

Frequency converter

Frequency Converter Fv



Frequency converter

Frequency Converter Fv

Documentation



- Several operating modes for different applications
- Easy to operate and service (detachable fan, LCD operating panel with copy function)
- Advanced functions and high performance
- Integrated mains filter
- Parameterization and start-up with PC software
- Worldwide availability and service

The Rexroth Frequency Converter Fv is the optimized drive solution for the automation of various applications in the 0.4 kW to 90 kW output range. The various types of voltage/frequency (U/f) control, sensorless vector control (SVC) or vector control with sensor (FOC) enable a wide range of applications.

When it comes to applications with Sytronix variable-speed pump systems, the Rexroth Frequency Converter Fv provides a customized variant for optimum pressure and flow control.

Technical data

		FVCA01.2-0K40	FVCA01.2-0K75	FVCA01.2-1K50	FVCA01.2-2K20	FVCA01.2-4K00	FVCA01.2-5K50	FVCA01.2-7K50
Performance data								
Nominal power	[kW]	0.4	0.75	1.5	2.2	4	5.5	7.5
Nominal continuous current	[A]	1.3	2.5	4	5.5	10	13	17
Nominal motor voltage		Three phase, 0 V ... mains voltage						
Output voltage		0 V to mains voltage						
Output frequency		0 ... 400 Hz						
Overload capacity		200 % In for 1 s or 150 % In for 60 s						
Mains voltage	3 AC	3 AC 380 ... 480 V (-15 % / +10 %)						
Frequency		50 ... 60 Hz (±5 %)						
Brake chopper/resistor								
Brake resistor		External						
Brake chopper		Internal						
Environmental conditions								
Permissible temperature (operation)		-10 ... +40 °C						
Permissible humidity (operation)		< 90%						
Max. Operating altitude		Derating from 1000 m (1 % of the power output per 100 m)						
Protection type		IP20						
Functions								
Control technology		V/f, SVC, FOC						

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Pulse-width modulation (PWM), can be set steplessly	[kHz]	1 ... 15						
Type of modulation		Magnetic flux PWM modulation: SVPWM						
Speed control range	Without pulse generator	Vector control 1 : 100						
	With pulse generator	Vector control 1 : 1000						
Starting torque	U/f	Max. start-up torque 150% at 5 Hz						
	SVC	Max. start-up torque 150% at 0.5 Hz						
	FOC	Max. start-up torque 200% at 0 Hz						
Frequency resolution	Digital	0.01 Hz						
	Analog	Maximum frequency x 0.05%						
U/f characteristic curve		Freely definable						
Ramps		linear, S-curve						
Direct current brake	Start frequency	0 ... 10 Hz						
	Braking time	0 to 20 s						
Automatic energy saving function		Load-dependent adaptation of V/f curve						
Automatic PWM frequency adaptation		load-dependent adaptation of PWM frequency						
Integrated control		integrated step switching mechanism						
Accuracy of frequency setting	Analog	0.05%						
	Digital	0.01%						
Accuracy of frequency control	SVC	0.5% x maximum frequency						
	FOC	0.05% x maximum frequency						
Controller		PID						
Bus systems		Modbus						
		PROFIBUS (optional)						
	Status messages via digital outputs	Operation, target value achieved, etc.						
Display		LCD: frequency, output voltage, output current, etc.						
LED status		Rotation direction and operating status						
Weight								
Mass	[kg]	2.7	2.7	2.7	2.8	4.8	4.9	4.9
Norms and Standards								
Certification		EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]	EN 61800-3 [↔] EN 61800-5-1 [↔] UL 508 C [↔]
		FVCA01.2-11K0	FVCA01.2-15K0	FVCA01.2-18K5	FVCA01.2-22K0	FVCA01.2-30K0	FVCA01.2-37K0	
Performance data								
Nominal power	[kW]	11	15	18.5	22	30	37	

