KMT Waterjet Products & Services

Pumps | Cutting Heads | Cutting Systems | Accessories | Services

KMT WATERJET
SHAPE TECHNOLOGIES GROUP®

10/2024

KMT Waterjet Systems

World’s Fastest Waterjet

In the early 1970s, the technology of cutting material with water came up. Right from the start, we have been deeply involved: KMT WATERJET, which emerged from McCartney Manufacturing Co. (est. in 1946), developed the first waterjet cutting system for commercial use in 1971. Since those early days, the waterjet cutting technology has taken big steps to become a valuable addition and alternative to conventional cutting methods.

When it comes to advancing the technology, KMT Waterjet Systems has always played a big role, and thanks to our consistent and innovative product development, we have been among the technology leaders in the industry for over 40 years now. During this time, we have continuously expanded our sales and service network. Therefore, we are able to offer our customers qualified support by many local offices all over the world.

Our products are well-known for reliability, sophisticated design and ease of maintenance – qualities which our engineers have in mind right from the first draft for a new product. Thus, you can be sure that KMT technology always fulfills the highest quality standards. In our portfolio, we offer you solutions for all kinds of applications: From entry level systems for occasional cutting needs to high-end technology for reliable high-capacity production in multi-shift operation.

The experience gained over the years of course is a big benefit when it comes to continuously improving cutting machines and developing further innovative products. Therefore, the KMT experts have become sought-after advisers for production planning. They can find solutions for all kinds of cutting tasks bringing in the company’s know-how concerning waterjet cutting.

- Trained and certified technicians
- Worldwide sales and support network
- State-of-the-art research and development center
- ISO 9001:2008 Certification and TSSA Certification
- CSA and CE compliance
- Highest quality products made using the most advanced processes
- A focus on advancement of our customers

Content

System Technology

Cutting Systems

One-, two-, or three-dimensional waterjet cutting and robot applications

Due to the universal applicability of the waterjet cutting technology, it is used for a very wide range of cutting applications. Consequently, there is a big variety of available waterjet cutting systems:

- 1D slitter systems for cutting web material
- 2D cutting tables for cutting sheet material
- 3D robot applications for complete three-dimensional outlines
- Further customized solutions

ONE-DIMENSIONAL CUTTING

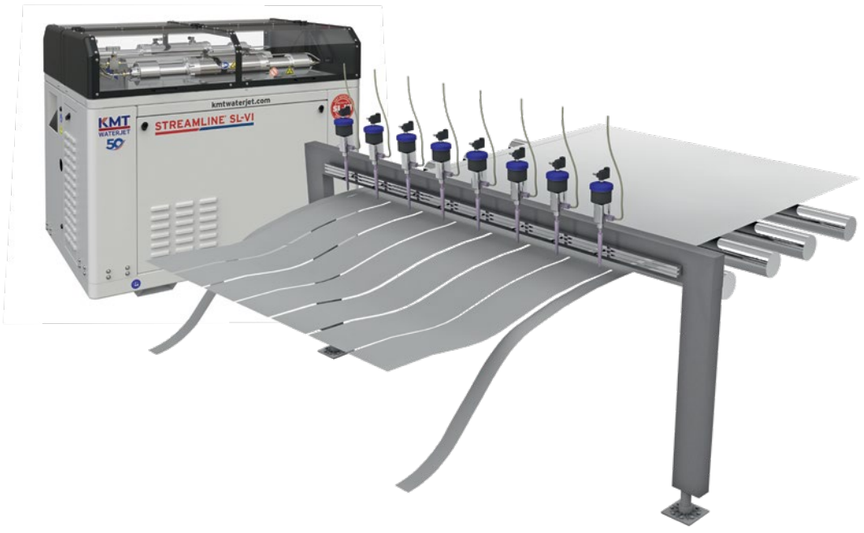
One-dimensional systems are mostly used for cutting web material. The material is placed on a conveyor chain, which carries it at high speed through a portal construction. This construction is equipped with several cutting heads. The space between the cutting heads determines the width of the material stripes. As these kinds of systems are often used in multi-shift operation, high cutting speed and reliability of the production process are very important.

TWO-DIMENSIONAL CUTTING

The most frequently used system is the 2D cutting table (see picture on the next page). For cutting intricate outlines, the cutting head is guided by a central CNC control system along the x- and y-axis. Very often, the z-axis (height) is adjustable, too. That is necessary because the cutting head has to be positioned very close to the material to obtain optimal cutting results. This type of system is the ideal solution for the quick production of different workpieces from different sheet materials.

A 5-axes-system enabling the cutting head to tilt via a rotation axis can realize angular and cone-shaped cuts as they are necessary for weld preparation. Also available are systems for cutting holes in pipes or tubes.

The main system features include high cutting speeds and the ability to cut a large number of parts at the same time – very often, these systems are equipped with multiple cutting heads for multiplying the production output. These systems are also adapted for mirrored cuts or reverse cutting. 2D cutting tables are available in various sizes.



ROBOT APPLICATIONS FOR THREE-DIMENSIONAL CUTTING

Especially in the automotive and mechanical engineering industry, there are complex requirements which can only be realized by a system for three dimensional cutting. For these kinds of applications, the cutting head is installed on a robot arm and run along a three-dimensional workpiece for trimming the material or cutting holes. Robot systems are often equipped with rotating shuttle tables. These enable the time-saving loading and off-loading of the system while simultaneously cutting workpieces in the cutting box. Typical applications are:

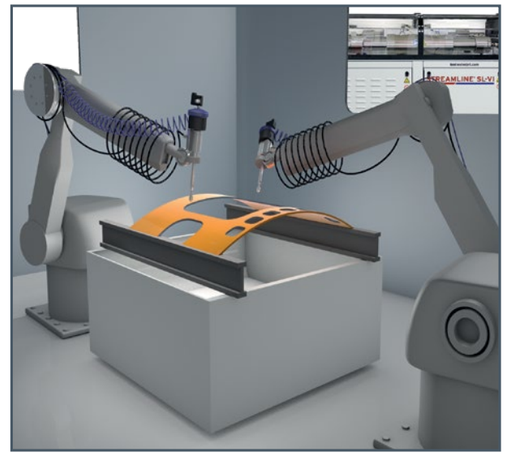
Abrasive cutting:
Engine components made in titanium, aluminum and stainless steel; turbine blades; marble and other decorative stone

Pure water cutting:
Components for car interiors such as carpets, door panels, bumpers, dashboards, instrument panels, glove compartments, etc.

KMT – THE HEART OF WATERJET CUTTING

For over 40 years now, our heart has been beating for waterjet cutting. You can benefit from the experience and expertise: Just let us know about your personal cutting demands. Taking your requirements into account, we will work out a cutting system concept which best fits your needs so that you can run your production efficiently and economically.

2D-Cutting Table with high pressure pump
STREAMLINE SL 60 PRO 3



3D-Cutting Box with high pressure pump
STREAMLINE SL-VI 100

KMT Waterjet Cutting
4.100 vs. 6.200 bar

The ideal solution for every application

With a comprehensive portfolio of high pressure pumps, KMT Waterjet Systems offers the ideal technology for every requirement – from occasional cutting needs to multi-shift operation. Basically, KMT distinguishes between the PRO 50 and the STREAMLINE PRO series for working pressures of up to 6.200 bar and the pump models NEO and STREAMLINE SL-VI STD and PLUS, which operate in a maximum pressure range of 3.800 to approx. 4.100 bar.

UNSURPASSED PRODUCTIVITY

The advantages of the high operating pressure of 6.200 bar are particularly relevant for efficiency where operators need to cut thick and/or very hard materials. The high operating pressure improves conformity as well as the quality of the cut edge compared to traditional 4.000 bar applications.

- Depending on the material and its thickness, cutting with 6.200 bar allows operators to increase the cutting speed by up to 50%. In some applications, the increase is even higher.
- Higher operating pressures improve conformity as well as the quality of the cut edge. In many cases, there is no need for reworking cut edges.
- Cutting with 6.200 bar significantly reduces the consumption of abrasive.
- Thanks to the increased cutting speed, more workpieces can be cut in the same time. This leads to lower costs per piece.
- The high working pressure when piercing and cutting the workpiece reduces the delamination for composite material.

CHOOSING THE RIGHT PRESSURE SYSTEM

The following tables can be used to find the high pressure system that is best for a specific application. There are three main variables driving the choice:

1. **Type of material**
   The quality and thickness of the material crucially determines the possible cutting speed and the necessary orifice size. Moreover, the material's hardness determines whether to apply pure water or abrasive cutting.
2. **Cutting speed**
   The possible cutting speed determines the number of orifices needed to meet your production requirements. Speed per cutting head will vary based on the thickness of the material, the operating pressure, the quality and quantity of abrasive, the shape to be cut and type of edge finish desired.
3. **Size and number of orifices**
   The water consumption of the cutting machine depends on the size and number of orifices. The more orifices are operated simultaneously and the larger these orifices are, the higher are the requirements for the pump's performance.
   For personal assistance in selecting the high pressure system which is right for a specific application, call KMT. If you do not find your individual material in the list below, our KMT experts will help you to determine the relevant cutting speeds for you.

Explore the KMT Cut Calculator App and compare Waterjet Cutting speeds at 6.000 bar and 4.000 bar.

