

KRACHT



Transfer Gear Pumps

KF 1/4...KF 1/24

coated

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Description

The central element in numerous technical processes is the metering of liquids. PU components, plasticisers, resins, adhesives, lacquers and paints are just a few of the important liquids with a broad application spectrum.

The accuracy, uniformity and reproducibility with which these liquids can be processed is also decisive for the quality of the final product.

Ideal for these applications is the KRACHT gear pump KF 1/4... KF 1/24 coated.

The KF 1/4...KF 1/24 coated are external gear pumps with a discharge volume of 4 cm³/r to 24 cm³/r.

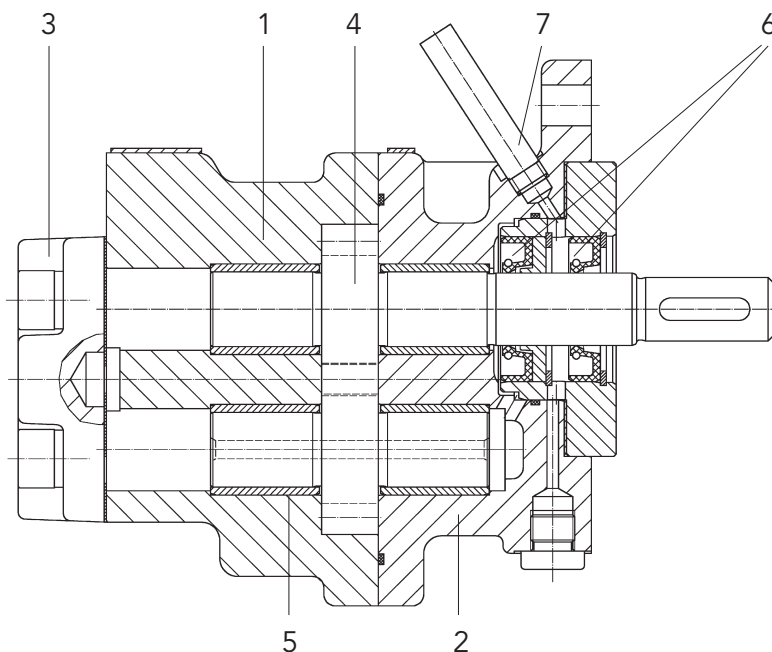
All gear parts and bearing bushes are protected against wear and corrosion by means of a special coating, so that also filled media up to a certain particle size and hardness of the fillers can be pumped.

Guide values in this respect are a maximum particle size of 30 µm and a Mohs hardness of 6.

The double rotary shaft seals enable operation with sealing liquid (quench) to prevent hardening or crystallising of the pumped medium.

On request the KF 1/4... KF 1/24 coated can be supplied with a magnetic drive.

Construction



- 1 Housing
- 2 Flange cover
- 3 End cover
- 4 Gear
- 5 Plain bearing bush
- 6 Shaft end sealing
- 7 Port for liquid sealing

Characteristics

Mounting	Flange type
Pipe connection	Threaded ports
Direction of rotation	cw or ccw
Fitting position	optional
Weight	see dim. sheets

Working Characteristics

Working pressure	Inlet port	$p_{e \min}$	= - 0.4 bar (- 0.6 bar for short time)
		$p_{e \max}$	= 1 bar for FKM-rotary shaft sealing 5 bar for PTFE-rotary shaft sealing
	Outlet port	$p_{e \max}$	= 50 bar (depends of viscosity)
Speed		n	= 200 ... 2000 1/min (depends of viscosity)
Viscosity		ν_{\min}	= 12 mm ² /s
		ν_{\max}	= 15000 mm ² /s (higher viscosities on request)
Fluid temperature		$\vartheta_{m \min}$	= - 10 °C
		$\vartheta_{m \max}$	= 150 °C for FKM-rotary shaft sealing 200 °C for PTFE-rotary shaft sealing
Ambient temperature		$\vartheta_{u \min}$	= - 20 °C
		$\vartheta_{u \max}$	= 60 °C

Materials

Housing	EN-GJL-250
Gear	Steel 1.7139 nickel plated (with SiC inlets)
Bearing bushes	Steel ETG 100 nickel plated (with SiC inlets)
Seals	FKM, PTFE

