

Maintenance & Supplies

Service Kits - Contain everything you need for routine maintenance. This is a single service kit including high pressure seal, critical o-rings, a seat for the high pressure seal (where applicable), 6 oz. of viscous fluid for rotation control (where applicable) and a fill tube or syringe. Call for specific details regarding your tool.

Seal Kits - Identical to the Service Kits, but does not include viscous fluid, fill tube and syringe. These kits are for customers who already have these items.

Overhaul Kits - These kits contain normal wear items. They usually include a single high pressure seal and seat, shaft seals, bearings and 6 oz. of viscous fluid (where applicable). Call for the contents of your specific kit.

Tool Kits - These are different for every **StoneAge**® tool. They contain special tools for seating shaft seals and making adjustments.

Lubricants - Lubricants are available in their manufacturer's packaging for your convenience.

Tool and Service Kit Chart

StoneAge® Tool	Service Kit	Seal Kit	Overhaul Kit	Tool Kit	Lubricant
Barracuda® - BC-K - 20k psi	BC 600	BC 602	BC 610	BC 612	GP 042
Barracuda® - BC-H9-C - 40k psi	BC 600-H9-C	BC 602-H9-C	BC 610-H9-C	BC 612	GP 042
BJV™	BJ 600-X	BJ 602	BJ 610-X	BJ 612	BJ 048-X
BJV-M™	BJ 600-M-X	BJ 602-M	BJ 610-M-X	BJ 612	BJ 048-X
BJV-P16™	BJ 600-P16-X	BJ 602-P16	BJ 610-P16-X	BJ 612	BJ 048-X
BJV-20K™	BJK 600-X	BJK 602	BJK 610-X	BJK 612	BJ 048-X
BJV-H9™	BJ 600-H9-X	BJK 602-H9	BJ 610-H9-X	BJ 612-H9	BJ 048-X
Gopher - GO-M9™ - 20k psi	GO 600	GO 602	GO 610	GO 612	GP 044
Gopher - GO-H9-C™ - 40k psi	GO 600-H9-C	BC 602-H9-C	GO 610-H9-C	GO 612	GP 044
Raptor™ - RPT	RPT 600	RPT 602	RPT 610	RPT 612	BJ 048-X
Badger™ - 15k psi	BA 600-X	BA 602	BA 610-X	BA 612	BJ 048-X
Badger™ - 20k psi	BA 600-20k-X	BA 602-20k	BA 610-20k-X	BA 612	BJ 048-X
Badger™ - BA-P8™ & BA-M9™	BA 600-P8/M9	BA 602-P8/M9	BA 610-P8/M9	BA 612	BJ 048-F
Warthog® WT-3/8™	WT 600	WT 602	WT 610	WT 612	BJ 048-S
Warthog® WS-1/2™	WS 600	WS 602	WS 610	WS 612	BJ 048-S
Warthog® WH-1/2™ & 3/4™	WH 600	WH 602	WH 610	WH 612	BJ 048-F
Warthog® WG-1™	WG 600	WG 602	WG 610	WG 612	BJ 048-F
Warthog® WD 1-1/4™	WD 600	WD 602	WD 610	WG 612	BJ 048-F
CST™	CST 600		CST 610		GP 048
SA 1900™, SA 1909™	HI 600		HI 610		GP 048
SL-P8P4™	SL 600-P		SL 610-P	SL 612	GP 048
SL-M9AV9™	SL 600-K		SL 610-K	SL 612	GP 048
SL-H9H9-C™	BC 505-S	BC 602-H9-C	SL 610-H9-C	GO 612	GP 048
SG-P8P8™ & SG-M12AV12™	SG 600		SG 610	SG 612	GP 048
SG-P12P12-M™ & SG-M16A16™	SG 600-M		SG 610-M	SG 612	GP 048
SG-CCN™	SG 600-CCN		SG 610-CCN	SG 612	GP 048
SH-P8P8™	SH 600		SH 610		GP 048
SM-P16™	SM 600-P16		SM 610-P16		GP 048
SM-P20™	SM 600-P20		SM 610-P20		GP 048
Torus®	TR 600	TR 602	TR 610		
HI™	HI 600		HI 610		GP 048
UH™	UH 600		UH 610	UH 612	GP 048

Note: "X" indicates fast or slow rotation speeds available, please specify when ordering.

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Threaded Connections



Pressures above 4k psi

Use anti-seize and fluorocarbon tape for gall-free, leak-free pipe connections. For 20k and 40k psi connections, just use anti-seize.

Galling

Stainless steel threaded connections tend to gall when tightened. Galled threads are almost welded together, resulting in an expensive problem. To prevent galling use an anti-seize compound whenever stainless steel threads are tightened.

Tape by itself doesn't prevent galling.

