wepuko PAHNKE

We perform under high pressure.

Oil hydraulics

PVSD

Products
Industries
Applications
Modernisation

Contents

www.wepuko.de

You can find more information about the products and solutions from Wepuko PAHNKE via this link.

Front page: 16-pump PMSD drive (RX 500) for an 80/100 MN press.

Dear readers,

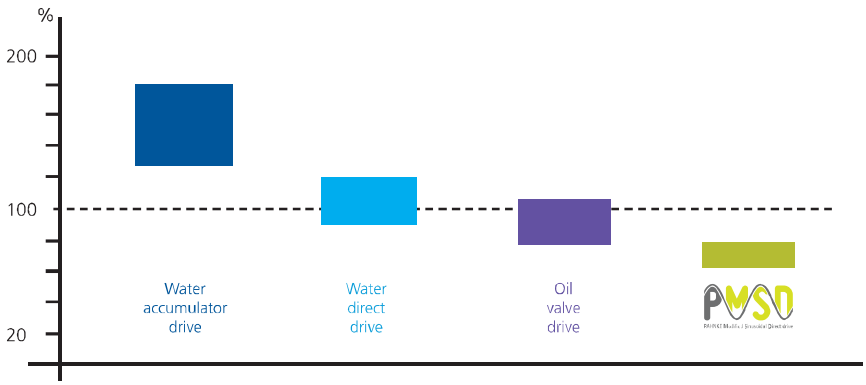
Oil hydraulics perfectly combine enormous power density, high dynamism and the ability to transfer huge forces in a compact system.

Oil hydraulic pumps from Wepuko are used wherever reliability and durability are called for in the toughest conditions. And for good reason. Each of our radial piston pumps is the product of 80 years of expertise and experience. These pumps are mostly used at pressures of 300 to 420 bar, and up to 1,000 bar in special applications.

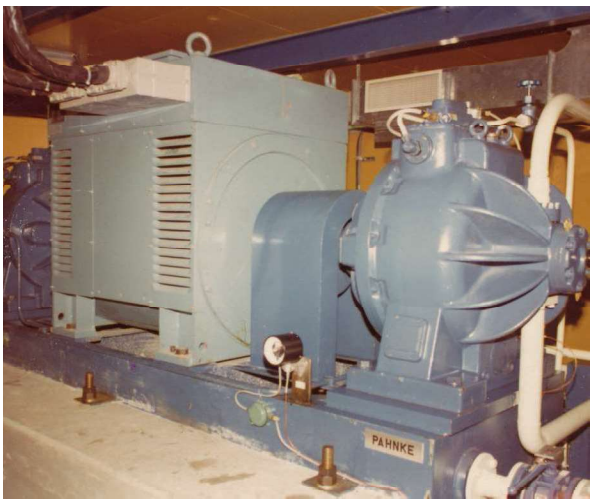
As well as individual pumps, we also supply complete solutions for our customers, from small units to large hydraulic systems with up to 30 MW of installed power.

As a manufacturer of hydraulic forging presses, Wepuko PAHNKE knows the needs of the market inside out. Hans-Joachim Pahnke founded his press-making company PAHNKE Engineering in 1973. In 1975, he developed a revolutionary hydraulic drive system for presses: the PAHNKE Modified Sinusoidal Direct drive (PMSD).

To this day, this system continues to offer unrivalled precision and power combined with energy efficiency and low maintenance. For our customers, this means not only the best possible productivity and therefore profitability, but also a significant contribution to protecting the environment.



Relative energy consumption of different drive types for hydraulic forging presses



The first PMSD drive (1976) for a 5 MN forging press

10-RX-pump PMSD drive for a 53 MN open-die forging press at Union Electric (USA).

From single high-pressure valves to complete drives with 30 MW of power: Wepuko PAHNKE is your partner for everything you need.

RF series

RH series

High-pressure valves

Our large, cartridge-style high-pressure valves are one of our signature products and also one of our most popular.

With a nominal diameter up to 80, operating pressures of up to 420 bar in the standard design and up to 630 bar in the special design are easily achievable. Our product range also includes filler valves up to 600 bar and a nominal diameter of 300. We can also supply several valve sizes as proportional valves with forced control.

We deliver our high-pressure valves in cooperation with our American sister company Wepuko PAHNKE Engineering.

Radial piston pumps

We have over 80 years of experience in high-pressure radial piston pumps, and offer pumps with both constant and variable flow rate.

Pumps with constant flow rate (RF and RH)

Thanks to their smart design, any well-trained mechanic will find it easy to service and repair these machines on site. Operating pressures of up to 450 bar are standard. We can also produce special pumps with up to 1,000 bar. Our customers value the excellent noise characteristics, high volumetric efficiency and low energy losses. Shaft drives make it possible to couple together pumps of different sizes.

Our pumps also stand out thanks to their long maintenance intervals. They can often go for over 50,000 operating hours without the need for repair.

- Multi-row design leads to reduced bearing loads and therefore a longer bearing service life (up to 50,000 hours)
- Robust design allows for operating pressures of up to 1,000 bar
- Excellent noise characteristics thanks to suction slot/pressure valve combination
- Impressive volumetric efficiency, even with thin pumping media
- Easily replaceable internal components
- Shaft drive enables tandem arrangement
- No leakage line required

RV series

RX series

PMSD
PAHNKE Modified Sinusoidal Direct drive

Pumps with variable flow rate (RX and RV)

Our RX and RV series of high-pressure radial piston pumps are the result of decades of experience and development. Our pumps work reliably at operating pressures of up to 450 bar in constant operation, with a service life of well over 30,000 hours and sometimes twice as much.

The flow direction can be varied and reversed on all of our variable pumps (4-quadrant operation).

A wide range of controllers are available to respond to any imaginable requirements. Today, the vast majority of users choose the highly precise servo controller, which can be electronically adjusted to any characteristic.

Our pumps can be adjusted quickly and operate with little noise or pulsation. They are fitted with 9 or 11 pistons depending on the pump type. The flow rates range from 40 l/min to 1,000 l/min.

- Equilibrium of forces leads to reduced overall piston power
- Very small lateral forces on the pistons due to small slide shoe tilting angle
- Easy to reverse pump flow with short response times
- No problems with piston retraction, as the pistons' centrifugal force ensures positive engagement between the piston, slide shoe and swivelling stroke ring
- Short oil channel with wide cross-sections, even for 450 bar connections
- Cleverly designed modular controller system covers every option for adjustment and control
- Low-pulsation pumping and excellent noise characteristics thanks to 9 (RV) or 11-piston system (RX) and short flow of forces in the absorbing components
- Drum design with anti-friction bearing leads to high mechanical efficiency (RX)

Technical data

RX **Technical Data**	Type	RX 160	RX 250	RX 360	RX 500
Geometric volume	cm³/U	350	505	750	1015
Geometric capacity at rated speed n = 1000 min⁻¹	l/min	350	505	750	1015
Continuous Pressure acc. DIN 24312	bar	350			
Admissible working pressure for 50% displacement	bar	450			
Lubrication oil flow	l/min ca.	7	10	15	20
Minimum control time from 0 – 10 % stroke	ms	50	65	90	100
External leakage at p_e = 315 bar and 40 cSt	l/min ca.	30	40	60	80
Maximum speed	min⁻¹	1800	1500	1200	1000
Moment of inertia	kgm²	3,2	5,8	11,5	18,5
Weight	kg	680	930	1550	2150
Inlet pressure at low pressure connection P2	5-40 bar				
Inlet pressure at high pressure connection P1	5-450 bar				
Pressure liquid	Hydraulic Oil HLP according DIN 51524-2				
Pressure liquid viscosity	(40) 50-100 cSt recommendation ISO 68 at 40°C				
Allowable start viscosity at p_e = 5 bar	500 cSt				
Pressure liquid temperature	10-60°C				
Filtration size acc. ISO 4406	19/16/13				
Drain flow pressure (casing pressure)	pressureless drain flow required				

