.
Always use good procedures and practises that ensure correct operation without risking damage to the motor or unit bearings. Motor key adjustment is not provided.

NMRV – 취부방향 / Mounting positions

NMRV - NRV			
NMRV...U - B3	**B6**	**V5**	**V6**
			
B8	**B7**		
			

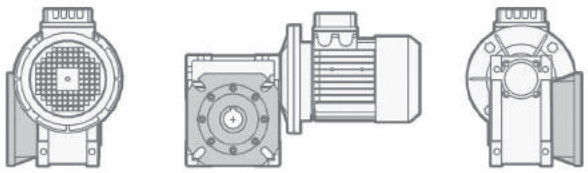
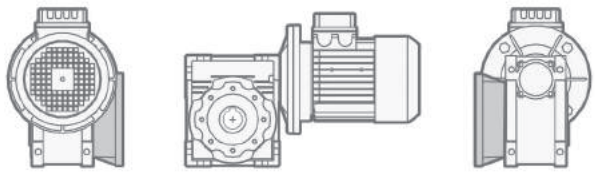
- " U " 버전은 NMRV 025-075 및 NRV 030-063의 사이즈와 연관되어 있다. 이러한 사이즈들의 경우, 취부방향을 반드시 지정할 필요는 없다.
- "U" version is related to sizes from NMRV 025-075 and NRV 030-063. For these sizes it is not necessary to specify mounting position.

- 수직 위치에 관한 내용은 3페이지를 참조하도록 한다.
- For vertical positions, check with pages 3 .

- 별도로 명시하지 않을 경우, 기본적인 취부방향은 B3로 한다.
- Unless specified otherwise, the standard positions are B3.

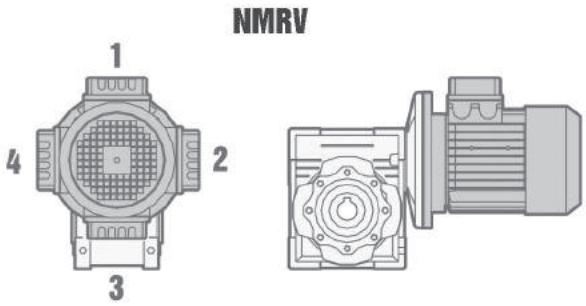
- 위치가 확정되지 않은 경우, 당사에 기술서비스 지원을 요청하도록 한다.
- For positions not envisaged, it is necessary to call our Technical Service.

Flange F-FL

D	S
	

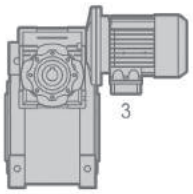
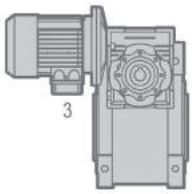
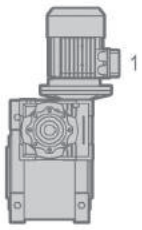
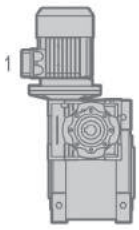
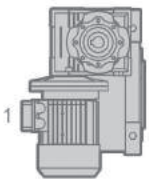
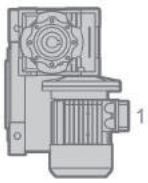
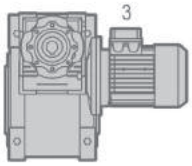
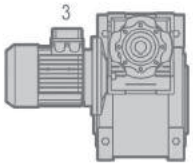
- 별도로 명시하지 않을 경우, 감속기는 B3에 대하여 명시된 위치 D에 플랜지가 설치되어 공급된다.
- Unless specified otherwise, the gear reducer is supplied with the flange in pos. D referred to position B3.

NMRV – 터미널 박스 위치 / Execution



- 별도로 명시하지 않을 경우, 1번으로 조립되어 제공된다.
- In the case of specific requirements, when ordering, specify the position of the terminal box as shown in the diagram.

NMRV + NMRV – 더블웜 조립방향 / Execution

NMRV-NMRV / NRV-NMRV			
AS1	AS2	VS1	VS2
			
PS1	PS2	BS1	BS2
			

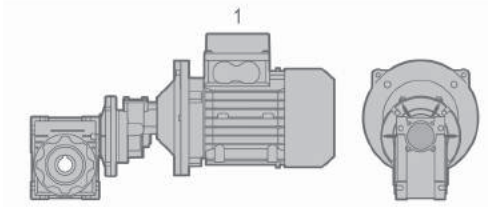
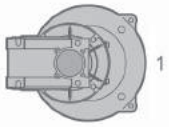
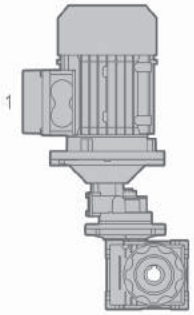
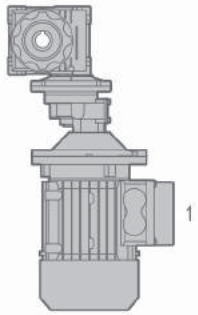
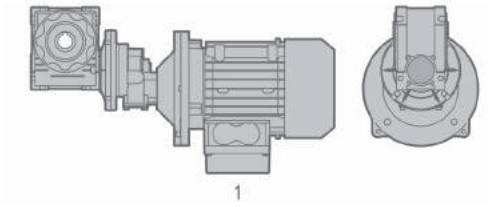
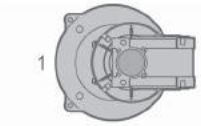
- 2차 기어 감속기와 관련한 1차 감속기의 위치는 버전에 따라 달라집니다.
- The position of the 1st reducer with respect to the 2nd gear reducer depend on the version.

- 특정 조립방향은 2차 감속기에 대하여 지정된다. 설치 가능한 조립방향은 24페이지를 참조하도록 한다.
- The specified mounting position refers to the 2nd gear reducer. See page 24 for the possible mounting positions.

- 별도로 명시하지 않을 경우, 조립방향은 BS2에 맞추어 공급된다.
- Unless otherwise specified at the time of order, combination groups are supplied in version BS2.