Step 1 – Determine the approximate Cutting Speed Rates required. By knowing the speed rate and estimating the orifice size range, a decision can be made on the number of cutting heads required.

POSSIBLE CUTTING SPEEDS*

CUTTING SPEED RATES					
Pressure [bar]		6.200	4.100	6.200	4.100
Water Orifice/ Focusing Tube [mm]		0,20 / 0,54	0,25 / 0,76	0,25 / 0,76	0,35 / 1,10
Abrasive Flow [g/min]		400	500	650	750
Material	Thickness (mm)	Cutting Speed (mm/min)			
Aluminium	10	600-750	400-500	850-1.100	600-850
	20	250-300	150-200	300-450	250-350
	40	80-110	50-90	120-170	80-110
Stainless Steel	10	200-250	110-160	250-350	190-250
	20	60-90	40-60	100-150	70-100
	40	25-40	15-25	35-55	25-40
Black Granite	10	550-700	350-450	750-1.000	550-800
	20	200-270	130-180	300-400	200-300
	40	70-100	55-75	100-150	80-110

*Surface Quality: medium – smooth
The values in the table are only approximate values. Actual cutting speed may be influenced by further variables (water quality, orifice wear, etc.).

Step 2 – Determine the size of the machine, based on the orifice size and number of cutting heads. The KMT high-pressure pumps differ according to maximum pressure range and motor power which affects the water flow rate.

MAXIMUM NUMBER OF ORIFICES AT MAXIMUM PRESSURE†

ORIFICE SIZE (mm)	PRO-3 125[1]	PRO-3 60[1]	SL-VI 100 PLUS[3]	SL-VI 50 PLUS[3]	SL-VI 30 PLUS[3]	SL-VI 100 STD[4]	SL-VI 50 STD[4]	SL-VI 15 PLUS[3]	CLASSIC V-DRIVE	ara
0,10*	15	7	23	13	8	25	14	3	14	14
0,12*	10	4	14	8	5	16	9	2	9	9
0,17	5	2	7	4	2	8	4	1	4	4
0,20	3	1	5	3	2	6	3		3	3
0,25	2	1	3	2	1	4	2		2	2
0,28	2		2	1	1	3	1		1	1
0,30	1		2	1		2	1		1	1
0,35	1		1	1		2	1		1	1
0,40			1			1				
0,45			1			1				

† The maximum no. of orifices can be increased by reducing the working pressure.
The actual number of orifices depends on quality and wear of the orifice and may deviate from the given values minimally.
* This orifice size is used for pure water cutting only.
[1] at 6.200 bar [2] at 6.000 bar [3] at 4.100 bar [4] at 3.800 bar

KMT High-Pressure Technology

The STREAMLINE SL-VI Intensifier

The STREAMLINE Intensifier – The best possible reliability as well as simple and quick maintenance are the key features in the development of all KMT high pressure pumps. The simple modular design enables the replacement of every single wear part. This design principle ensures that each component can be used to its maximum lifetime.

BUILT-IN SAFEGUARDS

High-tech software and built-in sensors provide protection and immediate access to information. More control and information is available faster.

LONG-TERM COMPETITIVENESS

We are continually adding new technology to our pumps and making it available as retrofit kits for older pumps. Buy a KMT pump today and be assured that you will have access to the most efficient and latest technology long into the future.

THE INTENSIFIER – THE RELIABLE HEART OF ALL ULTRA-HIGH PRESSURE PUMPS

The source of the power in high pressure systems is found in the intensifier. KMT has modified that source to set new standards in terms of user friendliness, maintenance requirements and overall reliability.

1. PLUNGER

The plunger consists of a ceramic material; compared to a metal plunger, the harder and smoother surface resists better against wear, eliminates scoring and increases seal lifetimes.

EXCLUSIVE LONG STROKE

Reduced maintenance at extended seal life are a result of the longer (8”) stroke generating less stress reversals than alternative products.

2. HYBRID SEAL KIT

Patented high pressure seal design ensures optimized lifetime.

3. WEEP HOLE INDICATORS

Weep holes reveal the condition of internal seals to protect all high pressure components from major damage due to wear and to achieve maximum lifetimes of the components.

4. “ONE-STEP” SEAL AND VALVE REPLACEMENT

Low and high pressure valves installed in the check valve body can be replaced in one step within a period of 5–10 minutes only.

5. HYDRAULIC SEAL

The convenient, cartridge-style seal in the intensifier combines 6 seals on one cartridge; it can be changed quickly without the need to disassemble the entire hydraulic section of the intensifier.

6. ELECTRONIC SHIFTING

Electronics provide reliable signals for smoother shifting to contribute to a stable pressure signal, which is needed to achieve best cutting edge quality.

7. HARD SEAL END CAP DESIGN „HSEC“

The innovative end cap design provides a metal-to- metal seal which eliminates rubber seals thus reducing consumables and saving operating costs while simultaneously increasing the uptime of your cutting system. The HSEC Design is used in all pumps of the STREAMLINE series. It further includes a larger version (intensification ratio 23:1) for high pressure pumps with 100 HP and more as well as a smaller version (intensification ratio 20:1) for 50 HP pumps.

BOLTED END CAP FOR THE CYLINDER

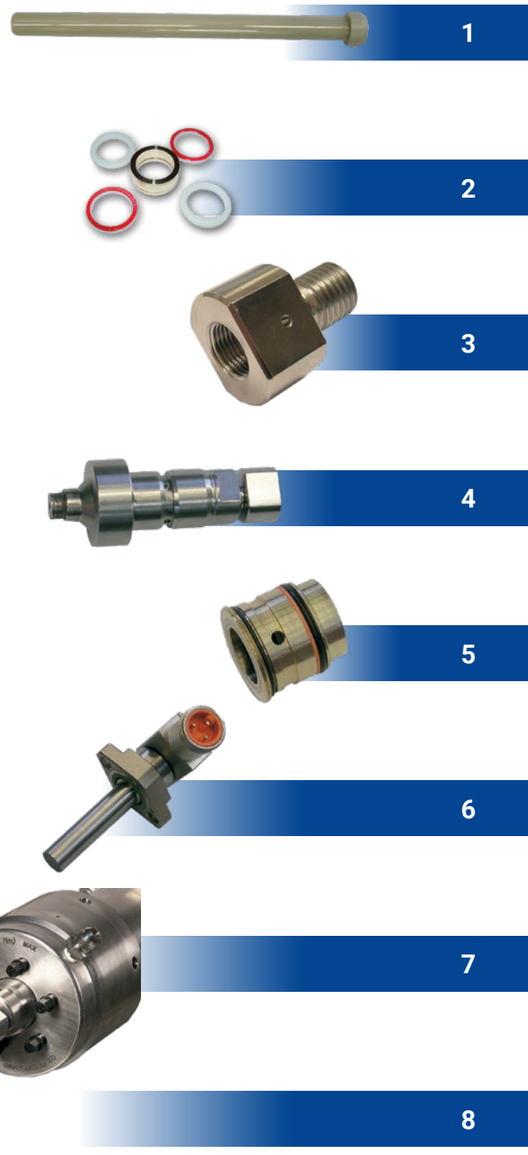
The sophisticated design of the end cap enables the more than 4.000 bar to be restrained by a torque of only 47 Nm. Furthermore, it is not necessary to completely dismantle the intensifier for maintenance works.

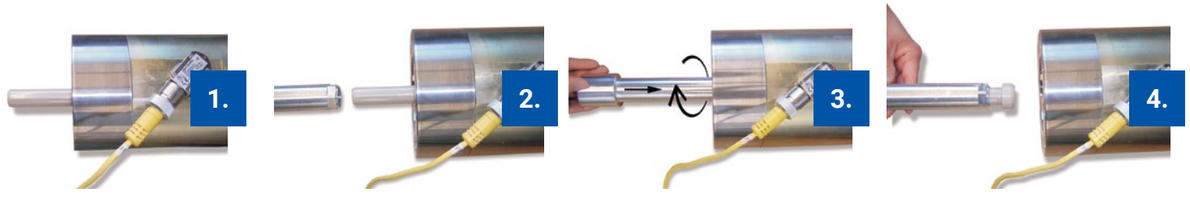
CURVE-ON-CURVE INTENSIFIER

The new patented Curve-On-Curve Design of our intensifiers allows for a longer lifetime of the cylinder body / seal head connection. The optimized geometry of the metal-on-metal seals facilitates the installation and endures more maintenance cycles than conventional technologies.

8. “QUICK RELEASE” PLUNGER CONCEPT

Thanks to patented design, the removal of the ceramic plunger from the hydraulic piston needs just 4 steps without the necessity to disassemble the entire hydraulic section.





