Screw pumps KTS

KTS

KNOLL
.It works

available from stock

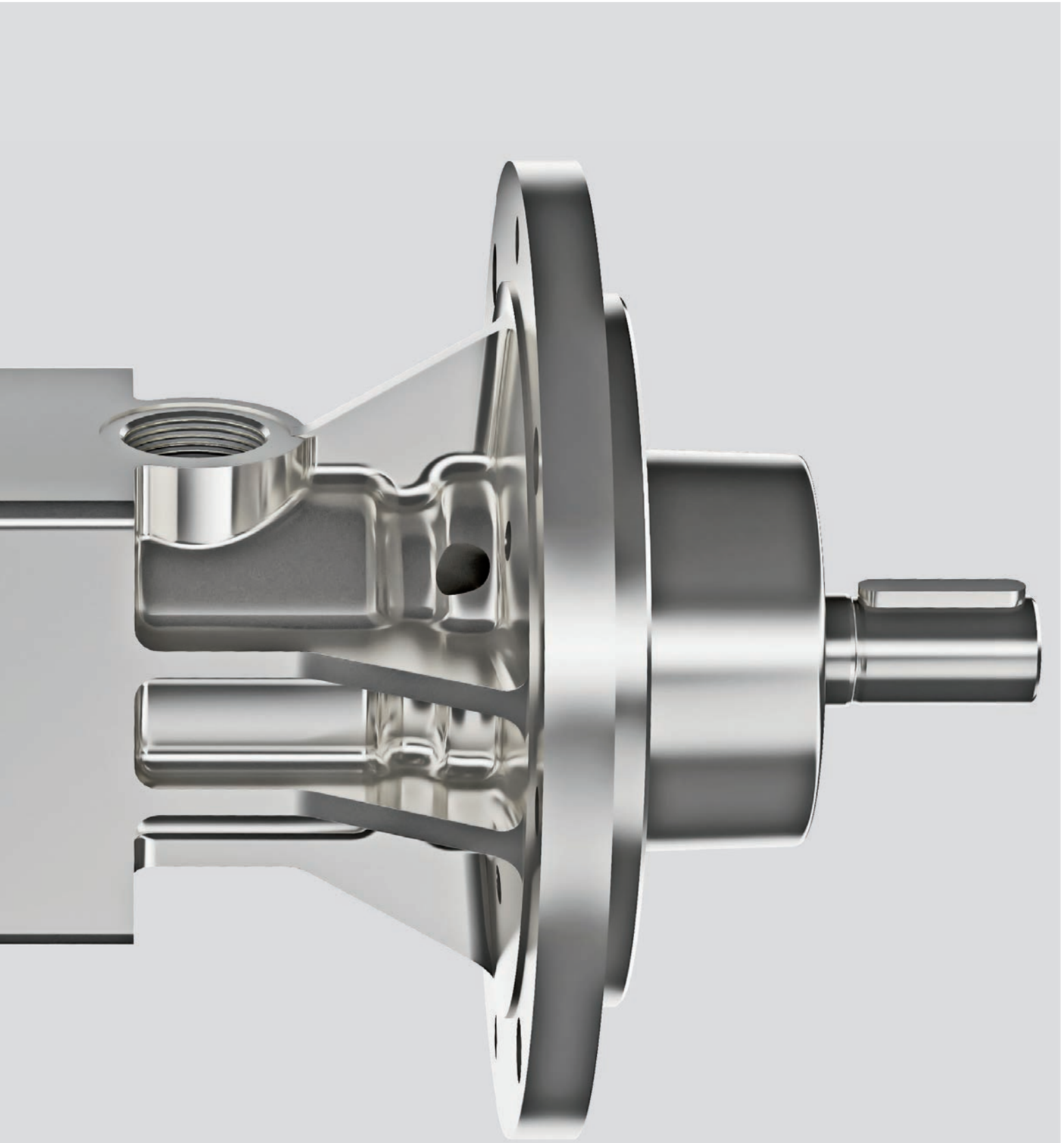
Version 01-2020

Content

KNOLL .It works

KNOLL is the largest employer in the Upper Swabian city Bad Saulgau with approximately 1,000 employees. Walter Knoll laid the foundation for the company in 1970. The family business supplies manufacturers and users of machine tools with conveyor and filter systems worldwide. All sectors that use machine tools for turning, milling, drilling or grinding apply KNOLL products, especially machine construction, electrotechnology, vehicle assembly, the aerospace industry and the energy sector. Since 1974, the company has grown continuously on its own premises. Its affiliation with and sense of responsibility toward the local region are part of its corporate philosophy. Whether planes, turbine buckets, car rims, knives or cell phones, the list of end products that KNOLL contributes to is highly varied.

KNOLL Maschinenbau ranks among the leading suppliers of systems for conveying and filtering chips and cooling lubricants in the metal machining industry. The screw pump KTS has been a KNOLL success story for over 28 years. It conveys cooling lubricants (oils, emulsions, aqueous solutions) for high-pressure applications on machine tools. A typical example is cooling, lubrication and chip transportation for tools with an internal cooling lubricant supply during drilling and milling. The KTS offers innovative technology, durability and wear resistance. Through cutting-edge production technologies, continuous development and a highly efficient logistics and service network we have established ourselves in this segment.

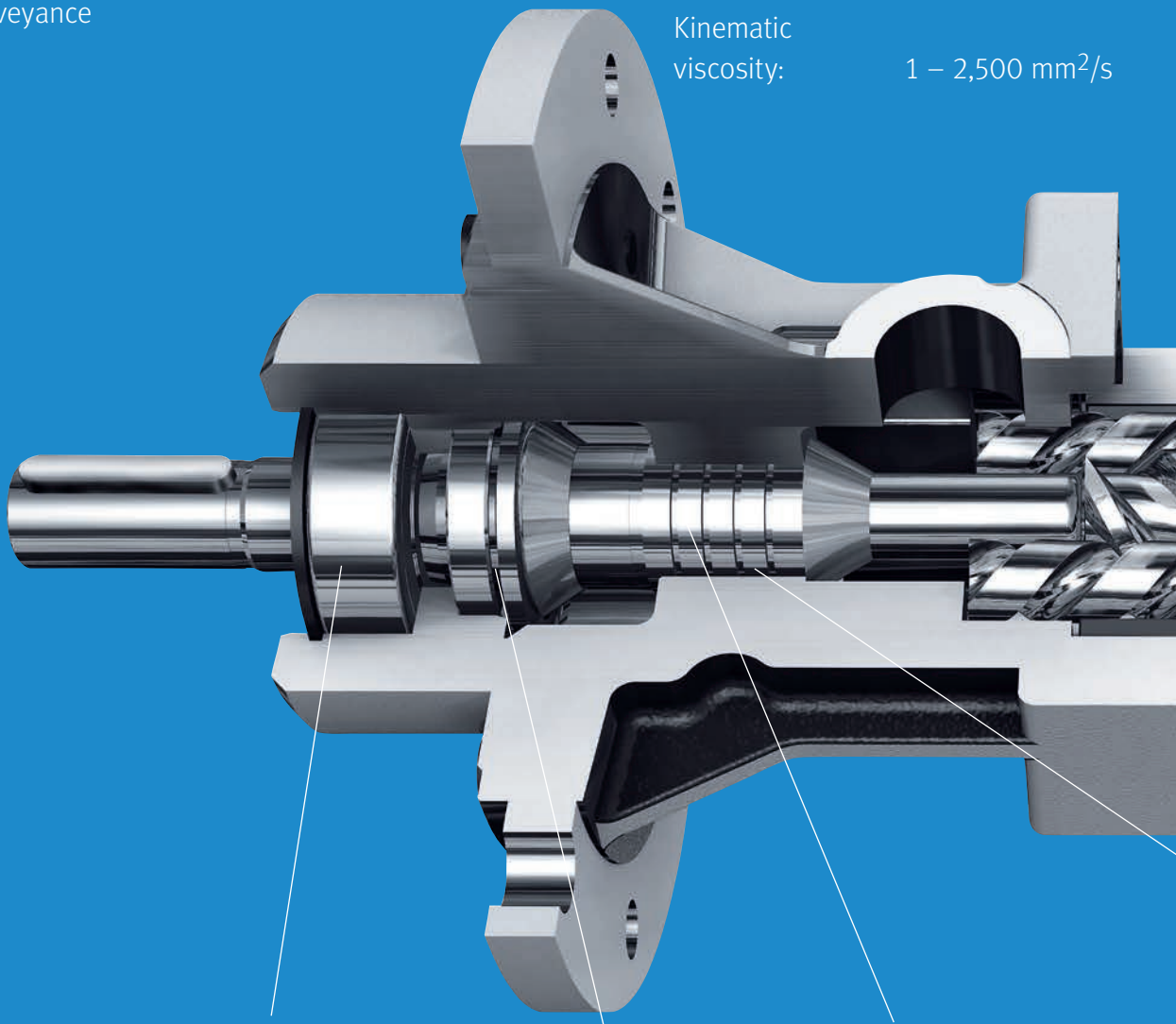


Advantages

- Long durability thanks to high wear resistance
- Low pulsation
- High temperature resistance
- Low noise generation
- Gentle liquid conveyance

Specifications

Delivery rate:	1 – 900 l/min
Pressure increase:	1 – 200 bar
Inlet pressure:	max. 20 bar
Temperature:	max. 130 °C
Air content:	3 – 5 vol. %
Kinematic viscosity:	1 – 2,500 mm^2/s



Design features

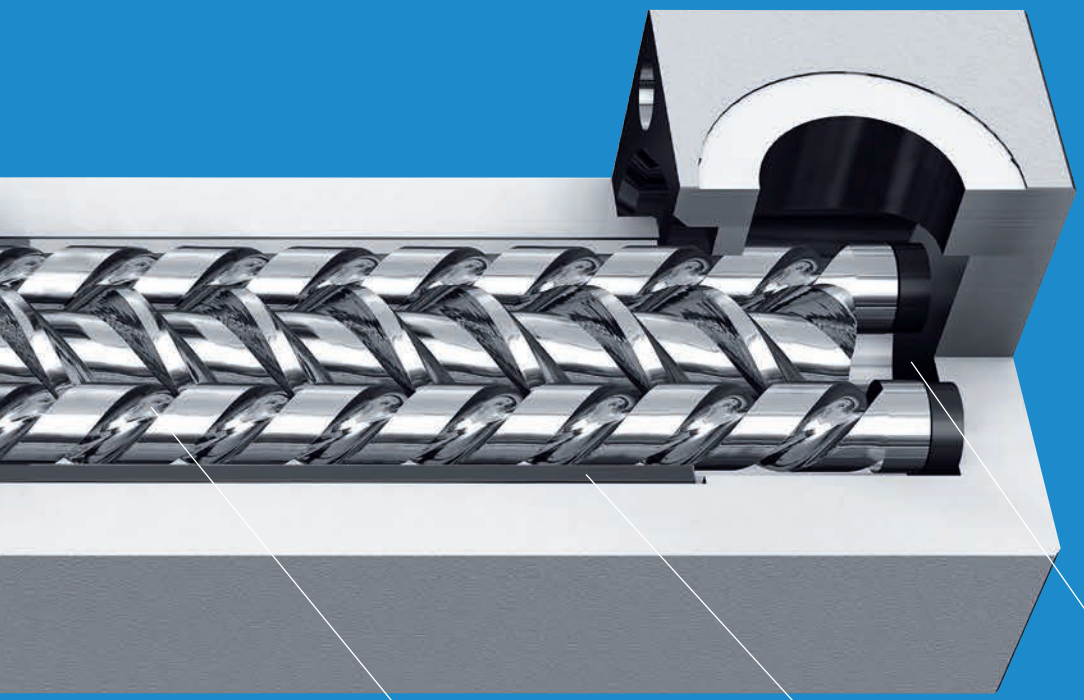
Exterior main bearing for greater durability

Optional axial face seal for dry installation

Labyrinth for effective pressure reduction and high efficiency

Layout

Screw pumps KTS by KNOLL are self-priming displacement pumps suitable for lubricating and little abrasive media. The pump consists of three primary components:
1. Suction housing, 2. Spindle housing with a drive spindle and two concurrently rotating running spindles, 3. Pressure port housing with throttling point, sealed shaft feedthrough and external main bearing.
The spindle housing consists of two steel-embedded ceramic shells.



Optional ceramic piston bushing at the throttle gap to minimize wear

Precision manufactured screw spindles from long-lasting specially treated tool steel

Precision manufactured spindle housing made of ceramic, thereby nearly wear-free

Wear resistant axial thrust balance

Type code

KTS 25-50-T-A-G-KB-H-B

- Configuration
- Type / size
- Spindle pitch
- Model T
- Axial thrust balance
- Mechanical seal G/G4
  G = inlet pressure ≤ 8 bar
  G4 = inlet pressure 8 – 20 bar
- Ceramic piston bushing
- High pressure › 150 bar
- Coating

Features	Type	KTS 20	KTS 25	KTS 32	KTS 40	KTS 50	KTS 60
Spindle package made of specially treated tool steel, optional with mechanical seal	T (-G)	●	●	●	●	●	–
Spindle package made of specially treated tool steel and high wear-resistant SiC feedthrough at the throttling point, optional with mechanical seal	T (-G)-KB	●	●	●	●	●	–
Spindle package with high-strength coating and high wear-resistant SiC feedthrough at the throttling point with mechanical seal	T-G-KB-B	–	○	○	○	○	–
Spindle package with high-strength coating and high wear-resistant SiC feedthrough at the throttling point with mechanical seal and axial thrust balance	T-A-G-KB	○	○	–	–	–	●
Spindle package with high-strength coating and high wear-resistant SiC feedthrough at the throttling poinz with mechanical seal and axial thrust balance	T-A-G-KB-B	–	○*	○	○	○	–
Spindle package made of specially treated tool steel with mechanical seal at increased inlet pressure	T-G4	○	○	○	○	○	–

● Preferred series; ○ Option; – not available
* execution only in T-A-G-KB-H-B possible

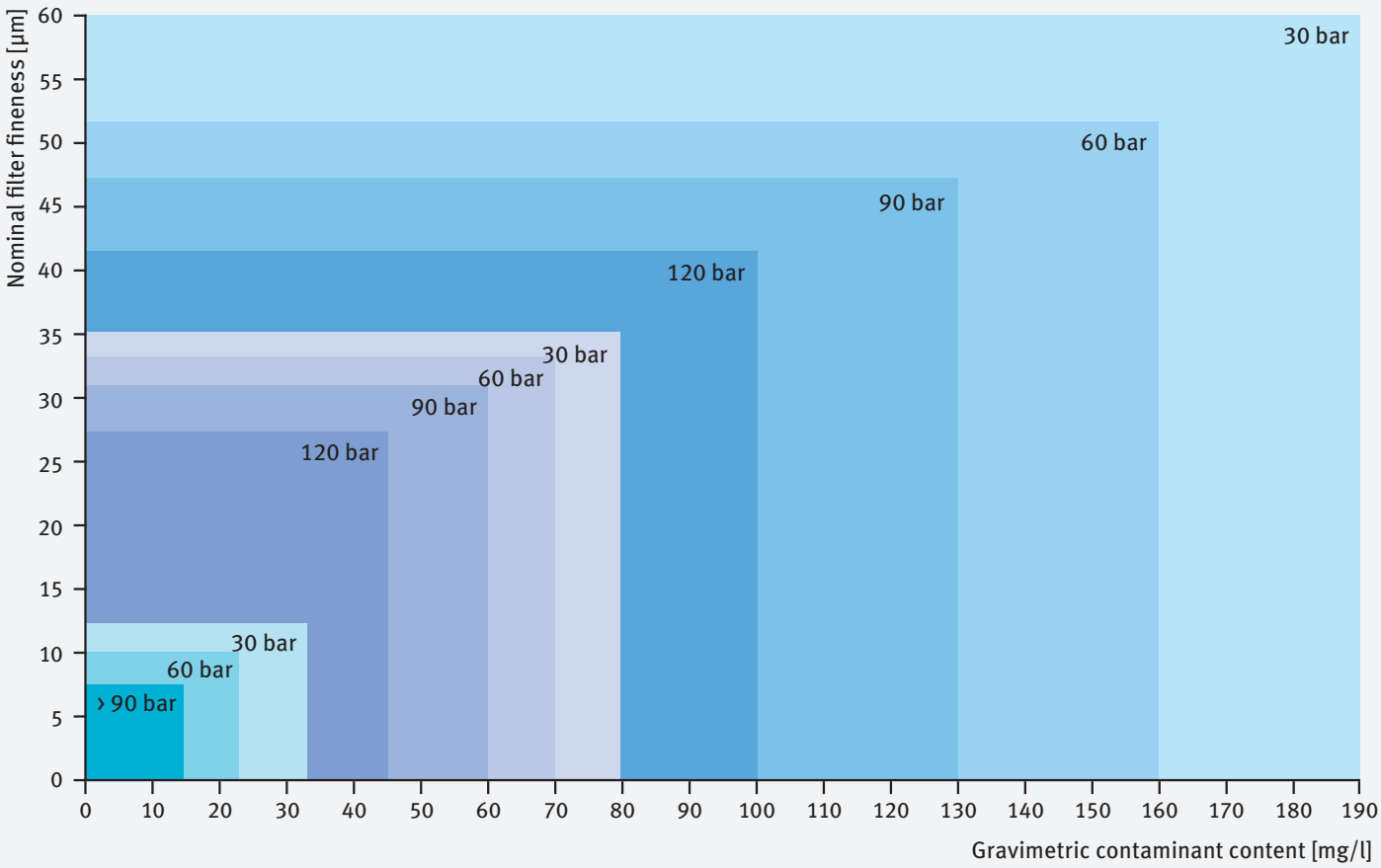
Versions

All pumps come in a submersible version for vertical installation (usually in containers) and in a foot version for horizontal and vertical dry installation.
KTS pumps can optionally be equipped with PQ-Tronic speed control.

Inspection

Precision in accordance with inspection regulations
Q › 100 l/min VDMA 24284, class II, group II
Q ≤ 1100 l/min KNOLL instructions

Recommended filter quality



The information refers to the gravimetric contaminant content with a 5 µm cellulose membrane in 100 ml sample.