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Nominal continuous current	[A]	24	33	39	44	60	75
Nominal motor voltage		Three phase, 0 V ... mains voltage					
Output voltage		0 V to mains voltage					
Output frequency		0 ... 400 Hz					
Overload capacity		200 % I _n for 1 s or 150 % I _n for 60 s					
Mains voltage	3 AC	3 AC 380 ... 480 V (-15 % / +10 %)					
Frequency		50 ... 60 Hz (±5 %)					
Brake chopper/resistor							
Brake resistor		External					
Brake chopper		Internal			External		
Environmental conditions							
Permissible temperature (operation)		-10 ... +40 °C					
Permissible humidity (operation)		< 90%					
Max. Operating altitude		Derating from 1000 m (1 % of the power output per 100 m)					
Protection type		IP20					
Functions							
Control technology		V/f, SVC, FOC					
Pulse-width modulation (PWM), can be set steplessly	[kHz]	1 ... 12				1 ... 8	
Type of modulation		Magnetic flux PWM modulation: SVPWM					
Speed control range	Without pulse generator	Vector control 1 : 100					
	With pulse generator	Vector control 1 : 1000					
Starting torque	U/f	Max. start-up torque 150% at 5 Hz					
	SVC	Max. start-up torque 150% at 0.5 Hz					
	FOC	Max. start-up torque 200% at 0 Hz					
Frequency resolution	Digital	0.01 Hz					
	Analog	Maximum frequency x 0.05%					
U/f characteristic curve		Freely definable					
Ramps		linear, S-curve					
Direct current brake	Start frequency	0 ... 10 Hz					
	Braking time	0 to 20 s					
Automatic energy saving function		Load-dependent adaptation of V/f curve					
Automatic PWM frequency adaptation		load-dependent adaptation of PWM frequency					
Integrated control		integrated step switching mechanism					
Accuracy of frequency setting	Analog	0.05%					
	Digital	0.01%					

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Accuracy of frequency control	SVC	0.5% x maximum frequency					
	FOC	0.05% x maximum frequency					
Controller		PID					
Bus systems		Modbus					
		PROFIBUS (optional)					
Status messages via digital outputs		Operation, target value achieved, etc.					
Display		LCD: frequency, output voltage, output current, etc.					
LED status		Rotation direction and operating status					
Weight							
Mass	[kg]	8.8	9	16.5	16.5	22	22
Norms and Standards							
Certification		EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔

		FVCA01.2-45K0	FVCA01.2-55K0	FVCA01.2-75K0	FVCA01.2-90K0
Performance data					
Nominal power	[kW]	45	55	75	90
Nominal continuous current	[A]	95	110	152	183
Nominal motor voltage		Three phase, 0 V ... mains voltage			
Output voltage		0 V to mains voltage			
Output frequency		0 ... 400 Hz			
Overload capacity		200 % In for 1 s or 150 % In for 60 s			
Mains voltage	3 AC	3 AC 380 ... 480 V (-15 % / +10 %)			
Frequency		50 ... 60 Hz (±5 %)			
Intermediate circuit					
Intermediate circuit voltage	[V] DC				Mains connection voltage x 1.41
Brake chopper/resistor					
Brake resistor		External			
Brake chopper		External			
Environmental conditions					
Permissible temperature (operation)		-10 ... +40 °C			
Permissible humidity (operation)		< 90%			
Max. Operating altitude		Derating from 1000 m (1 % of the power output per 100 m)			
Protection type		IP20			
Functions					
Control technology		V/f, SVC, FOC			
Pulse-width modulation (PWM), can be set steplessly	[kHz]	1 ... 4			
Type of modulation		Magnetic flux PWM modulation: SVPWM			

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Speed control range	Without pulse generator	Vector control 1 : 100			
	With pulse generator	Vector control 1 : 1000			
Starting torque	U/f	Max. start-up torque 150% at 5 Hz			
	SVC	Max. start-up torque 150% at 0.5 Hz			
	FOC	Max. start-up torque 200% at 0 Hz			
Frequency resolution	Digital	0.01 Hz			
	Analog	Maximum frequency x 0.05%			
U/f characteristic curve		Freely definable			
Ramps		linear, S-curve			
Direct current brake	Start frequency	0 ... 10 Hz			
	Braking time	0 to 20 s			
Automatic energy saving function		Load-dependent adaptation of V/f curve			
Automatic PWM frequency adaptation		load-dependent adaptation of PWM frequency			
Integrated control		integrated step switching mechanism			
Accuracy of frequency setting	Analog	0.05%			
	Digital	0.01%			
Accuracy of frequency control	SVC	0.5% x maximum frequency			
	FOC	0.05% x maximum frequency			
Controller		PID			
Bus systems		Modbus			
		PROFIBUS (optional)			
		Status messages via digital outputs	Operation, target value achieved, etc.		
Display					
		LCD: frequency, output voltage, output current, etc.			
LED status		Rotation direction and operating status			
Weight					
Mass	[kg]	37	39	56.7	58
Norms and Standards					
Certification		EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔	EN 61800-3 ↔ EN 61800-5-1 ↔ UL 508 C ↔