HA31 + NMRV 취부방향 / HA31 + NMRV Mounting positions

HA31 - NMRV

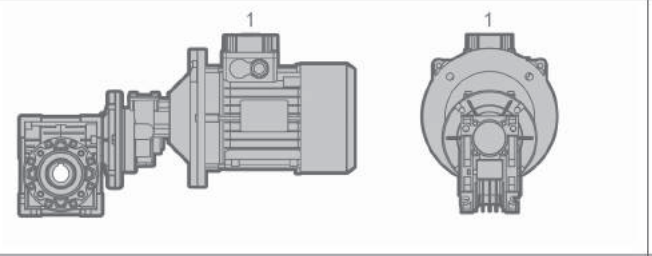
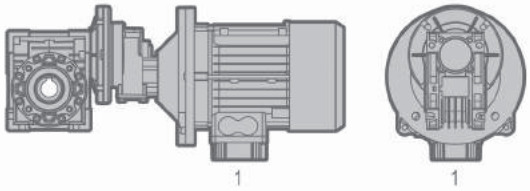
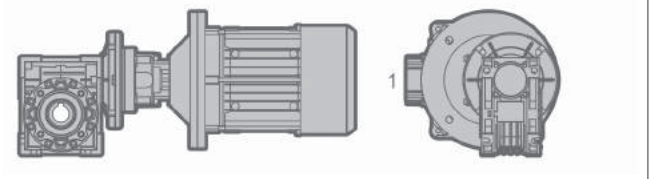
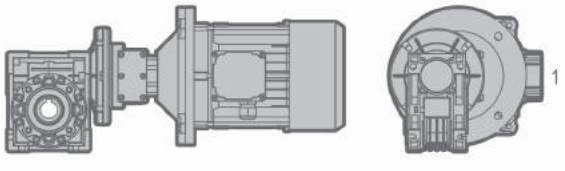
B3	B6	V5	V6
			
B8	**B7**		
			

- 취부방식은 "U" 이고, 모든 취부방식에 사용 가능합니다.
- The mounting position is U and it is valid for all mounting positions.

- 예상 장착 위치에 취부합니다. 그렇지 않을 경우 당사 기술부에 문의합니다.
- Mount the unit in the expected mounting position. Otherwise contact our Technical Service.

- 취부방식이 명시되지 않은 경우, 터미널 박스는 position 1 으로 공급된다.
- Unless otherwise specified, the gear reducer is supplied with terminal box in position 1.

HA31 + NMRV 모터 조립방향 / HA31 + NMRV Execution

<table>
<tr><th colspan="2">HA31 - NMRV</th></tr>
<tr><th>BS</th><th>AS</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><th>VS</th><th>PS</th></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

- 취부방식이 명시되지 않은 경우, 기본 취부방향은 BS/B3입니다.
- Unless specified otherwise, the standard positions are BS/B3.

- 취부방식이 명시되지 않은 경우, 터미널 박스는 position 1으로 공급된다.
- Unless otherwise specified, the gear reducer is supplied with terminal box in position 1.

- 참조 : 주문시 항상 취부방식과 조립방향을 지정해 주시기 바랍니다.
- N.B. : When ordering, please always specify execution and mounting position.

NMRV – 모터용량에 따른 분류 / Performance

0,06kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	2	6,2	5,0	NMRV025	56A4	439
186,7	3	4,2	7,5	NMRV025	56A4	503
140,0	3	3,5	10,0	NMRV025	56A4	553
93,3	5	2,5	15,0	NMRV025	56A4	633
70,0	6	2,0	20,0	NMRV025	56A4	697
46,7	8	1,6	30,0	NMRV025	56A4	798
35,0	10	1,3	40,0	NMRV025	56A4	878
28,0	12	0,9	50,0	NMRV025	56A4	946
23,3	14	0,7	60,0	NMRV025	56A4	1006
280,0	2	10,7	5,0	NMRV030	56A4	597
186,7	3	7,3	7,5	NMRV030	56A4	683
140,0	3	5,6	10,0	NMRV030	56A4	752
93,3	5	4,0	15,0	NMRV030	56A4	861
70,0	6	3,0	20,0	NMRV030	56A4	948
56,0	7	3,1	25,0	NMRV030	56A4	1021
46,7	8	2,6	30,0	NMRV030	56A4	1085
35,0	10	1,9	40,0	NMRV030	56A4	1194
28,0	11	1,6	50,0	NMRV030	56A4	1286
23,3	13	1,3	60,0	NMRV030	56A4	1367
17,5	15	0,9	80,0	NMRV030	56A4	1504
14,0	25	1,3	100,0	NMRV025/030	56A4	1620
9,3	32	0,9	150,0	NMRV025/030	56A4	1830
7,0	41	0,7	200,0	NMRV025/030	56A4	1830
5,6	44	0,8	250,0	NMRV025/030	56A4	1830
4,7	59	1,2	300,0	NMRV025/040	56A4	3490
3,5	71	0,9	400,0	NMRV025/040	56A4	3490
2,8	82	0,7	500,0	NMRV025/040	56A4	3490
2,3	101	0,6	600,0	NMRV025/040	56A4	3490
1,9	116	0,5	750,0	NMRV025/040	56A4	3490
1,6	143	0,5	900,0	NMRV025/040	56A4	3490
1,2	171	0,4	1200,0	NMRV025/040	56A4	3490
0,9	197	0,3	1500,0	NMRV025/040	56A4	3490
0,8	217	0,3	1800,0	NMRV025/040	56A4	3490
0,6	268	0,2	2400,0	NMRV025/040	56A4	3490
0,5	324	0,2	3000,0	NMRV025/040	56A4	3490
0,4	294	0,1	4000,0	NMRV025/040	56A4	3490
0,3	356	0,1	5000,0	NMRV025/040	56A4	3490
4,7	60	1,2	300,0	NMRV030/040	56A4	3490
3,5	72	0,9	400,0	NMRV030/040	56A4	3490
2,8	98	0,6	500,0	NMRV030/040	56A4	3490
2,3	107	0,7	600,0	NMRV030/040	56A4	3490
1,9	125	0,6	750,0	NMRV030/040	56A4	3490
1,6	143	0,5	900,0	NMRV030/040	56A4	3490
1,2	172	0,4	1200,0	NMRV030/040	56A4	3490
0,9	203	0,4	1500,0	NMRV030/040	56A4	3490
0,8	226	0,3	1800,0	NMRV030/040	56A4	3490
0,6	271	0,2	2400,0	NMRV030/040	56A4	3490
0,4	312	0,2	3200,0	NMRV030/040	56A4	3490
0,4	367	0,1	4000,0	NMRV030/040	56A4	3490
0,3	401	0,1	5000,0	NMRV030/040	56A4	3490
1,6	146	1,0	900,0	NMRV030/050	56A4	4840
1,2	175	0,7	1200,0	NMRV030/050	56A4	4840
0,9	206	0,7	1500,0	NMRV030/050	56A4	4840
0,8	230	0,6	1800,0	NMRV030/050	56A4	4840
0,6	276	0,4	2400,0	NMRV030/050	56A4	4840
0,5	319	0,4	3000,0	NMRV030/050	56A4	4840
0,4	367	0,2	4000,0	NMRV030/050	56A4	4840
0,3	409	0,2	4800,0	NMRV030/050	56A4	4840