RV **Technical Data**	Type	RV 150.1	RV 150.H	RV 250.1	RV 360.1
Geometric volume	cm³/U	97,7		167,0	242,0
Geometric capacity at rated speed n = 1500	l/min	146,0		250,0	363,0
Continuous Pressure acc. DIN 24312	bar	350	420	350	315
Required oil flow for casing flushing	l/min	8		10	14
Minimum control time from 0 - 100% stroke	ms	45		52	55
External leakage at p_e = 315 bar and 35 cSt	l/min	8,5		13	18
Speed range for self-priming operation (0,9 bar absolute)	min⁻¹	500-1500		500-1500	500-1000
For pre-filling p_e = 2 bar	min⁻¹	200-1500			
Maximum allowable radial load at shaft end (flexible coupling required)	N	500		750	1000
Moment of inertia	kgm²	0,0676		0,164	0,258
Weight	kg	150		207	300
Method of fastening		foot / flange		flange	foot / flange
Inlet Pressure	Continuous Pressure				
Pressure liquid	Hydraulic Oil HLP according DIN 51524-2				
Pressure liquid viscosity	20-75 cSt				
Allowable start viscosity at p_e = 1 bar absolute	150 cSt				
Allowable start viscosity at p_e = 2 bar absolute	400 cSt				
Pressure liquid temperature	10-65°C				
Filtration size acc. ISO 4406	19/16/13				
Drain flow pressure (casing pressure)	max. 2 bar absolute				

RF **Technical Data**	Type	RF 15	RF 19	RF 24	RF 32	RF 42	RF 56	RF 70	RF 94
Geometric volume	cm³/U	10,1	12,9	16,5	21,5	28,2	37,6	47,2	62,8
Geometric capacity at rated speed n = 1500 min⁻¹	l/min	15,1	19,3	24,7	32,2	42,2	56,4	70,8	94,2
Weight	kg	34		38		95		100	
Number of pistons		6		10		6		10	
Maximum speed	min⁻¹	2200				2000			

	Type	RF 121	RF 154	RF 202	RF 258	RF 330	RF 404	RF 516	RF 650	RF 1000
Geometric volume	cm³/U	81,2	103	135	172	225	270	344	450	680
Geometric capacity at rated speed n = 1500 min⁻¹	l/min	121	154	202	258	335	405	516	670	1000
Weight	kg	246		295		320	500		580	710
Number of pistons		6		10			20			
Maximum speed	min⁻¹	1800								1500

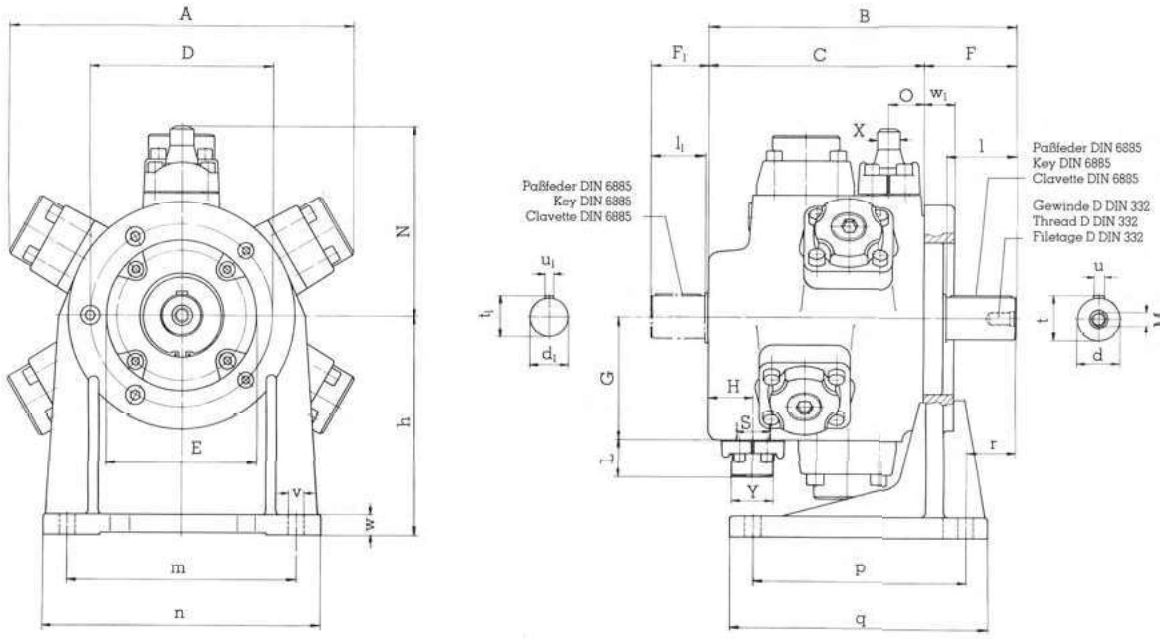
	RF 15 ... 258	RF 404, 516	RF 330, 650	RF 1000
Continuous Pressure acc. DIN 24312 [bar]	450		420	400
Inlet pressure [bar]*)	0,1 ... 2,5 (10)		1 ... 10	1 ... 5
Pressure liquid **)	Hydraulic Oil HLP according DIN 51524			
Pressure liquid viscosity	22-100 cSt			
Allowable start viscosity at p_e = 1 bar	400 cSt at n = 1500 min⁻¹			
Pressure liquid temperature	10-65°C			
Filtration size acc. ISO 4406	19/16/13			
Volume efficiency at 450 bar	0,94			

*) Inlet pressure < Outlet pressure .
**) Other pressure liquids like HFA, HFC, HFD, on request.

RH **Technical Data**	Type	RH 21	RH 27	RH 35	RH 45	RH 58	RH 75	RH 97	RH 125
Geometric volume	cm³/U	14,4	18,1	24,1	30,1	38,7	50,1	64,6	83,6
Geometric capacity at rated speed n = 1500 min⁻¹	l/min	21,7	27,1	36,1	45,2	58,1	75,2	96,9	125,4
Weight	kg	95		100		246		295	
Maximum speed	min⁻¹	1800							
Continuous Pressure acc. DIN 24312 [bar]	1000								
Inlet pressure [bar]	1-2,5								
Pressure liquid	Hydraulic Oil HLP acc. DIN 51524								
Pressure liquid viscosity	22-100 cSt								
Allowable start viscosity at p_e = 1 bar	400 cSt								
Pressure liquid temperature	10-65°C								
Filtration size acc. ISO 4406	19/16/13								
Volume efficiency at 1000 bar	0,85								

