

JOHNSON BAND SAW

Model "J"

Instructions • Parts

Consult Instruction
Book before making
any changes in
factory setting

JOHNSON MANUFACTURING CORPORATION

ALBION — MICHIGAN

PHONE DIAL NA 9-8661

Before Operating Machine, Read Items 1 thru 5

THIS MACHINE HAS BEEN THOROUGHLY TESTED AND OPERATED. FILE ANY CONCEALED DAMAGES WITH CARRIER

1. Installation

- (A) Move machine to cutting location before uncrating.
- (B) Uncrate carefully. Do not damage mechanism under bed.
- (C) Check pivot bar lock (J-202). Make sure it is in pivot bar groove and head has not shifted in transit.
- (D) Set machine reasonably level especially wet cutting machines.
Caution: Do not operate without coolant.

2. Electrical Equipment

- (A) Motor leads are not connected at factory — Use only competent electrician to assure proper wiring. Wiring diagram appears on motor.
- (B) Do not hook machine to over-loaded line — serious motor damage will result VOIDING MOTOR GUARANTEE.
- (C) Three phase machines are equipped with motor starter mounted on single front leg and actuated by switch arm at front of machine. Linkage must be free at both On and Off position so NO pressure is on switch. To insure motor protection, check number on heater supplied, before installing.

Single phase machines have a heavy duty 20 amp. toggle switch mounted under bed. Switch linkage must not exert pressure on switch in ON or OFF position.

3. Hydraulic Frame Control

is operated by lever J 115. Valve mechanism is delicate and excessive pressure on handle can cause damage. A light pressure is all that is required.

Close valve gently before raising head of machine. Head will remain at any desired level and descend gently when valve is opened.

4. Quick Acting Vise

is provided for fast change from wide to narrow cuts. Half nut must be fully engaged in vise screw by lever BJ 200, before vise is tightened.

5. Stock Stop Gauge*

is provided for duplicate cuts. Unit swings down out of the way when not desired. Measure stock with bolt in forward position, clamp, and then rotate so bolt recedes allowing cut portion of stock to fall free. 5/16" screw on bolt end is provided for fine adjustment.

* Bar not included with machine.

BLADE INSTALLATION and TENSION

To install blade: With frame on a slightly raised position, remove blade guard and brushes. Place blade through the guides, around the band wheels so blade is against flanges. Tighten tension screw slightly. Recheck blade position and apply full tension.

Tighten the blade as much as you can with one hand. Replace blade guard and brushes. Recheck tension every 8 hours of use to offset possible blade stretch.

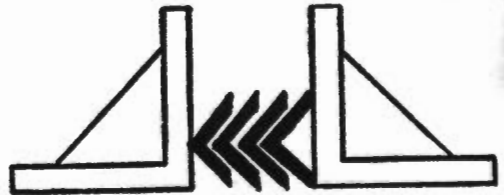
CUTTING PRESSURE

Two means of adjusting blade pressure are provided. Normally, the slide weight provides adequate range. Should weight vary, extension spring has adjusting bolt. Weight of frame should not exceed 12 to 15 lbs. at the handle. Excessive weight will cause a distorted cut and blade damage.

MULTIPLE CUTTING or STACKING

Determine the number of pieces that can be handled efficiently. Note that the "Pressure per tooth" when cutting two pieces side by side is but one-half of the pressure per tooth per single piece.

CAUTION – Each piece must be held securely. One loose piece may cause teeth stripping.



EXAMPLE – Position for multiple cutting of angles.

BRUSHES

Cleaning brushes or chip breakers are provided. Brushes should be replaced when they become clogged or worn. Tooth stripping is generally caused by clogged brushes which fail to remove chips that become welded to point of tooth. Brush holder guard is mounted on tip off block close to blade.

IDLE WHEEL ADJUSTMENT (With Blade Tightened to Proper Tension)

Blade should track on wheel evenly with back of blade up to but not rubbing flange. The idle wheel is nested in a rocker block and is held by four 5/16" hex bolts. To make blade ride up, loosen two bolts toward motor one-half turn. Tighten two front bolts one-half turn. Care must be taken not to overdraw bolts. Reverse procedure to bring blade down.