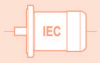
0,06kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
0,9	211	1,0	1500,0	NMRV030/063	56A4	6270
0,8	233	0,8	1800,0	NMRV030/063	56A4	6270
0,6	286	0,8	2400,0	NMRV030/063	56A4	6270
0,5	332	0,7	3000,0	NMRV030/063	56A4	6270
0,4	385	0,4	4000,0	NMRV030/063	56A4	6270
0,3	424	0,4	5000,0	NMRV030/063	56A4	6270
0,6	342	1,1	2400,0	NMRV040/075	56A4	7380
0,5	391	0,8	3000,0	NMRV040/075	56A4	7380
0,4	464	0,5	4000,0	NMRV040/075	56A4	7380
0,3	516	0,4	5000,0	NMRV040/075	56A4	7380
0,5	420	1,3	3000,0	NMRV040/090	56A4	8180
0,4	505	0,9	4000,0	NMRV040/090	56A4	8180
0,3	567	0,7	5000,0	NMRV040/090	56A4	8180

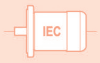
0,09kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	3	4,1	5,0	NMRV025	56B4	439
186,7	4	2,8	7,5	NMRV025	56B4	503
140,0	5	2,4	10,0	NMRV025	56B4	553
93,3	7	1,6	15,0	NMRV025	56B4	633
70,0	9	1,3	20,0	NMRV025	56B4	697
46,7	12	1,1	30,0	NMRV025	56B4	798
35,0	15	0,9	40,0	NMRV025	56B4	878
280,0	3	7,1	5,0	NMRV030	56B4	597
186,7	4	4,9	7,5	NMRV030	56B4	683
140,0	5	3,7	10,0	NMRV030	56B4	752
93,3	7	2,6	15,0	NMRV030	56B4	861
70,0	9	2,0	20,0	NMRV030	56B4	948
56,0	11	2,1	25,0	NMRV030	56B4	1021
46,7	12	1,7	30,0	NMRV030	56B4	1085
35,0	15	1,3	40,0	NMRV030	56B4	1194
28,0	17	1,0	50,0	NMRV030	56B4	1286
23,3	19	0,8	60,0	NMRV030	56B4	1367
14,0	38	0,8	100,0	NMRV025/030	56B4	1620
9,3	49	0,6	150,0	NMRV025/030	56B4	1830
7,0	62	0,5	200,0	NMRV025/030	56B4	1830
5,6	66	0,5	250,0	NMRV025/030	56B4	1830
4,7	75	0,4	300,0	NMRV025/030	56B4	1830
3,5	107	0,3	400,0	NMRV025/030	56B4	1830
2,8	115	0,3	500,0	NMRV025/030	56B4	1830
2,3	135	0,2	600,0	NMRV025/030	56B4	1830
1,9	151	0,2	750,0	NMRV025/030	56B4	1830
1,6	178	0,2	900,0	NMRV025/030	56B4	1830
1,2	212	0,1	1200,0	NMRV025/030	56B4	1830
0,9	247	0,1	1500,0	NMRV025/030	56B4	1830
0,8	304	0,1	1800,0	NMRV025/030	56B4	1830
0,6	340	0,1	2400,0	NMRV025/030	56B4	1830
0,5	405	0,1	3000,0	NMRV025/030	56B4	1830
28,0	19	2,2	50,0	NMRV040	56B4	2475
23,3	22	1,8	60,0	NMRV040	56B4	2630
17,5	26	1,3	80,0	NMRV040	56B4	2895
14,0	29	1,0	100,0	NMRV040	56B4	3118

0,09kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
3,5	110	1,1	400,0	NMRV030/050	56B4	4840
2,8	127	0,9	500,0	NMRV030/050	56B4	4840
2,3	164	0,9	600,0	NMRV030/050	56B4	4840
1,9	191	0,8	750,0	NMRV030/050	56B4	4840
1,6	219	0,7	900,0	NMRV030/050	56B4	4840
1,6	207	1,0	900,0	NMRV030/063	56B4	6270
1,2	272	0,8	1200,0	NMRV030/063	56B4	6270
0,9	316	0,7	1500,0	NMRV030/063	56B4	6270
0,9	371	1,1	1500,0	NMRV040/075	56B4	7380
0,8	417	0,9	1800,0	NMRV040/075	56B4	7380
0,6	513	0,7	2400,0	NMRV040/075	56B4	7380
0,5	587	0,5	3000,0	NMRV040/090	56B4	8180
0,4	696	0,4	4000,0	NMRV040/090	56B4	8180

0,18kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
280,0	5	3,6	5,0	NMRV030	63B4	597
186,7	8	2,4	7,5	NMRV030	63B4	683
140,0	10	1,9	10,0	NMRV030	63B4	752
93,3	14	1,3	15,0	NMRV030	63B4	861
70,0	18	1,0	20,0	NMRV030	63B4	948
56,0	21	1,0	25,0	NMRV030	63B4	1021
46,7	24	0,9	30,0	NMRV030	63B4	1085
70,0	19	2,2	20,0	NMRV040	63B4	1824
56,0	23	1,7	25,0	NMRV040	63B4	1964
46,7	26	1,8	30,0	NMRV040	63B4	2087
35,0	32	1,4	40,0	NMRV040	63B4	2298
28,0	39	1,1	50,0	NMRV040	63B4	2475
23,3	43	0,9	60,0	NMRV040	63B4	2630
35,0	33	2,5	40,0	NMRV050	63B4	3153
28,0	39	2,0	50,0	NMRV050	63B4	3397
23,3	44	1,6	60,0	NMRV050	63B4	3610
17,5	53	1,2	80,0	NMRV050	63B4	3973
14,0	61	0,9	100,0	NMRV050	63B4	4280
3,5	228	1,0	400,0	NMRV030/063	63B4	6270
2,8	265	0,8	500,0	NMRV030/063	63B4	6270
2,3	372	1,0	600,0	NMRV040/075	63B4	7380
1,9	448	0,9	750,0	NMRV040/075	63B4	7380
1,6	502	0,8	900,0	NMRV040/075	63B4	7380
1,2	649	0,9	1200,0	NMRV040/090	63B4	8180
0,9	758	0,7	1500,0	NMRV040/090	63B4	8180
0,8	888	1,2	1800,0	NMRV050/105	63B4	10320
0,6	1149	0,9	2400,0	NMRV050/105	63B4	10320
63,0	22,0	2,6	22,10	HA31+NMRV040	63B4	1885
59,0	24,0	2,6	23,80	HA31+NMRV040	63B4	1931
55,0	25,0	2,5	25,50	HA31+NMRV040	63B4	1977
48,0	28,0	2,1	29,40	HA31+NMRV040	63B4	2074
44,0	31,0	2,1	31,50	HA31+NMRV040	63B4	2122
39,0	34,0	1,9	35,60	HA31+NMRV040	63B4	2211
34,0	39,,0	1,8	40,90	HA31+NMRV040	63B4	2315
32,0	40,0	1,6	44,20	HA31+NMRV040	63B4	2375
29,0	44,0	1,5	47,50	HA31+NMRV040	63B4	2433