Main dimensions

RH
Main dimensions

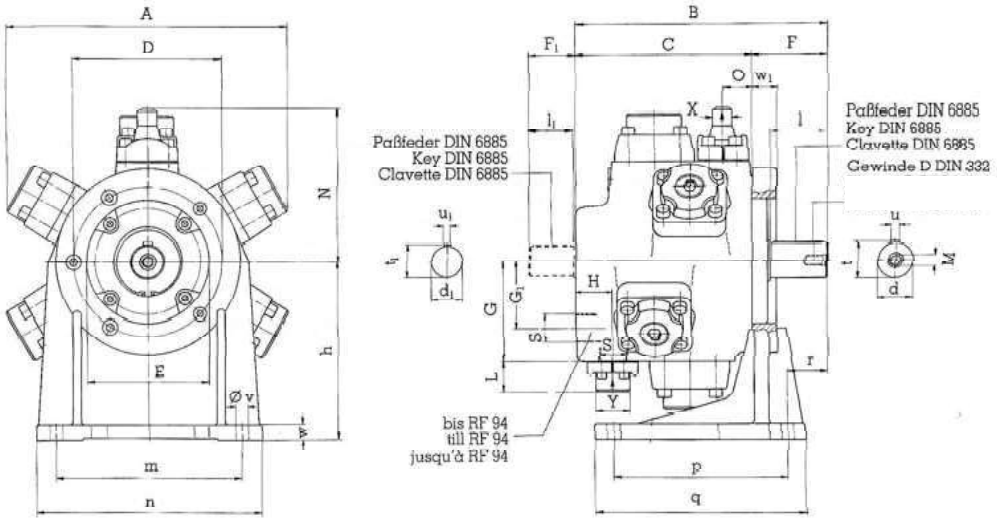


Pump foot and 2nd shaftend by request

Type	A	B	C	D	E	F	F_1	G	H	L	M	N	O	S	X Pipe	Y Pipe
RH 21 RH 27	340	340	227	4 x M16 195	165	112	63	122	50	-	M 12	192	36	G 1¼"	10/20	-
RH 35 RH 45	360	340	227	4 x M16 195	165	112	63	122	50	-	M 12	208	36	G 1½"	12,5/25	-
RH 58 RH 75	500	463	327	4 x M20 275	230	138	90	185	68	57	M 16	285	54	-	16/34	41,5/48
RH 97 RH 125	520	463	327	4 x M20 275	230	138	90	185	68	57	M 16	285	54	-	20,4/42,4	52,8/60

Type	d	d_1	h	l	l_1	m	n	p	q	r	t	t_1	u	u_1	v	w	w_1
RH 21 RH 27 RH 35 RH 45	45	38	265	82	58	260	320	250	300	52	48,5	41	14	10	18	22	25
RH 58 RH 75 RH 97 RH 125	65	55	330	105	82	350	420	320	390	75	69	59	18	16	27	30	45

RF
Main dimensions

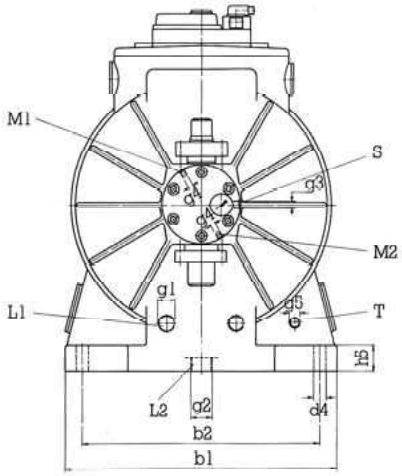


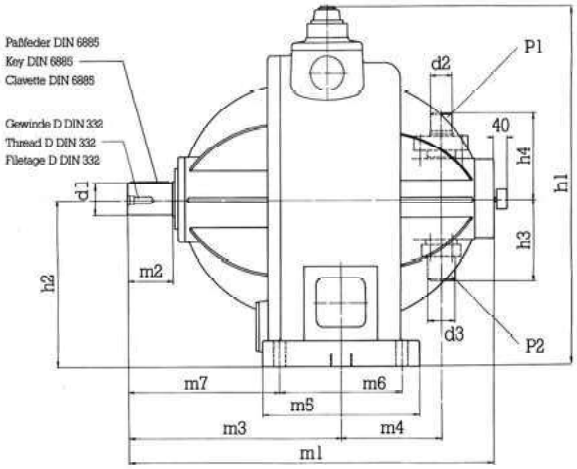
Type	A	B	C	D	E	F	F_1	G	G_1	H	L	M	N	O	S	X Pipe to 400 bar	X Pipe to 700 bar	Y Pipe
RF 15 RF 19	245	245	165	4 x M12 138	115	80	46	86	55	37	-	M 10	150	24	G ¾"	16/12	20/12	-
RF 24 RF 32	265	245	165	4 x M12 138	115	80	46	86	55	37	-	M 10	150	24	G 1"	16/12	20/12	-
RF 42 RF 56	340	340	227	4 x M16 195	165	112	63	122	80	50	-	M 12	192	36	G 1¼"	20/15	25/15	-
RF 70 RF 94	360	340	227	4 x M16 195	165	112	63	122	80	50	-	M 12	198	36	G 1½"	25/19	33,7/21	-
RF 121 RF 154	500	463	327	4 x M20 275	230	138	90	185	-	70	57	M 16	280	49	SAE Size 50	38/29	38-25,4	60,3x54,5
RF 202 RF 258	520	463	327	4 x M20 275	230	138	90	185	-	70	58	M 16	295	49	SAE Size 60	44,5/35,5	44,5/31,9	70/64,2
RF 330 RF 404 RF 516 RF 650	520	707	532	4 x M20 275	230	175	90	185	-	75	90	M 16	305	70	SAE Size 80	60,3/46,1	60,3/40,3	88,9/80,8
RF 1000	610	810	620	-	-	190	166	212	-	115	90	-	343	82	-	101,6/61,6	-	88,9/80,8

Type	d	d_1	h	l	l_1	m	n	p	q	r	t	t_1	u	u_1	Øv	w	w_1
RF 15 RF 19 RF 24 RF 32	32	28	180	58	42	165	200	155	190	42	35	31	10	8	14	18	18
RF 42 RF 56 RF 70 RF 94	45	38	265	82	58	260	320	250	300	52	48,5	41	14	10	18	22	25
RF 121 RF 154 RF 202 RF 258 RF 330	65	55	330	105	82	350	420	320	390	75	69	59	18	16	27	30	45
RF 404 RF 516 RF 650	65	55	450	140	82	430	500	440	510	90	69	59	18	16	27	40	50
RF 1000	85	85	400	160	160	360	410	600	720	200	89,4	89,4	22	22	22	35	-

Main dimensions

RX
Main dimensions





All dimensions in mm

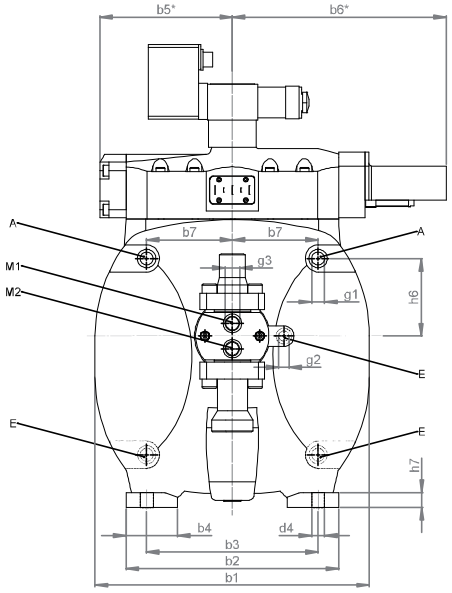
P1 High pressure connection
P2 Low pressure connection
L1 Alternative drain connection
L2 Alternative drain connection
S Lubricating connection
M1 Measuring connection high pressure
M2 Measuring connection low pressure
T Anschluß für Thermometer