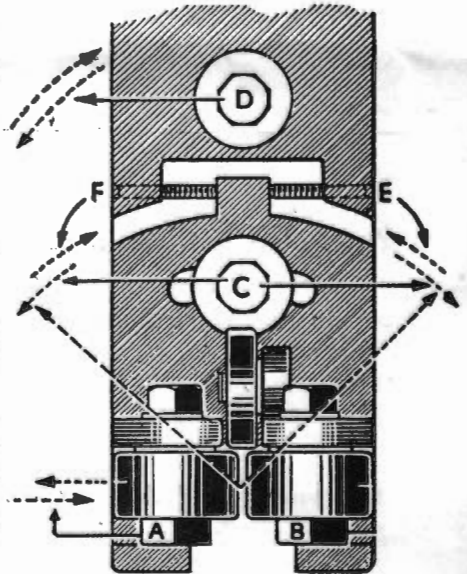
DRIVE WHEEL ADJUSTMENT

Four 3/8" hex bolts located on J 64 bracket (see sketch page 6). To bring blade up loosen outside bolts and tighten inside bolts one-half turn at a time. Reverse procedure to bring blade down on flanges.

GUIDE ADJUSTMENT

(STOP! Do not disturb factory setting unless casting breakage or unusual condition arises. YOU CANNOT MAKE A DEFECTIVE BLADE CUT STRAIGHT BY ALTERING GUIDES. Once altered, successive blades will suffer. Blade must be square to bed.)

1. Install NEW blade and tighten.
2. Close out light gap between roller and side of blade by turning eccentric axle "A". Do not pinch blade.
3. Swing blade to natural blade travel line by loosening "D" and set screws "E" and "F". Then reset E and F without disturbing this position. Now tighten "D".
4. Loosen "C" slightly and with the aid of a 12" steel scale lying on edge across the bed (not the tip-off block) and with the end against the side of the blade, using set screws "E" and "F", rotate blade square to bed. Reset "C" "E" and "F" and now guide should be in perfect adjustment. Blade must be square with top of bed at all points between the guides.
5. Square vise to blade.



LUBRICATION

1. Keep gear case full of Standard Worm Gear Oil SAE 90 to bottom of pulley shaft.
2. Repack wheel bearings every two years if under continuous service.
3. Pivot bar – Use any good cup grease on grease gun fittings.
4. DO NOT oil guide bearings. They are sealed for life.
5. Lubricate motor according to usual practice.

HOW to INSTALL NEW GUIDE ARM

Install new arm on guide ways at usual position. Clamp guide assembly in place with C-clamp serving instead of bolt "D" (see guide illustration). Blade should just touch vertical bearing on each guide. Now scribe through guide link hole to mark guide arm. Remove, drill and reassemble. Adjust both guides carefully according to guide adjustment (page 3.)

Coolant Pump Instructions for Wet Cutting

1. Do not run machine without filter screen, or with intake not submerged. Check for air leaks in system if flow is impaired.
2. Keep cleaning brushes in good contact with blade.
3. DO NOT OPERATE PUMP DRY. To operate machine dry, remove pump gear.

UNUSUAL CUTTING

Johnson Saws will lend themselves readily to unusual sawing jobs. Many users rig up jigs, clamps, etc., according to their own needs to facilitate cutting. Vise jaws, may be removed for special jobs.

Blade Selection and Cutting Speeds

Material	Speed Machine	Material	Speed Machine	Material	Speed Machine
Aluminum	3	Cast Iron	2	Structurals	3
Babbitt	3	Cold Rolled Steel	3	Tool Steels	2
Brass	3	Alloy Steel	2	Stainless Steels	1
Bronze	3	Drill Rod	2	Pipe and Tubing	3
Copper	2				

BLADE SELECTION

A 10 tooth blade is good all purpose blade.

Use 8 tooth or 6 tooth for large diameter.

On thin sections, select blade so at least 3 teeth are engaged in stock.