Dimensions

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Frequency Converter Fv**Dimensions**

Type	A [mm]	E [mm]	F [mm]
FVCA01.2-0K40	125	315	127
FVCA01.2-0K75			
FVCA01.2-1K50			
FVCA01.2-2K20			
FVCA01.2-4K00	150	380	162
FVCA01.2-5K50			
FVCA01.2-7K50			
FVCA01.2-11K0	175	448	204
FVCA01.2-15K0			
FVCA01.2-18K5	225	500	232
FVCA01.2-22K0			
FVCA01.2-30K0	250	585	256.5
FVCA01.2-37K0			
FVCA01.2-45K0	325	712.5	270
FVCA01.2-55K0			
FVCA01.2-75K0			
FVCA01.2-90K0	450	779	307

Accessories

Type code	Description	Material number:
FVAM01.1-A-Mounting Plate	Mounting plates to install the Fv operating panel in the control cabinet section	R912002621
FVAA01.1-M-NNNN-01V01	Frequency converter communication adapter for connection to a Modbus master	R912004892
FVAA01.2-P-NNNN-01V01	Frequency converter communication adapter for connection to a PROFIBUS master	R912004868
FRKS0001/001,0	Frequency converter Fv connection cable to operating panel, 1 m	R912001754
FRKS0002/003,0	Frequency converter Fv connection cable to operating panel, 3 m	R912001755

Type code	Description	Material number:
FELB02.1N-30K0-NNONE-A-560-NNNN	Brake chopper up to 30 kW permanent braking power	R912001499
FELB02.1N-45K0-NNONE-A-560-NNNN	Brake chopper up to 45 kW permanent braking power	R912001500

Type code	Description	Material number:
FELR01.1N-04K5-N055R-A-560-NNNN	Brake resistor, 4.5 kW, 55 Ω	R912001628
FELR01.1N-04K8-N032R-A-560-NNNN	Brake resistor, 4.8 kW, 27.2 Ω	R912001629
FELR01.1N-04K8-N27R2-A-560-NNNN	Brake resistor, 4.8 kW, 27.2 Ω	R912001630
FELR01.1N-06K0-N020R-A-560-NNNN	Brake resistor, 6 kW, 20 Ω	R912001635
FELR01.1N-06K0-N040R-A-560-NNNN	Brake resistor, 6 kW, 40 Ω	R912001636
FELR01.1N-08K0-N027R-A-560-NNNN	Brake resistor, 6 kW, 40 Ω	R912001640
FELR01.1N-09K6-N016R-A-560-NNNN	Brake resistor, 9.6 kW, 16 Ω	R912001641
FELR01.1N-09K6-N016R-A-560-NNNN	Brake resistor, 9.6 kW, 13.6 Ω	R912001642

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Type code	Description	Material number:
FELR01.1N-10K0-N022R-A-560-NNNN	Brake resistor, 10 kW, 22 Ω	R912001643
FELR01.1N-10K0-N024R-A-560-NNNN	Brake resistor, 10 kW, 24 Ω	R912001644
FELR01.1N-10K0-N028R-A-560-NNNN	Brake resistor, 10 kW, 28 Ω	R912001645
FELR01.1N-10K0-N032R-A-560-NNNN	Brake resistor, 10 kW, 32 Ω	R912001646
FELR01.1N-10K0-N27R2-A-560-NNNN	Brake resistor, 10 kW, 27.2 Ω	R912001647
FELR01.1N-12K5-N017R-A-560-NNNN	Brake resistor, 12.5 kW, 17 Ω	R912001648
FELR01.1N-12K5-N018R-A-560-NNNN	Brake resistor, 12.5 kW, 18 Ω	R912001649
FELR01.1N-12K5-N020R-A-560-NNNN	Brake resistor, 12.5 kW, 20 Ω	R912001650
FELR01.1N-12K5-N022R-A-560-NNNN	Brake resistor, 12.5 kW, 22 Ω	R912001651