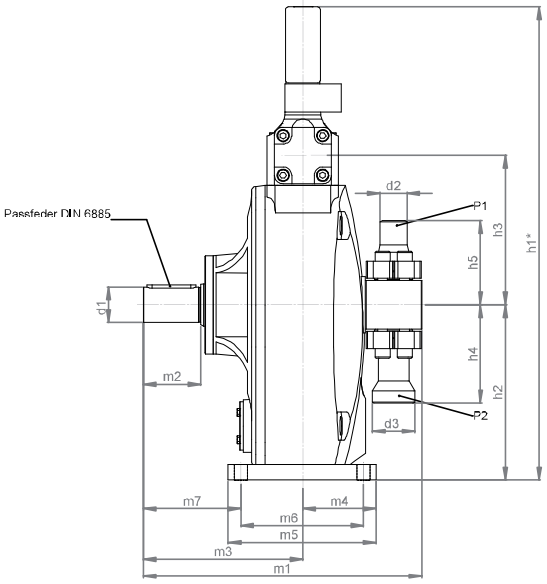
Low pressure connection P2 also available for high pressure application identical to P1 (refer to order key)

Type	b1	b2	$d1_{k6}$	d2	d3	d4	g1	g2	g3	g4	g5
RX 160	570	500	75	45/60	65/76	22	G1½"	G2"	G½"	G¼"	-
RX 250	780	680	90	50/76	65/75	33	G1½"	G2"	G¾"	G¼"	G½"
RX 360	920	800	100	58/89	78/96	33	G2"	G3"	G¾"	G¼"	G½"
RX 500	1000	850	110	60/89	100/118	39	G2"	G3"	G¾"	G¼"	G½"

Type	h1	h2	h3	h4	h5	m1	m2	m3	m4	m5	m6	m7
RX 160	750	365	225	225	60	680	105	370	240	290	220	275
RX 250	1025	475	240	255	75	1043	130	611	282	450	350	436
RX 360	1185	560	255	335	90	1275	180	755	355	600	480	515
RX 500	1258	605	265	350	100	1435	200	850	390	650	500	600

RV
Main dimensions





All dimensions in mm
P1 Pressure connection
P2 Suction connection
E Inlet for casing flushing (always on the lowest point)

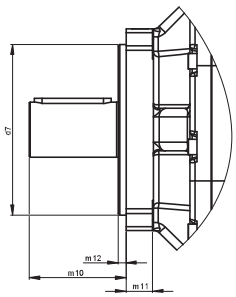
A selectable outlet for casing flushing
M1 Measuring connection discharge (for regulation device 7-9)
M2 Measuring connection suction

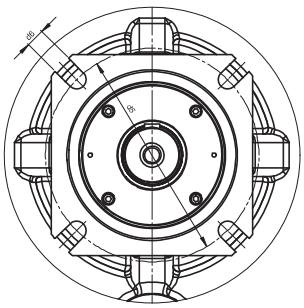
Type	b1	b2	b3	b4	b5	b6	b7	d1	d2	d3	d4	g1	g2	g3
RV 150	400	310	250	75	193	312	125	50	38/29	60,3/54,5	19	G1/2"	G3/8"	G1/2"
RV 150.H	400	310	250	75	193	312	125	55	48,3/26	48,3/26	19	G1/2"	G3/8"	G1/4"
RV 250	450	-	-	-	208	326	120	63	48,3/30	48,3/30	-	G3/4"	-	G1/4"
RV 360	480	450	360	90	208	326	155	65	45/34	60,5/50	23	G3/4"	G1/2"	G3/8"

Type	h1	h2	h3	h4	h5	h7	h8	m1	m2	m3	m4	m5	m6	m7
RV 150	675	250	213	138,5	118,5	113	22	400	82	227	130	211	175	140
RV 150.H	675	250	213	130	130	113	22	400	82	227	130	211	175	140
RV 250	725	268	243,5	143	143	120	-	502	-	279	173	-	-	-
RV 360	775	305	257,5	159	187,5	120	35	530	105	295	180	290	240	175

Flange version

Type	d5	d6	d7	m10	m11	m12
RV 150	200	18	160 h8	94,5	20	9
RV 250	200	18	160 h8	118	23	9
RV 360	250	22	200 h8	113	31	9





Control device RX+RV

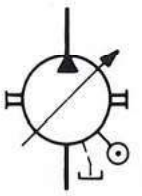
Symbols

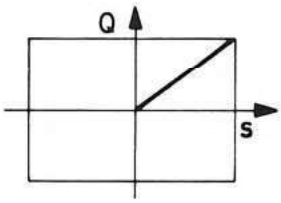
Control Curve

Fixed displacement

Pump with a constant, in stationary position by means of adjusting screw pre-selectable

1

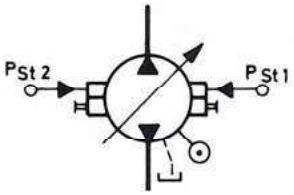


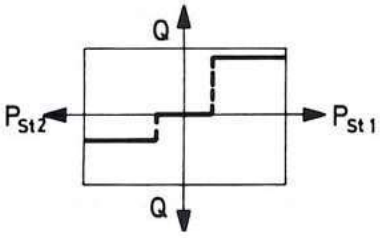


Hydraulic Two-Position Control

The pump can be controlled hydraulically by means of an external control to two different, through adjusting screws pre-selectable operating positions.

3

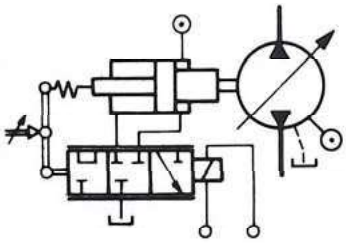


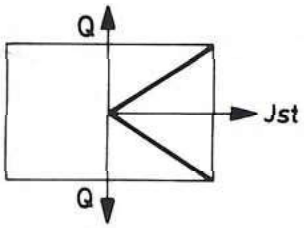


Electro Hydraulic Proportional Control

The pump can be controlled or reversed proportionally to a pre-selected precision control flow by means of regulating magnet.

5

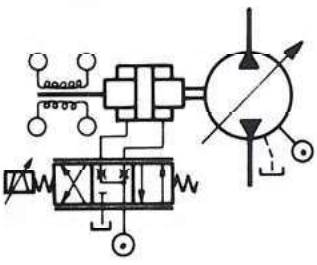


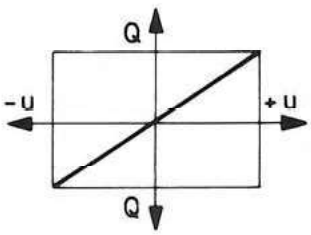


Electro Hydraulic Servo Control

The pump can be controlled or reversed electro-hydraulically with high precision in proportion to a pre-selected control voltage.

6





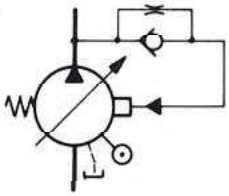
Control device RX+RV

Symbols

Control Curve

Constant Flow Regulator

The pump regulates automatically the capacity depending upon the appropriate operating pressure so that the pre-selected driver rating remains constant.