0,18kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
26,0	51,0	1,4	54,50	HA31+NMRV040	63B4	2548
24,0	51,0	1,1	58,90	HA31+NMRV040	63B4	2614
22,0	58,0	1,2	63,00	HA31+NMRV040	63B4	2673
20,0	63,0	1,1	71,30	HA31+NMRV040	63B4	2785
18,0	72,0	1,0	78,80	HA31+NMRV040	63B4	2880
16,0	67,0	0,9	88,30	HA31+NMRV040	63B4	2992
15,0	82,0	0,9	94,50	HA31+NMRV040	63B4	3060
14,0	85,0	0,7	102,00	HA31+NMRV040	63B4	3139
13,0	91,0	0,7	109,10	HA31+NMRV040	63B4	3210
12,0	103,0	0,7	118,10	HA31+NMRV040	63B4	3296
59,0	24,0	3,0	23,80	HA31+NMRV050	63B4	2650
55,0	25,0	2,9	25,50	HA31+NMRV050	63B4	2714
44,0	31,0	2,4	31,50	HA31+NMRV050	63B4	2912
39,0	35,0	3,0	35,60	HA31+NMRV050	63B4	3034
34,0	40,0	2,8	40,90	HA31+NMRV050	63B4	3177
32,0	40,0	2,8	44,20	HA31+NMRV050	63B4	3259
29,0	45,0	2,9	47,50	HA31+NMRV050	63B4	3339
26,0	52,0	2,6	54,50	HA31+NMRV050	63B4	3497
24,0	52,0	2,0	58,90	HA31+NMRV050	63B4	3587
22,0	59,0	2,3	63,00	HA31+NMRV050	63B4	3669
20,0	63,0	2,0	71,30	HA31+NMRV050	63B4	3823
18,0	74,0	1,8	78,80	HA31+NMRV050	63B4	3952
16,0	68,0	1,7	88,30	HA31+NMRV050	63B4	4107
15,0	83,0	1,6	94,50	HA31+NMRV050	63B4	4200
14,0	85,0	1,3	102,00	HA31+NMRV050	63B4	4308
13,0	91,0	1,3	109,10	HA31+NMRV050	63B4	4406
12,0	103,0	1,3	118,10	HA31+NMRV050	63B4	4524
11,0	101,0	1,0	127,50	HA31+NMRV050	63B4	4641
9,8	105,0	1,3	142,50	HA31+NMRV050	63B4	4816
9,0	105,0	1,1	154,70	HA31+NMRV050	63B4	4840
8,6	119,0	1,2	163,60	HA31+NMRV050	63B4	4840
7,4	136,0	1,0	189,00	HA31+NMRV050	63B4	4840
6,9	135,0	0,9	204,00	HA31+NMRV050	63B4	4840
5,9	169,0	0,9	236,30	HA31+NMRV050	63B4	4840
5,6	163,0	0,7	252,00	HA31+NMRV050	63B4	4840
14,0	81,0	1,7	100,00	NMRV030/050	63B4	3800
9,3	112,0	1,2	150,00	NMRV030/050	63B4	4350
7,0	141,0	0,9	200,00	NMRV030/050	63B4	4788
4,7	183,0	0,8	300,00	NMRV030/050	63B4	4840
14,0	82,0	1,7	100,00	NMRV040/050	63B4	3800
9,3	114,0	1,2	150,00	NMRV040/050	63B4	4350
7,0	144,0	0,8	200,00	NMRV040/050	63B4	4788
4,7	188,0	0,8	300,00	NMRV040/050	63B4	4840

0,22kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	7,0	2,9	5,00	NMRV030	63C4	597
187,0	10,0	2,0	7,50	NMRV030	63C4	683
140,0	12,0	1,5	10,00	NMRV030	63C4	752
93,0	18,0	1,1	15,00	NMRV030	63C4	861
70,0	22,0	0,8	20,00	NMRV030	63C4	948
56,0	26,0	0,8	25,00	NMRV030	63C4	1021
47,0	30,0	0,7	30,00	NMRV030	63C4	1085

0,22kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
140,0	13,0	3,4	10,00	NMRV040	63C4	1447
93,0	19,0	2,4	15,00	NMRV040	63C4	1657
70,0	24,0	1,8	20,00	NMRV040	63C4	1824
56,0	29,0	1,4	25,00	NMRV040	63C4	1964
47,0	32,0	1,5	30,00	NMRV040	63C4	2087
35,0	40,0	1,1	40,00	NMRV040	63C4	2298
28,0	47,0	0,9	50,00	NMRV040	63C4	2475
23,0	53,0	0,7	60,00	NMRV040	63C4	2630
35,0	41,0	2,0	40,00	NMRV050	63C4	3153
28,0	48,0	1,6	50,00	NMRV050	63C4	3397
23,0	54,0	1,3	60,00	NMRV050	63C4	3610
18,0	65,0	1,0	80,00	NMRV050	63C4	3973
14,0	75,0	0,7	100,00	NMRV050	63C4	4280
63,0	27,0	2,2	22,10	HA31+NMRV040	63C4	1885
59,0	29,0	2,2	23,80	HA31+NMRV040	63C4	1931
55,0	31,0	2,1	25,50	HA31+NMRV040	63C4	1977
48,0	35,0	1,7	29,40	HA31+NMRV040	63C4	2074
44,0	38,0	1,8	31,50	HA31+NMRV040	63C4	2122
39,0	42,0	1,6	35,60	HA31+NMRV040	63C4	2211
34,0	48,0	1,4	40,90	HA31+NMRV040	63C4	2315
32,0	49,0	1,3	44,20	HA31+NMRV040	63C4	2375
29,0	54,0	1,2	47,50	HA31+NMRV040	63C4	2433
26,0	62,0	1,1	54,50	HA31+NMRV040	63C4	2548
24,0	62,0	0,9	58,90	HA31+NMRV040	63C4	2614
22,0	71,0	1,0	63,00	HA31+NMRV040	63C4	2673
20,0	77,0	0,9	71,30	HA31+NMRV040	63C4	2785
18,0	88,0	0,8	78,80	HA31+NMRV040	63C4	2880
16,0	82,0	0,8	88,30	HA31+NMRV040	63C4	2992
15,0	101,0	0,7	94,50	HA31+NMRV040	63C4	3060
59,0	29,0	2,5	23,80	HA31+NMRV050	63C4	2650
55,0	31,0	2,4	25,50	HA31+NMRV050	63C4	2714
48,0	35,0	3,3	29,40	HA31+NMRV050	63C4	2847
44,0	38,0	1,9	31,50	HA31+NMRV050	63C4	2912
39,0	43,0	2,5	35,60	HA31+NMRV050	63C4	3034
34,0	49,0	2,3	40,90	HA31+NMRV050	63C4	3177
32,0	49,0	2,3	44,20	HA31+NMRV050	63C4	3259
29,0	55,0	2,3	47,50	HA31+NMRV050	63C4	3339
26,0	63,0	2,1	54,50	HA31+NMRV050	63C4	3497
24,0	63,0	1,6	58,90	HA31+NMRV050	63C4	3587
22,0	73,0	1,9	63,00	HA31+NMRV050	63C4	3669
20,0	77,0	1,7	71,30	HA31+NMRV050	63C4	3823
18,0	91,0	1,5	78,80	HA31+NMRV050	63C4	3952
16,0	83,0	1,4	88,30	HA31+NMRV050	63C4	4107
15,0	101,0	1,3	94,50	HA31+NMRV050	63C4	4200
14,0	104,0	1,1	102,00	HA31+NMRV050	63C4	4308
13,0	111,0	1,0	109,10	HA31+NMRV050	63C4	4406
12,0	126,0	1,1	118,10	HA31+NMRV050	63C4	4524
11,0	123,0	0,9	127,50	HA31+NMRV050	63C4	4641
9,8	128,0	1,1	142,50	HA31+NMRV050	63C4	4816
9,0	129,0	0,9	154,70	HA31+NMRV050	63C4	4840
8,6	145,0	1,0	163,60	HA31+NMRV050	63C4	4840
7,4	166,0	0,9	189,00	HA31+NMRV050	63C4	4840
6,9	165,0	0,7	204,00	HA31+NMRV050	63C4	4840
5,9	206,0	0,7	236,30	HA31+NMRV050	63C4	4840
14,0	96,0	0,7	100,00	NMRV030/040	63C4	2769
14,0	98,0	1,4	100,00	NMRV030/050	63C4	3800
9,3	136,0	1,0	150,00	NMRV030/050	63C4	4350
14,0	101,0	1,4	100,00	NMRV040/050	63C4	3800
9,3	140,0	1,0	150,00	NMRV040/050	63C4	4350
4,7	214	1,1	300,0	NMRV030/063	63C4	6270
3,5	279	0,8	400,0	NMRV030/063	63C4	6270