Technical Data

Size	Nominal displacement	Geometrical displacement V_g cm ³ /r	Working pressure p_b bar	Max. pressure p_{\max} bar	Permitted forces ($n = 1450$ 1/min)		Moment of inertia (without coupling) x 10 ⁻⁴ J Kgm ²
					F_{radial} N	F_{axial} N	
1/	4	4.6	50	60	500	100	0.2
	8	8.3					0.35
	11	11.3					0.45
	16	16.6					0.65
	20	20.5					0.75
	24	24.8		0.87			
			50				

Kinematic viscosity ν [mm ² /s]	<	300	400	500	1000	2000	3000	6000	10000	20000	30000
Maximum speed N_{\max} 1/min	≥	1500	1250	1000	750	600	500	400	300	200	100

Discharge Flow

at Speed n = 1450 1/min														
Working pressure p (bar)														
Discharge flow Q l/min	2	6	10	14	18	20	22	25	30	35	40	45	50	Nominal size
	6.6	6.4	6.2	6.0	5.8	5.7	5.6	5.5	5.3	5.0	4.8	4.5	4.3	1/4
	12.0	11.7	11.4	11.1	10.8	10.7	10.5	10.3	9.9	9.6	9.2	8.8	8.5	1/8
	16.1	15.9	15.6	15.2	14.8	14.6	14.4	14.2	13.8	13.4	13.0	12.6	12.1	1/11
	23.8	23.4	23.0	22.7	22.3	22.1	21.9	21.6	21.1	20.6	20.2	19.7	19.2	1/16
	29.4	29.0	28.6	28.2	27.8	27.6	27.4	27.1	26.2	26.1	25.6	25.1	24.6	1/20
	35.6	35.2	34.8	34.4	34.0	33.8	33.6	33.3	32.8	32.3	31.8	31.3	30.8	1/24

Power Input

at Speed n = 1450 1/min														
Working pressure p (bar)														
Power input P kW	2	6	10	14	18	20	22	25	30	35	40	45	50	Nominal size
	0.10	0.16	0.21	0.26	0.31	0.33	0.36	0.40	0.47	0.53	0.60	0.66	0.73	1/4
	0.20	0.28	0.36	0.45	0.54	0.58	0.62	0.69	0.80	0.90	1.00	1.10	1.20	1/8
	0.22	0.33	0.38	0.55	0.65	0.71	0.77	0.85	0.99	1.12	1.26	1.40	1.53	1/11
	0.25	0.40	0.55	0.70	0.85	0.93	1.00	1.12	1.31	1.50	1.69	1.88	2.07	1/16
	0.27	0.37	0.65	0.85	1.05	1.15	1.25	1.40	1.65	1.90	2.10	2.40	2.60	1/20
	0.29	0.54	0.78	1.03	1.30	1.40	1.50	1.70	2.00	2.30	2.60	2.90	3.20	1/24

The ratings refer to mineral oil with a viscosity of 34 mm²/s.

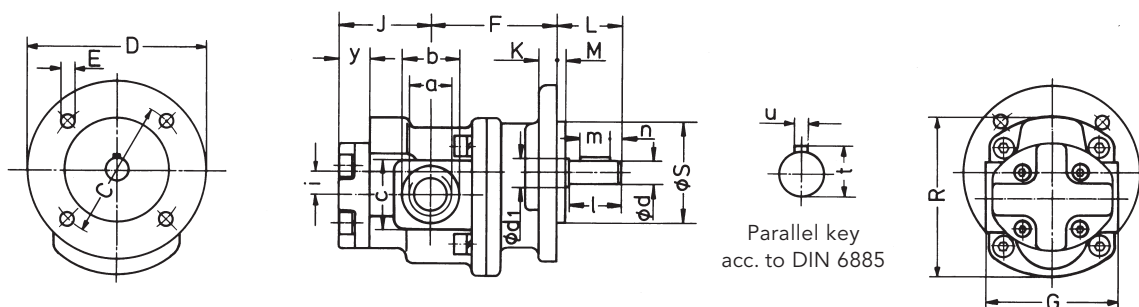
The dispersion of the discharge flow Q as specified in the table may be Q + 2.5 % up to - 5 %.

At viscosities of <30 mm²/s: Reduction of discharge flow.

The drive motor output must be selected 20 % higher than the data for P as specified in the table.