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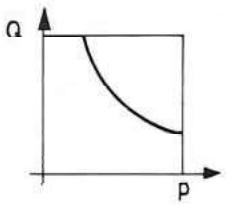
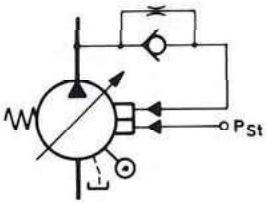


Constant Flow Regular with Switching Possibility to a Minimum pumping Capacity

Regulator as described under 7. Pumping capacity can be additionally controlled to a pre-selected value by means of external control pressure.



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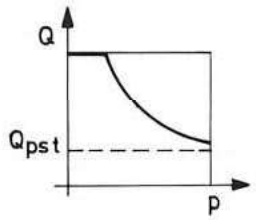
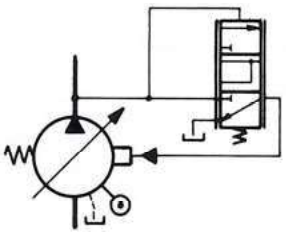


Constant Pressure Regulator

The pump regulates automatically after achieving a selectable pressure so that this can be kept constant, independent from the pumping capacity.



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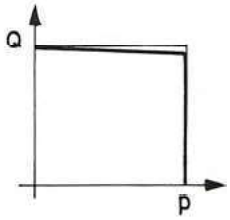
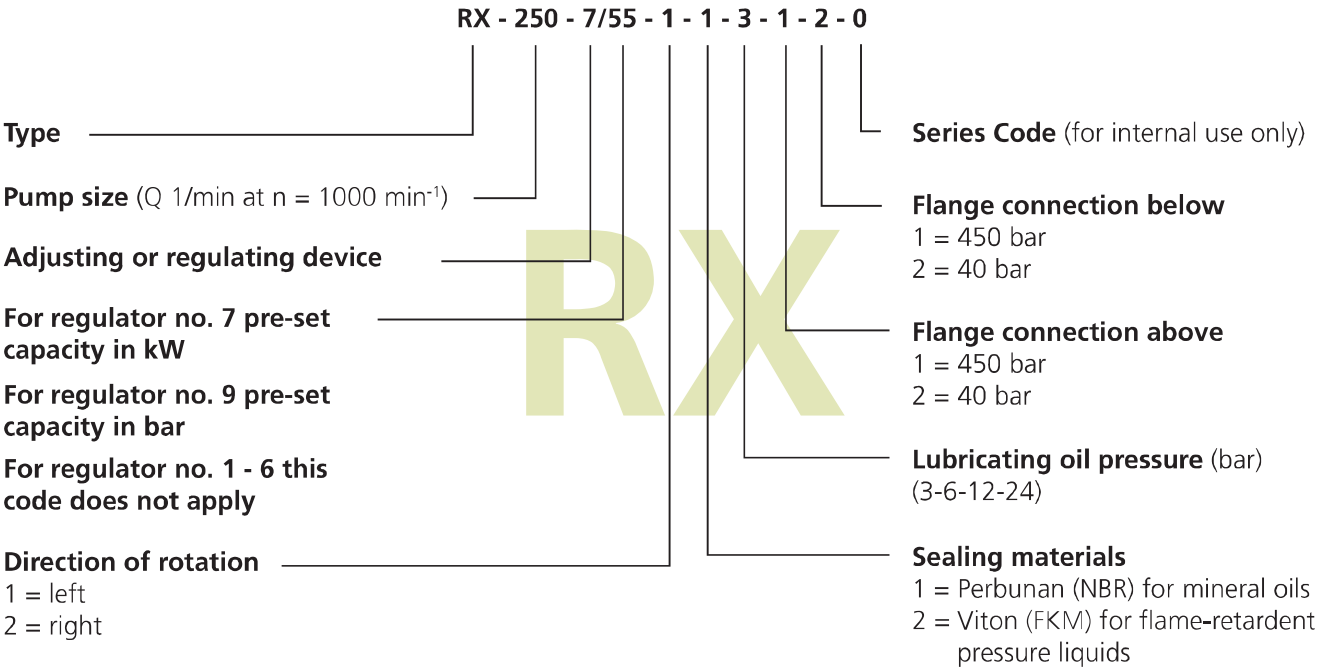
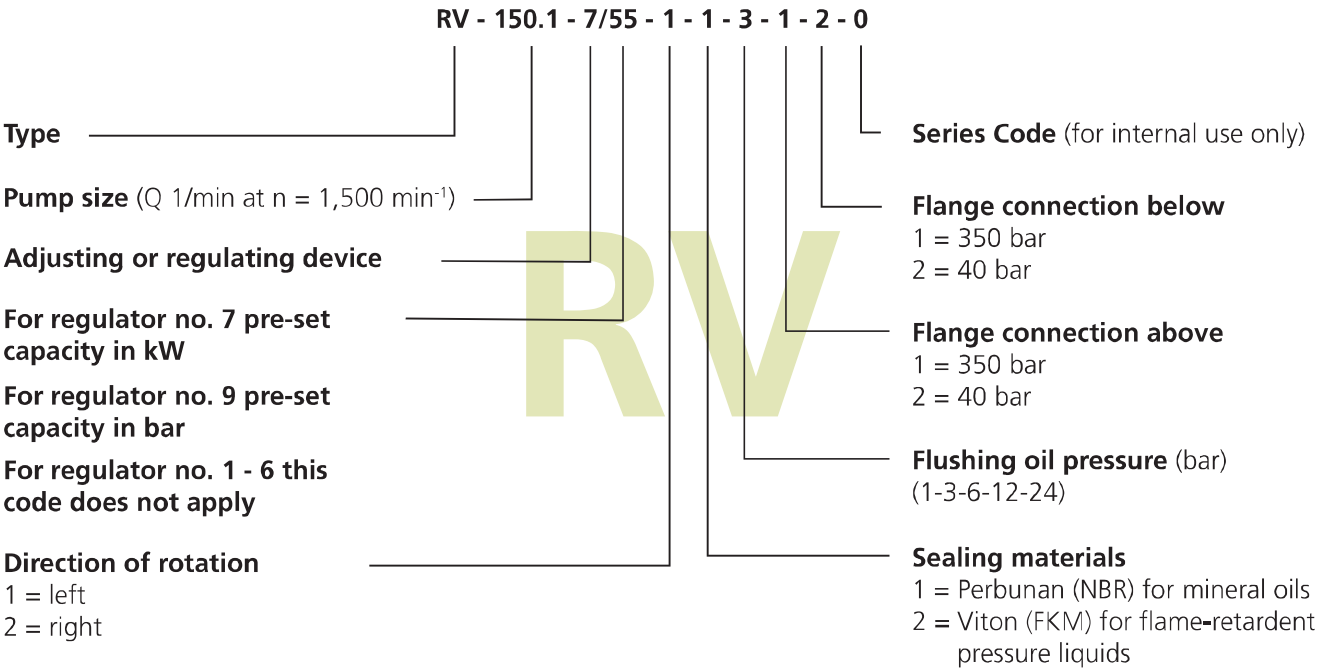
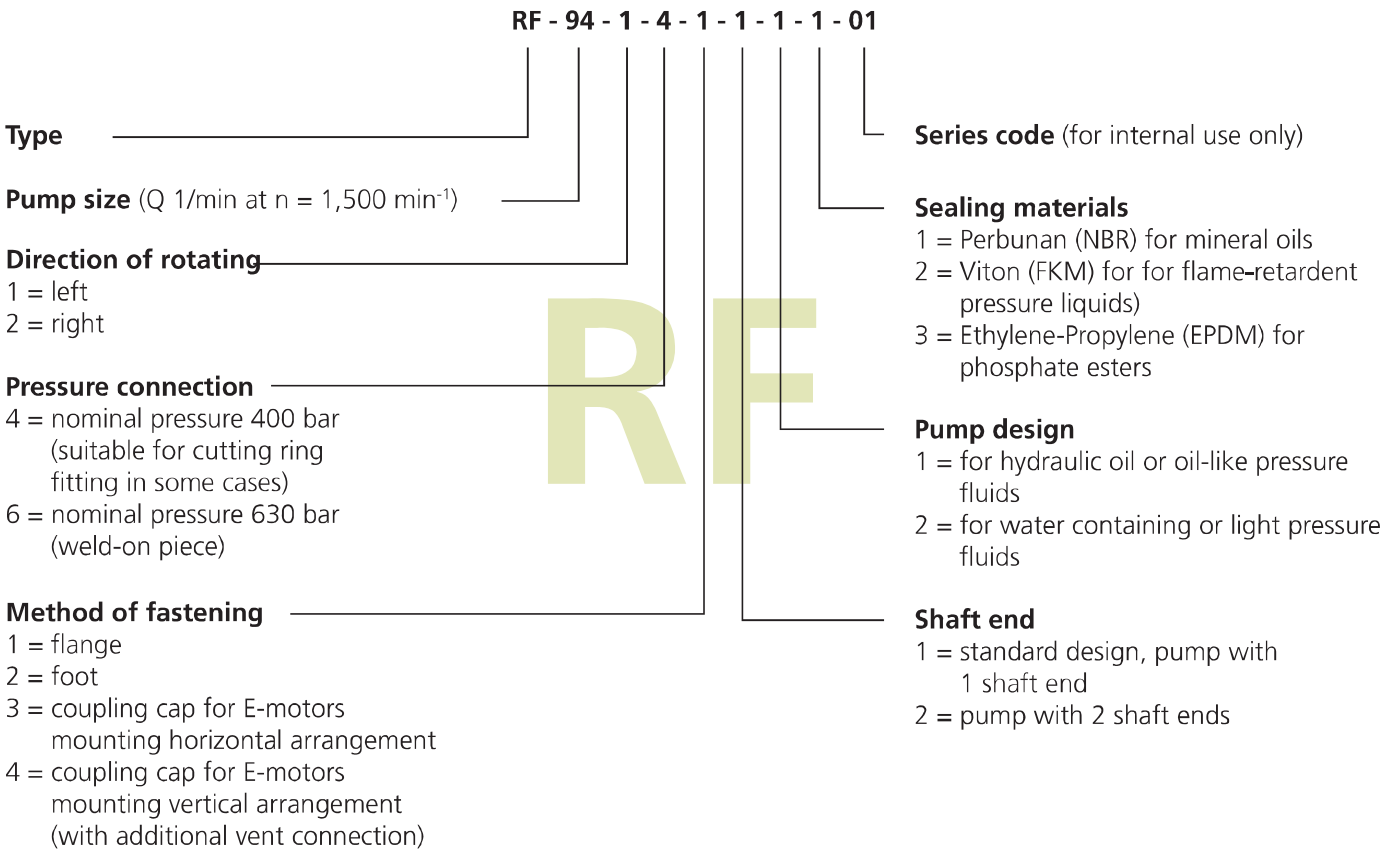
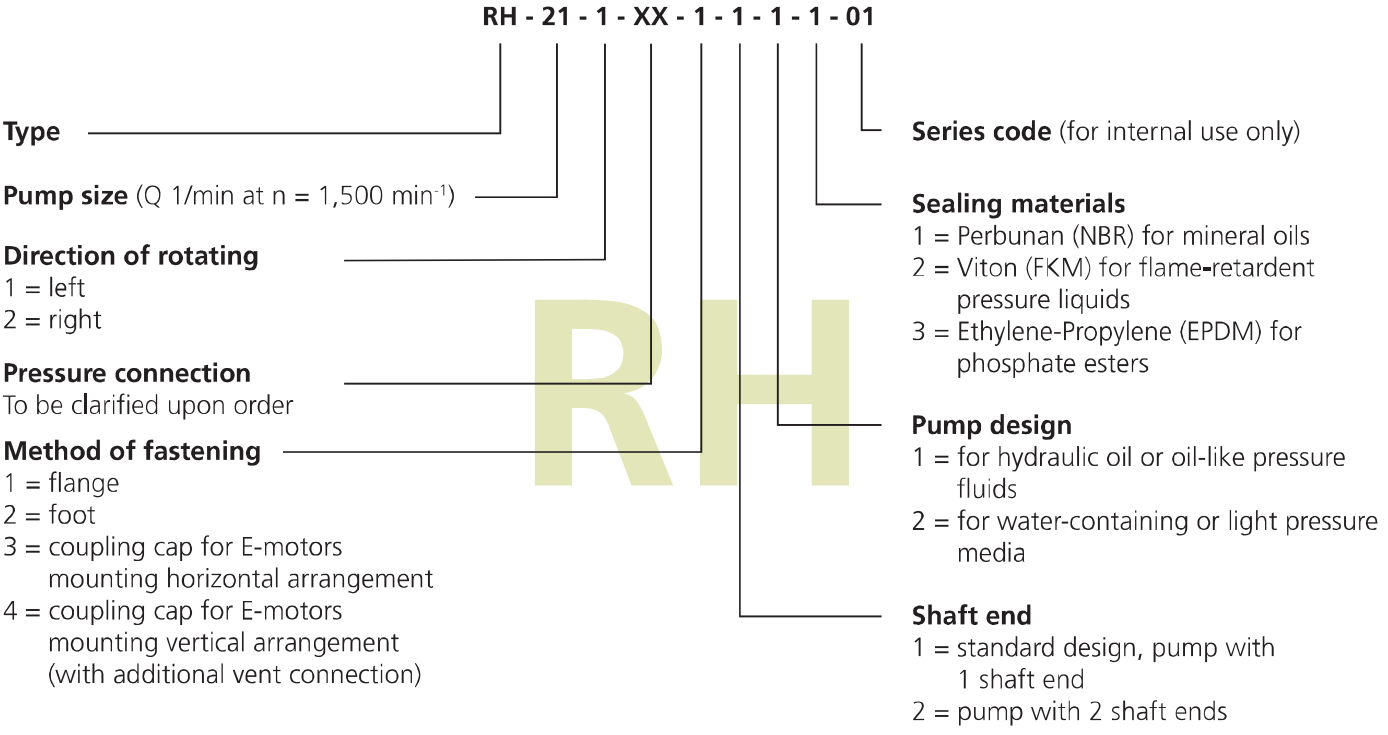


Ordering and data key






RF - 94 - 1 - 4 - 1 - 1 - 1 - 1 - 01
Type
Pump size (Q 1/min at n = 1,500 min-1)
Direction of rotating
1 = left
2 = right
Pressure connection
4 = nominal pressure 400 bar (suitable for cutting ring fitting in some cases)
6 = nominal pressure 630 bar (weld-on piece)
Method of fastening
1 = flange
2 = foot
3 = coupling cap for E-motors mounting horizontal arrangement