Very hard particles* 1,000 – 10,000 HV Such as corundum, ceramic, SiC, glass and carbide metals. Corundum upon request	**Hard particles 500 – 1,000 HV** Such as hardened steel, cast material with filler metal, aluminum with a high silicon content, abrasive: CBN/diamond	**Soft particles ‹ 500 HV** Such as unhardened steel, grey cast iron, non-ferrous metals

* Option B with coated spindles recommended

KTS selection

Maximum pressure [bar]**

	Grinding		Grinding		Turning, Milling, Drilling		Turning, Milling, Drilling	
	Emulsion	Oil	Emulsion	Oil	Emulsion	Oil	Emulsion	Oil
T (-G/G4)	–	–	30	60	60	80	80	100
T (-G)-KB	–	–	60	90	80	100	100	120
T-G-KB-B T-A-G-KB (-B)	60	90	90	120	120	120	150	1

** Pressures above 150 bar on request

2,900 rpm
50 Hz
1 mm²/s

Motor:	2-pole
Rotational speed:	2,900 rpm
Frequency:	50 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	1 mm²/s, such as emulsion

Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		15	14.1	13.3	12.5	11.8	11.1	10.5	9.9	9.4	8.9	8.5	8.1	7.8	7.5	7.3
	P		0.4	0.7	1	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.3	3.6	3.9	4.2	4.5
KTS 20-40	Q		19.5	18.6	17.8	17	16.3	15.6	15	14.4	13.9	13.4	13	12.6	12.3	12	11.8
	P		0.5	1	1.4	1.9	2.3	2.7	3.2	3.6	4.1	4.5	4.9	5.4	5.8	6.3	6.7
KTS 25-34	Q		26.6	25.4	24.2	23.1	22.0	21.0	20.1	19.2	18.4	17.6	16.9	16.2	15.4	14.6	13.9
	P		0.7	1.2	1.8	2.3	2.8	3.4	3.9	4.5	5.0	5.6	6.1	6.7	7.2	7.8	8.3
KTS 25-38	Q		29.7	28.7	27.7	26.8	25.9	25	24.2	23.4	22.7	22	21.4	20.8	20.2	19.7	19.3
	P		0.7	1.3	1.9	2.5	3.1	3.7	4.3	4.9	5.5	6.1	6.7	7.3	7.9	8.5	9.1
KTS 25-50	Q		38.5	37.2	36	34.8	33.7	32.6	31.6	30.6	29.7	28.9	28.1	27.4	26.8	26.2	25.7
	P		1	1.7	2.5	3.3	4	4.8	5.6	6.3	7.1	7.9	8.7	9.4	10.2	11	11.7
KTS 25-60	Q		45.2	43.8	42.3	41	39.8	38.6	37.5	36.4	35.5	34.6	33.8	33.1	32.4	31.8	31.4
	P		1.1	2	3	4	5	5.9	6.9	7.9	8.8	9.8	10.8	11.7	12.7	13.7	14.7
KTS 32-48	Q		58.5	56.6	54.8	53.1	51.5	49.9	48.5	47.2	45.9	44.8	43.8	42.8	42	41.2	40.6
	P		1.4	2.5	3.7	4.8	6	7.2	8.3	9.5	10.6	11.8	13	14.1	15.3	16.4	17.6
KTS 32-64	Q		79.4	77.2	75	72.9	70.9	69	67.2	65.5	63.8	62.3	60.8	59.5	58.2	57	55.9
	P		1.9	3.5	5	6.6	8.1	9.7	11.3	12.8	14.4	15.9	17.5	19.1	20.6	22.2	23.7
KTS 32-76	Q		92.4	90.2	87.9	85.8	83.8	81.8	79.9	78	76.3	74.6	73	71.5	70	68.6	67.4
	P		2.3	4.2	6	7.9	9.7	11.6	13.4	15.3	17.1	19	20.8	22.7	24.5	26.4	28.2
KTS 40-60	Q		115	112	109	106	103	100	97.6	95.1	92.8	90.5	88.4	86.3			
	P		2.8	4.9	7	9.1	11.2	13.3	15.4	17.5	19.6	21.7	23.8	25.9			
KTS 40-80	Q		156	152	148	144	141	137	134	131	128	125	122	119			
	P		3.7	6.6	9.6	12.5	15.5	18.4	21.4	24.3	27.3	30.2	33.2	36.1			
KTS 40-96	Q		187	183	179	175	171	167	164	160	157	154	151	148			
	P		4.4	8.1	11.8	15.5	19.3	23	26.7	30.5	34.2	37.9	41.7	45.4			
KTS 50-74	Q		228	224	220	217	213	209	206	202	199	195	192	188			
	P		5	9.4	13.8	18.3	22.7	27.1	31.5	35.9	40.4	44.8	49.2	53.6			
KTS 50-100	Q		311	305	300	294	289	284	279	274	270	266	261	257			
	P		7	13	19	25	31	37	43	49	55	61	67	73			
KTS 50-120	Q		374	367	360	353	347	341	334	328	323	317	312	306			
	P		8.6	15.7	22.8	29.9	37	44.2	51.3	58.4	65.5	72.6	79.8	86.9			
KTS 60-90	Q		458	447	436	425	415	405	396	387	378	369					
	P		10	18.3	26.6	34.9	43.2	51.5	59.8	68.1	76.4	84.7					
KTS 60-120	Q		606	592	579	566	553	541	530	519							
	P		12	22.5	33	43.5	54	64.5	75	85.5							
KTS 60-130	Q		651	639	627	614	602	590	578	567							
	P		13	24.2	35.4	46.6	57.8	69	80.2	91.5							
KTS 60-145	Q		735	718	701	686	670	655									
	P		14.7	28.3	41.9	55.5	69.1	82.7									

Only the characteristic values of version T are shown, different values for other variants are possible.

Motor:	2-pole
Rotational speed:	2,900 rpm
Frequency:	50 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	20 mm²/s, such as oil

2,900 rpm
50 Hz
20 mm²/s

Viscosity › 20 mm²/s greater power requirement. Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		15.3	14.9	14.5	14.1	13.7	13.4	13.1	12.8	12.5	12.3	12.1	11.9	11.7	11.6	11.5
	P		0.4	0.7	1	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.3	3.6	3.9	4.2	4.5
KTS 20-40	Q		20.2	19.7	19.3	18.9	18.6	18.2	17.9	17.6	17.4	17.1	16.9	16.7	16.6	16.4	16.3
	P		0.5	1	1.4	1.9	2.3	2.7	3.2	3.6	4.1	4.5	4.9	5.4	5.8	6.3	6.7
KTS 25-34	Q		27.5	26.6	25.7	24.9	24.2	23.5	22.9	22.3	21.8	20.9	20.4	19.9	19.4	19.0	18.5
	P		0.7	1.2	1.8	2.3	2.8	3.4	3.9	4.5	5.0	5.6	6.1	6.7	7.2	7.8	8.3
KTS 25-38	Q		30.4	29.8	29.3	28.9	28.4	28	27.6	27.2	26.8	26.5	26.2	25.9	25.6	25.4	25.1
	P		0.7	1.3	1.9	2.5	3.1	3.7	4.3	4.9	5.5	6.1	6.7	7.3	7.9	8.5	9.1
KTS 25-50	Q		39.7	39	38.4	37.8	37.2	36.7	36.2	35.7	35.3	34.8	34.5	34.1	33.8	33.5	33.2
	P		1	1.7	2.5	3.3	4	4.8	5.6	6.3	7.1	7.9	8.7	9.4	10.2	11	11.7
KTS 25-60	Q		47.1	46.3	45.6	45	44.3	43.8	43.2	42.7	42.2	41.8	41.4	41	40.7	40.4	40.1
	P		1.1	2	3	4	5	5.9	6.9	7.9	8.8	9.8	10.8	11.7	12.7	13.7	14.7
KTS 32-48	Q		61.3	60.4	59.5	58.6	57.8	57	56.3	55.7	55	54.5	54	53.5	53.1	52.7	52.4
	P		1.4	2.5	3.7	4.8	6	7.2	8.3	9.5	10.6	11.8	13	14.1	15.3	16.4	17.6
KTS 32-64	Q		82.5	81.4	80.3	79.2	78.2	77.3	76.4	75.5	74.7	73.9	73.2	72.5	71.9	71.3	70.7
	P		1.9	3.5	5	6.6	8.1	9.7	11.3	12.8	14.4	15.9	17.5	19.1	20.6	22.2	23.7
KTS 32-76	Q		97	95.9	94.8	93.7	92.7	91.7	90.7	89.8	88.9	88.1	87.3	86.5	85.8	85.1	84.5
	P		2.3	4.2	6	7.9	9.7	11.6	13.4	15.3	17.1	19	20.8	22.7	24.5	26.4	28.2
KTS 40-60	Q		120	118	117	115	114	113	111	110	109	108	107	106			
	P		2.8	4.9	7	9.1	11.2	13.3	15.4	17.5	19.6	21.7	23.8	25.9			
KTS 40-80	Q		161	160	158	156	154	152	151	149	147	146	144	143			
	P		3.7	6.6	9.6	12.5	15.5	18.4	21.4	24.3	27.3	30.2	33.2	36.1			
KTS 40-96	Q		194	192	190	188	186	184	182	180	179	177	176	174			
	P		4.4	8.1	11.8	15.5	19.3	23	26.7	30.5	34.2	37.9	41.7	45.4			
KTS 50-74	Q		235	233	231	229	227	225	224	222	220	218	216	215			
	P		5	9.4	13.8	18.3	22.7	27.1	31.5	35.9	40.4	44.8	49.2	53.6			
KTS 50-100	Q		319	316	313	310	308	305	303	300	298	296	294	292			
	P		7	13	19	25	31	37	43	49	55	61	67	73			
KTS 50-120	Q		383	379	376	372	369	366	363	360	357	354	352	349			
	P		8.6	15.7	22.8	29.9	37	44.2	51.3	58.4	65.5	72.6	79.8	86.9			
KTS 60-90	Q		464	458	453	448	443	438	433	428	424	419					
	P		10	18.3	26.6	34.9	43.2	51.5	59.8	68.1	76.4	84.7					
KTS 60-120	Q		609	601	595	588	582	576	570	565							
	P		12	22.5	33	43.5	54	64.5	75	85.5							
KTS 60-130	Q		655	648	642	636	630	624	618								
	P		13	24.2	35.4	46.6	57.8	69	80.2								
KTS 60-145	Q		746	737	729	721	714	706									
	P		14.7	28.3	41.9	55.5	69.1	82.7									

Only the characteristic values of version T are shown, different values for other variants are possible.

1,450 rpm
50 Hz
1 mm²/s

Motor:	4-pole
Rotational speed:	1,450 rpm
Frequency:	50 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	1 mm²/s, such as emulsion

Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		7.1	6.3	5.4	4.7	3.9	3.3	2.6	2.1	1.5	1.1					
	P		0.2	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.4	1.5					
KTS 20-40	Q		9	8.2	7.3	6.6	5.8	5.2	4.5	4	3.4	3					
	P		0.3	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2	2.3					
KTS 25-34	Q		12.3	10.8	9.4	8.3	7.4	6.6	5.8	5.0	4.2	3.4					
	P		0.4	0.7	0.9	1.2	1.5	1.8	2.0	2.3	2.6	2.9					
KTS 25-38	Q		14.2	13.2	12.2	11.3	10.4	9.5	8.7	7.9	7.2	6.5					
	P		0.4	0.7	1	1.3	1.6	1.9	2.2	2.5	2.8	3.1					
KTS 25-50	Q		18.1	16.8	15.6	14.4	13.3	12.2	11.2	10.2	9.3	8.5					
	P		0.5	0.9	1.2	1.6	2	2.4	2.8	3.2	3.6	3.9					
KTS 25-60	Q		20.8	19.3	17.9	16.5	15.3	14.1	13	12	11	10.1					
	P		0.5	1	1.5	2	2.5	3	3.4	3.9	4.4	4.9					
KTS 32-48	Q		26.4	24.5	22.7	21	19.4	17.9	16.4	15.1	13.9	12.7					
	P		0.7	1.3	1.8	2.4	3	3.6	4.2	4.7	5.3	5.9					
KTS 32-64	Q		36.7	34.4	32.2	30.2	28.2	26.3	24.4	22.7	21.1	19.5					
	P		1	1.7	2.5	3.3	4.1	4.9	5.6	6.4	7.2	8					
KTS 32-76	Q		41.7	39.4	37.2	35	33	31	29.1	27.3	25.5	23.8					
	P		1.2	2.1	3	3.9	4.9	5.8	6.7	7.6	8.6	9.5					
KTS 40-60	Q		52.1	49	46	43	40.2	37.5	35	32.5	30.1	27.9					
	P		1.4	2.5	3.5	4.6	5.6	6.7	7.7	8.8	9.8	10.9					
KTS 40-80	Q		72.4	68.5	64.7	61	57.4	53.9	50.5	47.2	44	41					
	P		1.8	3.3	4.8	6.3	7.7	9.2	10.7	12.2	13.6	15.1					
KTS 40-96	Q		87.3	82.9	78.7	74.6	70.7	66.9	63.3	59.9	56.6	53.5					
	P		2.2	4	5.9	7.8	9.6	11.5	13.4	15.2	17.1	19					
KTS 50-74	Q		107	104	99.8	96	92.3	88.6	85	81.4	77.8	74.3					
	P		2.5	4.7	6.9	9.1	11.3	13.6	15.8	18	20.2	22.4					
KTS 50-100	Q		148	142	137	131	126	121	116	111	107	102					
	P		3.5	6.5	9.5	12.5	15.5	18.5	21.5	24.5	27.5	30.5					
KTS 50-120	Q		178	171	164	158	151	145	139	133	127	121					
	P		4.3	7.8	11.4	15	18.5	22.1	25.6	29.2	32.8	36.3					
KTS 60-90	Q		223	212	201	191	180	171	161	152							
	P		5	9.2	13.3	17.5	21.6	25.8	29.9	34.1							
KTS 60-120	Q		301	287	273	260	248	236	225	214							
	P		6	11.3	16.5	21.8	27	32.3	37.5	42.8							
KTS 60-130	Q		323	310	298	286	273	261	250	238							
	P		6.5	12.1	17.7	23.3	28.9	34.5	40.1	45.7							
KTS 60-145	Q		356	339	323	307	292	277	263	249							
	P		7.4	14.2	21	27.8	34.6	41.4	48.2	55							

Only the characteristic values of version T are shown, different values for other variants are possible.

Motor:	4-pole
Rotational speed:	1,450 rpm
Frequency:	50 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	20 mm²/s, such as oil

1,450 rpm
50 Hz
20 mm²/s

Viscosity › 20 mm²/s greater power requirement. Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		7.5	7.1	6.6	6.3	5.9	5.6	5.2	5	4.7	4.5					
	P		0.2	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.4	1.5					
KTS 20-40	Q		9.7	9.3	8.9	8.5	8.1	7.8	7.5	7.2	6.9	6.7					
	P		0.3	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2	2.3					
KTS 25-34	Q		13.1	11.9	11.0	10.1	9.5	9.0	8.4	7.9	7.4	6.9					
	P		0.4	0.7	0.9	1.2	1.5	1.8	2.0	2.3	2.6	2.9					
KTS 25-38	Q		14.9	14.3	13.8	13.4	12.9	12.5	12.1	11.7	11.3	11					
	P		0.4	0.7	1	1.3	1.6	1.9	2.2	2.5	2.8	3.1					
KTS 25-50	Q		19.3	18.6	18	17.4	16.8	16.3	15.8	15.3	14.9	14.5					
	P		0.5	0.9	1.2	1.6	2	2.4	2.8	3.2	3.6	3.9					
KTS 25-60	Q		22.6	21.9	21.2	20.5	19.9	19.3	18.7	18.2	17.7	17.3					
	P		0.5	1	1.5	2	2.5	3	3.4	3.9	4.4	4.9					
KTS 32-48	Q		29.2	28.3	27.4	26.5	25.7	25	24.3	23.6	23	22.4					
	P		0.7	1.3	1.8	2.4	3	3.6	4.2	4.7	5.3	5.9					
KTS 32-64	Q		39.7	38.6	37.5	36.5	35.5	34.5	33.6	32.7	31.9	31.2					
	P		1	1.7	2.5	3.3	4.1	4.9	5.6	6.4	7.2	8					
KTS 32-76	Q		46.2	45.1	44	42.9	41.9	40.9	39.9	39	38.1	37.3					
	P		1.2	2.1	3	3.9	4.9	5.8	6.7	7.6	8.6	9.5					
KTS 40-60	Q		57.4	55.8	54.3	52.8	51.4	50.1	48.8	47.6	46.4	45.3					
	P		1.4	2.5	3.5	4.6	5.6	6.7	7.7	8.8	9.8	10.9					
KTS 40-80	Q		78	76	74.1	72.2	70.4	68.7	67	65.4	63.8	62.3					
	P		1.8	3.3	4.8	6.3	7.7	9.2	10.7	12.2	13.6	15.1					
KTS 40-96	Q		93.7	91.6	89.5	87.4	85.5	83.6	81.8	80.1	78.4	76.9					
	P		2.2	4	5.9	7.8	9.6	11.5	13.4	15.2	17.1	19					
KTS 50-74	Q		114	112	110	108	107	105	103	101	99.3	97.5					
	P		2.5	4.7	6.9	9.1	11.3	13.6	15.8	18	20.2	22.4					
KTS 50-100	Q		156	153	150	147	145	142	140	137	135	133					
	P		3.5	6.5	9.5	12.5	15.5	18.5	21.5	24.5	27.5	30.5					
KTS 50-120	Q		187	184	180	177	173	170	167	164	161	159					
	P		4.3	7.8	11.4	15	18.5	22.1	25.6	29.2	32.8	36.3					
KTS 60-90	Q		229	223	218	213	208	203	198	193							
	P		5	9.2	13.3	17.5	21.6	25.8	29.9	34.1							
KTS 60-120	Q		303	296	289	283	277	271	265	260							
	P		6	11.3	16.5	21.8	27	32.3	37.5	42.8							
KTS 60-130	Q		326	320	313	307	301	295	289	283							
	P		6.5	12.1	17.7	23.3	28.9	34.5	40.1	45.7							
KTS 60-145	Q		367	359	351	343	335	328	321	314							
	P		7.4	14.2	21	27.8	34.6	41.4	48.2	55							

Only the characteristic values of version T are shown, different values for other variants are possible.