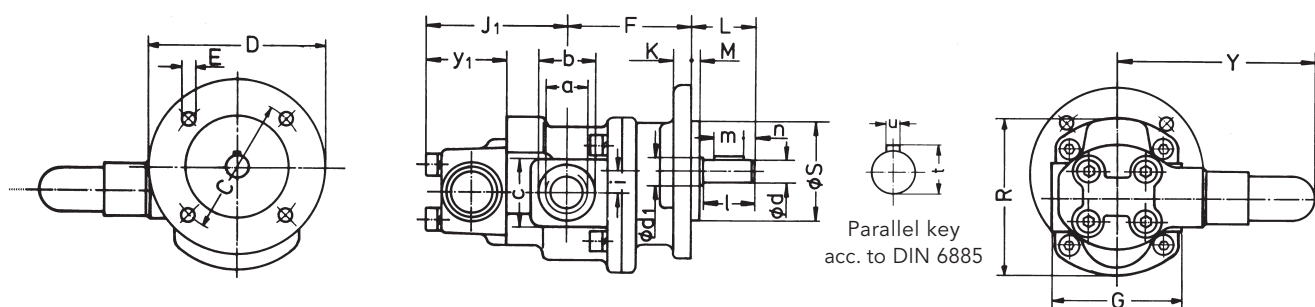
For viscosity of >100 mm²/s, the power input must be increased.

Dimensions



Size	Nom. displacement	Inlet and outlet ports Pipe thread					Shaft end															Weight kg								
		a	b	c	C	D	E	F	G	J ₁	K	L	M	R	S _{h6}	i	y	d ₁	d _{k6}	l	m		n	t	u					
1/	4	G ¹ / ₂	16	deep	29	40	90	110	9	64	38	11	40	5	100	65	15.5	20	16	14	30	20	5	16	5	3.0				
	8	G ³ / ₄	17		36	40				70	57																3.7			
	11	G ³ / ₄	17		36	40				70	57																	3.75		
	16	G ³ / ₄	17		36	40				70	57																		3.8	
	20	G ³ / ₄	17		36	40				80	57																			4.1
	24	G ³ / ₄	17		36	40				80	57																			

Dimensions with Pressure Relief Valve



Size	Nom. displacement	Inlet and outlet ports Pipe thread					Shaft end															Weight kg									
		a	b	c	C	D	E	F	G	J ₁	K	L	M	R	S _{h6}	Y	i	y ₁	d ₁	d _{k6}	l		m	n	t	u					
1/	4	G ¹ / ₂	16	deep	29	40	90	110	9	64	70	11	40	5	100	65	132	15.5	52	16	14	30	20	5	16	5	3.8				
	8	G ³ / ₄	17		36	40				70	89																	4.5			
	11	G ³ / ₄	17		36	40				70	89																		4.55		
	16	G ³ / ₄	17		36	40				70	89																			4.6	
	20	G ³ / ₄	17		36	40				80	89																				4.9
	24	G ³ / ₄	17		36	40				80	89																				