4 = coupling cap for E-motors mounting vertical arrangement (with additional vent connection)
Series code (for internal use only)
Sealing materials
1 = Perbunan (NBR) for mineral oils
2 = Viton (FKM) for for flame-retardent pressure liquids)
3 = Ethylene-Propylene (EPDM) for phosphate esters
Pump design
1 = for hydraulic oil or oil-like pressure fluids
2 = for water containing or light pressure fluids
Shaft end
1 = standard design, pump with 1 shaft end
2 = pump with 2 shaft ends
RF


RH - 21 - 1 - XX - 1 - 1 - 1 - 1 - 01
Type
Pump size (Q 1/min at n = 1,500 min-1)
Direction of rotating
1 = left
2 = right
Pressure connection
To be clarified upon order
Method of fastening
1 = flange
2 = foot
3 = coupling cap for E-motors mounting horizontal arrangement
4 = coupling cap for E-motors mounting vertical arrangement (with additional vent connection)
Series code (for internal use only)
Sealing materials
1 = Perbunan (NBR) for mineral oils
2 = Viton (FKM) for flame-retardent pressure liquids
3 = Ethylene-Propylene (EPDM) for phosphate esters
Pump design
1 = for hydraulic oil or oil-like pressure fluids
2 = for water-containing or light pressure media
Shaft end
1 = standard design, pump with 1 shaft end
2 = pump with 2 shaft ends
RH

20-pump PMSD drive (RX 500) for a modern 185 MN press from PAHNKE.