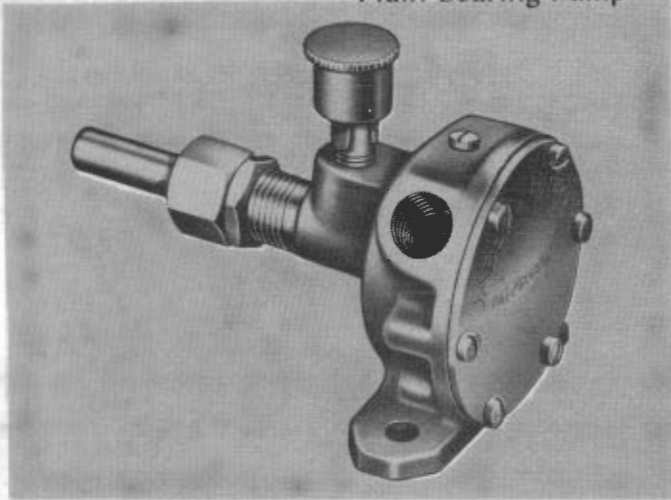
On dense, high chrome steels use slow speed, heavy pressure and avoid allowing blade to skim over stock causing glazing. Make each tooth bite into material.

Export Assembly Instructions

1. Mounting of double rear leg. Place pan over leg studs provided in crate. Mount leg and tighten.
2. Place pan having large hole over front leg bolts and then mount front leg using 6" leg studs and nuts fastened to bottom of crate.
3. After pan is mounted remove 1/4" x 2" toggle arm bolt under bed and replace by threading it thru switch arm and pan. Tighten securely. Switch will now operate correctly. (Three phase switch only.)
4. If adjustment is necessary, bend shut off rod so frame will operate switch when stock is cut off. When bending rod do not force against switch.
CAUTION: Make sure switch carries No Weight in "OFF" position.
5. Notes: Adjust end pans so center drawer slides freely in parallel ways.
6. Machine bed should be reasonably level lengthwise to assure proper liquid return.
7. Adjust balance spring as per cutting pressure instructions (page 2).
8. Ignore pan instructions on dry machine.

JABSCO®

BRONZE SELF-PRIMING
Plain Bearing Pump



TECHNICAL DATA MODELS

AL 1/8" — AL 1/4"

DESIGN FEATURES

BODY	Bronze Construction
IMPELLER	Jabsco Neoprene Compound
SHAFT	Stainless Steel
SHAFT SEAL	Packing Type
BEARINGS	Plain
PORTS	1/8" NPT—Model AL 1/8" 1/4" NPT—Model AL 1/4"
WEIGHT	1 1/4 lbs. (approximately)

TYPICAL APPLICATIONS

MARINE

- Pumping bilges, washdowns
- Circulating water in bait tanks
- Utility dock side pump
- Circulating engine raw water

INDUSTRIAL

- Circulating and transferring liquids
- Velocity-mixing
- Pumping coolants on machine tools
- Returning spilled liquids to process
- Pumping waste water to sewer
- Cellar, yards and sump drainage
- Chemical manufacturers and pharmaceutical houses — to pump soap, liquors, ink, dyes, medicines, alcohol, various acids, tanning liquors, glycerine, lotions, brine, etc.

FARMING

- Pumping water for stock, poultry houses, farmhouse
- Pumping water from wells and cisterns
- Pumping liquid ballast into tractor tires
- Pumping water from flooded basements
- Booster pumping

PLUMBING & HOME EMERGENCY USE

- Pumping out flooded basements, cesspools, sumps, etc.
- Draining water heaters and water closets
- Draining laundry tubs below sewer level
- When pipes break or leak
- Draining fishponds and garden pools
- Removing sludge, lye-water and other caustics from stopped up drains and sinks

VARIATIONS FROM UNIT DESCRIBED ABOVE

MODEL	VARIATION INCORPORATED
AL 1/4-08 AL 1/8-08	Heat Resistant Impeller for temperatures from 45° - 180° F.
AL 1/4-09 AL 1/8-09	Natural Rubber Impeller for temperatures from 27° - 100° F.
AL 1/4-37 AL 1/8-37	Oil Resistant Impeller
	For use with a wide range of oils including soluble, lubricating, machine cutting and certain diesel fuel. NOT RECOMMENDED for: toluene, gasoline, benzene, kerosene or other light fraction petroleum products.