Intensifier Pumps
TECHNICAL DATA









DESCRIPTION	SL 125 PRO 3	SL 60 PRO 3	SL-VI 100 PLUS	SL-VI 100 STD
Motor Rating (kW/hp)	93 / 125	45 / 60	74 / 100	
Pressure Range (bar)	1.000 - 6.200	1.000 - 6.200	500 - 4.136	500 - 3.800
Max. Flow Rate at Max. Pressure (l/min)	6,0	2,8	7,1	7,6
Length (mm)	2.238	2.095	2.095	
Width (mm)	1.500	1.320	1.320	
Height (mm)	1.552	1.508	1.508	
Weight (kg)	3.107	1.973	2.173	2.128
CUTTING WATER CIRCUIT				
Intensifier Design	PRO 3	PRO 3	HSEC 23-C	
Intensifier System	Dual	Single	Single	
Intensification Ratio	38.5 : 1	38.5 : 1	23 : 1	
Max. Stroke Rate (1/min)	2 x 42	42	75	79
Attenuator Volume (l)	1.6	1.6	3	2
Cutting Water Inlet Pressure (bar)	2,4 – 5,5	2,4 – 5,5	2,4 – 5,5	
Min. Cutting Water Inlet Flow (l/min)	24	12	30	
Low Pressure Filter (µm abs.)	10	10	10	
CONTROLS & ELECTRIC				
Control System	Eaton Smartwire	Eaton Smartwire	Eaton Smartwire	
User Control Display	5.7" Color Touchscreen	5.7" Color Touchscreen	5.7" Color Touchscreen	
No. of Display Languages	11[1]	11[1]	11[1]	
Motor Start	Softstarter	Softstarter	Softstarter	
Nom. Current at 400V/50Hz (A)	158	80	124	
Fuse Size at 400/50Hz (A)				
PNEUMATIC, HYDRAULICS & COOLING CIRCUIT*				
Hydraulic Tank Capacity (l)	416	211	211	
Oil Level and Temperature Control	Sensor	Sensor	Sensor	
Oil/Water Heat Exchanger	●	●	●	●
Oil/Air Cooler	○	○	○	○
STANDARD FEATURES & OPTIONS				
Redundant Intensifier	–	○	○	○
High Pressure Transducer	●	●	○	○
Dual Pressure Setting	–	–	–	–
Proportional Control	●	●	●	●
Cutting Water Inlet Shut-Off Valve	●	●	●	●
Safety Dump Valve	●	●	●	●
Adjustable Booster Pump	●	●	●	●
Oil Drip Pan	●	●	●	●
Control Cabinet	●	●	●	●
Electrical Controls	●	●	●	●
Doors	●	●	●	●
Top Cover	●	●	●	●
OTHERS				
Label According to EC-Machinery Directive	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	
Max. Sound Level (dB(A))	<82	<84	<84	
MAX. # OF ORIFICES AT MAX. PRESSURE[A]				
0.10[B] / 0.12[B] / 0.15[B]	15 / 10 / 7	7 / 4 / 3	23 / 14 / 10	25 / 16 / 11
0.17	5	2	7	8
0,20	3	1	5	6
0.23	2	1	4	4
0,25	2	1	3	4
0.28	1		3	3
0.30	1		2	2
0.33	1		2	2
0,35	1		1	2
0.38	1		1	1
0.40			1	1
0.43 / 0.45 / 0.48 / 0.51			1 / 1 / 1 / 0	1 / 1 / 1 / 1

SL-VI 50 PLUS	SL-VI 50 STD	SL-VI 30 PLUS	SL-VI 15	CLASSIC V-DRIVE	ARA
37 / 50	37 / 50	22 / 30	11/15	37 / 50	37 / 50
500 - 4.136	500 - 3.800	500 - 4.136	500 - 4.136	690 - 3.800	500 - 3.800
4,1	4,3	2,6	1,3	3,8	3,8
1.689	1.689	1.689	1.422	1.575	1.935
1.114	1.114	1.114	711	1.165	914
1.477	1.477	1.477	940	1.310	1.194
1.324	1.302	1.131	816	1.225	1.111
HSEC 20-C	HSEC 20-C	HSEC 20-C	HSEC 20-C	SSEC-QC	SSEC-RN
Single	Single	Single	Single	Single	Single
20 : 1	20 : 1	20 : 1	20 : 1	20 : 1	20 : 1
54	56	33	17	56	56
2	1	1	0.5	1	1
2,4 – 5,5	2,4 – 5,5	2,4 – 5,5	2 – 4	2-4	2 - 4
16	16	11	5,2	11	11
10	10	10	10	10	10
Eaton Smartwire	Eaton Smartwire	Eaton Smartwire	Relay	Siemens S7-1200	Siemens
5,7" Color Touchscreen	5,7" Color Touchscreen	5,7" Color Touchscreen	–	Color Touchscreen	Color Touchscreen
11[1]	11[1]	11[1]	–	6	6
Softstarter	Softstarter	Softstarter	Y / D Starter	Softstarter	Y/D Starter
66	66	49	22	66	66
For the necessary fuse size please adhere to your local requirements					
150	150	150	53	152	170
Sensor	Sensor	Sensor	Sensor	Sensor	Switch
●	●	●	●	●	●
○	○	○	○	○	○
○	○	○	–	–	–
○	○	○	–	–	–
–	–	–	–	–	●
●	●	●	–	●	–
●	●	●	–	–	–
●	●	●	●	●	●
●	●	●	–	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity	CE mark & CE Declaration of Conformity
<76	<76	<74	<75,5	<80	<80
13 / 8 / 5	14 / 9 / 6	8 / 5 / 3	3 / 2 / 1	14 / 9 / 6	14 / 9 / 6
4	4	2	1	4	4
3	3	2		3	3
2	2	1		2	2
2	2	1		2	2
1	1			1	1
1	1			1	1
1	1			1	1
1	1			1	1
	1				

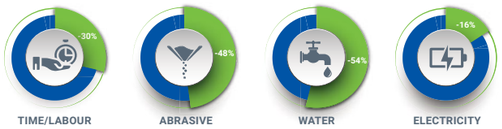
[1] English, German, Finnish, French, Italian, Polish, Russian, Spanish, Swedish, Czech, Chinese
[2] English, German, Finnish, French, Italian, Polish, Spanish, Swedish, Czech [3] English, Chinese [4] English

Ultra-High Pressure Pumps – 6.200 bar

STREAMLINE PRO 3

DRAMATICALLY REDUCING UNIT COSTS to drastically increase our customers' competitiveness: this was the overall objective that drove our engineers when developing the STREAMLINE PRO pump series. The result is impressive and has confirmed worldwide on a daily basis ever since: Parts are produced by up to 50% and often even faster compared to conventional 4.000 bar applications. This saves a considerable amount of time, energy and abrasive garnet. And so KMT's PRO technology highly conforms to the world's efforts of saving CO_2 emissions.

BOOST YOUR WATERJET OPERATIONS



Above savings, based on a sample cut, demonstrate the impact, which PRO technology offers in the daily business:

- Optimized return on investment ROI
- Increased production throughout
- Significantly improved margins

ACCESSORIES FOR 6.200 BAR CUTTING

All components for advanced 6.200 bar cutting include:

- PRO ultra high-pressure pumps
- ACTIVE AUTOLINE PRO abrasive cutting head
- ACTIVE IDE PRO abrasive cutting head
- AQUALINE PRO pure water cutting head
- AMS PRO abrasive management system
- PSC PRO valves, pipes and fittings

Taking into account the increased exposure to high pressure, the PRO products were designed to ensure economical operation with enhanced service life. The original PRO series by KMT Waterjet thus offers you optimized high-pressure equipment meeting the highest requirements as regards reliability and cutting quality in heavy-duty continuous operation.

ADVANTAGES OF WATERJET CUTTING AT 6.200 BAR

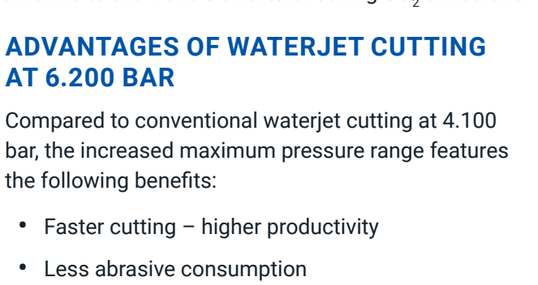
Compared to conventional waterjet cutting at 4.100 bar, the increased maximum pressure range features the following benefits:

- Faster cutting – higher productivity
- Less abrasive consumption
- Improved cutting edge quality
- Optimized machine utilization
- Improved conformity
- Reduced delamination
- Increased competitiveness

THE STREAMLINE PRO SERIES

The high pressure pumps of the STREAMLINE PRO series have significantly enhanced the productivity and efficiency of the waterjet cutting technology. The innovative high pressure pumps have been designed for both pure water and abrasive waterjet cutting at operating pressures of up to 6.200 bar.

The STREAMLINE PRO is available in two models with 45 kW or 93 kW. At a pressure of 6.200 bar, the two machine versions offer volumetric flows of 2,8 l/min and 6,0 l/min respectively. This enables the operator to cut with either single or multiple heads.



SL 125 PRO 3

SL 60 PRO 3

SAMPLE CUT REFERENCE

Material: Stainless Steel | Thickness: 25,4 mm (1 inch) | Edge Quality: Fine
Cutting Speeds: @ 6.000 bar: 49 mm/min | @ 3.800 bar: 34 mm/min
Water Orifice Sizes: @ 6.000 bar: 0,25 mm (0,010 inch) | @ 4.000 bar: 0,35 mm (0,014 inch)
Abrasive Flow Rates (80 Mesh): @ 6.000 bar: 400 g/min | @ 4.000 bar: 650 g/min

With the introduction of the 6.200 bar PRO technology, KMT Waterjet Systems brought waterjet cutting to a new level. As a result of the continuous efforts to further advance this technology, KMT developed the new optimized SUPRAlife Seal for the intensifier of the STREAMLINE PRO 3 offering the industry's most powerful combination of horsepower and pressure with significant improvements in uptime.