Heavy machine drives and forging presses

From heavy forging presses, large closed-die forging presses and steel extruders to heavy ship hydraulics, our oil-hydraulic drive systems are designed to be reliable, durable and above all extremely energy efficient.

The core of our oil-hydraulic drives are our radial piston pumps, available with both constant (RF, RH) or variable flow rate (RX, RV).

8-RF-pump drive for the 10,000-tonne closed-die forging press at Standard Steel (USA)

2-pump PMSD drive for the special press at the Freiberg University of Technology prior to commissioning

PMSD drive

The PAHNKE Modified Sinusoidal Direct drive (PMSD) is a specialised press drive developed by PAHNKE Engineering and planned by Hans-Joachim Pahnke.

This drive requires no valves to control the press movement. Instead, it works with quickly adjustable high-pressure RX pumps to determine the force, speed and movement direction of the press. Due to the lack of shocks, the system is extremely quiet and incredibly reliable. The pumps in these systems can operate for over 30,000 hours without repair, sometimes well over 50,000.

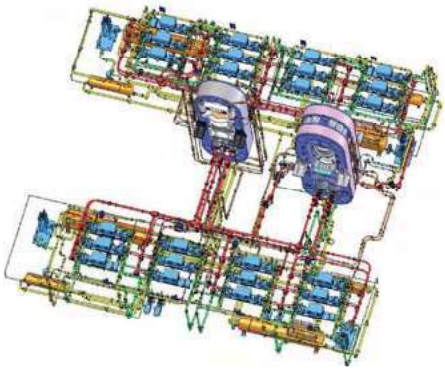
Another key advantage is the fact that this drive system requires much less energy than all comparable drives. Depending on the design, it can achieve an energy saving of 20% to 30% over other oil-hydraulic drives, and up to 60% compared to water-hydraulic drives (see graph in the introduction).

We used the PMSD drive as the basis for the 42-pump drive (RX 500), the most powerful hydraulic system in the world. With 30 MW of installed power, it is used to drive a 360 MN steel extractor and a 150 MN pre-forming press at Norheinco in China.

All new PAHNKE presses with hydraulic drives use PMSD technology.

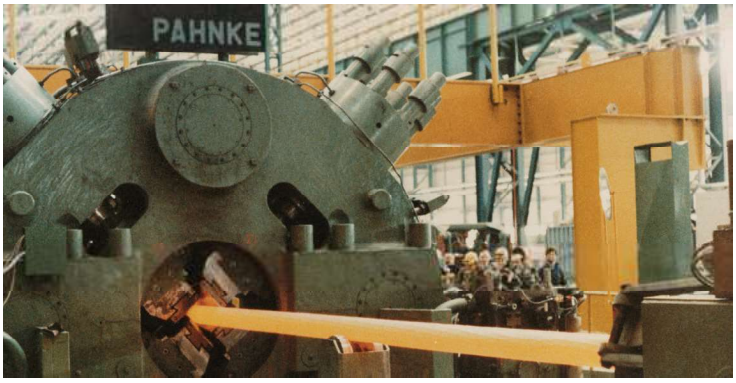
PMSD

PAHNKE Modified Sinusoidal Direct drive



42-pump PMSD drive (RX 500) in Norheinco, China

Our pumps are used wherever customers need reliability and durability in the toughest conditions!



Industries and applications

Is your industry or application not on this list?
Then get in touch!

General hydraulic systems
- Pressure intensifiers
- Pressure oil supply systems
- Direct drives for cylinders

Automotive industry
- Rubber presses

Mining
- Mining hydraulics

Construction
- Lift drives

Metal industry
- Forging presses
- Bending presses
- Slab shears
- Extruders
- Upsetting presses
- Particle board presses
- Packing presses
- Stripper cranes
- Stretching benches
- Forging manipulators
- Embossing machines
- Hydrostatic pipe testers
- Pulsation drives

Oil and gas
- Oil pump drives

Maritime
- Steering gear drive systems
- Rudder roll stabilisation drive (RRS drive)

Other industries
- Particle board presses
- Powder presses

Systems modernisation: Creating and preserving value

Modernisation can be a sensible alternative in cases where purchasing a new system would not be financially viable. We fit unprofitable presses with modern drives, controls and improved transport systems to turn them into powerful units.

Goal

Many presses currently in operation have a service life of over 30 years. Even while countless new presses are currently being built, old presses are rarely scrapped. These old machines often struggle to meet the high standards demanded on the global markets, however. This applies to both the products themselves and the production processes, documentation and certifications.

Modernisation can offer several benefits:

- Increased machine availability
- Reduced auxiliary process times
- Improved machine parameters
- Reduced operating costs
- Lower required manpower
- Ability to expand product range
- Reduced maintenance requirement and better spare part availability

Wepuko PAHNKE has already successfully modernised many systems for its customers. For example, we modernised and expanded the oil-hydraulic drive at a forge in Germany. This resulted in a permanently higher availability of around 99% for the hydraulic system after modernisation, together with a 30% drop in energy consumption.

Furthermore, the system's improved performance led to higher productivity.

Implementation

We use individually tailored modernisation measures to boost systems' performance, reliability and durability.

Often, increasing the pressure for greater pressing force in hydraulic forging presses is a simple process.

Replacing or converting mechanical parts makes it possible to install more precise guides with less need for maintenance, or extend the service life of cylinder seals from sometimes less than one year to up to ten.

This modernised open-die forging press with three cylinders has the following technical data: Pressing force levels 18 MN (two-cylinder operation) and 27 MN (three-cylinder operation), upsetting force: 30 MN, drive 8 x RF 650 radial piston pumps with valve control.

A new, state-of-the-art electronic controller not only offers a greater range of options for precisely setting the controller or capturing data related to operations in quality, but also eliminates the problem of spare parts availability in this fast-moving industry.

Installing remote-controlled tool clamping and changing mechanisms, or faster moving tool tables, allows us to accelerate forging processes.