HEAD CAPACITY TABLE

TOTAL HEAD		500 RPM		1160 RPM		1750 RPM		2100 RPM		2450 RPM		3000 RPM		3600 RPM	
Lbs. per Sq. in.	Ft. of Water	GPM	H/P	GPM	H/P	GPM	H/P	GPM	H/P	GPM	H/P	GPM	H/P	GPM	H/P
4.3	10	1.1	1/12	2.3	1/6	3.5	1/6	4.3	1/4	5.2	1/4	6.7	1/3	7.6	1/2
8.7	20	1.0	1/12	2.2	1/6	3.4	1/6	4.1	1/4	5.0	1/3	6.2	1/2	7.0	1/2
13.0	30	.9	1/12	2.1	1/6	3.2	1/6	3.9	1/4	4.8	1/3	5.6	1/2	6.3	1/2
17.3	40	.8	1/12	2.0	1/6	3.0	1/6	3.5	1/4	4.3	1/3	4.9	1/2	5.4	1/2
21.6	50	—	—	1.8	1/6	2.7	1/6	3.3	1/4	3.9	1/3	4.3	1/2	4.7	1/2

NOTE: Progressively longer life may be expected as operating pressures and speeds are reduced. Factory Application Engineering assistance suggested for operation in light shaded area and recommended for heavy shaded area. Capacitor type motor recommended.

Table shows approximate Head-Flow for new pump in U.S. gallons per minute.

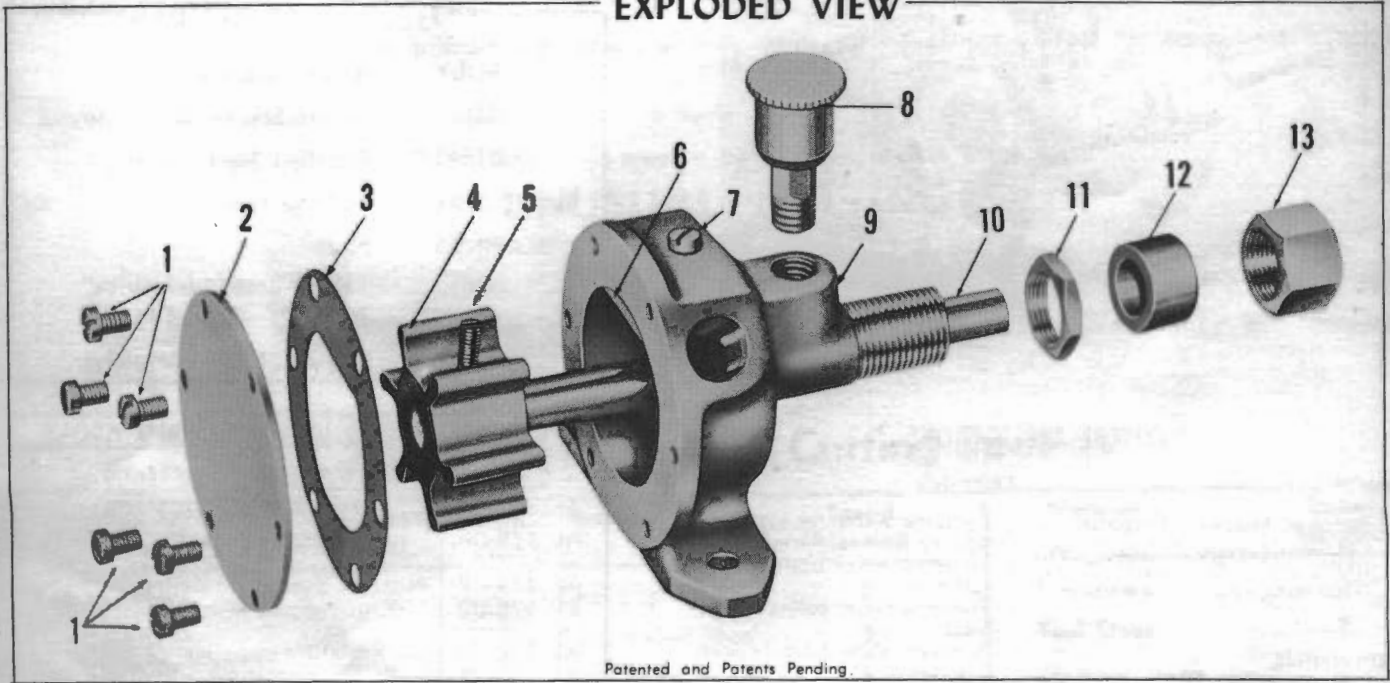
Made under one or more of the following patents—U.S. 2,189,356; 2,575,549; 2,631,021; 2,753,809; 2,772,637; 2,782,723; 2,789,511; 2,836,441; 2,853,011; 2,855,853; 2,857,848; 2,858,769; 2,858,920; 2,881,710; 2,892,646; 2,918,011; 2,923,565; 2,933,046; 2,971,489; 2,976,811; 2,988,187; 3,008,528; 3,014,429; 3,041,579; 3,053,382. Great Britain: 773,090 (Nov. 1, '55); 784,928 (Sept. 29, '56); 805,453 (July 26, '56); 813,223 (Mar. 6, '57); 813,598 (Mar. 5, '57); 870,662 (June 23, '58). Italy: 545,450; 560,964; 590,900; 594,667. Germany: DBP 1,063,036. Japan: 231,978. France: (S.G.D.S.) 1,133,271; 1,133,572; 1,144,312; 1,154,842; 1,156,602; 1,196,460; 1,199,350; 1,209,181.