Type code	Description	Material number:
FELR01.1N-0080-N750R-D-560-NNNN	Brake resistor, 0.08 kW, 750 Ω	R912001618
FELR01.1N-0150-N700R-D-560-NNNN	Brake resistor, 0.15 kW, 700 Ω	R912001619
FELR01.1N-0150-N700R-D-560-NNNN	Brake resistor, 1.2 kW, 180 Ω	R912001620
FELR01.1N-01K5-N068R-D-560-NNNN	Brake resistor, 1.5 kW, 68 Ω	R912001621
FELR01.1N-01K5-N150R-D-560-NNNN	Brake resistor, 1.5 kW, 150 Ω	R912001622
FELR01.1N-0260-N250R-D-560-NNNN	Brake resistor, 0.26 kW, 250 Ω	R912001623
FELR01.1N-0260-N400R-D-560-NNNN	Brake resistor, 0.26 kW, 400 Ω	R912001624
FELR01.1N-02K0-N047R-D-560-NNNN	Brake resistor, 2 kW, 47 Ω	R912001625
FELR01.1N-02K0-N110R-D-560-NNNN	Brake resistor, 2 kW, 110 Ω	R912001626
FELR01.1N-0390-N150R-D-560-NNNN	Brake resistor, 0.39 kW, 150 Ω	R912001627
FELR01.1N-0500-N550R-D-560-NNNN	Brake resistor, 0.5 kW, 550 Ω	R912001631
FELR01.1N-0520-N100R-D-560-NNNN	Brake resistor, 0.52 kW, 100 Ω	R912001632
FELR01.1N-0520-N230R-D-560-NNNN	Brake resistor, 0.52 kW, 230 Ω	R912001633
FELR01.1N-0520-N350R-D-560-NNNN	Brake resistor, 0.52 kW, 350 Ω	R912001634
FELR01.1N-0780-N075R-D-560-NNNN	Brake resistor, 0.78 kW, 75 Ω	R912001637
FELR01.1N-0780-N140R-D-560-NNNN	Brake resistor, 0.78 kW, 140 Ω	R912001638
FELR01.1N-0800-N275R-D-560-NNNN	Brake resistor, 0.8 kW, 275 Ω	R912001639
FELR01.1N-0800-N275R-D-560-NNNN	Brake resistor, 1.04 kW, 50 Ω	R912001652
FELR01.1N-1K04-N090R-D-560-NNNN	Brake resistor, 1.04 kW, 90 Ω	R912001653
FELR01.1N-1K56-N040R-D-560-NNNN	Brake resistor, 1.56 kW, 40 Ω	R912001654
FELR01.1N-1K56-N070R-D-560-NNNN	Brake resistor, 1.56 kW, 70 Ω	R912001655

Support with selecting EMC filters for frequency converter Fv

Frequency converter	EMC filter type key	Purchase
FVCA01.2-0K40-3P4-MDA-LP-NNNN-02VRSFVCA01.2-0K75-3P4-MDA-LP-NNNN-02VRSFVCA01.2-1K50-3P4-MDA-LP-NNNN-02VRSFVCA01.2-2K20-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0008-A-480-NNNN	1
FVCA01.2-4K00-3P4-MDA-LP-NNNN-02VRSFVCA01.2-5K50-3P4-MDA-LP-NNNN-02VRSFVCA01.2-7K50-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0022-A-480-NNNN	1
FVCA01.2-11K0-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0030-A-480-NNNN	1

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Frequency converter	EMC filter type key	Purchase
FVCA01.2-15K0-3P4-MDA-LP-NNNN-02VRSFVCA01.2-18K5-3P4-MDA-LP-NNNN-02VRSFVCA01.2-22K0-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0051-A-480-NNNN	1
FVCA01.2-30K0-3P4-MDA-LP-NNNN-02VRSFVCA01.2-37K0-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0090-A-480-NNNN	1
FVCA01.2-45K0-3P4-MDA-LP-NNNN-02VRSFVCA01.2-55K0-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0120-A-480-NNNN	1
FVCA01.2-75K0-3P4-MDA-LP-NNNN-02VRSFVCA01.2-90K0-3P4-MDA-LP-NNNN-02VRS	FENF01.1A-A075-E0250-A-480-NNNN	1