3,500 rpm
60 Hz
1 mm²/s

Motor:	2-pole
Rotational speed:	3,500 rpm
Frequency:	60 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	1 mm²/s, such as emulsion

Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		18.2	17.3	16.5	15.7	15	14.3	13.7	13.1	12.6	12.1	11.7	11.3	11	10.7	10.5
	P		0.5	0.9	1.2	1.6	1.9	2.3	2.6	3	3.3	3.7	4	4.4	4.7	5.1	5.4
KTS 20-40	Q		23.8	22.9	22.1	21.3	20.6	19.9	19.3	18.7	18.2	17.7	17.3	16.9	16.6	16.3	16.1
	P		0.7	1.2	1.7	2.2	2.8	3.3	3.8	4.4	4.9	5.4	6	6.5	7	7.6	8.1
KTS 25-34	Q		32.6	31.4	30.2	29.0	27.9	26.9	25.9	25.0	24.1	23.3	22.6	21.9	21.3	20.8	20.3
	P		0.8	1.5	2.1	2.7	3.4	4.0	4.7	5.3	5.9	6.6	7.2	7.8	8.5	9.1	9.8
KTS 25-38	Q		36.1	35.1	34.1	33.2	32.3	31.4	30.6	29.8	29.1	28.4	27.8	27.2	26.6	26.1	25.7
	P		0.8	1.6	2.3	3	3.7	4.5	5.2	5.9	6.6	7.4	8.1	8.8	9.5	10.3	11
KTS 25-50	Q		47	45.7	44.4	43.2	42.1	41	40	39.1	38.2	37.3	36.6	35.9	35.2	34.6	34.1
	P		1.1	2.1	3	3.9	4.9	5.8	6.7	7.7	8.6	9.5	10.4	11.4	12.3	13.2	14.2
KTS 25-60	Q		55.4	53.9	52.5	51.1	49.9	48.7	47.6	46.6	45.6	44.7	43.9	43.2	42.5	42	41.5
	P		1.3	2.5	3.6	4.8	6	7.1	8.3	9.5	10.7	11.8	13	14.2	15.3	16.5	17.7
KTS 32-48	Q		71.8	69.9	68.1	66.3	64.7	63.2	61.8	60.4	59.2	58.1	57	56.1	55.2	54.5	53.8
	P		1.6	3	4.4	5.8	7.2	8.6	10	11.4	12.8	14.2	15.6	17	18.4	19.8	21.2
KTS 32-64	Q		97.1	94.9	92.7	90.6	88.6	86.7	84.9	83.2	81.5	80	78.5	77.2	75.9	74.7	73.6
	P		2.3	4.2	6.1	7.9	9.8	11.7	13.6	15.5	17.4	19.2	21.1	23	24.9	26.8	28.7
KTS 32-76	Q		113	111	109	107	105	103	101	99	97.3	95.6	94	92.5	91	89.7	88.4
	P		2.8	5	7.2	9.5	11.7	13.9	16.2	18.4	20.6	22.9	25.1	27.3	29.6	31.8	34
KTS 40-60	Q		141	138	135	132	129	126	124	121	119	116	114	112			
	P		3.4	6	8.5	11	13.6	16.1	18.6	21.2	23.7	26.2	28.8	31.3			
KTS 40-80	Q		191	187	183	179	175	172	169	165	162	159	156	153			
	P		4.4	8	11.5	15.1	18.7	22.2	25.8	29.3	32.9	36.5	40	43.6			
KTS 40-96	Q		229	225	220	216	212	209	205	202	198	195	192	189			
	P		5.3	9.8	14.3	18.8	23.3	27.8	32.3	36.8	41.3	45.8	50.3	54.8			
KTS 50-74	Q		278	274	270	267	263	259	256	252	248	245	241	238			
	P		6	11.4	16.7	22	27.4	32.7	38	43.4	48.7	54	59.4	64.7			
KTS 50-100	Q		379	373	367	362	357	352	347	342	337	333	329	325			
	P		8.4	15.7	22.9	30.2	37.4	44.7	51.9	59.1	66.4	73.6	80.9	88.1			
KTS 50-120	Q		455	448	441	434	428	422	415	409	404	398					
	P		10.3	18.9	27.5	36.1	44.7	53.3	61.9	70.5	79.1	87.7					
KTS 60-90	Q		555	544	533	523	512	503	493	484							
	P		12.1	22.1	32.1	42.1	52.1	62.2	72.2	82.2							
KTS 60-120	Q		733	719	705	692	679	668									
	P		14.5	27.2	39.8	52.5	65.2	77.8									
KTS 60-130	Q		788	775	763	751	738	726									
	P		15.7	29.2	42.7	56.2	69.8	83.3									
KTS 60-145	Q		891	874	858	842	827										
	P		17.7	34.2	50.6	67	83.4										

The KTS 60-130 and KTS 60-145 must be operated at an inlet pressure of at least 1.5 bar with an RPM of 3,500.
Only the characteristic values of version T are shown, different values for other variants are possible.

Motor:	2-pole
Rotational speed:	3,500 rpm
Frequency:	60 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	20 mm²/s, such as oil

3,500 rpm
60 Hz
20 mm²/s

Viscosity › 20 mm²/s greater power requirement. Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		18.6	18.1	17.7	17.3	17	16.6	16.3	16	15.8	15.5	15.3	15.1	15	14.8	14.7
	P		0.5	0.9	1.2	1.6	1.9	2.3	2.6	3	3.3	3.7	4	4.4	4.7	5.1	5.4
KTS 20-40	Q		24.5	24.1	23.6	23.3	22.9	22.6	22.2	22	21.7	21.5	21.2	21.1	20.9	20.8	20.6
	P		0.7	1.2	1.7	2.2	2.8	3.3	3.8	4.4	4.9	5.4	6	6.5	7	7.6	8.1
KTS 25-34	Q		33.5	32.6	31.7	30.9	30.1	29.4	28.8	28.2	27.7	26.8	26.3	25.8	25.3	24.8	24.3
	P		0.8	1.5	2.1	2.7	3.4	4.0	4.7	5.3	5.9	6.6	7.2	7.8	8.5	9.1	9.8
KTS 25-38	Q		36.8	36.3	35.8	35.3	34.8	34.4	34	33.6	33.3	32.9	32.6	32.3	32	31.8	31.5
	P		0.8	1.6	2.3	3	3.7	4.5	5.2	5.9	6.6	7.4	8.1	8.8	9.5	10.3	11
KTS 25-50	Q		48.1	47.4	46.8	46.2	45.7	45.1	44.6	44.1	43.7	43.3	42.9	42.5	42.2	41.9	41.7
	P		1.1	2.1	3	3.9	4.9	5.8	6.7	7.7	8.6	9.5	10.4	11.4	12.3	13.2	14.2
KTS 25-60	Q		57.2	56.5	55.8	55.1	54.5	53.9	53.3	52.8	52.3	51.9	51.5	51.1	50.8	50.5	50.3
	P		1.3	2.5	3.6	4.8	6	7.1	8.3	9.5	10.7	11.8	13	14.2	15.3	16.5	17.7
KTS 32-48	Q		74.6	73.6	72.7	71.9	71.1	70.3	69.6	68.9	68.3	67.7	67.2	66.8	66.3	66	65.6
	P		1.6	3	4.4	5.8	7.2	8.6	10	11.4	12.8	14.2	15.6	17	18.4	19.8	21.2
KTS 32-64	Q		100	99	98	96.9	95.9	95	94.1	93.2	92.4	91.6	90.9	90.2	89.6	89	88.4
	P		2.3	4.2	6.1	7.9	9.8	11.7	13.6	15.5	17.4	19.2	21.1	23	24.9	26.8	28.7
KTS 32-76	Q		118	117	116	115	114	113	112	111	110	109	108	108	107	106	105
	P		2.8	5	7.2	9.5	11.7	13.9	16.2	18.4	20.6	22.9	25.1	27.3	29.6	31.8	34
KTS 40-60	Q		146	144	143	141	140	139	137	136	135	134	133	132			
	P		3.4	6	8.5	11	13.6	16.1	18.6	21.2	23.7	26.2	28.8	31.3			
KTS 40-80	Q		196	194	192	190	189	187	185	183	182	180	179	177			
	P		4.4	8	11.5	15.1	18.7	22.2	25.8	29.3	32.9	36.5	40	43.6			
KTS 40-96	Q		235	233	231	229	227	225	223	222	220	219	217	216			
	P		5.3	9.8	14.3	18.8	23.3	27.8	32.3	36.8	41.3	45.8	50.3	54.8			
KTS 50-74	Q		285	283	281	279	277	275	274	272	270	268	266	265			
	P		6	11.4	16.7	22	27.4	32.7	38	43.4	48.7	54	59.4	64.7			
KTS 50-100	Q		386	383	381	378	375	373	370	368	366	363	361	359			
	P		8.4	15.7	22.9	30.2	37.4	44.7	51.9	59.1	66.4	73.6	80.9	88.1			
KTS 50-120	Q		464	460	457	453	450	447	444	441	438	435					
	P		10.3	18.9	27.5	36.1	44.7	53.3	61.9	70.5	79.1	87.7					
KTS 60-90	Q		561	555	550	545	540	535	530	525							
	P		12.1	22.1	32.1	42.1	52.1	62.2	72.2	82.2							
KTS 60-120	Q		735	728	721	715	708	702									
	P		14.5	27.2	39.8	52.5	65.2	77.8									
KTS 60-130	Q		791	784	778	772	766	760									
	P		15.7	29.2	42.7	56.2	69.8	83.3									
KTS 60-145	Q		902	894	886	878	870										
	P		17.7	34.2	50.6	67	83.4										

The KTS 60-130 and KTS 60-145 must be operated at an inlet pressure of at least 1.5 bar With an RPM of 3,500.
Only the characteristic values of version T are shown, different values for other variants are possible.

1,750 rpm
60 Hz
1 mm²/s

Motor:	4-pole
Rotational speed:	1,750 rpm
Frequency:	60 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	1 mm²/s, such as emulsion

Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		8.8	7.9	7.1	6.3	5.6	4.9	4.3	3.7	3.2	2.7					
	P		0.3	0.4	0.6	0.8	1	1.1	1.3	1.5	1.7	1.8					
KTS 20-40	Q		11.2	10.3	9.5	8.7	8	7.3	6.7	6.1	5.6	5.1					
	P		0.3	0.6	0.9	1.1	1.4	1.7	1.9	2.2	2.5	2.7					
KTS 25-34	Q		15.2	13.8	12.5	11.3	10.2	9.2	8.4	7.7	7.1	6.3					
	P		0.4	0.8	1.1	1.4	1.8	2.1	2.4	2.8	3.1	3.4					
KTS 25-38	Q		17.4	16.4	15.4	14.5	13.6	12.7	11.9	11.1	10.4	9.7					
	P		0.4	0.8	1.1	1.5	1.9	2.2	2.6	3	3.3	3.7					
KTS 25-50	Q		22.4	21	19.8	18.6	17.5	16.4	15.4	14.4	13.6	12.7					
	P		0.6	1	1.5	2	2.4	2.9	3.4	3.8	4.3	4.8					
KTS 25-60	Q		25.8	24.3	22.9	21.6	20.3	19.2	18.1	17	16.1	15.2					
	P		0.6	1.2	1.8	2.4	3	3.6	4.2	4.7	5.3	5.9					
KTS 32-48	Q		33.1	31.2	29.3	27.6	26	24.5	23.1	21.7	20.5	19.4					
	P		0.8	1.5	2.2	2.9	3.6	4.3	5	5.7	6.4	7.1					
KTS 32-64	Q		45.5	43.3	41.1	39	37	35.1	33.3	31.6	29.9	28.4					
	P		1.1	2.1	3	4	4.9	5.9	6.8	7.7	8.7	9.6					
KTS 32-76	Q		52.2	49.9	47.7	45.5	43.5	41.5	39.6	37.8	36	34.3					
	P		1.4	2.5	3.6	4.7	5.9	7	8.1	9.2	10.3	11.4					
KTS 40-60	Q		65.1	61.9	58.9	56	53.2	50.5	47.9	45.4	43.1	40.8					
	P		1.7	3	4.2	5.5	6.8	8.1	9.3	10.6	11.9	13.1					
KTS 40-80	Q		89.7	85.8	82	78.2	74.6	71.1	67.8	64.5	61.3	58.3					
	P		2.2	4	5.8	7.5	9.3	11.1	12.9	14.7	16.5	18.2					
KTS 40-96	Q		108	104	99.4	95.3	91.4	87.7	84.1	80.6	77.3	74.2					
	P		2.6	4.9	7.1	9.4	11.6	13.9	16.1	18.4	20.6	22.9					
KTS 50-74	Q		132	129	125	121	117	114	110	106	103	99.3					
	P		3	5.7	8.4	11	13.7	16.4	19	21.7	24.4	27					
KTS 50-100	Q		182	176	170	165	160	155	150	145	141	136					
	P		4.2	7.8	11.5	15.1	18.7	22.3	25.9	29.6	33.2	36.8					
KTS 50-120	Q		219	212	205	198	192	185	179	173	167	162					
	P		5.2	9.5	13.8	18	22.3	26.6	30.9	35.2	39.5	43.8					
KTS 60-90	Q		271	260	250	239	229	219	210	200							
	P		6	11	16.1	21.1	26.1	31.1	36.1	41.1							
KTS 60-120	Q		364	350	336	323	311	299	288	277							
	P		7.2	13.6	19.9	26.3	32.6	38.9	45.3	51.6							
KTS 60-130	Q		391	378	366	354	342	329	318	306							
	P		7.8	14.6	21.4	28.1	34.9	41.6	48.4	55.2							
KTS 60-145	Q		435	418	401	385	370	355	341	327							
	P		8.9	17.1	25.3	33.5	41.7	49.9	58.1	66.3							

Only the characteristic values of version T are shown, different values for other variants are possible.

Motor:	4-pole
Rotational speed:	1,750 rpm
Frequency:	60 Hz
Delivery rate:	Q [l/min]
Power requirement:	P [kW]
Viscosity:	20 mm²/s, such as oil

1,750 rpm
60 Hz
20 mm²/s

Viscosity › 20 mm²/s greater power requirement. Higher pressures upon request.

Model		Pressure [bar]:	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
KTS 20-30	Q		9.1	8.7	8.3	7.9	7.5	7.2	6.9	6.6	6.3	6.1					
	P		0.3	0.4	0.6	0.8	1	1.1	1.3	1.5	1.7	1.8					
KTS 20-40	Q		11.9	11.5	11	10.7	10.3	10	9.6	9.4	9.1	8.9					
	P		0.3	0.6	0.9	1.1	1.4	1.7	1.9	2.2	2.5	2.7					
KTS 25-34	Q		16.1	15.0	14.0	13.2	12.5	11.9	11.4	10.8	10.3	9.9					
	P		0.4	0.8	1.1	1.4	1.8	2.1	2.4	2.8	3.1	3.4					
KTS 25-38	Q		18.1	17.6	17.1	16.6	16.1	15.7	15.3	14.9	14.5	14.2					
	P		0.4	0.8	1.1	1.5	1.9	2.2	2.6	3	3.3	3.7					
KTS 25-50	Q		23.5	22.8	22.2	21.6	21	20.5	20	19.5	19.1	18.7					
	P		0.6	1	1.5	2	2.4	2.9	3.4	3.8	4.3	4.8					
KTS 25-60	Q		27.7	26.9	26.2	25.6	24.9	24.3	23.8	23.3	22.8	22.4					
	P		0.6	1.2	1.8	2.4	3	3.6	4.2	4.7	5.3	5.9					
KTS 32-48	Q		35.9	34.9	34	33.2	32.4	31.6	30.9	30.2	29.6	29					
	P		0.8	1.5	2.2	2.9	3.6	4.3	5	5.7	6.4	7.1					
KTS 32-64	Q		48.6	47.4	46.4	45.3	44.3	43.4	42.5	41.6	40.8	40					
	P		1.1	2.1	3	4	4.9	5.9	6.8	7.7	8.7	9.6					
KTS 32-76	Q		56.7	55.6	54.5	53.4	52.4	51.4	50.4	49.5	48.6	47.8					
	P		1.4	2.5	3.6	4.7	5.9	7	8.1	9.2	10.3	11.4					
KTS 40-60	Q		70.3	68.8	67.3	65.8	64.4	63.1	61.8	60.5	59.3	58.2					
	P		1.7	3	4.2	5.5	6.8	8.1	9.3	10.6	11.9	13.1					
KTS 40-80	Q		95.3	93.3	91.4	89.5	87.7	86	84.3	82.6	81.1	79.5					
	P		2.2	4	5.8	7.5	9.3	11.1	12.9	14.7	16.5	18.2					
KTS 40-96	Q		114	112	110	108	106	104	103	101	99.2	97.6					
	P		2.6	4.9	7.1	9.4	11.6	13.9	16.1	18.4	20.6	22.9					
KTS 50-74	Q		139	137	135	133	131	130	128	126	124	122					
	P		3	5.7	8.4	11	13.7	16.4	19	21.7	24.4	27					
KTS 50-100	Q		189	186	184	181	178	176	173	171	169	167					
	P		4.2	7.8	11.5	15.1	18.7	22.3	25.9	29.6	33.2	36.8					
KTS 50-120	Q		228	224	221	217	214	211	208	205	202	199					
	P		5.2	9.5	13.8	18	22.3	26.6	30.9	35.2	39.5	43.8					
KTS 60-90	Q		277	272	267	261	256	251	247	242							
	P		6	11	16.1	21.1	26.1	31.1	36.1	41.1							
KTS 60-120	Q		366	359	352	346	340	334	328	323							
	P		7.2	13.6	19.9	26.3	32.6	38.9	45.3	51.6							
KTS 60-130	Q		394	388	381	375	369	363	357	351							
	P		7.8	14.6	21.4	28.1	34.9	41.6	48.4	55.2							
KTS 60-145	Q		446	437	429	421	413	406	399	392							
	P		8.9	17.1	25.3	33.5	41.7	49.9	58.1	66.3							

Only the characteristic values of version T are shown, different values for other variants are possible.