IMPROVED UPTIME THANKS TO OPTIMIZED SUPRALIFE SEAL DESIGN

To achieve longer uptimes and a more efficient high pressure pump, KMT revised the design of the high pressure seal construction: Instead of installing the seal package into the cylinder bore, it is integrated into a cartridge housing which seals against a chamfer at the end of the cylinder. This prevents damage from the cylinder bore. The new design significantly increases the seal life compared to the previous technology. KMT applies a 500 h warranty on this crucial component.

To benefit from a maximum seal life, a consistent preload needs to be applied to the assembly. Therefore, a hydraulic pre-tensioner is included in the dedicated tool kit. This facilitates the maintenance and always guarantees the exact tightening torque thus ensuring maximum seal life.

PATENTED INTENSIFIER TECHNOLOGY

The new patented Design of our PRO-3 intensifiers allows for a longer lifetime of the cylinder body / seal head connection. The optimized geometry of the metal-on-metal seals facilitates the installation and endures more maintenance cycles than conventional technologies.

TECHNICAL DATA PRO 3

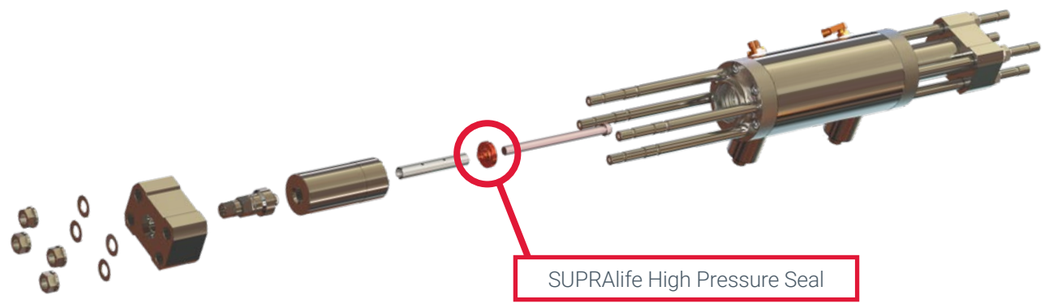
	125[1]	60[2]
Motor Rating (kW/hp)	93 / 125	45 / 60
Pressure Range (bar)	1.000 – 6.200	
Max. Flow Rate at max. Pressure (l/min)	6,0	2,8
Intensifier Design	PRO 3	
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity	

Max. Number of Orifices at max. Pressure

	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Cutting		
	0,10	0,12	0,15	0,17	0,25	0,38
1	15	10	7	5	2	1
2	7	4	3	2	1	–

BENEFITS OF KMT'S PRO 3 INTENSIFIER

- Revised high pressure seal design using the optimized SUPRAlife Seal for a longer lifetime
- Patented Intensifier Design
- Sophisticated heat treat of the seal head body
- Stainless steel liners
- Optimized hydraulic piston design for a better sense of the proximity switch
- Super polished carbide plunger



Abrasive Cutting Heads – 6.200 bar

ACTIVE AUTOLINE PRO + ACTIVE IDE PRO

The PRO abrasive cutting heads from KMT WATERJET SYSTEMS have been specially designed for waterjet cutting with 6.200 bar. Their design and materials can withstand huge forces while focusing the energy to the point where it is needed, namely to the cutting jet.

ACTIVE AUTOLINE PRO
Abrasive Cutting Head

Among the outstanding features of ACTIVE AUTOLINE PRO cutting heads are automatic precision positioning, perfect repetition accuracy, high cutting speeds, long service life and easy maintenance. It takes only seconds to replace the few wear parts of the head, such as the orifice, mixing chamber and focusing tube, and no tools are required. In order to keep routine maintenance to a minimum, these parts are made from tough wear-proof materials. The typical features of KMT products based on the innovative approach for efficiency and economy in continuous operation have thus been successfully integrated into the design of the cutting head.

ACTIVE AUTOLINE PRO cutting heads can be integrated into all waterjet cutting systems with rigid or multiple head connections.

ACTIVE IDE PRO
Improved Cutting Performance Thanks to High Precision

The ACTIVE IDE PRO cutting head features a diamond orifice which is firmly integrated into the orifice body. A specially devised manufacturing method ensures that the waterjet is properly aligned at all times and connected to the mixing chamber located below the orifice body. In the mixing chamber, the abrasive is added to the waterjet. The stringent production tolerances for the mounted cutting head guarantee that the cutting jet is always properly aligned along the axis. As the waterjet exits the focusing tube at the correct angle, the power of the waterjet is focused for optimum impact. This allows for maximum cutting speeds at minimum cutting gaps combined with excellent cutting edge quality.

HYPERTUBE PRO
Focusing Tube for 6.200 bar Applications

With the HYPERTUBE PRO, KMT Waterjet has developed a patented design that considerably prolongs the service life of the focusing tube. In most cases, the focusing tube shows asymmetric wear, which results in an elliptic deformation of the outlet opening. HYPERTUBE PRO focusing tubes are equipped with an index that enables operators to repeatedly turn the tube by a set angle in the housing of the cutting head. This results in a uniform wear pattern so that the waterjet cross-section remains circular.

The jet remains properly focused for a longer period of time, which further helps reduce the operating costs of the waterjet cutting unit. Experience shows that this patented solution prolongs the service life of focusing tubes by around 100%.

ACTIVE IDE PRO

ACTIVE AUTOLINE PRO

ABRASIVE CUTTING HEADS

The abrasive cutting heads ACTIVE AUTOLINE PRO and ACTIVE IDE PRO are also available in the attractive AMS package, which additionally includes the components ABRALINE (p 30) and FEEDLINE (p 31) thus representing the simple complete solution for the abrasive feed.

Pure Water Cutting Head – 6.200 bar

AQUALINE PRO

THE NOZZLE VALVE FOR MAXIMUM STRESS

The wide range of cutting tasks and numerous switching cycles puts a heavy strain on the nozzle valve. With the AQUALINE PRO pure water cutting head, KMT has developed the perfect solution for 6.200 bar applications. As the cutting speed is higher than with 4.000 bar, delamination is significantly reduced and in many cases completely eliminated. Depending on the actual requirements, the valves are available as normally open (N/O) or usually closed (N/C) valves. These high-pressure valves usually open in less than 50 ms, depending on the operating pressure. High precision, sturdy design and extremely short switching times are the key features of the AQUALINE PRO waterjet cutting head range.

PSC-PRO INSTALLATION PARTS FOR 6.200 BAR VALVES, CONNECTORS AND PIPES

PSC stands for Precision System Components, which include all installation parts required in high pressure cutting technology to feed the cutting water from the pump to the connected cutting stations. The PRO series of PSCs has been specially developed to meet the requirements of waterjet cutting with 6.200 bar. The comprehensive PSC PRO range of products allows for the flexible and reliable installation of pipeline systems suitable for all commonly used cutting systems. PSCs from KMT offer unrivaled reliability, availability and wear resistance.

AQUALINE PRO

High-Pressure Pump – 4.136 bar

STREAMLINE SL-VI 100/50/30 PLUS

With the series of STREAMLINE SL-VI high pressure pumps for waterjet cutting, KMT Waterjet Systems optimizes their complete range of high pressure intensifier pumps. Based on four frames in different sizes, the SL-VI series will grant the KMT customers an unprecedented choice of configuration possibilities. And while being based on tried and tested technology, the SL-VI comes up with some considerable improvements compared to the predecessor model.

WORKING PRESSURE OF UP TO 4.136 BAR

The pump units are available in three different power rates (22, 37 and 74 kW). Wherever required, the STREAMLINE SL-VI supplies high pressure water of up to 4.136 bar. In those areas where such a high pressure is not needed, the STREAMLINE SL-VI can cut material at a lower pressure.

IMPROVED MOTOR PERFORMANCE

The motor of the STREAMLINE SL-VI pumps allows for multi-input voltages and has been upgraded to IE3 according to the norm EC 640/2009. This leads to an optimized motor efficiency: Compared to previous models, the pump can create a higher flow rate of the high pressure water at the same motor rating, thus increasing the maximum possible orifice size and with it the cutting system's productivity.

PATENTED INTENSIFIER TECHNOLOGY

The new patented Curve-On-Curve Design of our intensifiers allows for a longer lifetime of the cylinder body / seal head connection. The optimized geometry of the metal-on-metal seals facilitates the installation and endures more maintenance cycles than conventional technologies.

TECHNICAL DATA SL-VI PLUS			
	100[1]	50[2]	30[3]
Motor Rating (kW/hp)	74 / 100	37 / 50	22 / 30
Pressure Range (bar)	500 – 4.136		
Max. Flow Rate at max. Pressure (l/min)	6,0	2,8	2,6
Intensifier Design	HSEC 23-C	HSEC 20-C	HSEC 20-C
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity		

Max. Number of Orifices at max. Pressure

	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Cutting		
	0,10	0,12	0,15	0,17	0,25	0,35
1	23	14	10	7	3	1
2	13	8	5	4	2	1
3	8	5	3	2	1	0

TOP COVER GUARD INTERLOCK DESIGN

The top cover is made of transparent material. Therefore, a visual inspection of the intensifier assembly is possible without the necessity to open the cover. Moreover, the top cover guard interlock design meets the EN ISO 13849-1 safety performance standard thus providing increased operational safety when working with the pump.