Pressures below 4k psi

For pressures below 4k psi use Parker Thread Mate® alone for gall-free, leak-free connections.

Air Motors



SG 055

LM 016-4

LM 016-6

Three air motors are currently used in our assemblies, note the chart at right. Use this information to plan your compressed air requirements.

Model	SG 055 + LM 016-4	LM 016-6
At Peak		
Rotation	3000 rpm	3000 rpm
Power	1.7 HP 1.3 KW	4.0 HP 3.0 KW
Torque	36 in-lbs 4.1 Nm	84 in-lbs 10.0 Nm
Air Consumption	30 cfm 51 m3/hr	128 cfm 228 m3/hr
Air Pressure	100 psi 7.0 bar	100 psi 7.0 bar
At Minimum		
Rotation	600 rpm	600 rpm
Power	.35 HP .26 KW	.50 HP .37 KW
Torque	31 in-lbs 3.5 Nm	62 in-lbs 7.0 Nm

Hydraulic Motors



LM 121 + LM 122 Motors

The Danfoss OMM 8 hydraulic motor is currently used on all **StoneAge®** equipment with hydraulic power. This information helps you plan oil pumping and control requirements. Available with either 0° (**LM 121**) or 90° (**LM 122**) ports.

LM 121 & 122	Continuous	Intermittent
Rotation	1960 rpm	2430 rpm
Power	2.3 HP 1.7 KW	3.5 HP 2.6 KW
Torque	95 in-lbs 4.1 Nm	135 in-lbs 10.0
Oil Flow	4.2 gpm 1 m3/hr	5.3 gpm 1.2 m3/hr
Oil Pressure	1450 psi 100 bar	2000 psi 138 bar
Min. Rotation	50 rpm	

Lubricants



MSDS sheets are available for all lubricants.

Lubricant	Part #	Qty	Source	Specification
Viscous Fluid	BJ 048-X	6 oz.	StoneAge®	Synthetic Silicone Lubricant
Air Motor Oil	GP 041	32 oz.	Mobil	Almo 525 - ISO 46 - SAE 10
Hydraulic Oil	HF 042	1 Gal.	Texaco	Rando HD 68 - ISO VG 68
Auto Trans Fluid	GP 042	32 oz.	NAPA	Mercon/Dexron ATF
Anti-Seize	GP 043	2 oz.	Swagelok	MS-TL-BGT
Motor Oil	GP 044	32 oz.	NAPA	10W-40
Gearbox Lube	GP 046	32 oz.	NAPA	80W - 85W - 90
Thread Sealant	GP 047	4 oz.	Parker	Thread Mate
Grease	GP 048	14 oz.	Mobil	Synthetic Grease SHC 100



www.advancedpressuresystems.com

Toll Free in North America:
1 (877) 290-4277 or (281) 290-9950



Orders & Information

1-866-795-1586 (Toll Free in the U.S.) • 970-259-2869 • FAX: 970-259-2868 • sales@stoneagetools.com

Hours: 8:00 AM - 5:00 PM • Monday - Friday (USA Mountain Standard Time)

Customer Service

Quotes are always available to detail specifications and consider options while a customer is planning a job. After review, such quotes can be converted into an accurate order. Quotes are valid for a stated period, making price temporarily immune from potential increases.

Repairs

Operator's Manuals for all equipment are available online. They illustrate tools and identify parts, plus they detail maintenance and overhaul procedures. Additional copies of the manuals, repair videos and CD's are available at a nominal charge.

Repair & Maintenance Service is available by the same technicians who build and test our tools. We try to complete repairs and test every tool within two days of receipt. Call first so we can record all the information necessary to begin work as soon as the tool arrives. Make sure you include contact information. Send tool to:

StoneAge® Inc. - Attn. Repairs, 466 S. Skyline Dr., Durango, CO 81303, USA

Serial Number Database is maintained on all equipment sold. If a customer knows the serial number when ordering parts, we can check to see that the right parts are specified.

Technical Help is available by phone for customers who are unsure how best to use **StoneAge®** equipment, or how to approach an unusual task. On-site assistance is available for a fee.

Service Bulletins are issued whenever specifications, design or maintenance changes are made.

Lead Time

Parts and Service Kits are available to ship same day as ordered. Standard tools can usually be shipped the next day. Custom porting of heads usually requires at least 3-4 days to schedule through the factory. More complicated systems like Lancing Machines are built when ordered, which can take several weeks depending on factory backlog. Check availability and place orders early enough to avoid scheduling conflicts.

Rentals

Not available from StoneAge® Inc. Check our web site for a list of **StoneAge®** dealers who may rent equipment.