Speed control with PQ-Tronic

Function

The KNOLL PQ-Tronic allows to specify desired pressures within a range of 0 – 150. With this system, pump performance is regulated automatically. By changing the drive motor from 10 Hz – 75 Hz, the rotational speed of the pump unit changes (500 – 4500 rpm) and therefore the performance characteristics change as well. A pressure sensor together with an electronic PI control ensures the specified pressure (target value) independent of the amount used.

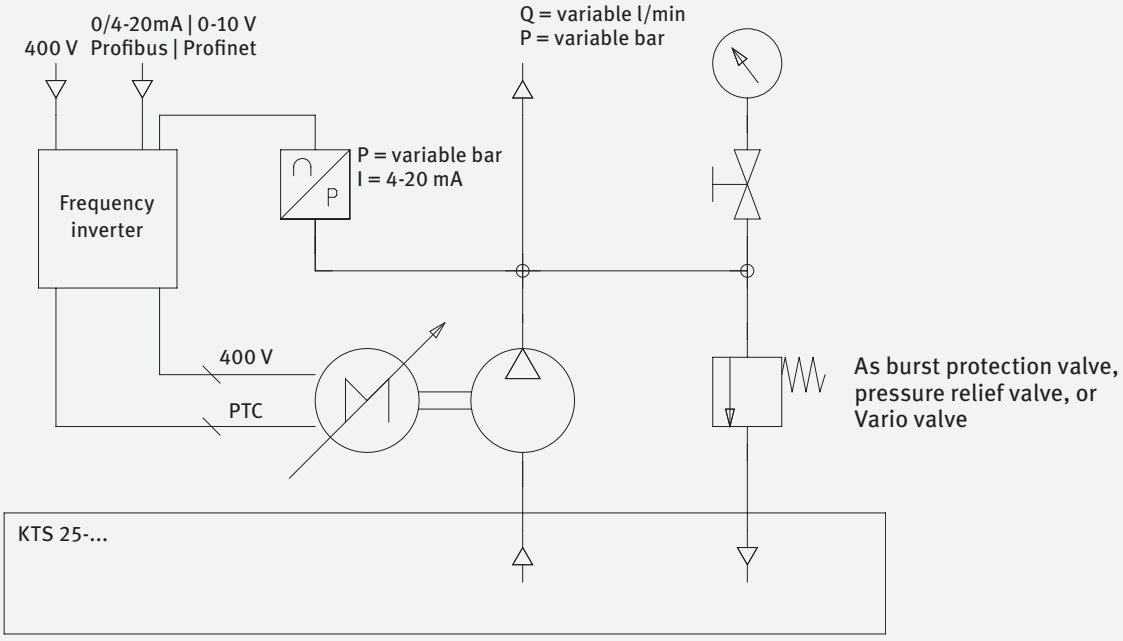
Use

- Machine tools, machining centers and their tools with an internal coolant supply.

Advantages

- Any desired preset pressure with the M-function
- Energy savings of 50 – 70 % and hence quicker amortization
- Low pulsation conveyance
- Smooth starts and stops
- No power peaks during startup
- Speed adjustment to reduce noise
- Less wear and maintenance
- Long service life with parameters optimized to the process
- Reduced heat input to the medium by adapting the performance, thus enabling a smaller cooler
- Minimum quantities with Vario valve at very low speed
- Vario valve as a safety valve with an offset for operating pressure

Schematic

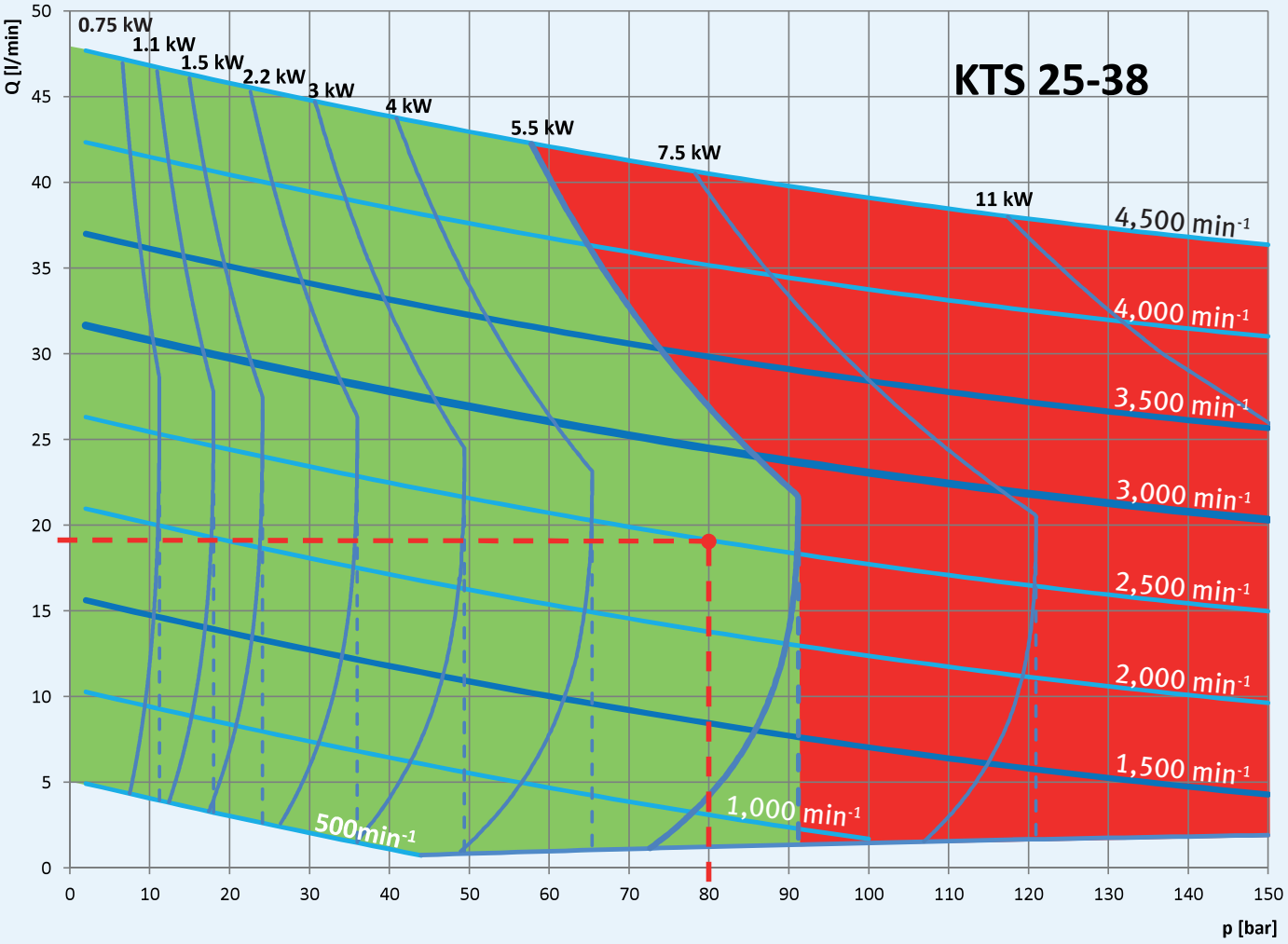


Example layout

Customer requirements	
Medium:	Emulsion
Viscosity:	1 mm²/s
Max. pressure increase:	80 bar
Delivery rate:	19 l/min

Speed control with PQ-Tronic

Layout



Results for three-phase motor

Power:	5.5 kW
Rotational speed:	2,500 rpm
Number of pole pairs:	2

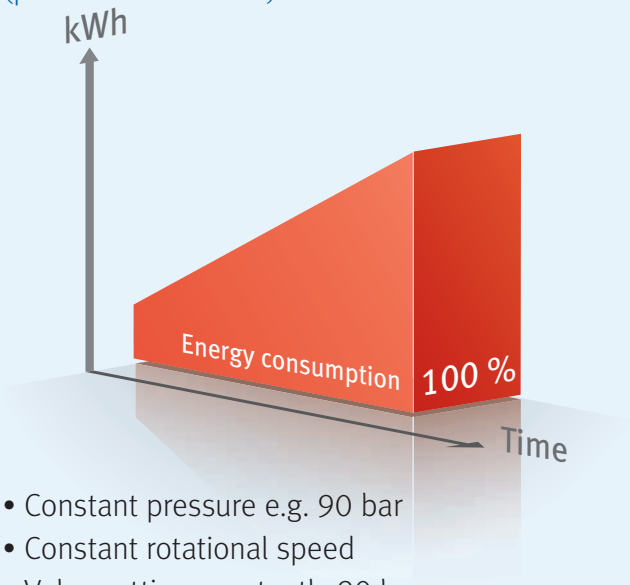
Benefits

Within the diagram, every operating point to the left of the motor characteristic (green area) is possible in terms of delivery rate and pressure. The motor performance characteristic results from the available torque at a specific pressure. For several operating points, the pump size is optimized with regard to the drive power.

Comparison of pressure regulation

Energy savings for the processing of a gearbox housing calculated from the energy required to supply cooling lubricant.

Constant and unregulated pressure (pressure relief valve)

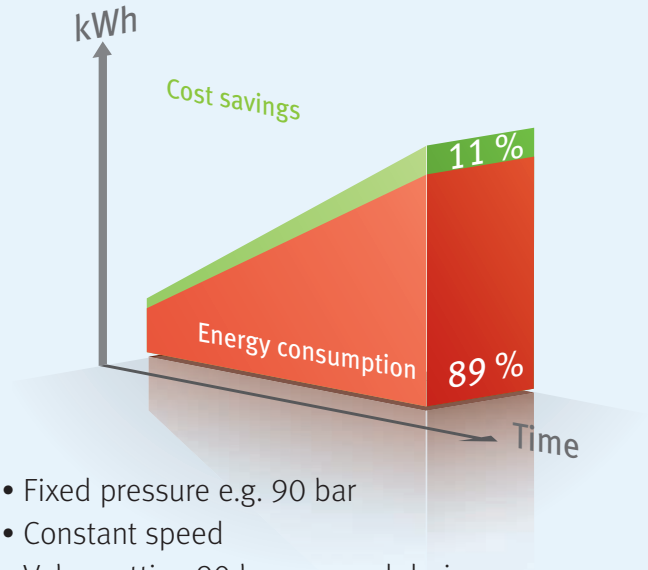


- Constant pressure e.g. 90 bar
- Constant rotational speed
- Valve setting constantly 90 bar

Conclusion

Greatest energy consumption, lowest purchase costs

Constant pressure and pressure-minimized discharge

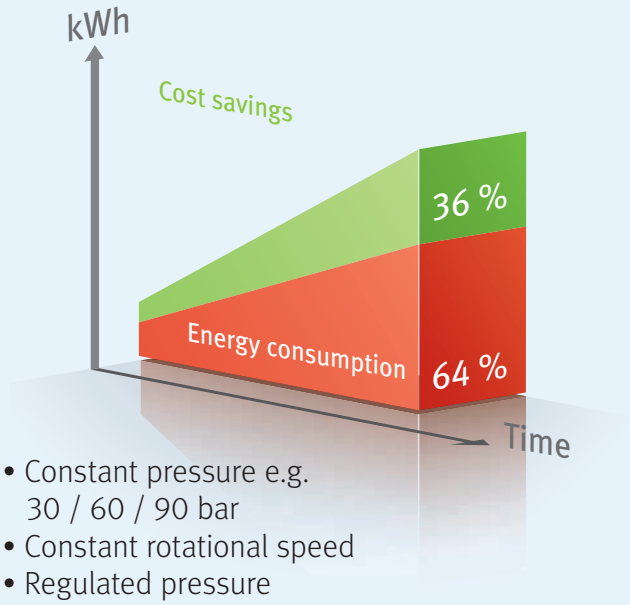


- Fixed pressure e.g. 90 bar
- Constant speed
- Valve setting 90 bar, opened during pauses

Conclusion

Low energy savings, low purchase costs

Variable pressure and pressure-minimized discharge

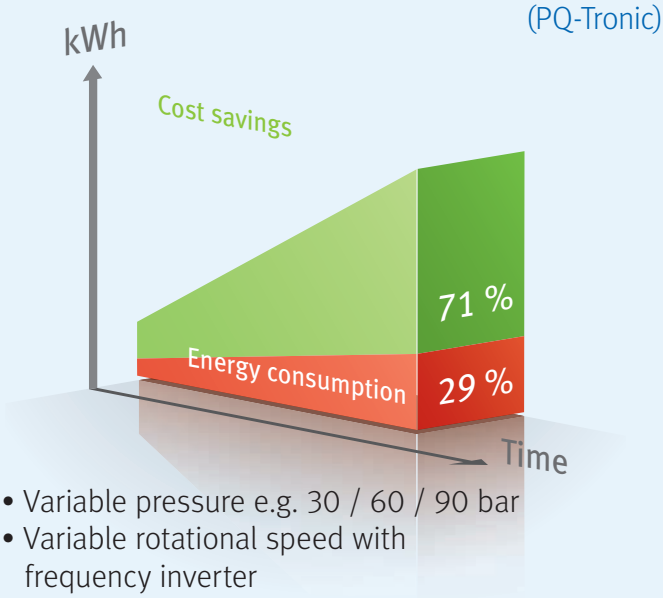


- Constant pressure e.g. 30 / 60 / 90 bar
- Constant rotational speed
- Regulated pressure

Conclusion

Average energy savings, average purchase costs, short amortization time

Variable pressure with rotational speed adaptation (PQ-Tronic)



- Variable pressure e.g. 30 / 60 / 90 bar
- Variable rotational speed with frequency inverter

Conclusion

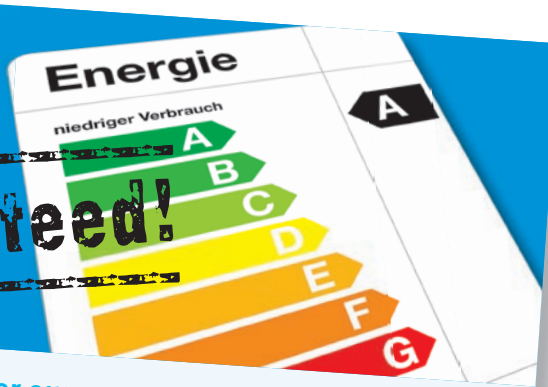
Highest energy savings, highest purchase costs, shortest amortization time

ENERGYNOW

KNOLL .It works

We determine your possible energy savings on-site

Guaranteed!



So far, not many customers opted for our energy saving PQ-Tronic control technology because the determination of the possible savings was too complex.

NOW the measuring process is fast and simple

KNOLL E-PASS

1. We can determine your energy-saving potential on site with a brief measurement, followed by a computer calculation. Afterwards, you receive your energy protocol.
2. Additionaly, we provide you with an on-site cost/benefit appraisal, including your amortization analysis.
3. You then decide whether to go for a PQ-Tronic upgrade.

If you wish to obtain more detailed information, please contact us.

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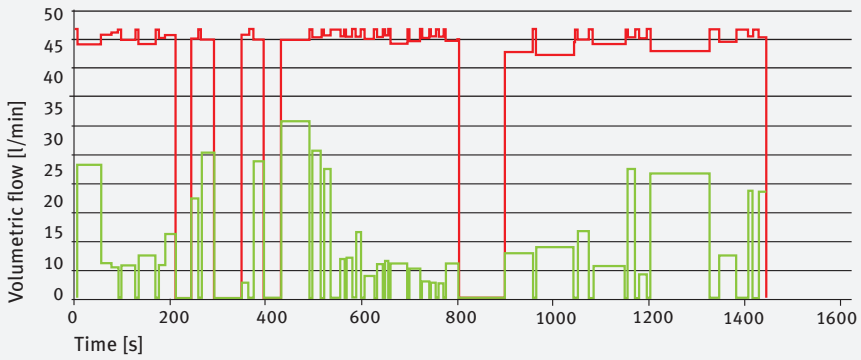
www.knoll-mb.de

KNOLL E-PASS
Measurement results

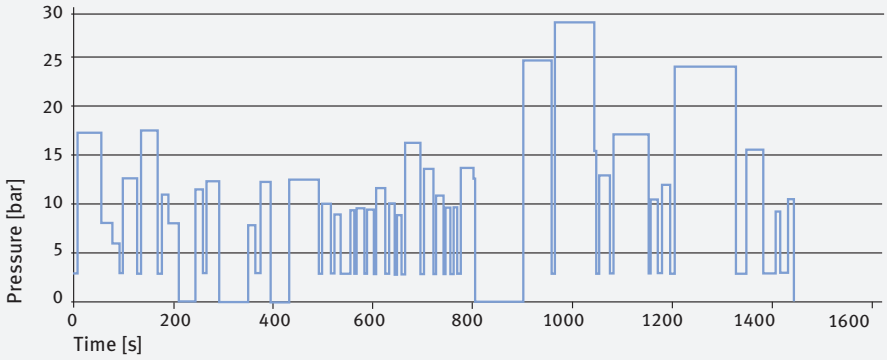
Cooling lubricant volumetric flow



Volumetric flow without regulation

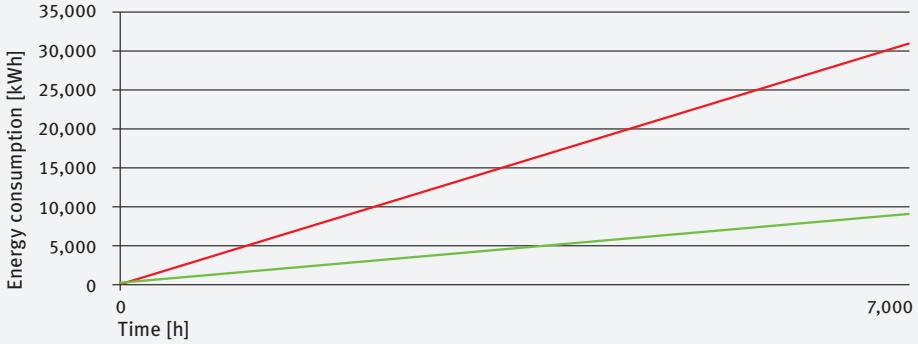
Volumetric flow with regulation

PQ-Tronic-Pressure curve



Pressure curve

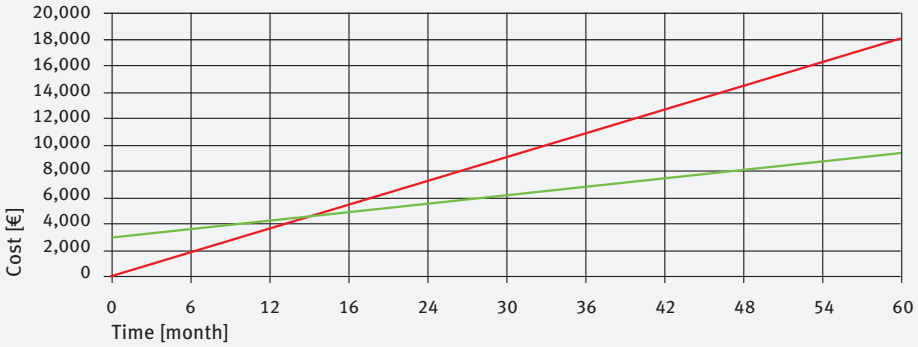
Energy consumption (pump and cooler)