High Pressure Pump – 3.800 bar

STREAMLINE SL-VI 100/50 STD

For application which do not require a maximum pressure of 4.136 bar, KMT WATERJET SYSTEMS offers the STREAMLINE SL-VI STD high pressure pump as a lower priced alternative still featuring KMT's advanced pump technology. The STD models can be operated both independently as a stand-alone unit or communicating with the central control system of the entire cutting machine.

APPLICABLE FOR PURE WATER & ABRASIVE CUTTING

The STREAMLINE SL-VI STD is designed for flexible production in pure water as well as in abrasive applications. It is dedicated to those kinds of cutting jobs which require cutting pressure of up to 3.800 bar. The high reliability and lifetime performance equal those of our more sophisticated PLUS models.

DURABLE COMPONENTS

The plunger of every SL-VI pump model consists of a ceramic material. Compared to a metal plunger, the harder and smoother surface resists better against wear, eliminates scoring and increases seal lifetimes.

SOFTSTARTER SAVES ELECTRICITY COSTS

The included softstarter additionally helps you to decrease your operating cost by reducing peaks in the consumption of electricity. Your local current supply usually does not have to get modified to install the STREAMLINE SL-VI unit.

TECHNICAL DATA SL-VI STD		
	100[1]	50[2]
Motor Rating (kW/hp)	74 / 100	37 / 50
Pressure Range (bar)	500 – 3.800	
Max. Flow Rate at max. Pressure (l/min)	7,6	4,3
Intensifier Design	HSEC 23-C	HSEC 20-C
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity	

Max. Number of Orifices at max. Pressure

	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Cutting		
	0,10	0,12	0,15	0,17	0,25	0,35
1	25	16	11	8	4	3
2	14	9	6	4	2	1

INDIVIDUAL CONFIGURATION

As both pump models SL-VI PLUS and SL-VI STD are based on the same technology and the same frame, operators of an STD pump can benefit from the advanced hi-tech design of the PLUS model. By choosing different configuration possibilities, the pump can be customized to fit the operator's demands.

High Pressure Pump – 4.136 bar

STREAMLINE SL-VI 15

The STREAMLINE SL-VI 15 pump was specifically designed for light-duty applications demanding a reliable source of high pressure. It is dedicated to cutting systems using one to three cutting heads to cut soft materials with a pure waterjet such as food, textiles, paper, foam, gypsum cardboard or insulation material.

COMPACT DESIGN FOR CONVENIENT INTEGRATION

The compact design of the STREAMLINE SL-VI 15 pump supports the machine manufacturer to integrate the pump in his individual systems design communicating with the control system of the entire machine. On the other hand, it can also be installed as a stand alone unit. It does not require much space and all components are very easy to access for maintenance. For better visibility and ease of maintenance, it provides an open view to the high pressure generating intensifier.

TECHNICAL DATA SL-VI 15 PLUS						
Motor Rating (kW/hp)	11 / 15					
Pressure Range (bar)	500 – 4.136					
Max. Flow Rate at max. Pressure (l/min)	1,2					
Intensifier Design	HSEC 20					
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity					
Max. Number of Orifices at max. Pressure						
	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Water Cutting		
	0,10	0,12	0,15	0,17	0,20	0,25
	3	2	1	1	–	–

SAFETY FUNCTIONS AND FEATURES

The safety dump valve kit releases the pressure from the system as soon as the pump shuts off by pressing the emergency stop. It shuts off automatically if the oil level is below the minimum level or if the oil overheats. In these cases, a red light flashes in order to indicate the faulty operating condition to the operator.

ABRASIVE CUTTING ALSO POSSIBLE

The SL-VI 15 pump also has the capability to supply one abrasive cutting head for cutting harder materials of smaller thickness. It allows operating the lowest orifice combinations needed for abrasive cutting. If you intend to use your system mainly for abrasive applications and if the thickness of the materials varies case by case, you should consider the installation of a more powerful KMT pump.

STREAMLINE SL-VI

High Pressure Pump – 3.800 bar

ARA

The ARA high pressure pump meets all essential requirements for successful and seamless operation of a waterjet cutting system. While it fully eliminates complex features in favor of ease of operation, ARA hosts one of the most successful and reliable KMT intensifier designs, a variant of the “SSEC” – intensifier concept. Whether you’re cutting hourly or single shift operation, ARA handles the load easily.

THE HEART

Representing the heart of the pump configuration, our engineers have transplanted the extremely successful “SSEC” pressure intensifier concept into ARA high-pressure system. This is not only characterized by its reliability. The module is also at the forefront when it comes to ease of maintenance.

TECHNICAL DATA ARA						
Motor Rating (kW/hp)	37 / 50					
Pressure Range (bar)	500 – 3.800					
Max. Flow Rate at max. Pressure (l/min)	3,8					
Intensifier Design	SSEC-RN					
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity					
Max. Number of Orifices at max. Pressure						
	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Water Cutting		
	0,10	0,12	0,15	0,17	0,25	0,35
	14	9	4	4	2	1

Intelligent Control System for Built-in Safety

To ensure highest safety and reliability, the ARA is equipped with a Siemens PLC system. The graphic display provides the machine operator with valuable information regarding the operating status of the pump. Information that might be relevant for proper servicing is easily available, and the display acts as an indispensable tool for troubleshooting..

Stand-alone Operation or Overall System Integration

Depending on the customer’s requirements, the pump can be run as a stand-alone unit or it can be hardwired to the central PLC of the motion system.

FULLY SUPPORTED BY KMT SERVICE

KMT maintains many sales and service offices worldwide. This enables our customers to discuss their challenges with KMT’s regional experts, usually in their own native language. The best way to solve a problem can then be agreed together – regardless whether it’s about sharing tips & tricks or an on-site service-intervention.

ARA PUMP

High Pressure Pump – 3.800 bar

STREAMLINE CLASSIC V-DRIVE

ECO-ENGINEERED TECHNOLOGY

The STREAMLINE CLASSIC V-DRIVE combines the latest energy saving trends with a solid & reliable high pressure package. Equipped with a speed-controlled motor drive the STREAMLINE CLASSIC V-DRIVE specifies any criteria of an energy saving machine. The motor spins, when the cutting head is open - it stays in idle mode when no water is to be supplied. A TÜV Rheinland report documents the energy savings results and measurements.

REDUCED CO_2 EMISSIONS

KMT's patent-pending V-DRIVE TECHNOLOGY is crucial to its success in delivering the most reliable intensifier performance, while significantly increasing the pump's efficiency rate. This built-in control device does not add any complexity to the operator's job, since it just manages the rpm-control by itself pro-actively.

The achievable savings with regards to energy and CO_2 emissions depend on the individual production environment. The specific application as such determines the actual savings.

TECHNICAL DATA CLASSIC V-DRIVE						
Motor Rating (kW/hp)	37 / 50					
Pressure Range (bar)	500 – 3.800					
Max. Flow Rate at max. Pressure (l/min)	3,8					
Intensifier Design	SSEC-QC					
Label acc. to EC-Machinery Directive	CE mark & CE Declaration of Conformity					
Max. Number of Orifices at max. Pressure						
	Orifice Sizes (mm) Pure Water Cutting			Orifice Sizes (mm) Abrasive Water Cutting		
	0,10	0,12	0,15	0,17	0,25	0,35
	14	9	5	4	2	1

RELIABLE INTENSIFIER PERFORMANCE AND ENDURANCE

With hundreds of KMT CLASSIC style pump units commissioned around the world, utilizing the identical STREAMLINE intensifier design, the operator benefits from superior component lifetimes, resulting in a seamless operation.

STAND ALONE VS REMOTE OPERATION

Two different operating modes can be selected by means of a key switch:

Stand Alone: Operator controls the pump via the on-board touchscreen display.

Remote: Pump is hardwired to the PLC of the motions system and receives control commands from this central PLC.

POWERFULL PERFORMANCE IN A COMPACT FRAME

The floorspace requirements of the STREAMLINE CLASSIC V-DRIVE are extraordinarily low. However, despite the compact design the engineers of KMT successfully managed to provide comfortable access to the service locations.

STREAMLINE CLASSIC V-DRIVE

V-DRIVE TECHNOLOGY

POWERED BY V-DRIVE TECHNOLOGY

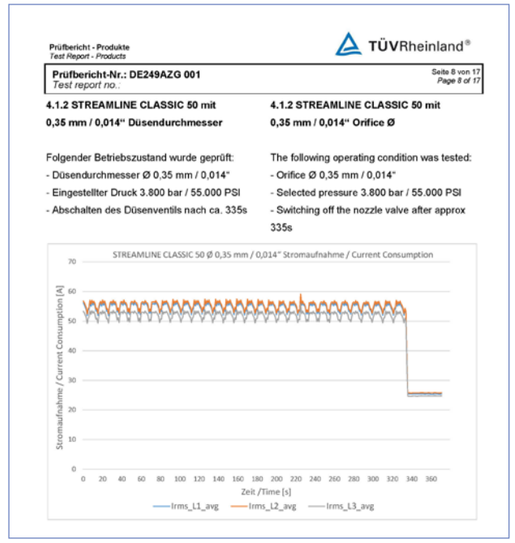
Energy Savings via RPM Control

Conventionally driven high pressure pumps continue spinning the motor no matter if high pressure water is delivered or not. V-DRIVE Technology, however, controls the rotations per minute (rpm) of the motor in such a way, that it reduces the rpm down to almost zero.