Equipment manufactured by StoneAge® Inc. is warranted to be free of defect in material and workmanship for a period of six months. **StoneAge®** liability is limited to the repair or replacement of the defective part, FOB Durango. By acceptance of each shipment, buyer releases **StoneAge®** of all other liabilities, performance guarantees, or indemnification requirements, regardless of any stated terms in buyer's purchase documents. Furthermore, buyer is warned that high pressure water jetting is potentially dangerous and they need to provide for safe installation, adequate personal protective equipment, as well as training and supervision in safe use.

Terms of Sale

All sales are FOB Durango, Colorado in US dollars.

Minimum restocking charge of 15% applies to standard items returned un-used. Return authorization expires after 12 months. Custom items may not be returned for credit.

Ordering

Call, E-Mail, or FAX your order to a dealer or to the factory, with Purchase Order #, addresses for shipping and billing, and delivery date needed. Check datasheet to be sure specifications are complete. Advise whether we should hold shipment until all items are available.

Shipping

Shipping is pre-paid and invoiced with order, but may be charged directly to the customer's account with selected courier by special instruction. Most orders are shipped via UPS or Fed Ex couriers, specify a preference if you wish. Lancing Systems, Floor Cleaners, Telebooms, and other large equipment must be shipped by truck or air freight. We or the customer may make the arrangements. Airline counter-to-counter delivery is not reliable from our mountain location.

Payment

Major credit cards or bank transfers are accepted. Pre-payment is required to ship custom equipment. Allow 10 days to set up a new account and call for equipment or orders which exceed credit limits. Call for an application.



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Measurements & Conversions

Measurement Conversion Tables

From	To	Multiply by	From	To	Multiply by
Meters	Feet	3.281	Bar	Lbs/sq. in.	14.5
Feet	Meters	.3048	Lbs./sq. in.	Bar	.0689
Millimeters	Inches	.0394	Kilograms	Pounds (Mass)	2.205
Inches	Millimeters	25.4	Pounds (mass)	Kilograms	.4536
Liters/min	GPM (US)	.2624	Newtons	Pounds (Force)	.2248
Liters/min	GPM (Brit)	.2200	Pounds (Force)	Newtons	4.448
GPM (US)	Liters/min	3.785	Kilowatts	Horsepower	1.341
GPM (Brit)	Liters/min	4.546	Horsepower	Kilowatts	.7457
GPM (US)	GPM (Brit)	.8327			
GPM (Brit)	GPM (US)	1.201			

Q = Flow in gpm

V = Velocity in ft/sec

P = Pressure in psi

hp = Horsepower

Cv = Flow Coefficient

ΔP = Pressure Drop

F = Thrust in Lbs.

ΔT = Temp Change °F

$$Q = 29.92 \times d^2 \times P^{1/2} \times Cd$$

$$V = 12.186 \times P^{1/2} = Cd \times .4085 \times Q/d^2$$

$$P = .00112 \times Q^2 / (d^4 \times Cd^2)$$

$$hp = .0174 \times d^2 \times P^{3/2} \times Cd = P \times Q / 1714$$

$$CV = Q / \Delta P^{1/2} = 53 \times (D^{2.5} / L^{1/2})$$

$$\Delta P = (Q/Cv)^2$$

$$F = \pi/2 \times d^2 \times P \times CD = .052 \times P^{1/2} \times Q + .0018 \times (Q/D)^2 \times Cd$$

$$\Delta T = \Delta P / 337.6$$

Key: L = Tube length in feet, D = Tube ID in inches, d = Orifice diameter in inches, Cd = Discharge Coefficient, Cd = 0.90 for long cone orifice, Cd = 0.70 for drilled steel orifice, Cd = 0.65 for sapphire orifice

ToolTalk™ - Consider Us Your Waterblast Partner

Understanding Pressure Loss

Pressure loss is an often overlooked and poorly understood aspect of waterblasting. Pressure loss occurs through the hose, fittings and swivels in the system. It is a function of the flow rate; it is not dependent on the pressure being used. The inside diameter and the length of the hose along with the flow rate determine the pressure loss. The maximum pressure and maximum flow rate are determined by the capacity of the pump. The power of the water reaching the surface to be cleaned is the combination of the pressure and the flow in direct proportion. Assuming the maximum pressure is fixed by the pump or component rating, but that flow rate can be increased, you will apply the maximum combination of pressure and flow rate (maximum power) if you increase the flow rate to the point where the pressure loss through the hoses and fittings in the system reaches one-third of the operating pressure.

Another case to consider is making extremely long runs where a tool is pulled along a pipe by jet thrust. Jet thrust is directly proportional to the flow rate, but only to the square root of the pressure. Again assuming that the maximum pressure is fixed by the pump or component capacity but the flow rate can still be increased, to achieve the maximum pulling force the flow rate can be increased until the pressure loss through the hose reaches one-half of the operating pressure. Do not go below this, though, as pulling force drops off rapidly beyond this point.



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