Energy consumption without regulation 100 %

Energy consumption with regulation 28,3 %

Amortisation (7,000 operating hours per year)



Costs without regulation

Costs with regulation

KNOLL E-PASS Measurement results

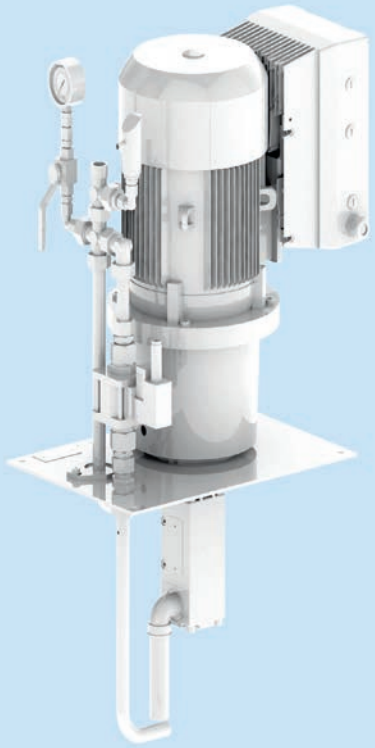
User report

Environmental protection is a priority for one of the world's most important system suppliers of transmission technology for passenger cars and light trucks. One of our goals is to make automobiles more environmentally friendly through the use of our products. Another goal is to minimize the ecological foot- print from production. All of the processes are continuously monitored and optimized in terms of costeffectiveness,energy and resource efficiency, and environmental compatibility.

The KNOLL E-PASS provided the customer with an analysis of the current situation and a calculation of possible savings including amortization. The evaluations are provided both graphically and tabularly. The customer added the KNOLL PQ-Tronic frequency control system to the original high-pressure pump with pressure relief valve.

KNOLL was responsible for connecting the frequency control system to an existing machine tool including the electrical and control system as well as ensuring the necessary safety appraisals.

Result: the reference plant confirmed the theoretically determined values. The amortization of the investment was less than two years.



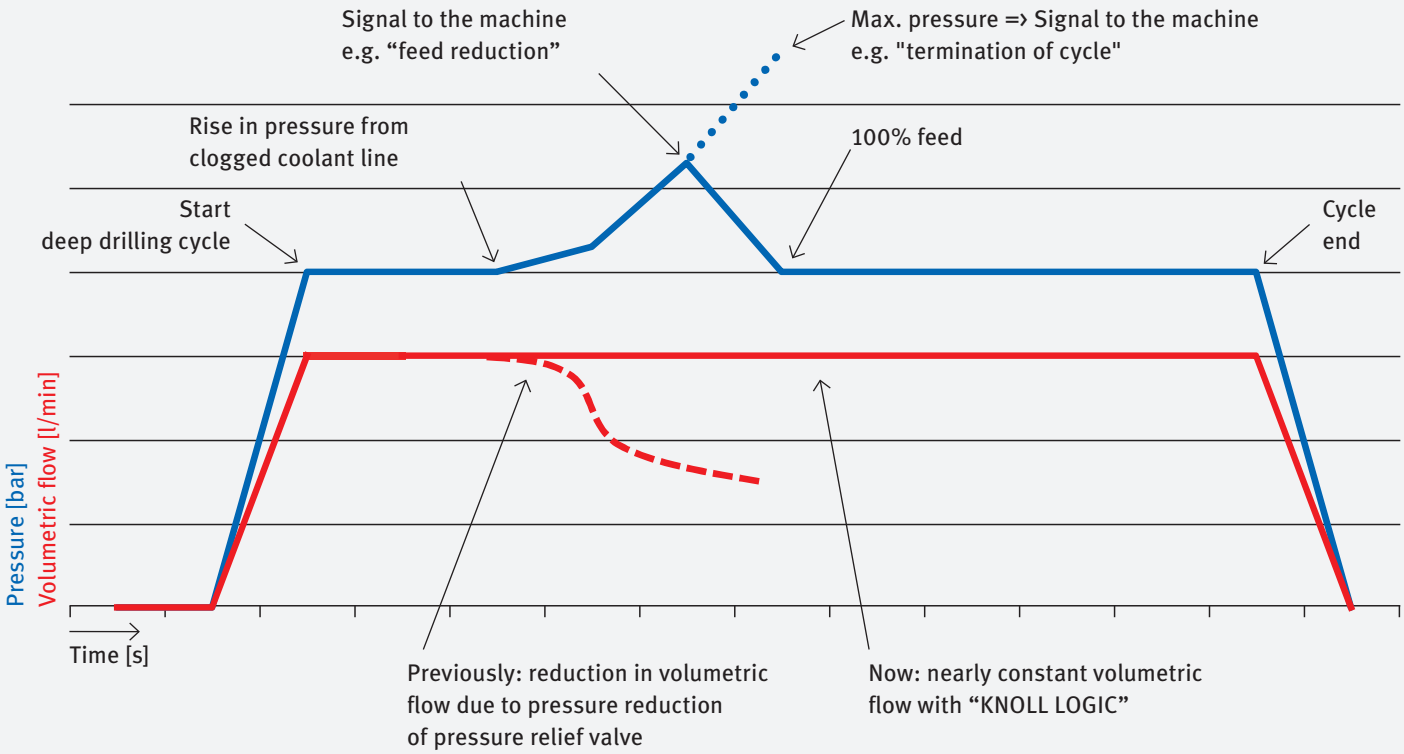
Process monitoring with PQ-Tronic

The KTS system for deep drilling using the PQ-Tronic

KNOLL uses the data from the frequency inverter to identify predictive signs of tool breakage. Relevant signals are forwarded to the CNC control so that the operator or machine can intervene in the process early enough.

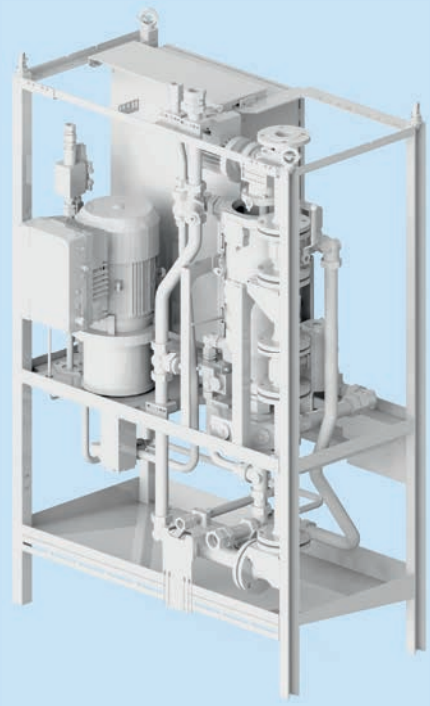
Customer benefits

- Increased feed
- Greater process reliability
- Lower reject rate
- Reduced tool costs
- Early identification of tool wear
- Greater system availability
- Energy savings
- Increased productivity

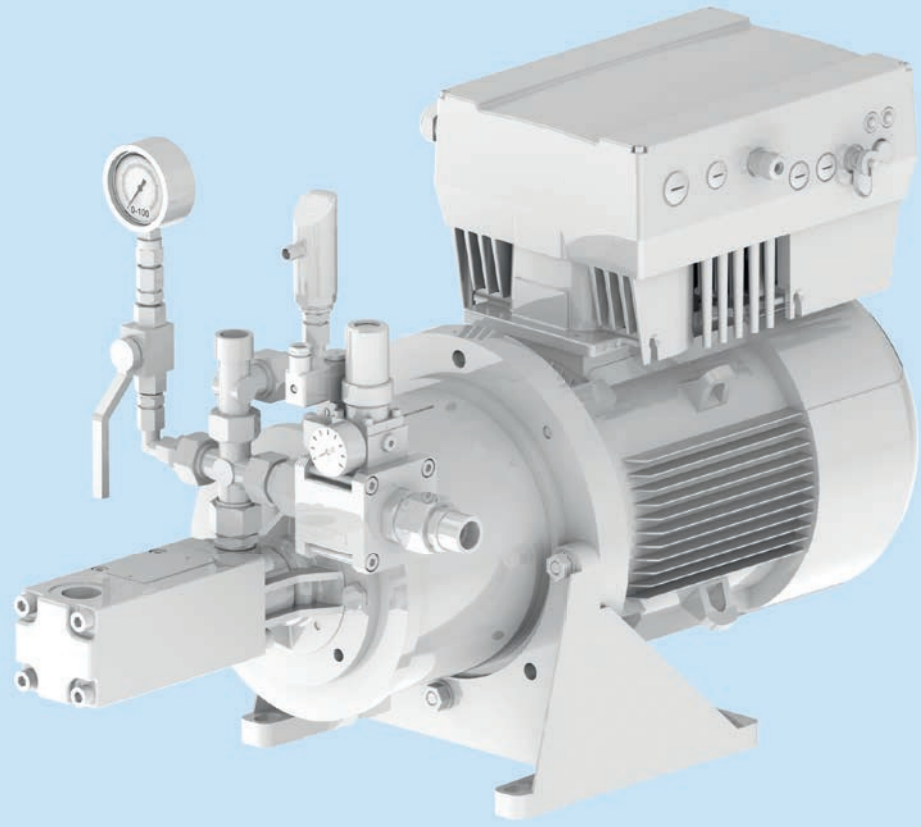


PQ-Tronic
Application examples

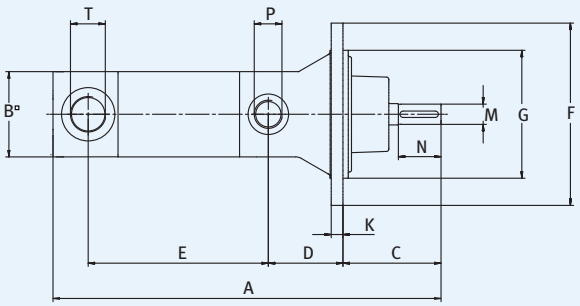
Pressure booster with frequency-controlled screw pump set up in dry installation

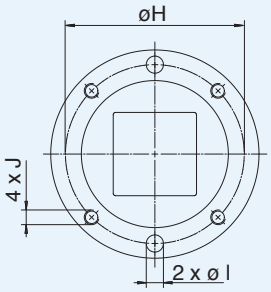


Dry installed frequency-controlled screw pump

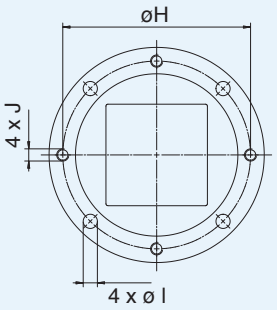


Screw pump





KTS 20/25



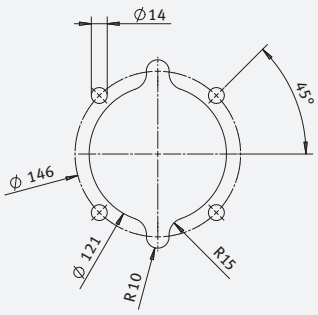
KTS 32/40/50/60

No guarantee of weight and dimensions
Dimensions only valid for pump version T

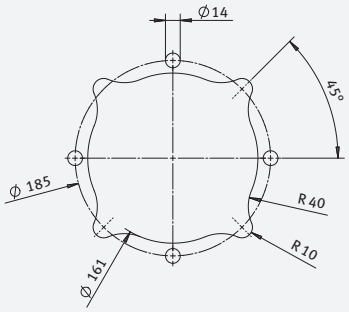
Pump installation size, KTS	Main dimensions [mm]											Pressure connection	Suction connection	Shaft end [mm]		Weight [kg]
	A	B	C	D	E	F	G	H	I	J	K	P	T	M	N	
20 ...	355	80	92	70	144	171	120	146	14	M 12	11	G 1/2	G 1	19	40	12
25 ...	380	80	92	70	169	171	120	146	14	M 12	11	G 3/4	G 1	19	40	13
32 ...	454	100	100	82	213	212	155	185	14	M 12	14	G 1	G 1 1/2	24	40	24
40 ...	508	120	105	84	272	212	155	185	14	M 12	15	G 1 1/2	G 2	28	45	36
50 ...	599	140	119	97	329	240	170	205	18	M 16	17	G 1 1/2	G 2	32	55	57
60 ...	751	176	143	102	408	350	250	300	22	M 20	19	SAE 2	SAE 3	48	65	121

Attachment of the pump plate / screw pump

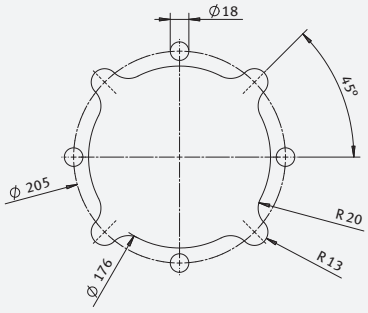
KTS 20/25



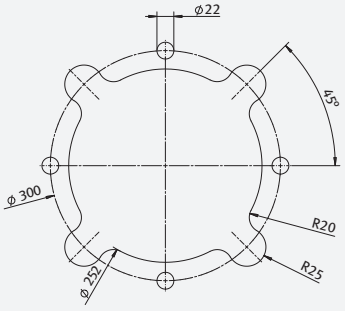
KTS 32/40



KTS 50



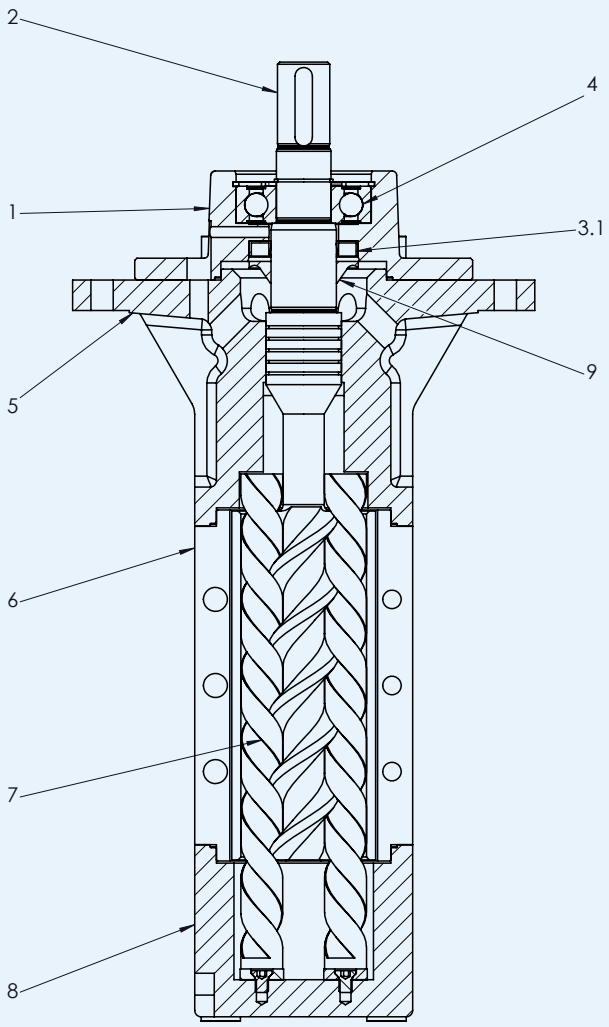
KTS 60



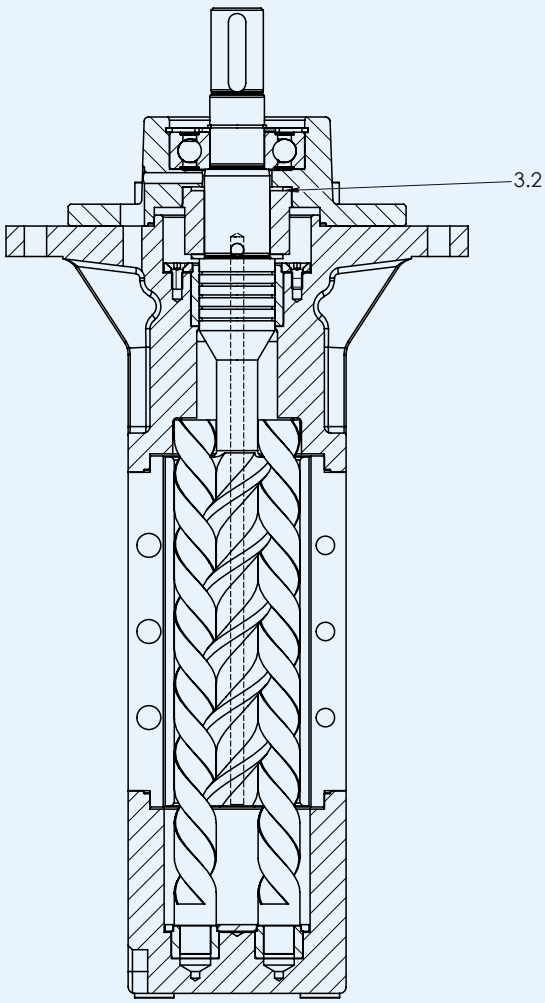
General tolerances according to ISO 2768-m. Different sheet ticknesses depending on pump size.