JABSCO

**Bronze
Plain Bearing Pump**

**TECHNICAL DATA
MODELS
AL 1/8" — AL 1/4"**

EXPLODED VIEW



Patented and Patents Pending.

Insist on genuine Jabsco parts — made only by the Jabsco Pump Company — the original and world's leading manufacturer of self-priming flexible neoprene impeller pumps.

PARTS LIST

KEY	PART NUMBER	DESCRIPTION	QTY. REQ.
1	SP 1002-01	Screws (End Cover)	6
2	AL-6	End Cover	1
3	1126	Gasket	1
4	AL-24	Impeller (Standard)	1
	AL-24-08	Impeller (Heat Resistant)	
	AL-24-09	Impeller (Natural Rubber)	
	AL-24-37	Impeller (Oil Resistant)	
5	SP 1009-05	Screw (Impeller)	1
6	AL-8	Cam	1
7	SP 1002-02	Screw (Cam)	1
8	SP 1501-01	Grease Cup	1
9	AL-1/4-4	Body (Mdl AL 1/4")	1
	AL-1/8-4	Body (Mdl AL 1/8")	
10	AL-10	Shaft	1
11	AL-18	Lock Nut	1
12	AL-22	Packing	1
13	AL-16	Packing Nut	1

SERVICE KITS

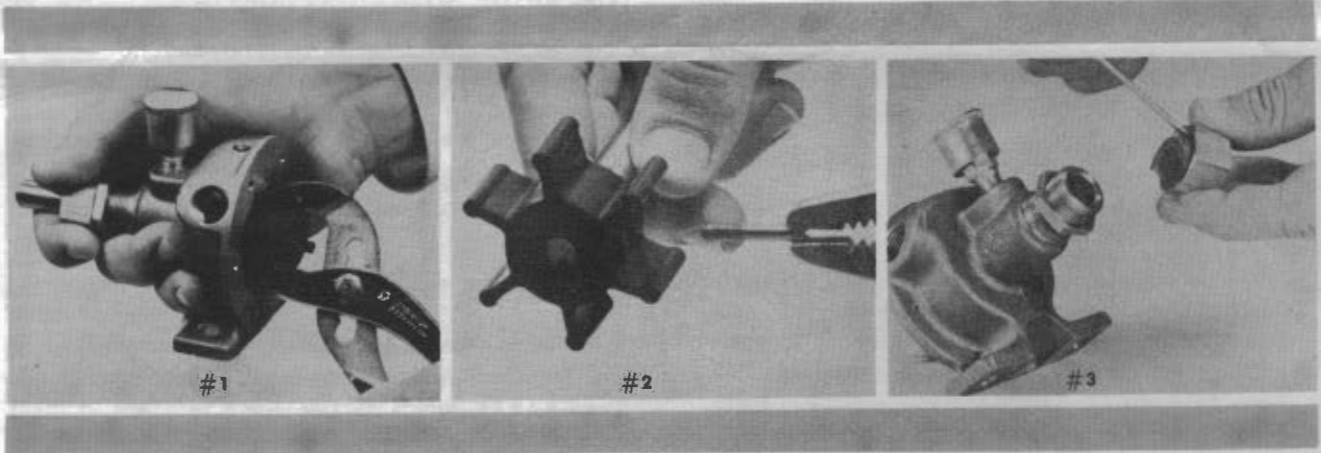
PUMP MODEL NUMBER	SERVICE KIT NUMBER
AL 1/4 AL 1/8	SK1
AL 1/4-08 AL 1/8-08	SK1-08
AL 1/4-09 AL 1/8-09	SK1-09
AL 1/4-37 AL 1/8-37	SK1-37

Kits consist of: Impeller, packing, gasket and end cover screws.