Power Consumption

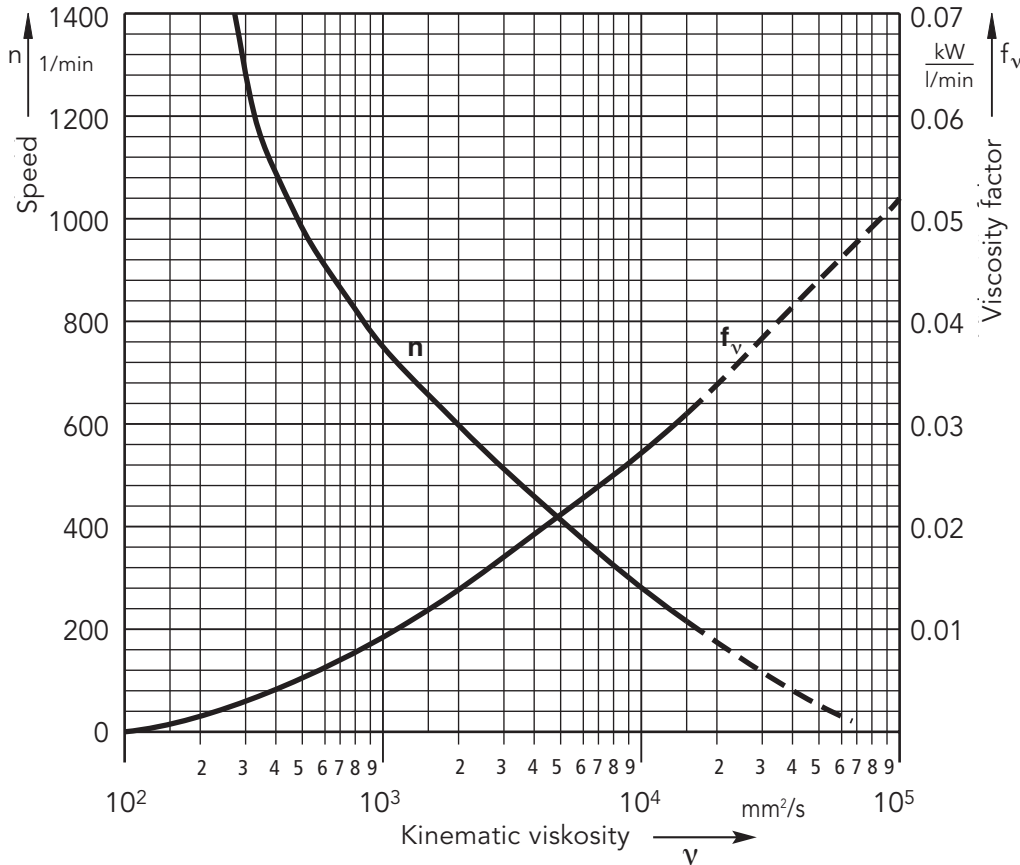


Chart: $n, f_v = f(v)$

Note:
To determine the power consumption, always take the max. operating viscosity at starting state into consideration.
The power of the drive motor should be selected 20% higher than the value determined.

Calculation of Power Consumption

$$P_{1Pu} = P_{tab} \cdot \frac{n}{1450} + f_v \cdot Q$$

P_{1Pu} = Power input, pump (kW)

P_{tab} = Power input acc. to table (kW)

n = Speed (1/min)
Observe dependance of viscosity

f_v = Viscosity factor $\left[\frac{\text{kW}}{\text{l/min}} \right]$
see chart

Q = Discharge flow (l/min) with $Q = \frac{V_g \cdot n}{1000}$

V_g = Geometrical displacement (cm³)

Example: Pump Type KF1/.

Viscosity	$v = 3000 \text{ mm}^2/\text{s}$
Operating pressure	$p = 16 \text{ bar}$
with	$P_{tab} = 4.7 \text{ kW}$
	$n = 500 \text{ 1/min}$
	$f_v = 0.017 \frac{\text{kW}}{\text{l/min}}$
	$Q = 50 \text{ l/min}$

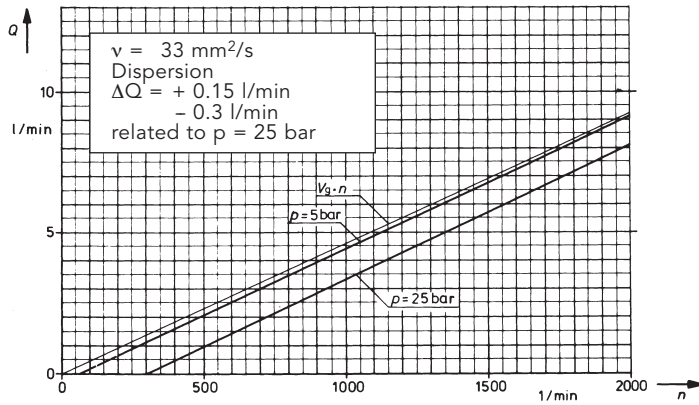
then
 $P_{1pu} = \left(4.7 \cdot \frac{500}{1450} + 0.17 \cdot 50 \right) \text{ kW}$
 $P_{1Pu} = 2.47 \text{ kW}$