0,37kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	11	3,2	5,0	NMRV040	71B4	1149
186,7	16	2,6	7,5	NMRV040	71B4	1315
140,0	21	2,1	10,0	NMRV040	71B4	1447
93,3	31	1,4	15,0	NMRV040	71B4	1657
70,0	40	1,1	20,0	NMRV040	71B4	1824
56,0	48	0,8	25,0	NMRV040	71B4	1964
46,7	54	0,9	30,0	NMRV040	71B4	2087
140,0	22	3,6	10,0	NMRV050	71B4	1987
93,3	31	2,6	15,0	NMRV050	71B4	2274
70,0	40	1,9	20,0	NMRV050	71B4	2503
56,0	49	1,5	25,0	NMRV050	71B4	2696
46,7	55	1,6	30,0	NMRV050	71B4	2865
35,0	69	1,2	40,0	NMRV050	71B4	3153
28,0	81	1,0	50,0	NMRV050	71B4	3397
23,3	91	0,8	60,0	NMRV050	71B4	3610
35,0	72	2,0	40,0	NMRV063	71B4	4122
28,0	85	1,6	50,0	NMRV063	71B4	4440
23,3	95	1,4	60,0	NMRV063	71B4	4719
17,5	117	1,0	80,0	NMRV063	71B4	5193
14,0	131	0,9	100,0	NMRV063	71B4	5595
23,3	100	2,0	60,0	NMRV075	71B4	5569
17,5	123	1,5	80,0	NMRV075	71B4	6130
14,0	141	1,3	100,0	NMRV075	71B4	6603
4,7	412	0,9	300,0	NMRV040/075	71B4	7380
3,5	506	0,7	400,0	NMRV040/075	71B4	7380
4,7	408	1,5	300,0	NMRV040/090	71B4	8180
3,5	532	1,1	400,0	NMRV040/090	71B4	8180
2,8	622	0,9	500,0	NMRV040/090	71B4	8180
2,3	779	0,8	600,0	NMRV040/090	71B4	8180
1,9	977	1,1	750,0	NMRV050/105	71B4	10320
1,6	1111	1,0	900,0	NMRV050/105	71B4	10320
1,2	1437	0,7	1200,0	NMRV050/105	71B4	10320
63,0	45,0	1,3	22,10	HA31+NMRV040	71B4	1885
59,0	49,0	1,3	23,80	HA31+NMRV040	71B4	1931
55,0	52,0	1,2	25,50	HA31+NMRV040	71B4	1977
48,0	58,0	1,0	29,40	HA31+NMRV040	71B4	2074
44,0	64,0	1,0	31,50	HA31+NMRV040	71B4	2122
39,0	71,0	0,9	35,60	HA31+NMRV040	71B4	2211
34,0	81,0	0,9	40,90	HA31+NMRV040	71B4	2315
32,0	82,0	0,8	44,20	HA31+NMRV040	71B4	2375
29,0	91,0	0,7	47,50	HA31+NMRV040	71B4	2433
63,0	45,0	2,2	22,10	HA31+NMRV050	71B4	2587
59,0	49,0	1,5	23,80	HA31+NMRV050	71B4	2650
55,0	52,0	1,4	25,50	HA31+NMRV050	71B4	2714
48,0	59,0	1,9	29,40	HA31+NMRV050	71B4	2847
44,0	64,0	1,2	31,50	HA31+NMRV050	71B4	2912
39,0	72,0	1,5	35,60	HA31+NMRV050	71B4	3034
34,0	82,0	1,3	40,90	HA31+NMRV050	71B4	3177
32,0	83,0	1,4	44,20	HA31+NMRV050	71B4	3259
29,0	93,0	1,4	47,50	HA31+NMRV050	71B4	3339
26,0	106,0	1,2	54,50	HA31+NMRV050	71B4	3497
24,0	106,0	1,0	58,90	HA31+NMRV050	71B4	3587
22,0	122,0	1,1	63,00	HA31+NMRV050	71B4	3669
20,0	130,0	1,0	71,30	HA31+NMRV050	71B4	3823
18,0	152,0	0,9	78,80	HA31+NMRV050	71B4	3952
16,0	140,0	0,8	88,30	HA31+NMRV050	71B4	4107
15,0	170,0	0,8	94,50	HA31+NMRV050	71B4	4200

0,37kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
0,9	1699	1,0	1500,0	NMRV063/130	71B4	13500
0,8	1918	0,9	1800,0	NMRV063/130	71B4	13500
0,8	2089	1,0	1800,0	NMRV063/150	71B4	18000
0,6	2519	1,1	2400,0	NMRV063/150	71B4	18000
0,5	2958	0,8	3000,0	NMRV063/150	71B4	18000