Also, if the pump operates only in partial mode (e.g. when cutting with just one cutting head instead of two), V-Drive Technology reduces the rpm in accordance to the adjusted load.

TÜV Rheinland measured the electricity supply for a pump unit with and without V-Drive Technology, and documented the same in a report.

If you are interested in in-depth information about the energy saving impact, please do not hesitate to contact your local KMT representative.


Prüfbericht - Produkte
Test Report - Products

TÜVRheinland®

Prüfbericht-Nr.: DE249AZG 001
Test report no.:

Seite 8 von 17
Page 8 of 17

4.1.2 STREAMLINE CLASSIC 50 mit 0,35 mm / 0,014" Düsendurchmesser

4.1.2 STREAMLINE CLASSIC 50 mit 0,35 mm / 0,014" Orifice Ø

Folgender Betriebszustand wurde geprüft:
- Düsendurchmesser Ø 0,35 mm / 0,014"
- Eingestellter Druck 3.800 bar / 55.000 PSI
- Abschalten des Düsenventils nach ca. 335s

The following operating condition was tested:
- Orifice Ø 0,35 mm / 0,014"
- Selected pressure 3.800 bar / 55.000 PSI
- Switching off the nozzle valve after approx 335s

STREAMLINE CLASSIC 50 Ø 0,35 mm / 0,014" Stromaufnahme / Current Consumption

Stromaufnahme / Current Consumption [A]

Zeit /Time [s]

Irms_L1_avg Irms_L2_avg Irms_L3_avg

TÜV Rheinland measured energy savings

INTELLIGENT CONTROL FEATURES

Integrated HMI Provides a Convenient Way To:

a. operate the pump

b. continuously monitor the pump condition

c. receive notifications about the status of the pump

The same display can be mirrored to central PLC by means of a hardwire connection mentioned before.

Pure Water Cutting Head – 4.136 bar

AQUALINE I

Especially automotive applications are among the most demanding of subcontracting jobs in the industry. Demands put on waterjet components are certainly not an exception, but a confirmation of this rule. Production units usually run 3 x 8-hour shifts throughout the complete week highlighting a need for extremely high reliability and speed.

RELIABILITY UNDER EXTREME CONDITIONS

Our AQUALINE I pure water cutting head has gained an industry-wide reputation for being amongst the quickest and the most reliable pure water cutting heads under extreme working conditions, through fastest reaction times and high component lifetimes and quality.

HIGH-PERFORMANCE NOZZLE VALVE

The multiple cutting cycles found in these industries place huge requirements on the on/off cycle speed and reliability of the cutting valve. The KMT AQUALINE I provides the industry‘s top quality leading solution in this area. Depending on the application, normally closed (N/C) and normally open (N/O) cutting valves are available. The nozzle valve opens in less than 50 ms depending on the operating pressure.

AQUALINE I

COMPACT DESIGN FOR FLEXIBLE USE

The AQUALINE I head weighs only 1.8 kg (3.9 lbs) guaranteeing high flexibility and making multi-head and 3-D applications easy. It can be equipped with both sapphire and diamond orifices, whatever fits the individual process needs best.

PRE-FILTER PROTECTS THE WATER NOZZLE

The pre-filter is installed between the HD line and the nozzle valve body in the adapter. This component reduces the mechanical impact on the water nozzle, as particles are removed from the cutting jet so that they do not cause abrasion to the nozzle. This significantly prolongs the service life of the nozzle and lowers the operating costs.

TECHNICAL DATA SL-VI 15 PLUS	
Length	91 mm
Width	91 mm
Height (with 8“ Nozzle Tube)	448 mm
Weight	1,8 kg
HP Connection	3/8“ UNF
Mounting Screws (2x)	1/4“ x 7/8”
CYCLE TIMES AT 3,450 BAR	
N/C Valve open	< 50 ms
N/C Valve close	< 160 ms
N/O Valve close	< 50 ms
N/O Valve open	< 115 ms

CUTTING SPEED		
MATERIAL	THICKNESS (MM)	SPEED (MM/MIN)
Rubber	2	27.000
	10	11.500
	20	2.000
Synthetic Material	2	22.500
	5	8.900
	10	3.400
Foamed Material	10	27.500
	100	5.500

At 4.136 bar; orifice sizes: 0,10 mm–0,25 mm;
Cycle Times at 3.450 bar surface quality: medium – smooth

Abrasive Cutting Heads – 4.136 bar

ACTIVE AUTOLINE II + ACTIVE IDE II

With the cutting heads ACTIVE AUTOLINE II and ACTIVE IDE II, KMT WATERJET SYSTEMS has developed abrasive cutting head assemblies that provide the best efficiency by utilizing long life components. Thus, maintenance efforts can be reduced and running times extended. The KMT cutting heads feature the following characteristics:

DESIGN ENSURES CORRECT ALIGNMENT OF THE JET

There is no need to adjust the water jet alignment at the nozzle. The construction design ensures that the water-abrasive mixture is ejected at the center of the nozzle and at maximum speed.

INSTANT INDICATION OF PREVENTABLE FAULTS

The cutting head is equipped with a leakage bore near the water nozzle. It indicates whether the nozzle is installed correctly and the cutting head is properly secured. Damage to the sealing surfaces of diamond or sapphire nozzles or to the nozzle pipe can thus be easily detected and eliminated.

PRE-FILTER PROTECTS THE WATER NOZZLE

The pre-filter is installed between the HD line and the nozzle valve body in the adapter. This component reduces the mechanical impact on the water nozzle, as particles are removed from the cutting jet so that they do not cause abrasion to the nozzle. This significantly prolongs the service life of the nozzle and lowers the operating costs.

SUPERIOR EDGE QUALITY

Thanks to the longer service life of the diamond orifices, a more consistent waterjet can be achieved over a longer period of time. This in turn helps increase the lifespan of the focusing tube and results in smoother cutting edges and less waste.

REDUCED SETUP TIME

The pre-aligned orifice and focusing tube reduce the operator setup time by maintaining an accurate Tool Center Point (TCP), and ensuring an effective cutting stream.

STANDARD NOZZLE CONFIGURATIONS [MM (INCH)]	
ORIFICE	FOCUSING TUBE
0,17 (0.007)	0,54 (0.021)
0,23 (0.009)	0,76 (0.030)
0,25 (0.010)	0,76 (0.030)
0,30 (0.012)	0,90 (0.035)
0,33 (0.013)	1,10 (0.043)
0,35 (0.014)	1,10 (0.043)

ABRASIVE MANAGEMENT SYSTEM

The abrasive cutting heads ACTIVE AUTOLINE and ACTIVE IDE are also available in the attractive AMS package, which additionally includes the components ABRALINE (see page 28) and FEEDLINE (see page 29) thus representing the simple complete solution for the abrasive feed.

Abrasive Cutting Heads – 4.136 bar

ACTIVE AUTOLINE II + ACTIVE IDE II

ACTIVE AUTOLINE II

Easy solution for top level performance

- The patented tool-free attachment allows for the quick exchange of the water and focusing nozzles without the need to dismantle the abrasive feed hose.
- The unique non-metallicly welded nozzle base caters for high precision and repetition accuracy.
- The AUTOLINE II cutting head includes only three wear parts, namely the orifice, the mixing chamber and the focusing tube, which are made from extremely wear resistant materials.
- The nozzle body consists of an exchangeable insert. If worn, simply replace the mixing chamber.
- Pure-water cuts can be made with the same orifice, so retooling takes only a few seconds.

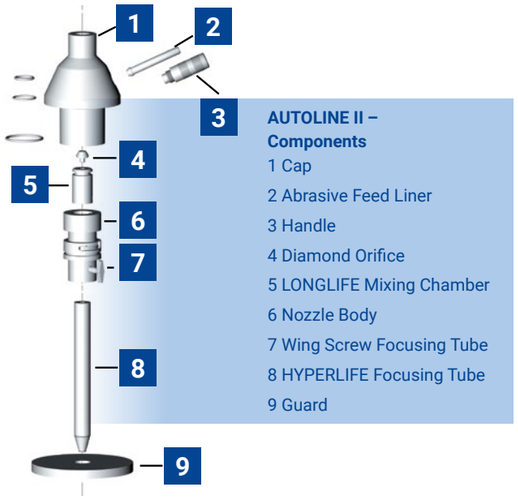
ACTIVE IDE II

Breakthrough in performance & simplicity

- As the cutting head contains a minimum number of individual components, it is particularly easy to handle while producing high-precision cuts.
- Important features are the low maintenance effort, the exact targeted cutting jet, the pre-filter protecting the orifice and the advanced nozzle valve design.
- The diamond orifice and the mixing chamber are combined in a single nozzle body. Both professional users and workers who have only recently been introduced to abrasive cutting benefit from the simple design of the unit as the focusing tube and the pre-filter, which are the only wear parts, can be exchanged easily and quickly.