Motor power output: $P_{2Mot} = 1.2 \cdot P_{1Pu} = 2.96 \text{ kW}$

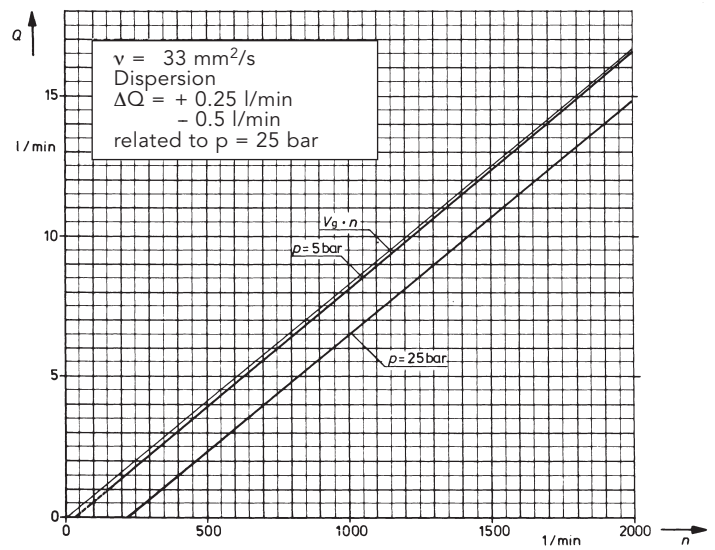
Select helical geared motor
 Size 100 L with $P = 3.0 \text{ kW}$
 $n = 490 \text{ 1/min}$

Characteristic Curves

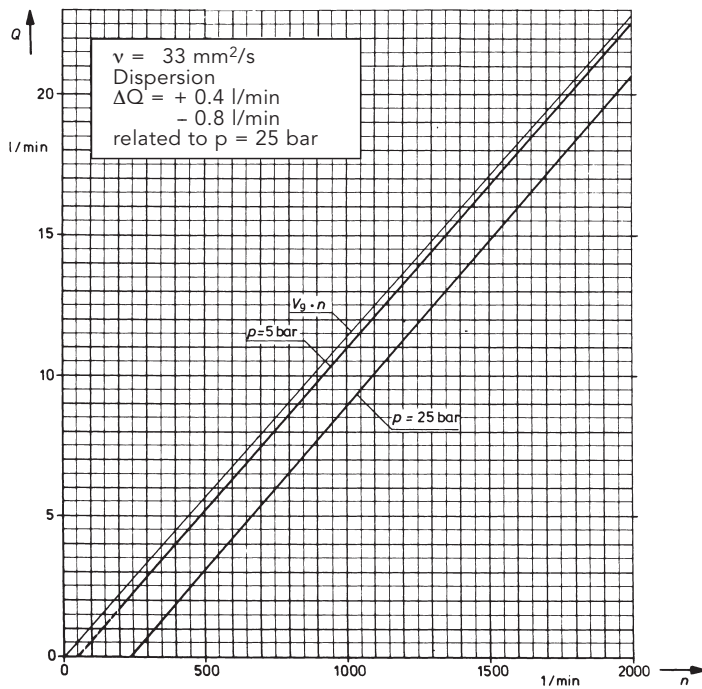
KF 1/4 ... E.



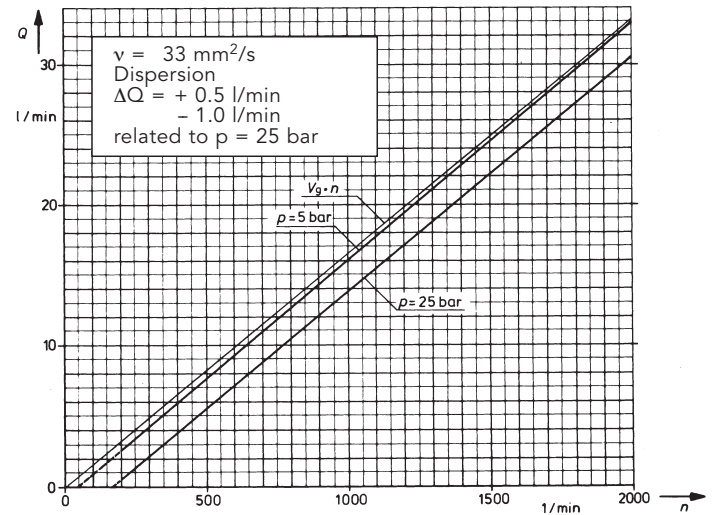
KF 1/8 ... E.