0,55kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	17	2,2	5,0	NMRV040	71C4	1149
186,7	24	1,7	7,5	NMRV040	71C4	1315
140,0	32	1,4	10,0	NMRV040	71C4	1447
93,3	47	0,9	15,0	NMRV040	71C4	1657
280,0	17	4,1	5,0	NMRV050	80A4	1577
186,7	25	3,1	7,5	NMRV050	80A4	1805
140,0	33	2,4	10,0	NMRV050	80A4	1987
93,3	47	1,7	15,0	NMRV050	80A4	2274
70,0	60	1,3	20,0	NMRV050	80A4	2503
56,0	72	1,0	25,0	NMRV050	80A4	2696
46,7	82	1,1	30,0	NMRV050	80A4	2865
70,0	62	2,2	20,0	NMRV063	80A4	3272
56,0	74	1,8	25,0	NMRV063	80A4	3524
46,7	84	1,9	30,0	NMRV063	80A4	3745
35,0	107	1,4	40,0	NMRV063	80A4	4122
28,0	126	1,1	50,0	NMRV063	80A4	4440
23,3	142	0,9	60,0	NMRV063	80A4	4719
35,0	110	2,0	40,0	NMRV075	80A4	4865
28,0	131	1,6	50,0	NMRV075	80A4	5241
23,3	149	1,3	60,0	NMRV075	80A4	5569
17,5	183	1,0	80,0	NMRV075	80A4	6130
14,0	210	0,9	100,0	NMRV075	80A4	6603
17,5	192	1,5	80,0	NMRV090	80A4	6783
14,0	225	1,2	100,0	NMRV090	80A4	7306
17,5	204	2,4	80,0	NMRV105	80A4	8571
14,0	240	1,9	100,0	NMRV105	80A4	9232
4,7	656	1,7	300,0	NMRV050/105	80A4	10320
3,5	849	1,2	400,0	NMRV050/105	80A4	10320
2,8	1012	1,0	500,0	NMRV050/105	80A4	10320
2,3	1214	0,8	600,0	NMRV050/105	80A4	10320
1,9	1452	0,8	750,0	NMRV050/105	80A4	10320
55,0	78,0	0,8	25,50	HA31+NMRV040	71C4	1977
44,0	95,0	0,7	31,50	HA31+NMRV040	71C4	2122
63,0	67,0	0,9	22,10	HA31+NMRV040	71C4/80A4	1885
59,0	73,0	0,9	23,80	HA31+NMRV040	71C4/80A4	1931
55,0	78,0	1,0	25,50	HA31+NMRV050	71C4	2714
44,0	95,0	0,8	31,50	HA31+NMRV050	71C4	2912
34,0	121,0	0,9	40,90	HA31+NMRV050	71C4	3177
26,0	158,0	0,8	54,50	HA31+NMRV050	71C4	3497
22,0	182,0	0,7	63,00	HA31+NMRV050	71C4	3669
63,0	67,0	1,5	22,10	HA31+NMRV050	71C4/80A4	2587
59,0	73,0	1,0	23,80	HA31+NMRV050	71C4/80A4	2650
48,0	88,0	1,3	29,40	HA31+NMRV050	71C4/80A4	2847
39,0	106,0	1,0	35,60	HA31+NMRV050	71C4/80A4	3034
32,0	123,0	0,9	44,20	HA31+NMRV050	71C4/80A4	3259
29,0	138,0	0,9	47,50	HA31+NMRV050	71C4/80A4	3339

0,55kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
2,8	1012	1,5	500,0	NMRV063/130	80A4	13500
1,9	1489	1,2	750,0	NMRV063/130	80A4	13500
1,2	2195	0,8	1200,0	NMRV063/130	80A4	13500
0,8	3106	0,7	1800,0	NMRV063/150	80A4	18000
0,6	3744	0,7	2400,0	NMRV063/150	80A4	18000

0,75kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	23	3,0	5,0	NMRV050	80B4	1577
186,7	34	2,3	7,5	NMRV050	80B4	1805
140,0	45	1,8	10,0	NMRV050	80B4	1987
93,3	64	1,3	15,0	NMRV050	80B4	2274
70,0	82	1,0	20,0	NMRV050	80B4	2503
93,3	64	2,2	15,0	NMRV063	80B4	2973
70,0	84	1,6	20,0	NMRV063	80B4	3272
56,0	101	1,3	25,0	NMRV063	80B4	3524
46,7	115	1,4	30,0	NMRV063	80B4	3745
35,0	145	1,0	40,0	NMRV063	80B4	4122
56,0	104	1,9	25,0	NMRV075	80B4	4160
46,7	118	1,9	30,0	NMRV075	80B4	4421
35,0	149	1,5	40,0	NMRV075	80B4	4865
28,0	179	1,2	50,0	NMRV075	80B4	5241
23,3	203	1,0	60,0	NMRV075	80B4	5569
28,0	187	2,0	50,0	NMRV090	80B4	5799
23,3	215	1,6	60,0	NMRV090	80B4	6163
17,5	262	1,1	80,0	NMRV090	80B4	6783
14,0	307	0,9	100,0	NMRV090	80B4	7306
17,5	278	1,8	80,0	NMRV105	80B4	8571
14,0	327	1,4	100,0	NMRV105	80B4	9232
4,7	895	1,2	300,0	NMRV050/105	80B4	10320
3,5	1157	0,9	400,0	NMRV050/105	80B4	10320
63,0	92,0	1,1	22,10	HA31+NMRV050	80B4	2587
59,0	99,0	0,7	23,80	HA31+NMRV050	80B4	2650
48,0	120,0	1,0	29,40	HA31+NMRV050	80B4	2847
39,0	145,0	0,7	35,60	HA31+NMRV050	80B4	3034
2,8	1380	1,1	500,0	NMRV063/130	80B4	13500
2,3	1676	1,0	600,0	NMRV063/130	80B4	13500
1,9	2031	0,9	750,0	NMRV063/130	80B4	13500
1,6	2314	0,8	900,0	NMRV063/130	80B4	13500
2,8	1380	1,7	500,0	NMRV063/150	80B4	18000
2,3	1702	1,6	600,0	NMRV063/150	80B4	18000
1,9	1998	1,2	750,0	NMRV063/150	80B4	18000
1,6	2521	0,8	900,0	NMRV063/150	80B4	18000
1,2	3039	0,9	1200,0	NMRV063/150	80B4	18000

0,92kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
280,0	28	2,4	5,0	NMRV050	80C4	1577
186,7	41	1,9	7,5	NMRV050	80C4	1805