SERVICE INSTRUCTIONS

DISASSEMBLY

1. Remove end cover screws, end cover and gasket.
2. Remove drive coupling or pulley and loosen packing nut.
3. Clean and remove burrs from flatted end of shaft.
4. Remove shaft and impeller assembly from body. (Picture #1)
5. Remove drive screw from impeller and slide impeller off the shaft (Picture #2.)
6. Remove cam screw and cam, clean off permatex.
7. Remove packing nut.
8. Remove packing with pick or screwdriver. (Picture #3)
9. Inspect all parts for wear or damage and replace if necessary.



ASSEMBLY

1. Permatex cam screw threads and top and back end of cam and install in body with cam screw.
2. Position impeller on shaft and secure with drive screw.
3. Lubricate impeller bore with a light coat of Marfak 2HD grease, insert shaft and impeller assembly into body with a rotary motion.
4. Dip new packing in SAE 10 or 20 weight oil and install packing.
5. Install packing nut. Do not tighten.
6. Install gasket and end cover with end cover screws.
7. Hand tighten packing nut. During operation, tighten packing nut until pump stops dripping, set locking nut.

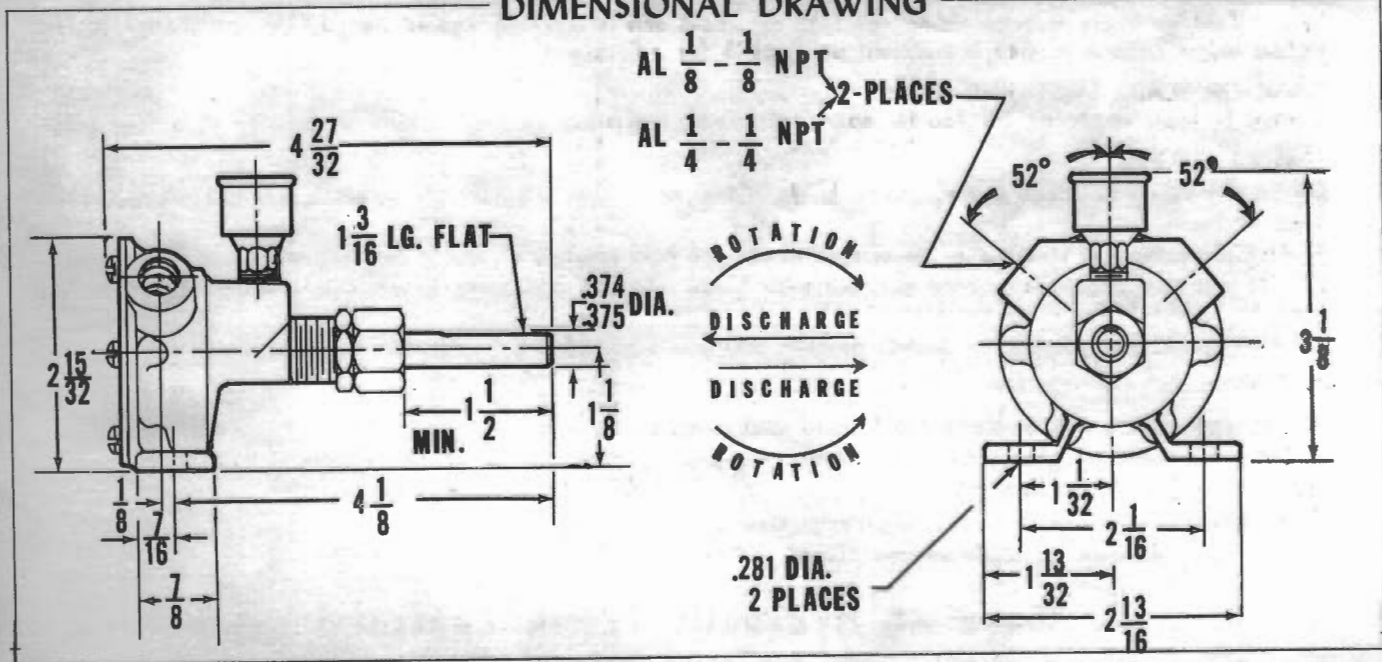
**Bronze
Plain Bearing Pump**

**TECHNICAL DATA
MODELS
AL 1/8" — AL 1/4"**

OPERATING INSTRUCTIONS

1. **INSTALLATION**—Pump may be mounted in any position. The rotation of the pump shaft determines the location of the pump's intake and discharge ports, refer to dimensional drawing. Before installing, turn the pump shaft in the direction of the operating rotation.
2. **DRIVE**—Belt or Direct with flexible coupling.
BELT DRIVE - Overtight belt load will reduce pump bearing life. Direct Drive recommended for operating speeds above 2100 RPM.
DIRECT DRIVE - Clearance should be left between drive shaft and pump shaft when installing coupling. Always mount and align pump and drive shaft before tightening the coupling set screw.
3. **SPEEDS**—100 RPM to the maximum shown in the performance table. For longer pump life, operate at lowest possible speeds.
4. **SELF-PRIMING**—Primes at low or high speeds. For vertical dry suction lift of 15 feet, a minimum of 800 RPM is required. Pump will produce suction lift up to 22 feet when wetted. **BE SURE SUCTION LINES ARE AIR TIGHT OR PUMP WILL NOT SELF PRIME.**
5. **RUNNING DRY**—Unit depends on liquid pumped for lubrication. **DO NOT RUN DRY** for more than 30 seconds. Lack of liquid will burn the impeller.
6. **CAUTION**—Do not pump light fraction petroleum derivatives, solvents, thinners, highly concentrated or organic acids. If corrosive fluids are handled, pump life will be prolonged, if flushed with water after each use or after each work day.