Parts list

Version -T



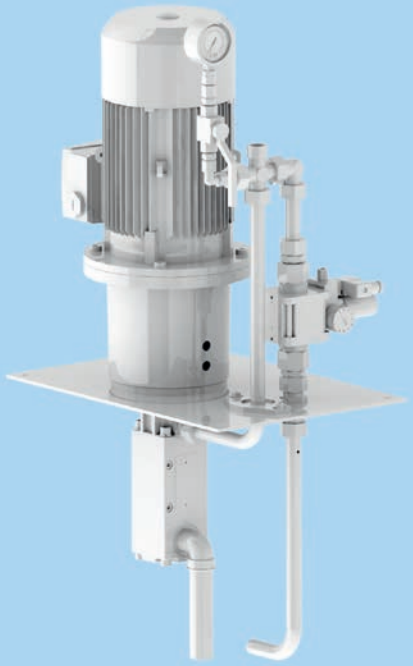
Version -T-A-G-KB-B

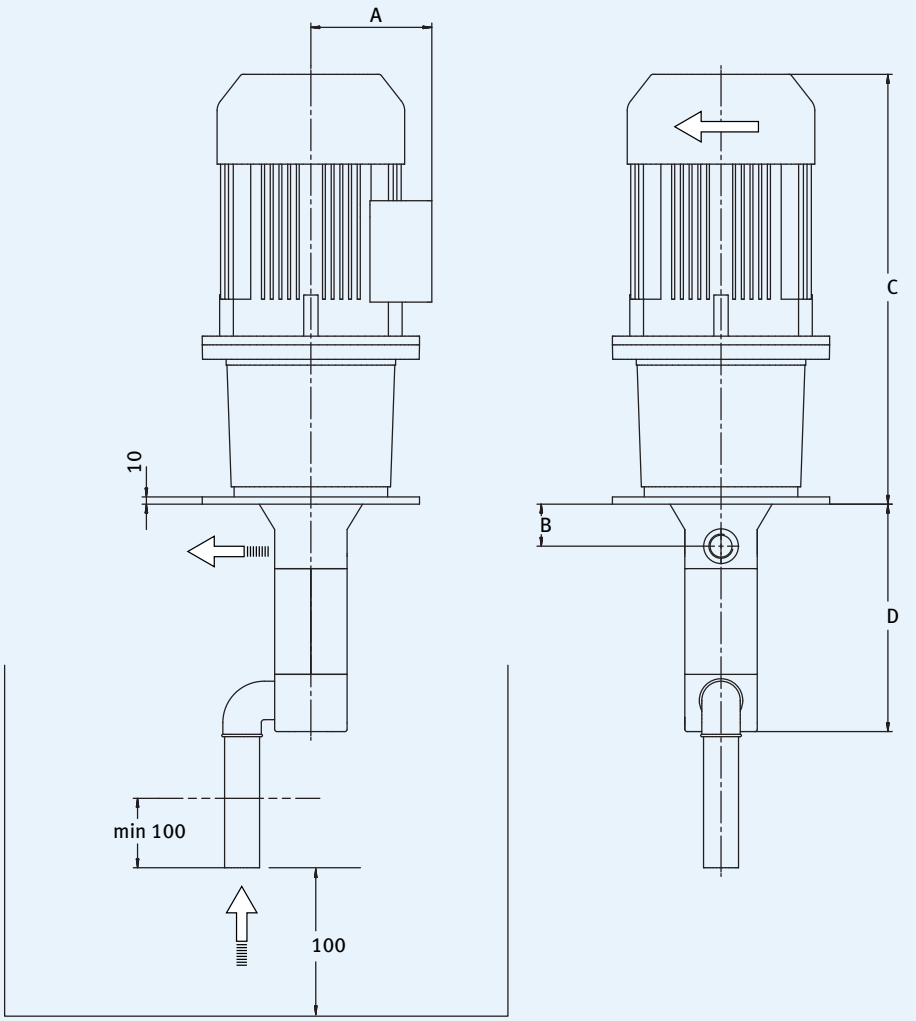


Position	Description
1	Bearing cover
2	Drive spindle
3.1	Radial shaft sealing ring (only for version -T)
3.2	Mechanical seal (only for version -T-G)
4	Deep groove ball bearing
5	Pressure port housing

Position	Description
6	Spindle housing
7	Running spindle
8	Suction housing
9	Centrifuge ring

Submersible pumps

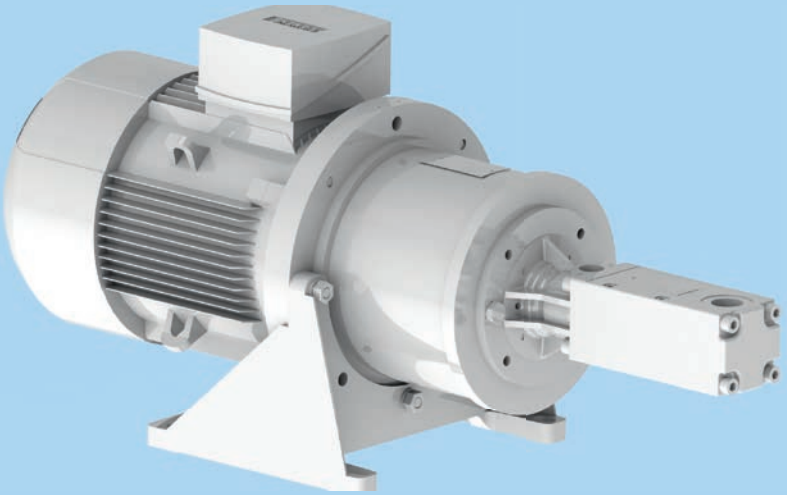


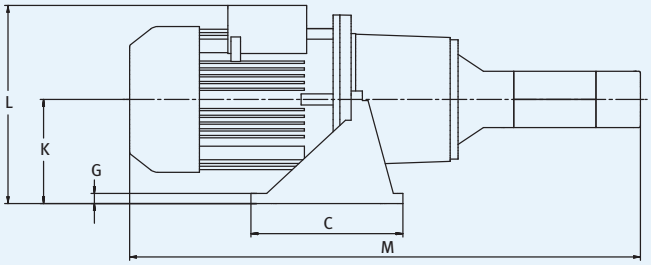


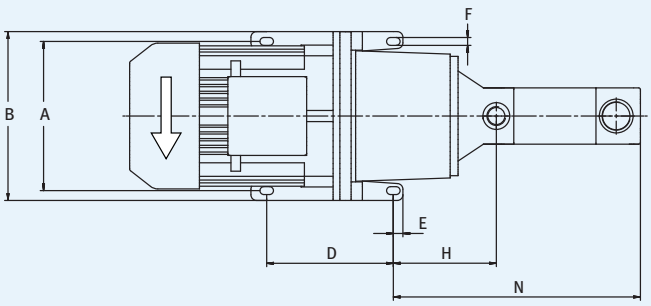
KTS pump	Motor size	Main dimensions [mm]				Weight [kg]	
		A	B	C (IE3)	D*	2-pole IE3	4-pole IE3
	80M	149		421		25	28
	80M	149		456		26	-
	90S	155		466		29	30
	90L	155		496		33	33
	100L	170		567		39	43
20	100L	170	49	567	242	-	43
	112M	176		550		47	47
	132S	201		602		57	78
	132S	201		652		71	-
	132M	201		652		-	78
	160M	235		743		90	98
	90S	155		466		30	31
	90L	155		466		34	34
	100L	170		567		41	45
	100L	170		567		-	45
25	112M	176	49	550	267	49	49
	132S	201		602		58	79
	132S	201		652		72	-
	132M	201		652		-	79
	160M	235		743		92	100
	160M	235		743		101	-
	90S	155		496		41	42
	90L	155		526		45	45
	100L	170		570		52	56
	100L	170		570		-	56
	112M	176		553		60	60
	132S	201		605		69	90
32	132S	201	58	655	330	83	-
	132M	201		655		-	90
	160M	235		774		103	111
	160M	235		774		112	-
	160L	235		834		122	128
	180M	286		868		188	193
	200L	315		891		280	-
	200L	315		916		255	270
	112M	176		554		72	72
	132S	201		606		81	102
	132S	201		656		95	-
	132M	201		656		-	102
	160M	235		775		115	123
40	160M	235	59	775	387	124	-
	160L	235		835		134	140
	180M	286		869		200	205
	180L	286		869		-	210
	200L	315		892		267	282
	200L	315		917		292	-
	132S	201		668		102	123
	132S	201		718		116	-
	132M	201		718		-	123
	160M	235		777		136	144
	160M	235		777		145	-
	160L	235		837		155	161
50	180M	286	70	871	474	221	226
	180L	286		871		-	231
	200L	315		894		288	303
	200L	315		919		313	-
	225S	345		960		-	349
	225M	345		1020		379	-
	225M	345		1020		-	384
	160M	235		779		200	208
	160M	235		779		209	-
	160L	235		839		219	225
	180M	286		873		285	290
	180L	286		873		-	295
	200L	315		896		352	367
	200L	315		921		377	-
	225S	345		962		-	413
60	225M	345	73	999	579	442	-
	225M	345		999		-	448
	250M	417		1091		520	-
	250M	417		1091		-	555
	280S	433		1164		645	-
	280S	433		1164		-	706
	280M	433		1274		725	-
	280M	433		1274		-	806

No guarantee of weight and dimensions / *Dimensions only valid for pump version T

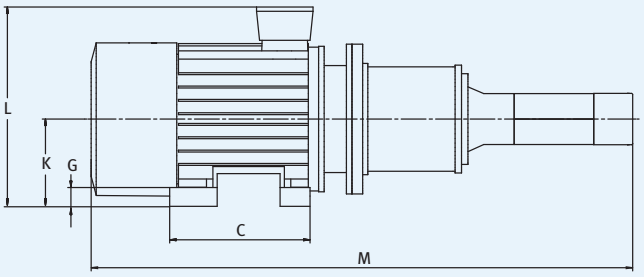
Pumps in foot version

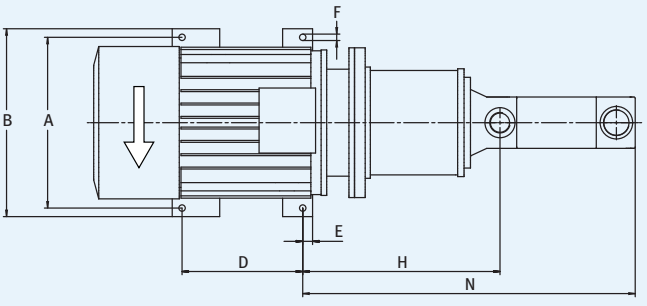






Valid for 80M to 225M size motors, B5 and V1





Valid for 250M to 315S size motors, B35 design

Pumps in foot version

Pump KTS	Motor size	Main dimensions [mm] A	B	C	D	E	F	G	H	K	L	M* IE3	N*	Weight [kg] 2-pole IE3	4-pole IE3
	80M	180	210	90	60	15	11	12	138	112	261	663	320	25	28
	80M	180	210	90	60	15	11	12	138	112	261	698	320	26	-
	90S	180	210	90	60	15	11	12	138	112	267	708	320	29	30
	90L	180	210	90	60	15	11	12	138	112	267	738	320	33	33
20	100L	215	250	230	185	22.5	14	16	167	155	325	809	349	41	45
	100L	215	250	230	185	22.5	14	16	167	155	325	809	349	-	45
	112M	215	250	230	185	22.5	14	16	167	155	331	792	349	49	49
	132S	265	300	270	225	22.5	14	19	171	185	386	844	353	60	81
	132S	265	300	270	225	22.5	14	19	171	185	386	894	353	74	-
	132M	265	350	305	265	20	18	19	183	235	436	894	365	-	81
	160M	300	350	305	265	20	18	19	183	235	470	985	365	95	103
	90S	180	210	90	60	15	11	12	138	112	267	708	345	31	32
	90L	180	210	90	60	15	11	12	138	112	267	733	345	35	35
	100L	215	250	230	185	22.5	14	16	167	155	325	834	374	43	47
	100L	215	250	230	185	22.5	14	16	167	155	325	834	374	-	47
25	112M	215	250	230	185	22.5	14	16	167	155	331	817	374	51	51
	132S	265	300	270	225	22.5	14	19	171	185	386	869	378	61	82
	132S	265	300	270	225	22.5	14	19	171	185	386	919	378	75	-
	132M	265	350	305	225	22.5	18	19	171	185	386	919	378	-	82
	160M	300	350	305	265	20	18	18	183	235	470	1010	390	97	105
	160M	300	350	305	265	20	18	18	183	235	470	1010	390	106	-
	90S	180	250	90	60	15	14	12	138	155	310	826	399	42	43
	90L	180	250	230	185	22.5	14	15	179	155	310	856	440	46	46
	100L	215	250	230	185	22.5	14	16	179	155	325	900	440	54	58
	100L	215	250	230	185	22.5	14	16	179	155	325	900	440	-	58
	112M	215	250	230	185	22.5	14	16	179	155	331	883	440	62	62
	132S	265	300	270	225	22.5	14	19	183	185	386	935	444	72	93
32	132S	265	300	270	225	22.5	14	19	183	185	386	985	444	86	-
	132M	265	350	305	225	22.5	18	19	183	185	386	985	444	-	93
	160M	300	350	305	265	20	18	18	223	235	470	1104	484	108	116
	160M	300	350	305	265	20	18	18	223	235	470	1104	484	117	-
	160L	300	350	305	265	20	18	18	223	235	470	1164	484	127	133
	180M	300	350	305	265	20	18	18	223	235	521	1198	484	193	198
	200L	350	400	355	305	25	25	20	219	200	515	1221	480	283	-
	200L	350	400	355	305	25	25	20	219	200	515	1246	480	258	273
	112M	215	250	230	185	22.5	14	16	181	155	331	931	499	74	74
	132S	265	300	270	225	22.5	14	19	185	185	386	983	503	84	-
	132S	265	300	270	225	22.5	14	19	185	185	386	1033	503	98	41
	132M	265	350	305	225	22.5	18	19	185	185	386	1033	503	-	105
40	160M	197	350	305	265	20	18	18	225	235	470	1152	543	120	128
	160M	300	350	305	265	20	18	18	225	235	470	1152	543	129	-
	160L	300	350	305	265	20	18	18	225	235	470	1212	543	139	145
	180M	300	350	305	265	20	18	18	225	235	521	1246	543	205	210
	180L	300	350	305	265	20	18	18	225	235	521	1246	543	-	213
	200L	350	400	355	305	25	25	20	221	200	515	1269	539	270	285
	200L	350	400	355	305	25	25	20	221	200	515	1294	539	295	-
	132S	265	300	270	225	22.5	14	19	185	185	386	1142	568	105	126
	132S	265	300	270	225	22.5	14	19	185	185	386	1192	568	119	-
	132M	265	350	305	225	22.5	18	19	185	185	386	1192	568	-	126
	160M	300	350	305	265	20	18	18	238	235	470	1251	621	141	149
	160M	300	350	305	265	20	18	18	238	235	470	1251	621	150	-
	160L	300	350	305	265	20	18	18	238	235	470	1311	621	160	166
50	180M	300	350	305	265	20	18	18	238	235	521	1345	621	226	231
	180L	300	350	305	265	20	18	18	238	235	521	1345	621	-	234
	200L	350	400	355	305	25	25	20	234	200	515	1368	617	291	306
	200L	350	400	355	305	25	25	20	234	200	515	1393	617	316	-
	225S	400	450	385	347	34	18	22	253	295	633	1412	636	-	349
	225M	400	450	385	347	34	18	22	253	295	633	1472	636	379	-
	225M	400	450	385	347	34	18	22	253	295	633	1472	636	-	384
	160M	300	350	305	265	20	18	18	166	235	470	1358	672	205	213
	160M	300	350	305	265	20	18	18	166	235	470	1358	672	214	-
	160L	300	350	305	265	20	18	18	166	235	470	1418	672	224	230
	180M	300	350	305	265	20	18	18	166	235	521	1452	672	290	295
	180L	300	350	305	265	20	18	18	166	235	521	1452	672	-	300
	200L	350	400	355	305	25	25	20	508	200	515	1475	1014	355	370
60	200L	350	400	355	305	25	25	20	508	200	515	1500	1014	380	-
	225S	400	450	385	347	34	18	22	259	295	633	1603	765	-	413
	225M	400	450	385	347	34	18	22	259	295	633	1603	765	442	-
	225M	400	450	385	347	34	18	22	259	295	633	1603	765	-	448
	250M	406	490	409	349	30	30	40	585	250	667	1670	1091	520	-
	250M	406	490	409	349	30	30	40	585	250	667	1670	1091	-	555
	280S	457	540	479	368	30	30	40	607	280	713	1743	1113	645	-
	280S	457	540	479	368	30	30	40	607	280	713	1743	1113	-	706
	280M	457	540	479	419	30	30	40	607	280	713	1853	1113	725	-
	280M	457	540	479	419	30	30	40	607	280	713	1853	1113	-	806

No guarantee of weight and dimensions / *Dimensions only valid for pump version T

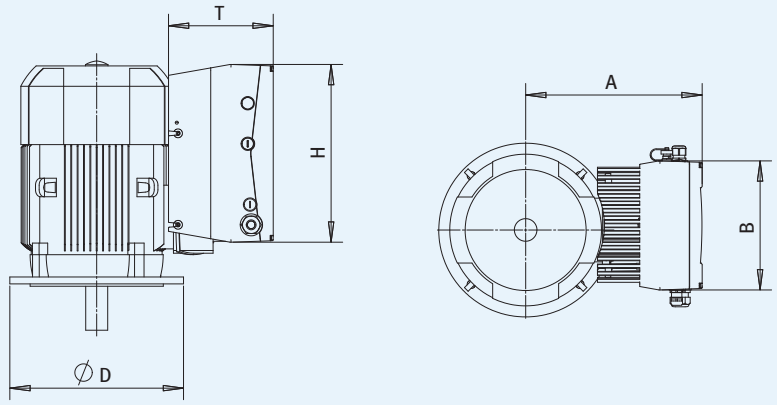
Frequency inverter (FI) 0.75 – 22.0 kW

Advantages

- Compact dimensions by installing the inverter onto the box (piggyback).
- KNOLL control know-how included.