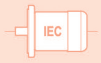
0,92kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
140,0	55	1,4	10,0	NMRV050	80C4	1987
93,3	78	1,0	15,0	NMRV050	80C4	2274
140,0	55	2,4	10,0	NMRV063	80C4	2597
93,3	79	1,8	15,0	NMRV063	80C4	2973
70,0	103	1,3	20,0	NMRV063	80C4	3272
56,0	124	1,0	25,0	NMRV063	80C4	3524
46,7	141	1,1	30,0	NMRV063	80C4	3745
35,0	178	0,8	40,0	NMRV063	80C4	4122
70,0	104	2,0	20,0	NMRV075	80C4	3862
56,0	127	1,6	25,0	NMRV075	80C4	4160
46,7	145	1,6	30,0	NMRV075	80C4	4421
35,0	183	1,2	40,0	NMRV075	80C4	4865
28,0	220	1,0	50,0	NMRV075	80C4	5241
23,3	249	0,8	60,0	NMRV075	80C4	5569
28,0	229	1,6	50,0	NMRV090	80C4	5799
23,3	264	1,3	60,0	NMRV090	80C4	6163
17,5	321	0,9	80,0	NMRV090	80C4	6783
17,5	341	1,4	80,0	NMRV105	80C4	8571
14,0	402	1,1	100,0	NMRV105	80C4	9232
4,7	1097	1,0	300,0	NMRV050/105	80C4	10320
3,5	1420	0,7	400,0	NMRV050/105	80C4	10320
3,5	1420	1,2	400,0	NMRV063/130	80C4	13500
2,8	1693	0,9	500,0	NMRV063/150	80C4	13500
63,0	113,0	0,9	22,10	HA31+NMRV050	80C4	2587
48,0	147,0	0,8	29,40	HA31+NMRV050	80C4	2847
2,8	1693	1,4	500,0	NMRV063/150	80C4	18000
2,3	2088	1,3	600,0	NMRV063/150	80C4	18000
1,9	2451	1,0	750,0	NMRV063/150	80C4	18000
1,6	3092	0,7	900,0	NMRV063/150	80C4	18000
1,2	3728	0,7	1200,0	NMRV063/150	80C4	18000

1,50kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	68	1,9	7,5	NMRV063	90L4	2359
140,0	89	1,5	10,0	NMRV063	90L4	2597
93,3	129	1,1	15,0	NMRV063	90L4	2973
70,0	168	0,8	20,0	NMRV063	90L4	3272
140,0	90	2,2	10,0	NMRV075	90L4	3065
93,3	132	1,5	15,0	NMRV075	90L4	3509
70,0	170	1,2	20,0	NMRV075	90L4	3862
56,0	207	1,0	25,0	NMRV075	90L4	4160
46,7	236	1,0	30,0	NMRV075	90L4	4421
70,0	174	2,2	20,0	NMRV090	90L4	4273
56,0	212	1,8	25,0	NMRV090	90L4	4603
46,7	243	1,8	30,0	NMRV090	90L4	4891
35,0	311	1,3	40,0	NMRV090	90L4	5383
28,0	373	1,0	50,0	NMRV090	90L4	5799
23,3	430	0,8	60,0	NMRV090	90L4	6163
35,0	323	2,1	40,0	NMRV105	90L4	6803
28,0	389	1,7	50,0	NMRV105	90L4	7328
23,3	448	1,3	60,0	NMRV105	90L4	7787
17,5	557	0,9	80,0	NMRV105	90L4	8571
17,5	565	1,5	80,0	NMRV130	90L4	11210
14,0	665	1,1	100,0	NMRV130	90L4	12076

1,50kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
4,7	1816	1,0	300,0	NMRV063/130	90L4	13500
3,5	2315	0,7	400,0	NMRV063/130	90L4	13500
9,3	1052	1,9	150,0	NMRV063/150	90L4	18000
7,0	1371	1,4	200,0	NMRV063/150	90L4	18000
5,6	1669	1,2	250,0	NMRV063/150	90L4	18000
4,7	1985	1,1	300,0	NMRV063/150	90L4	18000
3,5	2350	1,1	400,0	NMRV063/150	90L4	18000
2,8	2760	0,8	500,0	NMRV063/150	90L4	18000
2,3	3404	0,8	600,0	NMRV063/150	90L4	18000

1,84kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
186,7	84	1,5	7,5	NMRV063	90LL4	2359
140,0	109	1,2	10,0	NMRV063	90LL4	2597
93,3	158	0,9	15,0	NMRV063	90LL4	2973
186,7	84	2,2	7,5	NMRV075	90LL4	2785
140,0	110	1,8	10,0	NMRV075	90LL4	3065
93,3	162	1,2	15,0	NMRV075	90LL4	3509
70,0	208	1,0	20,0	NMRV075	90LL4	3862
56,0	254	0,8	25,0	NMRV075	90LL4	4160
46,7	290	0,8	30,0	NMRV075	90LL4	4421
70,0	213	1,8	20,0	NMRV090	90LL4	4273
56,0	260	1,4	25,0	NMRV090	90LL4	4603
46,7	297	1,5	30,0	NMRV090	90LL4	4891
35,0	382	1,0	40,0	NMRV090	90LL4	5383
28,0	458	0,8	50,0	NMRV090	90LL4	5799
56,0	267	2,2	25,0	NMRV105	90LL4	5816
35,0	397	1,7	40,0	NMRV105	90LL4	6803
28,0	477	1,4	50,0	NMRV105	90LL4	7328
23,3	550	1,0	60,0	NMRV105	90LL4	7787
17,5	693	1,2	80,0	NMRV130	90LL4	11210
14,0	816	0,9	100,0	NMRV130	90LL4	12076
9,3	1290	1,5	150,0	NMRV063/150	90LL4	18000
7,0	1682	1,2	200,0	NMRV063/150	90LL4	18000
5,6	2047	1,0	250,0	NMRV063/150	90LL4	18000
4,7	2435	0,9	300,0	NMRV063/150	90LL4	18000
3,5	2883	0,9	400,0	NMRV063/150	90LL4	18000
2,8	3385	0,7	500,0	NMRV063/150	90LL4	18000

2,20kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
186,7	100	1,8	7,5	NMRV075	100LA4	2785
140,0	132	1,5	10,0	NMRV075	100LA4	3065
93,3	194	1,0	15,0	NMRV075	100LA4	3509
186,7	101	3,1	7,5	NMRV090	100LA4	3081
140,0	134	2,6	10,0	NMRV090	100LA4	3391
93,3	196	2,0	15,0	NMRV090	100LA4	3882
70,0	255	1,5	20,0	NMRV090	100LA4	4273
56,0	311	1,2	25,0	NMRV090	100LA4	4603
46,7	356	1,2	30,0	NMRV090	100LA4	4891

2,20kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
70,0	258	2,4	20,0	NMRV105	100LA4	5399
56,0	319	1,9	25,0	NMRV105	100LA4	5816
46,7	360	1,8	30,0	NMRV105	100LA4	6181
35,0	474	1,4	40,0	NMRV105	100LA4	6803
28,0	570	1,1	50,0	NMRV105	100LA4	7328
23,3	657	0,9	60,0	NMRV105	100LA4	7787
35,0	474	2,2	40,0	NMRV130	100LA4	8897
28,0	570	1,7	50,0	NMRV130	100LA4	9584
23,3	657	1,4	60,0	NMRV130	100LA4	10185
17,5	828	1,0	80,0	NMRV130	100LA4	11210
28,0	578	2,4	50,0	NMRV150	100LA4	13103
23,3	666	1,9	60,0	NMRV150	100LA4	13924
17,5	828	1,4	80,0	NMRV150	100LA4	15325
14,0	975	1,0	100,0	NMRV150	100LA4	16508