KF 1/11 ... E.

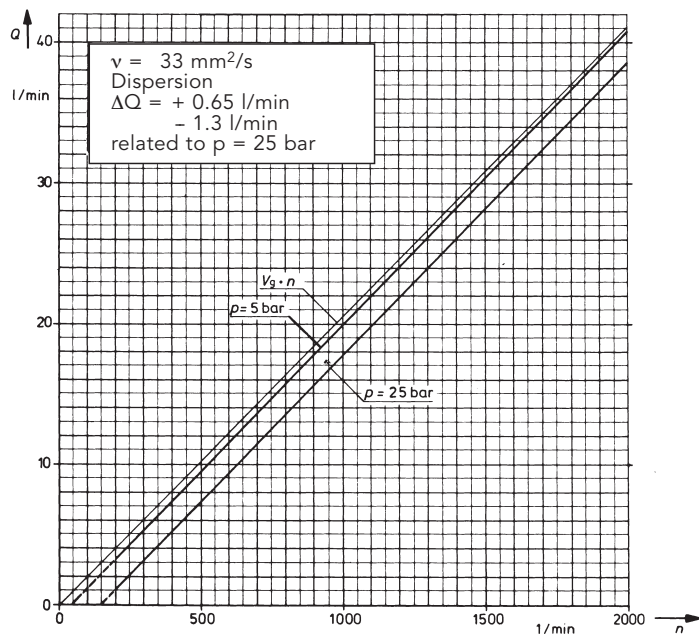


KF 1/16 ... E.

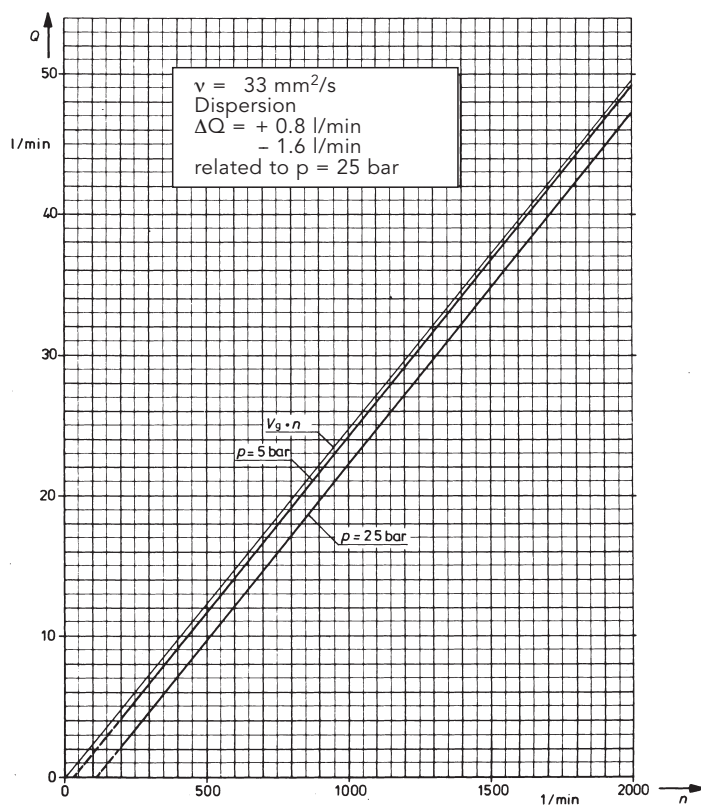


Characteristic Curves

KF 1/20 ... E.



KF 1/24 ... E.



Product Portfolio

Transfer Pumps

Transfer pumps for lubricating oil supply equipment, low pressure filling and feed systems, dosing and mixing systems.

Mobile Hydraulics

Single and multistage high pressure gear pumps, hydraulic motors and valves for construction machinery, vehicle-mounted machines.

Flow Measurement

Gear and turbine flow meters and electronics for volume and flow metering technology in hydraulics, processing and laquering technology.

Industrial Hydraulics / Test Bench Construction

Cetop directional control and proportional valves, hydraulic cylinders, pressure, quantity and stop valves for pipe and slab construction, hydraulic accessories for industrial hydraulics (mobile and stationary use).

Technology Test benches / Fluid Test benches.



KF 1/4...KF 1/24 / DE / 02.10

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