Recommended motor power [kW]	0.75	1.10	1.50	2.20	3.00	4.00	5.50	7.50	11.00	15.00	18.50	22.00
Line current [A]	1.90	2.60	3.30	4.60	6.20	7.90	10.80	14.80	23.30	28.30	33.30	39.90
Nominal output current [A] at 400 V/8 kHz	2.30	3.10	4.00	5.60	7.50	9.50	13.00	17.80	28.00	34.00	40.00	48.00
Size	A			B			C		D			
Weight including worktop [kg]	3.9			5.0			8.7		21.0			
Protection class	IP 65								IP 55			
Max. overload for 60 sec [%]	150											130
Mains voltage	3 AC 400 V - 15% to 480 V + 10%											
Mains frequency	50 / 60 Hz ± 6%											
EMC acceptance	Compliant according to DIN EN 61800 - 3, class C2											
Certificates and conformance	CE and UL											
Temperature range	- 25°C (without condensation) up to + 50°C (without derating)											
Safety functions	Over/under voltage, I²t limit, short -circuit, motor temperature, inverter temperature, anti-tipper											
Initial frequency range	0 – 400 Hz											
Digital inputs	4											
Fixed frequency	7											
Digital outputs	2											
Analog inputs	2 analog inputs (0 / 2 - 10 V, 0 / 4 - 20 mA)											
Analog outputs	0 - 10 V (-Imax = 10 mA) or 0 - 20 mA (load impedance R = 500 Ω)											
Process control	Freely configurable PID controller											
Relay outputs	2 NO contacts 250 V AC 2 A											
USB- interface	USB for M12 connector (converter RS485 / RS232)											
Manual control unit (optional)	MMI with line											
Bus module (optional)	Profinet, Profibus DP, CANopen, EtherCAT											
Safe stop	Optional											

Dimensions



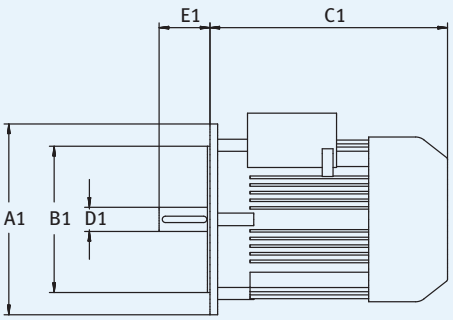
Motor power [kW]	Installation size	Main dimensions [mm] A	B	D	H	T
0.75 - 1.5	A	205	153	200	233	120
2.2	B	230	189	200	270	140
3.0	B	235	189	250	270	140
4,0	B	245	189	250	270	140
5.5 - 7.5	C	310	223	300	307	181
11.0 - 18.5	D	410	294	350	414	232
22.0	D	450	294	350	414	232

Standard multirange motors

Three-phase motor, 2-pole, 4-pole, Thermal class ISO-F, protection class IP 55, IE2

0.75 kW to 5.5 kW	7.5 kW to 90 kW
230 VΔ / 400 VY 50 Hz	400 VΔ / 690 VY 50 Hz
460 VY 60 Hz	460 VΔ 60 Hz

Other voltages upon request.

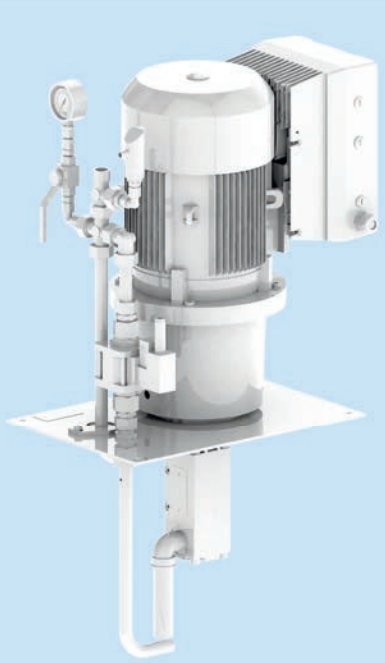


Technical data for standard motors IEC/EN 60034

Switch-on frequency: In order to minimize the stress to the pump and motor, the switch-on frequency should not exceed once per minute. For shorter switching operations, the pump should operate continuously and appropriate valves should be used to enable unpressurized discharge of the medium (see pages 36 - 37).

50Hz 2pole=2,900 rpm			50Hz 4pole=1,450 rpm			60Hz 2pole=3,500 rpm			60Hz 4pole=1,750 rpm			Size	Main dimensions [mm]					Weight [kg]	
Power	Nominal current	Noise level	Power	Nominal current	Noise level	Power	Nominal current	Noise level	Power	Nominal current	Noise level							2-pole	4-pole
[kW]	IE3 [A]	[dB(A)]	[kW]	IE3 [A]	[dB(A)]	[kW]	NPE [A]	[dB(A)]	[kW]	NPE [A]	[dB(A)]		A1	B1	C1 (IE3)	D1	E1	IE3	IE3
0.75	1.56	60	0.75	1.75	53	0.75	1.46	64	0.75	1.53	55	80M	200	130	252	19	40	11	14
1.1	2.25	60	-	-	-	1.1	1.98	64	-	-	-	80M	200	130	287	19	40	12	-
1.5	3	65	1.1	2.4	56	1.5	2.6	69	1.1	2.1	58	90S	200	130	297	24	50	15	16
2.2	4.2	65	1.5	3.15	56	2.2	3.65	69	1.5	2.85	58	90L	200	130	327	24	50	19	19
3	5.6	67	2.2	4.4	60	3	4.9	71	2.2	3.8	62	100L	250	180	371	28	60	26	30
-	-	-	3	5.9	60	-	-	-	3	5.1	62	100L	250	180	371	28	60	-	30
4	7.4	69	4	7.9	58	3.7	6	73	3.7	6.5	62	112M	250	180	354	28	60	34	34
5.5	9.9	68	5.5	10.5	64	5.5	8.6	72	5.5	9.1	68	132S	300	230	385	38	80	43	64
7.5	13.1	68	-	-	-	7.5	11.5	72	-	-	-	132S	300	230	435	38	80	57	-
-	-	-	7.5	14.3	64	-	-	-	7.5	12.4	68	132M	300	230	435	38	80	-	64
11	20	70	11	20.5	65	11	17.2	77	11	18	69	160M	350	250	494	42	110	75	83
15	27	70	-	-	-	15	24	77	-	-	-	160M	350	250	494	42	110	84	-
18.5	32	70	15	28.5	65	18.5	28	77	15	25	69	160L	350	250	554	42	110	94	100
22	38.5	77	18.5	35	66	22	34.5	80	18.5	31	68	180M	350	250	588	48	110	160	165
-	-	-	22	41.5	69	-	-	-	22	37	72	180L	350	250	588	48	110	-	170
30	53	78	30	55	70	30	46.5	81	30	48	72	200L	400	300	611	55	110	225	240
37	65	78	-	-	-	37	57	82	-	-	-	200L	400	300	636	55	110	250	-
-	-	-	37	66	66	-	-	-	37	58	69	225S	450	350	648	60	140	-	285
45	78	76	-	-	-	45	68	77	-	-	-	225M	450	350	708	55	110	315	-
-	-	-	45	80	66	-	-	-	45	70	69	225M	450	350	708	55	110	-	320
55	95	76	-	-	-	55	84	80	-	-	-	250M	550	450	747	60	140	385	-
-	-	-	55	96	66	-	-	-	55	86	69	250M	550	450	747	65	140	-	420
75	128	76	-	-	-	75	112	81	-	-	-	280S	550	450	820	65	140	510	-
-	-	-	75	133	71	-	-	-	75	115	79	280S	550	450	820	65	140	-	570
90	152	76	-	-	-	90	137	81	-	-	-	280M	550	450	930	65	140	590	-
-	-	-	90	157	71	-	-	-	90	141	79	280M	550	450	930	65	140	-	670

Pressure relief valves



Screw pumps are displacement pumps. Because of their design, pressure must be limited in order to maintain a reasonable motor current. In addition to burst protection, pressure relief valves that the preset pressure is maintained. Using dampened valves in screw pumps prevents pressure surges. In case of overpressure, unnecessary material is discharged through the valve.

Selection criteria

The selection of valves depends on the factors pressure, delivery rate, viscosity, adjustability.

Advantages

- Robust, insensitive to dirt
- The control part is separated from the cooling lubricant
- Easy change of pressure
- No pressure surges in the piping
- Constant pressure within large area
- Pressure-reducing circulation possible

Non-controlled pressure relief valve DBD (adjustable with tool)

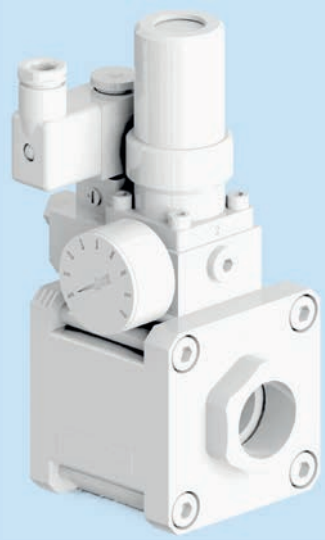
Function

The response pressure of the valve is adjusted via an adjusting screw. When the set pressure is reached, the valve cone opens and the operating medium flows off the pressure connection via the tank connection. The valve should preferably be mounted vertically, with the adjusting screw down. The maximum flow is achieved without significant pressure increase.

Type	Pressure [bar]	Delivery rate Q_{max} [l/min]	Connection thread
DBD040	10 - 30	60	G 3/4
DBD085	20 - 60	60	G 3/4
DBD130	50 - 100	60	G 3/4
DBD150	90 - 150	105	G 3/4

Pressure relief valves

Pneumatically controlled HPB pressure relief valve (manually adjustable)

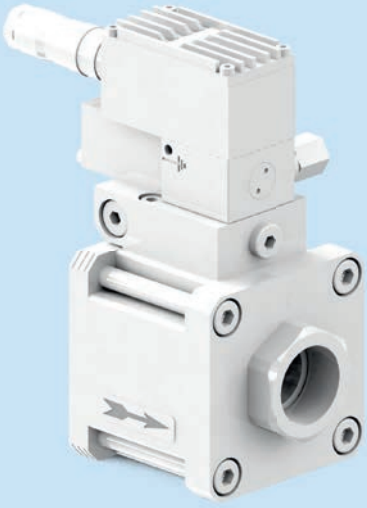


Function

The operating pressure of the valve can be adjusted using a hand-wheel. The pressure-reducing circuit can be controlled electrically. The valve remains open without flow or pressure.

Type	Pressure [bar]	Delivery rate Q_{max} [l/min]	Connection thread
3-HPB-H-12/200	10 - 200	85	G 1
3-HPB-H-15	5 - 120	100	G 1
3-HPB-S-15	5 - 64	100	G 1
3-HPB-H-32	5 - 120	240	G 1 1/2
3-HPB-S-32	5 - 64	400	G 1 1/2
3-HPB-S-50	5 - 64	800	G 1 1/2

Pneumatically controlled SPB pressure relief valve (electronically controlled)



Function

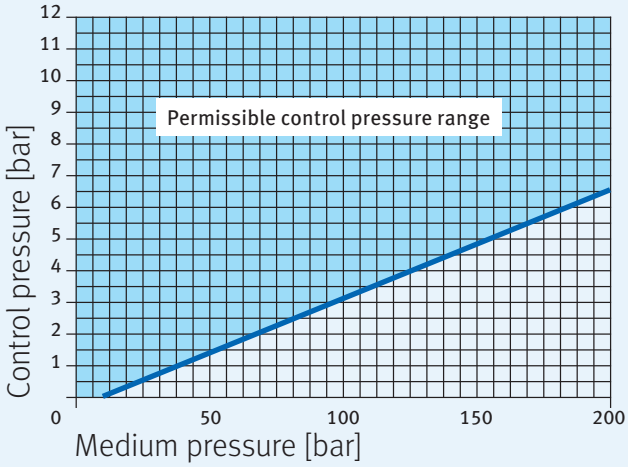
The variable valve allows you to specify desired pressures within a range of 5 – 160 bar. The machine control converts digital signals into analogue values (0 – 10 V) to regulate the pressure. The pneumatic control pressure changes in proportion to the analogue value and regulates the medium pressure. The valve remains open without flow or pressure.

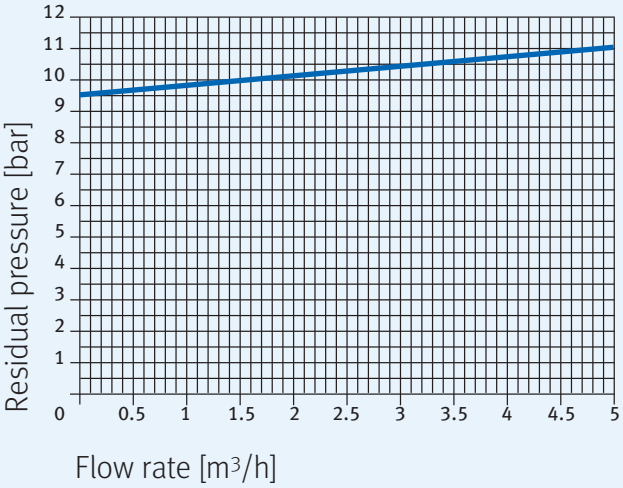
Type	Pressure [bar]	Delivery rate Q_{max} [l/min]	Connection thread
SPB-H-12/200	10 - 200	85	G 1
SPB-H-15	5 - 120	100	G 1
SPB-S-15	5 - 64	100	G 1
SPB-H-32	5 - 120	240	G 1 1/2
SPB-S-32	5 - 64	400	G 1 1/2
SPB-S-50	5 - 64	800	G 1 1/2

The air connection has to be maintained on a constant value with the help of a pressure regulator. For minimum control pressure, see pages 38-39. Valves for a higher delivery rate and pressure are available upon request.

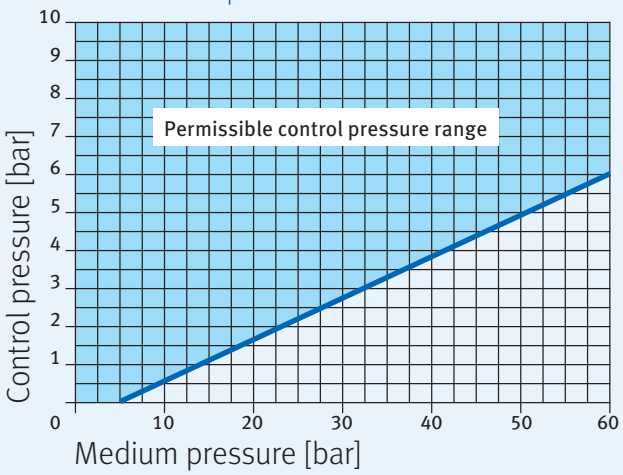
Characteristic curves for pneumatically controlled pressure relief valves

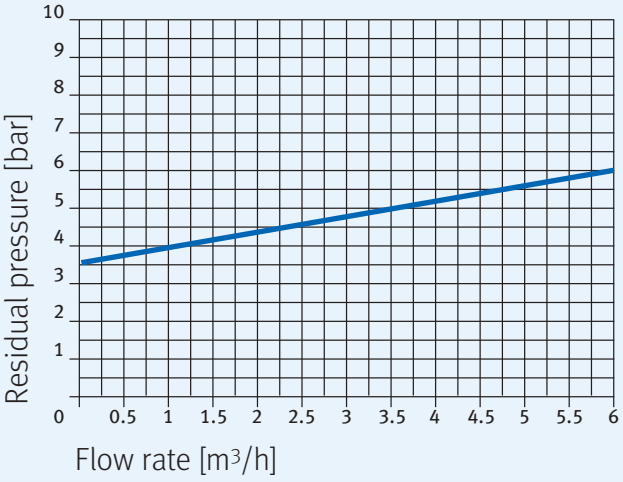
3-HPB-H-12/200 | SPB-H-12/200



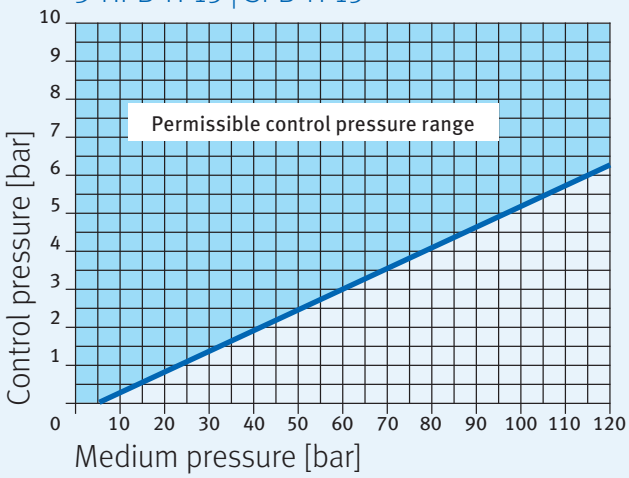


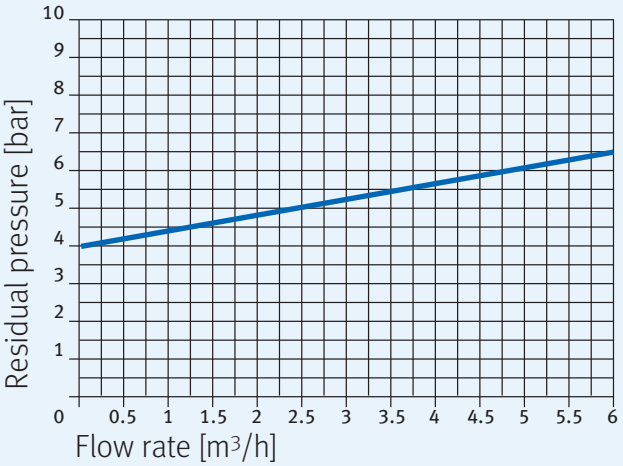
3-HPB-S-15 | SPB-S-15





3-HPB-H-15 | SPB-H-15

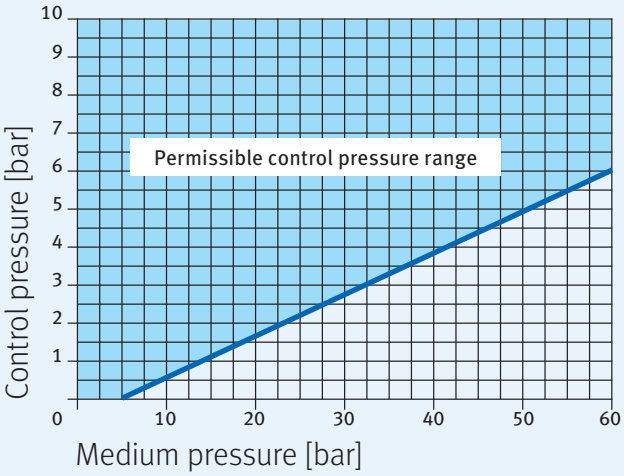


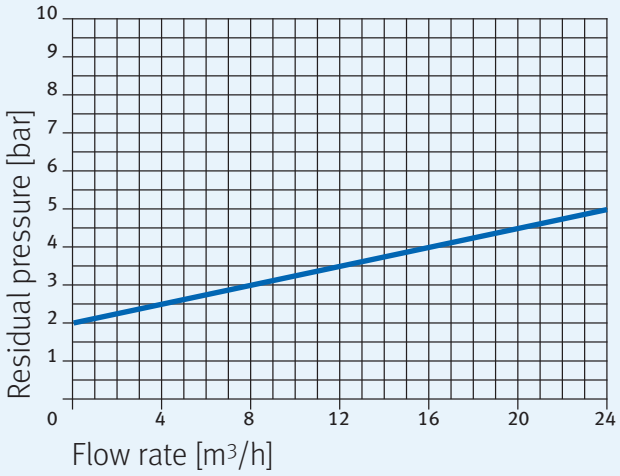


To fully exploit the pressure range, the corresponding control pressure must be available.