Ordering information

Type code	Description	Material number:
FVCA01.2-0K40-3P4-MDA-LP-NNNN-02VRS	0.4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1.3 A	R912005329
FVCA01.2-0K75-3P4-MDA-LP-NNNN-02VRS	0.75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2.5 A	R912005330
FVCA01.2-1K50-3P4-MDA-LP-NNNN-02VRS	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4 A	R912005331
FVCA01.2-2K20-3P4-MDA-LP-NNNN-02VRS	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.5 A	R912005332
FVCA01.2-4K00-3P4-MDA-LP-NNNN-02VRS	4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 10 A	R912005333
FVCA01.2-5K50-3P4-MDA-LP-NNNN-02VRS	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 13 A	R912005334
FVCA01.2-7K50-3P4-MDA-LP-NNNN-02VRS	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 17 A	R912005335
FVCA01.2-11K0-3P4-MDA-LP-NNNN-02VRS	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24 A	R912005336
FVCA01.2-15K0-3P4-MDA-LP-NNNN-02VRS	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 33 A	R912005337
FVCA01.2-18K5-3P4-MDA-LP-NNNN-02VRS	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39 A	R912005338
FVCA01.2-22K0-3P4-MDA-LP-NNNN-02VRS	22 kW, 3 AC 380 ... 480 V, 50/60 Hz, 44 A	R912005339
FVCA01.2-30K0-3P4-MDA-LP-NNNN-02VRS	30 kW, 3 AC 380 ... 480 V, 50/60 Hz, 60 A	R912005340
FVCA01.2-37K0-3P4-MDA-LP-NNNN-02VRS	37 kW, 3 AC 380 ... 480 V, 50/60 Hz, 75 A	R912005341
FVCA01.2-45K0-3P4-MDA-LP-NNNN-02VRS	45 kW, 3 AC 380 ... 480 V, 50/60 Hz, 95 A	R912005342
FVCA01.2-55K0-3P4-MDA-LP-NNNN-02VRS	55 kW, 3 AC 380 ... 480 V, 50/60 Hz, 110 A	R912005343
FVCA01.2-75K0-3P4-MDA-LP-NNNN-02VRS	75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 152 A	R912005344
FVCA01.2-90K0-3P4-MDA-LP-NNNN-02VRS	90 kW, 3 AC 380 ... 480 V, 50/60 Hz, 183 A	R912005345

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Type code	Description	Material number:
FVCA01.1-1K50-3P4-MDA-LP-P002-01V01	1.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4 A	R912004668
FVCA01.1-2K20-3P4-MDA-LP-P002-01V01	2.2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5.5 A	R912004669
FVCA01.1-4K00-3P4-MDA-LP-P002-01V01	4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 10 A	R912004670
FVCA01.1-5K50-3P4-MDA-LP-P002-01V01	5.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 13 A	R912004671
FVCA01.1-7K50-3P4-MDA-LP-P002-01V01	7.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 17 A	R912004672
FVCA01.1-11K0-3P4-MDA-LP-P002-01V01	11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24 A	R912004673
FVCA01.1-15K0-3P4-MDA-LP-P002-01V01	15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 33 A	R912004674
FVCA01.1-18K5-3P4-MDA-LP-P002-01V01	18.5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39 A	R912004675
FVCA01.1-22K0-3P4-MDA-LP-P002-01V01	22 kW, 3 AC 380 ... 480 V, 50/60 Hz, 44 A	R912004676
FVCA01.1-30K0-3P4-MDA-LP-P002-01V01	30 kW, 3 AC 380 ... 480 V, 50/60 Hz, 60 A	R912004677
FVCA01.1-37K0-3P4-MDA-LP-P002-01V01	37 kW, 3 AC 380 ... 480 V, 50/60 Hz, 75 A	R912004678
FVCA01.1-45K0-3P4-MDA-LP-P002-01V01	45 kW, 3 AC 380 ... 480 V, 50/60 Hz, 95 A	R912004679
FVCA01.1-55K0-3P4-MDA-LP-P002-01V01	55 kW, 3 AC 380 ... 480 V, 50/60 Hz, 110 A	R912004680
FVCA01.1-75K0-3P4-MDA-LP-P002-01V01	75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 152 A	R912004681
FVCA01.1-90K0-3P4-MDA-LP-P002-01V01	90 kW, 3 AC 380 ... 480 V, 50/60 Hz, 183 A	R912004682

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The data specified above only serve to describe the product. As our products are constantly being further developed, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification.

It must be remembered that our products are subject to a natural process of wear and aging.