3,00kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
186,7	137	1,4	7,5	NMRV075	100LB4	2785
140,0	180	1,1	10,0	NMRV075	100LB4	3065
93,3	264	0,8	15,0	NMRV075	100LB4	3509
186,7	138	2,3	7,5	NMRV090	100LB4	3081
140,0	182	1,9	10,0	NMRV090	100LB4	3391
93,3	267	1,5	15,0	NMRV090	100LB4	3882
70,0	348	1,1	20,0	NMRV090	100LB4	4273
56,0	425	0,9	25,0	NMRV090	100LB4	4603
46,7	485	0,9	30,0	NMRV090	100LB4	4891
93,3	267	2,3	15,0	NMRV105	100LB4	4905
70,0	352	1,8	20,0	NMRV105	100LB4	5399
56,0	435	1,4	25,0	NMRV105	100LB4	5816
46,7	491	1,4	30,0	NMRV105	100LB4	6181
35,0	647	1,1	40,0	NMRV105	100LB4	6803
28,0	778	0,8	50,0	NMRV105	100LB4	7328
56,0	435	2,1	25,0	NMRV130	100LB4	7607
46,7	497	2,1	30,0	NMRV130	100LB4	8084
35,0	647	1,6	40,0	NMRV130	100LB4	8897
28,0	778	1,3	50,0	NMRV130	100LB4	9584
23,3	896	1,0	60,0	NMRV130	100LB4	10185
17,5	1130	0,7	80,0	NMRV130	100LB4	11210
28,0	788	1,8	50,0	NMRV150	100LB4	13103
23,3	909	1,4	60,0	NMRV150	100LB4	13924
17,5	1130	1,0	80,0	NMRV150	100LB4	15325
14,0	1330	0,8	100,0	NMRV150	100LB4	16508

4,00kW

n2 [1/min]	M2 [Nm]	f.s.	i			Fr [N]
186,7	182	1,0	7,5	NMRV075	112M4	2785
140,0	240	0,8	10,0	NMRV075	112M4	3065

4,00kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	184	1,7	7,5	NMRV090	112M4	3081
140,0	243	1,4	10,0	NMRV090	112M4	3391
93,3	356	1,1	15,0	NMRV090	112M4	3882
70,0	464	0,8	20,0	NMRV090	112M4	4273
140,0	243	2,4	10,0	NMRV105	112M4	4285
93,3	356	1,7	15,0	NMRV105	112M4	4905
70,0	469	1,3	20,0	NMRV105	112M4	5399
56,0	580	1,0	25,0	NMRV105	112M4	5816
46,7	655	1,0	30,0	NMRV105	112M4	6181
56,0	580	1,6	25,0	NMRV130	112M4	7607
46,7	663	1,6	30,0	NMRV130	112M4	8084
35,0	862	1,2	40,0	NMRV130	112M4	8897
28,0	1037	0,9	50,0	NMRV130	112M4	9584
23,3	1195	0,8	60,0	NMRV130	112M4	10185
28,0	1051	1,3	50,0	NMRV150	112M4	13103
23,3	1211	1,0	60,0	NMRV150	112M4	13924
17,5	1506	0,8	80,0	NMRV150	112M4	15325

5,50kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	253	2,1	7,5	NMRV105	132S4	3893
140,0	334	1,7	10,0	NMRV105	132S4	4285
93,3	490	1,2	15,0	NMRV105	132S4	4905
70,0	645	1,0	20,0	NMRV105	132S4	5399
140,0	334	2,5	10,0	NMRV130	132S4	5605
93,3	490	1,9	15,0	NMRV130	132S4	6416
70,0	653	1,4	20,0	NMRV130	132S4	7062
56,0	797	1,2	25,0	NMRV130	132S4	7607
46,7	912	1,1	30,0	NMRV130	132S4	8084
35,0	1186	0,9	40,0	NMRV130	132S4	8897
70,0	653	2,0	20,0	NMRV150	132S4	9654
56,0	797	1,5	25,0	NMRV150	132S4	10400
46,7	945	1,3	30,0	NMRV150	132S4	11051
35,0	1186	1,3	40,0	NMRV150	132S4	12163
28,0	1444	1,0	50,0	NMRV150	132S4	13103
23,3	1666	0,8	60,0	NMRV150	132S4	13924

7,50kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	345	1,5	7,5	NMRV105	132L4	3893
140,0	455	1,3	10,0	NMRV105	132L4	4285
93,3	668	0,9	15,0	NMRV105	132L4	4905
186,7	349	2,1	7,5	NMRV130	132L4	5092
140,0	455	1,8	10,0	NMRV130	132L4	5605
93,3	668	1,4	15,0	NMRV130	132L4	6416
70,0	890	1,0	20,0	NMRV130	132L4	7062
56,0	1087	0,9	25,0	NMRV130	132L4	7607
46,7	1243	0,8	30,0	NMRV130	132L4	8084
35,0	1617	0,6	40,0	NMRV130	132L4	8897

7,50kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
70,0	890	1,5	20,0	NMRV150	132L4	9654
56,0	1087	1,1	25,0	NMRV150	132L4	10400
46,7	1289	0,9	30,0	NMRV150	132L4	11051
35,0	1617	1,0	40,0	NMRV150	132L4	12163

9,20kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	428	1,8	7,5	NMRV130	132M4	5092
140,0	559	1,5	10,0	NMRV130	132M4	5605
93,3	819	1,1	15,0	NMRV130	132M4	6416
70,0	1092	0,8	20,0	NMRV130	132M4	7062
56,0	1334	0,7	25,0	NMRV130	132M4	7607
70,0	1092	1,2	20,0	NMRV150	132M4	9654
56,0	1334	0,9	25,0	NMRV150	132M4	10400
46,7	1581	0,8	30,0	NMRV150	132M4	11051
35,0	1983	0,8	40,0	NMRV150	132M4	12163

11,00kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	512	2,3	7,5	NMRV150	160M4	6962
140,0	675	1,8	10,0	NMRV150	160M4	7663
93,3	990	1,3	15,0	NMRV150	160M4	8771
70,0	1306	1,0	20,0	NMRV150	160M4	9654
56,0	1595	0,8	25,0	NMRV150	160M4	10400

15,00kW

n2 [1/min]	M2 [Nm]	f.s.	i		IEC	Fr [N]
186,7	698	1,7	7,5	NMRV150	160L4	6962
140,0	921	1,3	10,0	NMRV150	160L4	7663
93,3	1351	0,9	15,0	NMRV150	160L4	8771
70,0	1780	0,7	20,0	NMRV150	160L4	9654