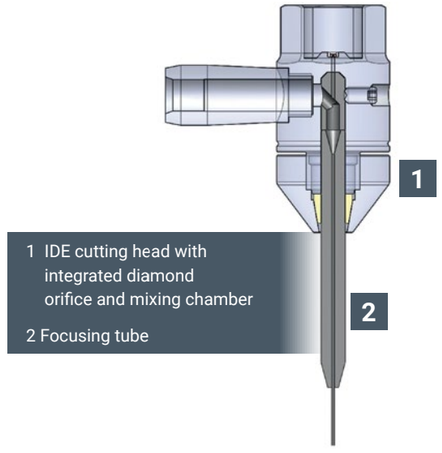
TECHNICAL DATA ACTIVE AUTOLINE II	
Length	91 mm
Width	115 mm
Length Nozzle Tube	6“
Total Height	448 mm
Weight	3 kg
HP Connection	3/8“ UNF
Mounting Screws (2x)	1/4“ x 7/8”

TECHNICAL DATA ACTIVE IDE II	
Length	91 mm
Width	97 mm
Length Nozzle Tube	5,75“
Total Height	448 mm
Weight	3,2 kg
HP Connection	3/8“ UNF
Mounting Screws (2x)	1/4“ x 7/8”



AUTOLINE II – Components

1 Cap
2 Abrasive Feed Liner
3 Handle
4 Diamond Orifice
5 LONGLIFE Mixing Chamber
6 Nozzle Body
7 Wing Screw Focusing Tube
8 HYPERLIFE Focusing Tube
9 Guard



1 IDE cutting head with integrated diamond orifice and mixing chamber

2 Focusing tube

Options and Accessories

PUMP OPTIONS

REDUNDANT INTENSIFIER

Adding a redundant intensifier provides a completely identical high pressure production system to a high pressure pump. Activating the redundant system takes just a few minutes and maintains a continuous flow of maximum high pressure for continuous production. The option is well worth the investment for shops under tight production schedules and in need of continuous, reliable production from just one machine. It is nearly the equivalent to having two pumps in one, while consuming less space – and far less capital. Please ask us which pump models can be equipped with a redundant intensifier.

PROPORTIONAL CONTROL

The Proportional Control enables automatic changes to the pressure generated by the pump, even mid-job, in order to maximize machine time and vary the cutting speed. It can dramatically reduce the complexity of cutting and the cutting time required, especially when working with fragile materials such as ceramic tile and glass. Using the Proportional Control, pressure can be lowered to one level for starting new holes, ramped up for cutting lines, and adjusted again for cutting curves. Pressure can be instantly adjusted to any level.

ABILITY TO FEED INTO ONE COMMON NETWORK

Many companies expand their business year by year. If more capacity is required, additional STREAMLINE pumps can be connected in order to feed into one common network supplying several cutting stations with high-pressure water. Step by step, you can increase productivity depending on your business’ needs.

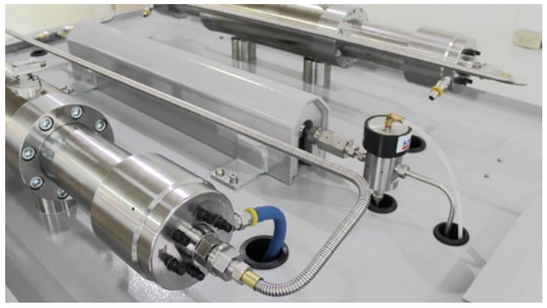
PUMP NETWORKING WITH “STROKE CONTROL”

Installing this option makes it possible to connect multiple pumps to a common high-pressure line for the ultimate in continuous production shops: a networked pump system where the pumps are monitored by the Stroke Control system. Exclusively available from KMT, it is the perfect tool for connecting multiple pumps and creating a much more reliable source of high pressure. The Stroke Control controls the output of each pump to be consistent with the size of the pump and proportional to the total load required from the pump network.

With the Stroke Control, the stroke rate of each pump is monitored so the total system demand is distributed equally among all pumps. It is the ultimate in automated, reliable, high-pressure production.

ADDITIONAL TOOLS AND OPTIONS

Tool and spare part kits as well as threading and coning tools are available to run your equipment most securely. Accessories such as closed loop cooling systems, waste water filtration, the BOOSTERLINE for the continuous water supply of high-pressure pumps or water treatment systems can be supplied in accordance to the equipment installed.



REDUNDANT INTENSIFIER CONCEPT

Original Parts and Installation Material

KMT GENUINE PARTS

KMT Genuine Parts are manufactured in the USA to the exact standards as the original parts found on new KMT Waterjet products. Our expertise and operating experience extends from the original SL-I operating at 3.800 bar all the way to today's industry-leading KMT PRO pumps cutting at 6.200 bar. No other provider has this breadth of experience and you can rest assured that your KMT waterjet equipment will operate at peak performance when you use KMT Genuine Parts.

BENEFITS OF KMT GENUINE PARTS

- Robust quality control inspection process to ensure superior fit and durability
- Manufactured to precise specifications best suited for your KMT pump
- Improvements made to KMT pumps are incorporated into KMT Genuine Parts
- KMT Customer Service and Technical Support is available 24/7

Remember to use KMT Genuine Parts to maintain your pump warranty and ensure that your investment pays off over the long-term. The use of imitation parts voids warranty coverage, compromises safety and may result in reduced component lifetime.

INSTALLATION PARTS FOR WATERJET CUTTING

KMT Waterjet provides reliable installation parts for the efficient installation of high-pressure pipeline systems for waterjet cutting. Catering for rated pressures of up to 6.900 bar, our product range covers all applications in the field of waterjet cutting.

Safety is of course a key aspect for the development of KMT installation material, as all parts must be able to withstand the high pressure in the supply system. Durability, high availability and reliability are the main factors here and have therefore been laid down as mandatory criteria for the product range. Our installation parts were developed in response to demands from our customers. Their design is based on the experience of KMT Waterjet in ultra high-pressure applications acquired over many years.

The KMT product line of Precision System Components includes the following items:

- Manual Valves
- Ball Valves
- Check Valves
- Swivel Joints
- Connectors
- Adapters
- Pipes
- Pressure Gauges

KMT WATERJET PARTS CATALOG

In our spare parts catalog, you will find comprehensive details concerning our product range – from spare parts for intensifiers to cutting heads to installation material. You can Download the PDF version of the catalog from our website or order your hard copy at **info@kmtwaterjet.com**.

Abrasive Bulk Transfer System

ABRALINE

Production reliability requires constant monitoring of the entire cutting process. An economical and successful cutting process depends greatly on a constant abrasive flow rate. This fact becomes even more important when cutting brittle materials such as stone, marble or glass.

ABRASIVE FLOW MONITORING SAVES TIME AND COSTS

Our ABRALINE feeding system precisely monitors the availability of sufficient abrasive closely during the entire cutting process. This protects your valuable material from damage and saves unnecessary costs and time. Its concept assures process stability, security and a very high degree of reliability.

TWO TANKS FOR A CONTINUOUS ABRASIVE FLOW

The ABRALINE transfer system consists of a big silo for the abrasive and a smaller tank which lies directly underneath. This vessel contains abrasive sand pressurized by compressed air. The connected flexible hose guides the abrasive directly to the abrasive metering system of each cutting head.

Additionally, the system features a control cabinet with a control relay which continuously monitors operating states and relays the corresponding signals to the pneumatic system and the control lights.

TECHNICAL DATA ABRALINE		
	ABRALINE IV ADVANCED	ABRALINE V
Max. Flow Rate (g/min)	4.000	4.000
Continuous Operating Pressure (bar)	2 – 6	2 – 4,4
Supply Voltage (V)	115 – 240	110 – 240
Vessel Volume (l)	24	25
Silo Volume (kg)	1.000	425
Length (mm)	1.060	858
Width (mm)	1.060	858
Height (mm)	1.915	1.392
Net Weight (kg)	250	112

SENSORS MONITOR ABRASIVE AVAILABILITY

Both of the tanks contain level sensors in the sand exit slot areas. Their signals are constantly monitored in the control station located in the electrical cabinet. When the abrasive level in the vessel reaches its minimum, the respective sensor gives a signal to the control relay which then opens the valve at the vessel inlet to automatically refill the vessel with abrasive. If the abrasive level in the upper tank is lower than required, a warning light begins to flash thus informing the operator to replenish the feeding hopper with abrasive sand.

THE CONVENIENT SOLUTION FOR DIFFERENT DEMANDS

KMT offers the ABRALINE feeding system in two different sizes suitable for different requirements. The smaller version ABRALINE V is sufficient for ensuring the abrasive feed for average cutting needs. For large cutting machines which operate continuously and with multiple cutting heads, we recommend the model ABRALINE IV Advanced.

ABRASIVE MANAGEMENT SYSTEM

The abrasive bulk transfer system ABRALINE is also available in the attractive AMS package, which additionally includes one or more abrasive cutting heads and the FEEDLINE thus representing the simple complete solution for the abrasive feed.

Abrasive Metering System

FEEDLINE

Stable and repeatable operating parameters are a fundamental requirement for high-quality waterjet cutting. This applies in particular to abrasive applications used to cut brittle materials, where a constant flow of abrasive is simply a must. KMT WATERJET SYSTEMS responded to this demand by developing the FEEDLINE abrasive metering system. Controlled through a central CNC controller or a potentiometer, the FEEDLINE supplies the cutting head with the optimized flow of abrasive. This helps save material and costs.