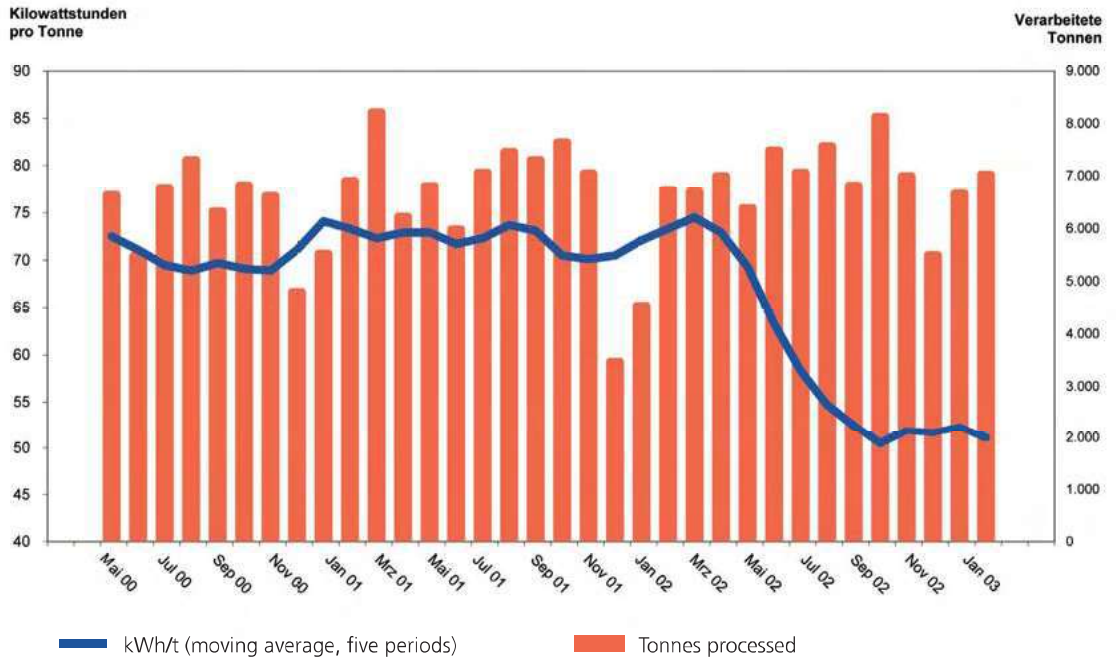
Significant performance improvements can also be achieved through modernising or expanding handling tools like forging manipulators, or by adding lifting and rotary tables for faster workpiece handling between forging processes.

What we offer

We optimise machines and systems at the periphery of the forging press, such as furnaces, cranes and tool transport mechanisms.

What is the best option: modernisation or new purchase? Together, we take a close look at the current state of your systems and discuss your production goals. Our experienced experts will be able to tell you which measures are most effective.

Modern press controller from Wepuko PAHNKE



Output and energy consumption of a 55 MN open-die forging press before and after modernisation in 2002

Research and development: Close to the market

What does the market need? This is the question that drives the developers at Wepuko PAHNKE. They work to create solutions for special customer requests or develop new areas of application. Both development and production are based in Metzingen, combining expertise at a single location.

Wepuko PAHNKE also uses modern simulation tools like FEM and CFD to support design processes.

Innovation on site

Research and development is extremely important to us, as it is the only way that we can achieve our goal of producing tough, reliable, and precise machines.

Wepuko PAHNKE GmbH combines the expertise and experience of two large companies. Wepuko has over 80 years of experience in high-pressure plunger pumps, while PAHNKE Engineering has amassed over 40 years of experience in hydraulic forging presses. The short distances at the company headquarters in Metzingen also makes developing the solutions for tomorrows' challenges easier.

Due to their specific properties, presses and pumps are developed separately. Despite this, we encourage our divisions to exchange knowledge and ideas. This results in consistent and optimised overall solutions for our customers.

All of our testing and development work is carried out in Metzingen. This helps us save time and protect our unique expertise.

Committed to quality

Our pumps and presses meet the toughest demands in terms of durability and reliability. Many of our products are custom made precisely to our customers' needs.

The planning and simulation phases are particularly important for prototypes or small batches. At Wepuko PAHNKE, we are constantly reinventing our products for our customers.

Even small changes to the dimensions, for example, can often have a major influence on the resulting forces and material stress. When it comes to flow cross sections and complex geometries, the priority is to prevent cavitation.

Virtual development procedures are becoming ever more important, as they ensure high quality with a short development time. They also offer our customers transparency and peace of mind. That is because in many cases, the customer receives a feasibility study and sample calculation with the initial offer.

As would be expected, our quality management system is certified to ISO 9001:2015.

Development with FEM

To ensure that development leads quickly and efficiently to a result, we use cutting-edge simulation tools. These are the finite element method (FEM) for analysing mechanical strength and computational fluid dynamics (CFD) for assessing the components' flow mechanics.

Right from the initial design, these tools allow us to investigate and optimise the flow mechanics from the individual part to the finished end product. The result is incredible efficiency.

We then subject the end product to a comprehensive series of tests on our test bench. This helps us guarantee the required product properties and ensure customer satisfaction.

We perform under high pressure, and that is what makes us unique.

Wepuko PAHNKE is the product of a merger between two historic market-leading businesses: Wepuko, the specialist for high-pressure pumps, and PAHNKE, the pioneer in hydraulic forging presses. This combination makes us unique and offers a number of decisive advantages over the competition.

Wepuko PAHNKE GmbH in Metzingen, Germany.

Wepuko PAHNKE GmbH is a mechanical and plant engineering company specialized in the development and production of high-pressure pumps and hydraulic forging presses, as well as their drives and control systems. In these fields, the company is acknowledged as an international market leader.

The pump product portfolio includes triplex plunger pumps and radial piston pumps with adjustable and constant flow rate. Wepuko PAHNKE also develops and produces customised units and systems to order. In addition, the company offers complete descaling plants. Wepuko PAHNKE solutions are used in the metal industry, the oil and gas sector, chemical companies and power stations. Customers include Otto Fuchs and Citic Heavy Industries for hydraulic presses and oil hydraulics, SMS Meer, Vallourec & Mannesmann, Robert Bosch and ArcelorMittal for water hydraulics, along with Shell, Petrobras, Petronas, Statoil, Gaz de France and Hyundai Heavy Industries for process pumps.

The company was founded in 1932 by Fritz Thumm in Metzingen in south-west Germany. One of the company's many innovations was the introduction of large radial piston pumps with high-speed control and flow rate reversal (1966).

The takeover of the business by the Pahnke family in 1996 allowed Hans-Joachim Pahnke, a pioneer in open-die forging presses, to apply his expertise. Among the outstanding innovations developed by Hans-Joachim Pahnke are the first open-die forging press with two-column design for underfloor installation (1956) and the **P**AHNKE **M**odified **S**inusoidal **D**irect drive (PMSD drive) for forging presses (1975).

In 2009 the world's largest hydraulic system began operation at Norheinco in China, using a PMSD drive from Wepuko PAHNKE. This was followed in 2011 by the world's most powerful open-die forging press at Citic Heavy Industries in China.

Today, the company is managed by Tanja Pahnke and is among the innovators in its field. The Wepuko PAHNKE group includes companies in the USA, China and Russia. Wepuko PAHNKE also has a global presence with representatives in more than 70 countries.

Milestones

1932	Fritz Thumm founds Wepuko in Metzingen
1973	Hans-Joachim Pahnke, Fritz Thumm jr. and Eric Koik found PAHNKE Engineering in Düsseldorf
1996	The Pahnke family acquires Wepuko
2002	Both companies' products are merged in a single business
2011	Rebranding to Wepuko PAHNKE GmbH

We perform under high pressure.

At home around the world

We have representatives in over 70 countries worldwide

Process pumps

Hydraulic forging presses

Oil hydraulics

Water hydraulics

Service

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