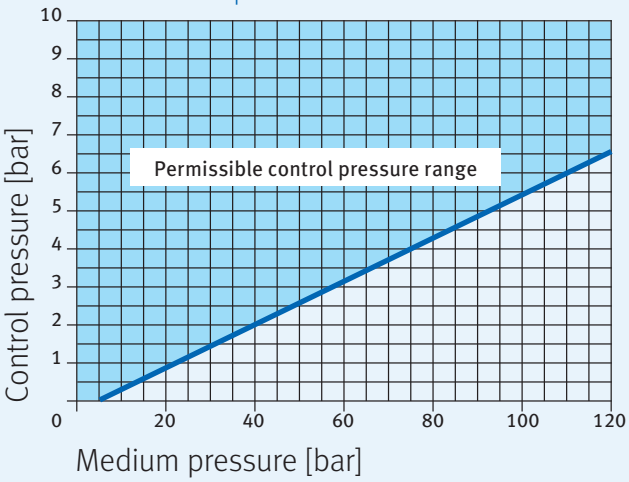
Characteristic curves for pneumatically controlled pressure relief valves

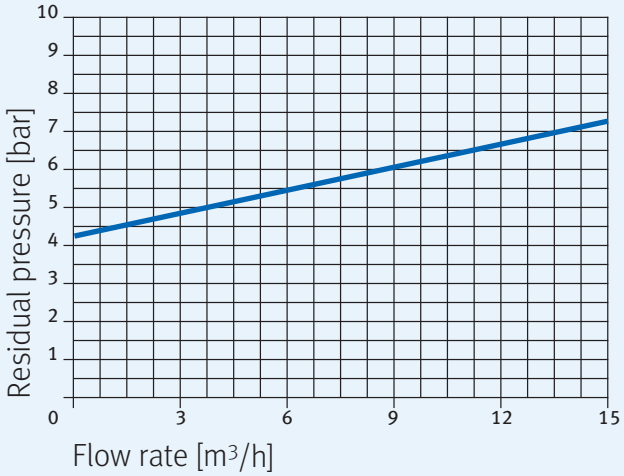
3-HPB-S-32 | SPB-S-32



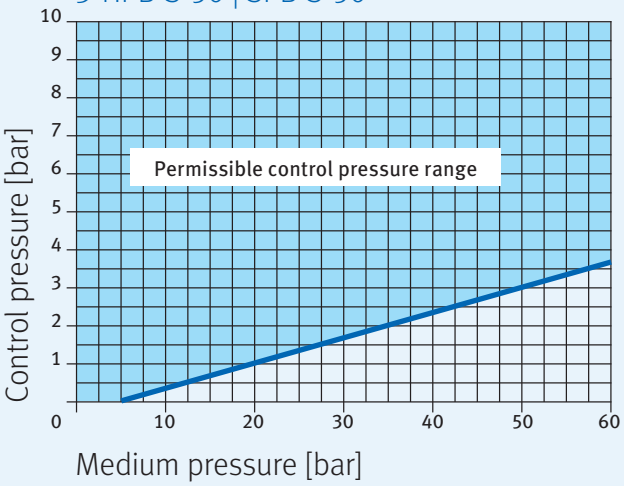


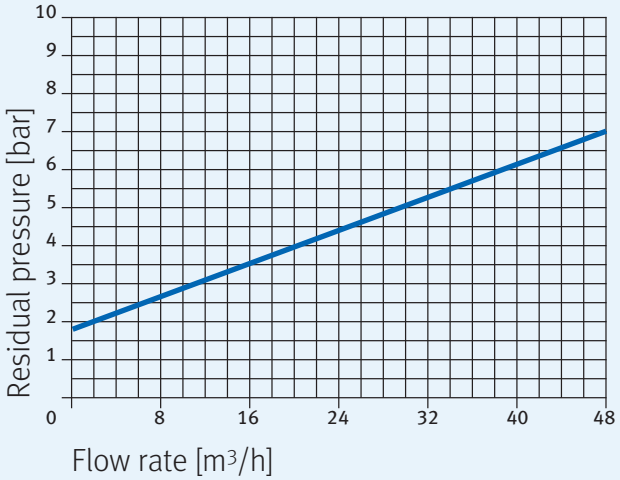
3-HPB-H-32 | SPB-H-32





3-HPB-S-50 | SPB-S-50





To fully exploit the pressure range, the corresponding control pressure must be available.

KNOLL
.It works

Screw pumps KTS

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info.itworks@knoll-mb.de
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KTS

508967 Subject to modifications.

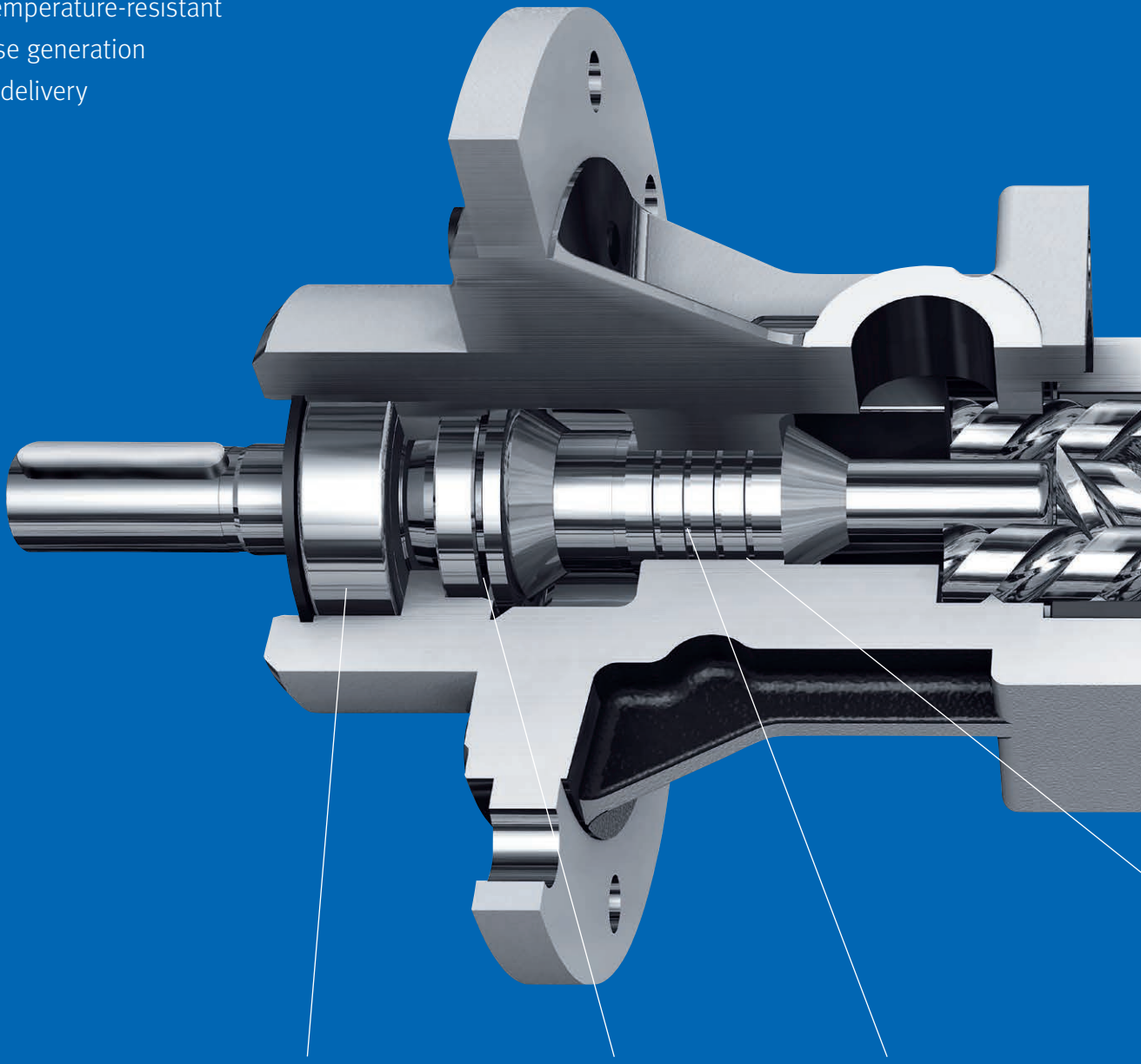
Screw spindle pumps type KTSV

KNOLL
.It works

Version 04-2015

Advantages

- Long service life thanks to high resistance to wear
- Low pulsation
- Extremely temperature-resistant
- Minimal noise generation
- Gentle fluid delivery



Features

Exterior main bearing for greater longevity

Installation of various shaft seal variants possible

Labyrinth for effective pressure reduction and high efficiency

Equipment

The KTSV screw pump is available in a submersible version for vertical installation (generally in containers) and in a model with feet for horizontal dry set-up.

Type code

KTSV 25-50

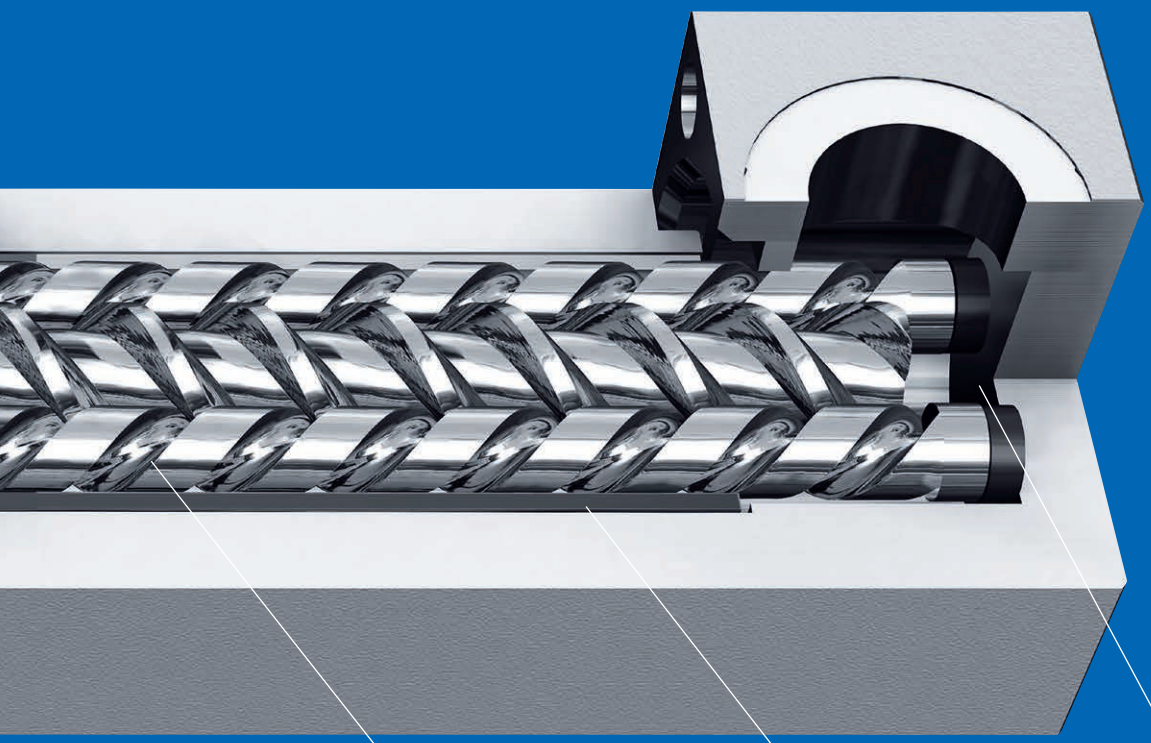
Configuration

Model

Spindle pitch

Layout

Type KTSV screw pumps by KNOLL are self-priming positive displacement pumps suitable for lubricating and non-abrasive materials. The pump has three primary components:
1. Suction housing, 2. Bearing housing with a drive spindle and two concurrently rotating running spindles, 3. Pressure housing with throttling point, sealed shaft bushing and external main bearing. The bearing housing consists of two steel-embedded ceramic shells.



Optional ceramic piston bushing at the throttle valve opening

Screw spindles precision-manufactured from long-lasting specially-treated tool steel

Precision manufactured bearing housing made of nearly wear-free ceramic

Wear resistant axial thrust compensation

Specifications

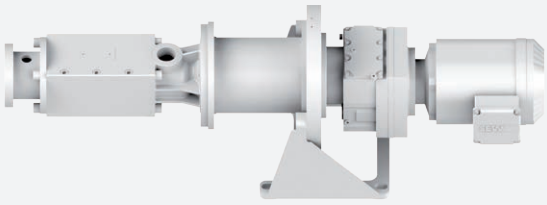
Delivery rate:	1 – 900 l/min
Pressure increase:	1 – 200 bar
Inlet pressure:	max. 20 bar

Conveying and dosing tasks in a wide variety of operating conditions

Application examples

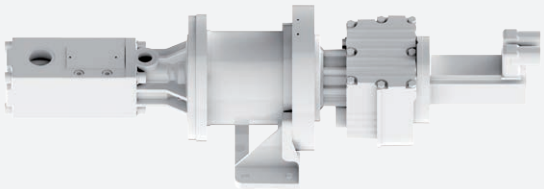
Pump with follower plate for drum unloading KTSV 50-100

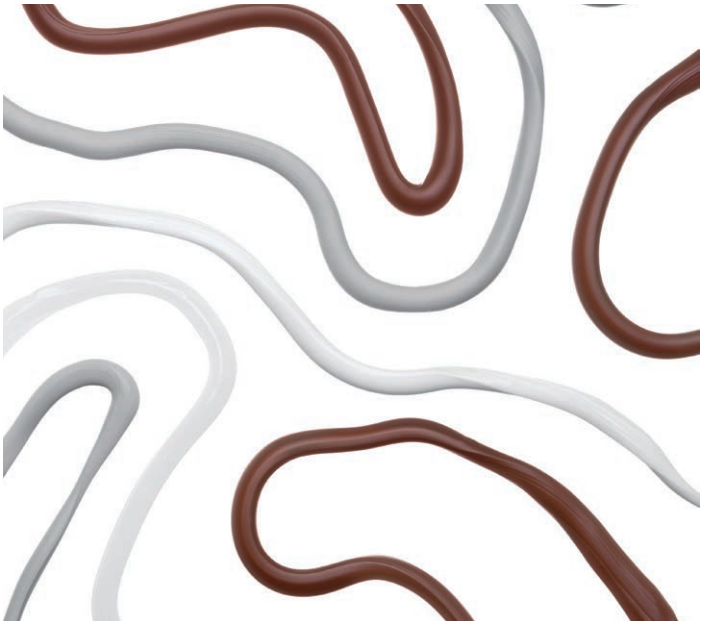
Medium:	Hardener for epoxide resin
Delivery rate:	1.5 – 3.5 l/min
Delivery pressure:	80 bar
Viscosity:	600,000 mPas



Dosing pump for thickener application KTSV 20-30

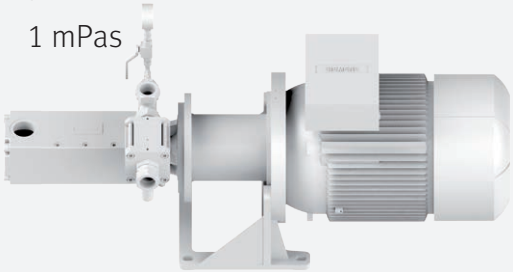
Medium:	Surface seal
Delivery rate:	0.75 l/min
Delivery pressure:	70 bar
Viscosity:	130,000 mPas





Conveyor pump in machine washing system KTSV 32-46

Medium:	Alkaline suds 1%
Delivery rate:	75 l/min
Delivery pressure:	30 bar
Viscosity:	1 mPas



The KTSV screw pump is precisely attuned to the solution adapted for customer-specific use.
What is your application?

Checklist

Contact data

Company:

Address:

Contact:

Telephone / E-mail: /

Application

Conveying application ☐ Dosing application ☐

Medium

Description:

Viscosity:

Particles:

Temperature:

Operating parameters

Flow rate:

Discharge pressure:

Additional information:

Model

Materials:

Requirements:

Additional information:

Drive

Three-phase motor ☐ Servo motor ☐

Voltage / Frequency:

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KTSV

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