THE FEEDLINE TECHNOLOGY

The FEEDLINE system supplies the cutting head with a constant metered quantity of abrasive. Without this controlled supply, the mixing chamber for abrasive, air and water would become clogged up. With the FEEDLINE, this is effectively prevented. It feeds a metered flow of abrasive by means of compressed air into a 0.8-litre transfer tank. At the base of the tank, the abrasive collects on the metering and transfer wheel whose rotational speed determines the feed rate to the cutting head.

TECHNICAL DATA FEEDLINE	
Flow rate (adjustable*)	0 – 1.000 g/min
Operating voltage	24 VDC
Control voltage	0 – 10 V / 4 – 20 mA
Net weight	3,1 kg
Length	124 mm
Width	130 mm
Height	470 mm

* Flow rates of greater than 1.000 g/min can be achieved by replacing a shim.

LOWER COSTS THANKS TO ACCURATE CONTROL

It requires different quantities of abrasive to cut different materials. The thicker the material, the more abrasive is needed. Accurate metering settings help lower operating costs especially in units used to cut many different materials on a daily basis. The adjustment range of the FEEDLINE caters for flow rates of 0 to 1.000 g per minute. Greater quantities can be catered for by changing a shim.

ABRASIVE MANAGEMENT SYSTEM

The abrasive metering system FEEDLINE is also available in the attractive AMS package, which additionally includes one or more abrasive cutting heads and the ABRALINE thus representing the simple complete solution for the abrasive feed.

Mobile Desludging System

CLEANLINE

The mobile desludging system CLEANLINE removes sand deposits from the cutting basin during the ongoing cutting operation. Therefore, laborious manual basin cleaning, expensive suction services or long production stoppages are a thing of the past. The CLEANLINE is run on compressed air only; thus it can be used anywhere and without the risk of a short circuit.

EFFICIENT DESLUDGING

Per minute, the CLEANLINE system removes approx. 50-60 kg of used abrasive from the basin. At this rate, a 3 m x 2 m cutting basin can be desludged in about 90-100 minutes.

EXTRACTING AND FLUSHING IN ONE GO

The desludging system is equipped with a tube lance which swirls up and sucks in the sludge while at the same time jetting the filtered water back into the cutting basin. The tube lance is manually placed in the required position where it remains during the cutting process until the dispersion of the abrasive in the basin makes a change of position necessary or the basin is completely desludged.

SPECIALIZED PUMP FOR A LONG LIFESPAN

The CLEANLINE system is actuated by reliable pneumatically driven diaphragm pumps which have been developed specifically for handling aggressive, abrasive and viscous liquids. The pumps are protected against running dry, feature a maintenance-free air control valve, have no shaft seals, are self priming and are protected against overload.

MINIMAL MAINTENANCE

The CLEANLINE is manufactured from high-quality components and materials thus guaranteeing long product life and low wear. The pump diaphragms, valve balls and valve seats are tried-and-tested industrial standard products which are easily exchangeable. Feel free to ask your KMT contact to purchase the necessary spare parts.

TECHNICAL DATA CLEANLINE	
Fill volume without cutting basin	1 m^3
Circulating volume	3-4 m^3/h
Compressed air supply	4-6 bar, 1 m^3/h
Standard hose length	5 m
Net weight	200 kg
Length	1.100 mm
Width	1.100 mm
Height	1.750 mm

CLEANLINE is supplied with CE mark and declaration of conformity according to Machinery Directive 2006/42/EC.

Cutting Water Supply System

BOOSTERLINE

The steady cutting water supply of high-pressure pumps is a significant factor when it comes to the reliability and economic efficiency of a waterjet cutting machine. The BOOSTERLINE cutting water supply system is KMT's innovative solution to guarantee a constant inlet pressure of the cutting water for ultra-high pressure pumps.

CONSTANT PRESSURE ENSURES SAFETY OF PRODUCTION

The constant supply of water to the ultra-high pressure pump through the BOOSTERLINE system prolongs the service life of wear parts in the intensifier. The maintenance interval of the intensifier and the downtimes of the cutting unit are reduced as the high pressure pump is operated at ideal conditions.

STREAMLINE high pressure pumps should be operated at a constant inlet pressure of 3,5 bar. Where pressure fluctuations occur in the public water supply, the BOOSTERLINE water supply system guarantees a steady volume flow to the high pressure pump. The system is automatically switched on and off, depending whether the intensifier is activated or not. Thanks to the fully automated operation, the BOOSTERLINE is very easy to operate.

ON THE SAFE SIDE WITH THE 750 L WATER TANK

A tank with a capacity of 750 liters ensures that there is always sufficient water available for your cutting application. The tank is made of non-transparent high-quality plastic, preventing the growth of algae, etc. Thanks to its compact design with a square base, the tank is easy to install. It guarantees continuous water supply to the high pressure pumps. If the quality of the water from the public supply does not meet the required standard, the BOOSTERLINE can be complemented with an upstream treatment unit.

EVERYTHING UNDER CONTROL – SENSOR MONITORING OF THE FILL LEVEL

To optimize the fill level of the BOOSTERLINE, it is monitored with two sensors. When the maximum fill level in the tank is reached, a 230 V solenoid valve closes the water inlet to the tank. When the water level reaches its minimum, the control system switches off the BOOSTERLINE pump, thus preventing damage from dry running. The control unit is mounted on top of the tank and is operated at 230 V.

TECHNICAL DATA BOOSTERLINE	
BOOSTERLINE – TANK	
Weight	25 kg
Length	780 mm
Width	780 mm
Height	1.600 mm
BOOSTERLINE – PUMP	
Weight	10,4 kg
Length	191 mm
Width	504 mm
Height	217 mm
Voltage	230 V
Motor capacity	1,5 kW
Max. delivery height	45 m
Max. fluid quantity	7 m^3/h
Max. operating temperature	40 °C

Services

KMT CUSTOMER SUPPORT

KMT Waterjet Systems assists its customers all over the world with competent advice, support and services in all matters concerning waterjet cutting – irrespective of whether you purchased your unit from us or elsewhere.
We are always there for you with 24/7 customer service!

PRODUCTS ON THE CUTTING EDGE

We permanently optimize our products to keep them state-of-the-art. You can benefit from that even if you have an older model of one of our pumps: In most cases, we offer upgrade kits of our technical improvements for retrofitting preceding models. Thus, you can always be equipped with the latest technology even without a completely new acquisition.

OPTIMAL AVAILABILITY OF SPARE PARTS

In our central warehouse, we permanently have a large amount of immediately available spare and wear parts in stock. And if you need your parts really quick, ask our satellite offices for their stock of fast-moving items. In this way, you will receive your order within 24 hours or even faster.

SUSTAINABLE PROCUREMENT

Our service engineers gladly advice you in the optimal procurement of spare and wear parts. Thus, you can be sure that you always have available the right item at the right time.

IDENTIFY YOUR SPARE PARTS ANYTIME, ANYWHERE

The PARTSLINE Anywhere online spare parts catalog helps you to identify the original spare parts you need at any time and from anywhere in the world, thus simplifying the easy order process via our customer service.

EXPERTISE FOR OUR CUSTOMERS

Our European headquarters in Bad Nauheim, Germany, has a service facility with highly trained and experienced engineers. We regularly run group and individual training courses in multiple languages for customers from all over the world - either in-house or at your facility. Investing a small amount of time and resources into learning the best practices and maintenance methods with KMT will prove beneficial.

PROACTIVE MAINTENANCE

Maintaining your Waterjet equipment in top operating condition is important to ensure optimal efficiency. The **KMT Genuine Service Maintenance Program** will positively impact your business as regular inspections and proactive maintenance of your high-pressure pumps will save you both time and money by improving the pump's overall performance.

EXTENDED WARRANTY

KMT Waterjet Systems provides you with a clearcut guideline concerning warranty cases. We successfully use a classification system which unambiguously categorizes all components of the high- pressure pumps for waterjet cutting machines - and we offer the possibility to extend the warranty period. Just ask your KMT representative for further information.

WITHIN REACH AT ANY TIME

Our 24 Hour Service Hot-line guarantees that one of our service employee is there for you around the clock and at any day of the year. Thus, you are saving time and money because technical questions can quickly be discussed over the phone.

SERVICE AROUND THE CORNER

In case you should need direct help, our service engineers can be at your site very quickly: Certainly, one of our many service locations is located near you. Therefore, downtimes of your production can be minimized.

Friendly, personal service that keeps your UHP waterjet system running at its optimal level. We know your time is valuable, and we are here to fully support you in the service of your KMT waterjet by offering you this new option. KMT Waterjet Systems Customer Service & Technical Service bases success upon customer satisfaction.

We want the process of ordering service, replacement parts and gaining knowledge about waterjet to be consistently easy and enjoyable. Our highly trained staff will answer questions and concerns.

KMT Service vans are located worldwide – KMT Genuine Service is closer than you think!

Backed by KMT Preventive Maintenance Programs
Our Global KMT Genuine Service Teams are highly qualified, averaging 15+ years of waterjet experience.

KMT Parts: kmtpartsline.com
Broadest range of complete waterjet systems.

KMT Waterjet Systems Inc.
635 West 12th Street | Baxter Springs | KS 66713
800 826 9274 | kmtwaterjet.com

KMT GmbH
Hohe Straße 4 - 6 | 61231 Bad Nauheim | Germany
Phone +49 (0) 6032 997 0 | Fax +49 (0) 6032 997 270