7. **PRESSURES**— For continuous operation, pressure should not exceed 20 PSI for the standard Model AL 1/4" or AL 1/8".
8. **TEMPERATURES**—45° - 120° F. use standard impeller. 45° - 180° F. use special -08 impeller. 27° - 100° F. use special -09 impeller.
9. **FREEZING WEATHER**—Drain unit by loosening end cover. The following anti-freeze compounds can be used without any adverse effects to the neoprene impeller: Atlas "Permaguard", DuPont "Zerex" and "Telar", Dow Chemical "Dowguard" and Olin Mathison "Pyro". Most methyl alcohol (methanol) based anti-freeze can be used. **DO NOT USE PETROLEUM BASED ANTI-FREEZE COMPOUNDS OR RUST INHIBITORS.**
10. **GASKET**—Use standard pump part. Thicker gasket will reduce priming ability. A thinner gasket will cause impeller to bind.
11. **PACKING**—Use standard pump part. Having packing nut too tight will increase the torque requirement and may burn packing or groove the shaft under the packing.
12. **GREASE CUPS**—Fill grease cups with water pump grease (Marfak 2HD or equivalent).
13. **SPARE PARTS**—A JABSCO Service Kit SK'1 should be kept on hand to service all but the most badly worn AL 1/4" or AL 1/8" pumps.

DIMENSIONAL DRAWING



WARRANTY: All products of the company are sold and all services of the company are offered subject to the company's warranty, terms and conditions of sale, copies of which will be furnished upon request.



JABSCO PUMP COMPANY
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PRINTED IN U.S.A.

MAINTENANCE HINTS

Crooked Cutting — Fault of Machine? The Blade? Or Both?

Check these Factors

1. Tension. (See instructions page 2)
2. Has guide adjustment been altered in a futile attempt to make a worn blade cut straight?
See guide adjustment.
3. Is machine excessively heavy? See Cutting Pressure.
4. Are pivot bar collars against bed so head is not drifting side ways?
5. Are cleaning brushes in good contact with blade?
6. Make sure pivot bar turns in bed and not in side frames.

Is It the Blade ?

If the above items are all O.K., then we must suspect the blade. Here is how to recognize a defective blade:

1. If, after cut, the blade is plastered to the side of the cut and scrapes when raised up, this indicates that machine wished to travel in vertical path but blade followed a false path due to irregular set, sharper side, or injury. This is a typical "out" cut.
2. If blade stands way clear of stock as above it is an "in" cut.
3. A proper cutting blade will go through the stock with equal space on each side of the blade. A defective blade will lay over to one side or the other.

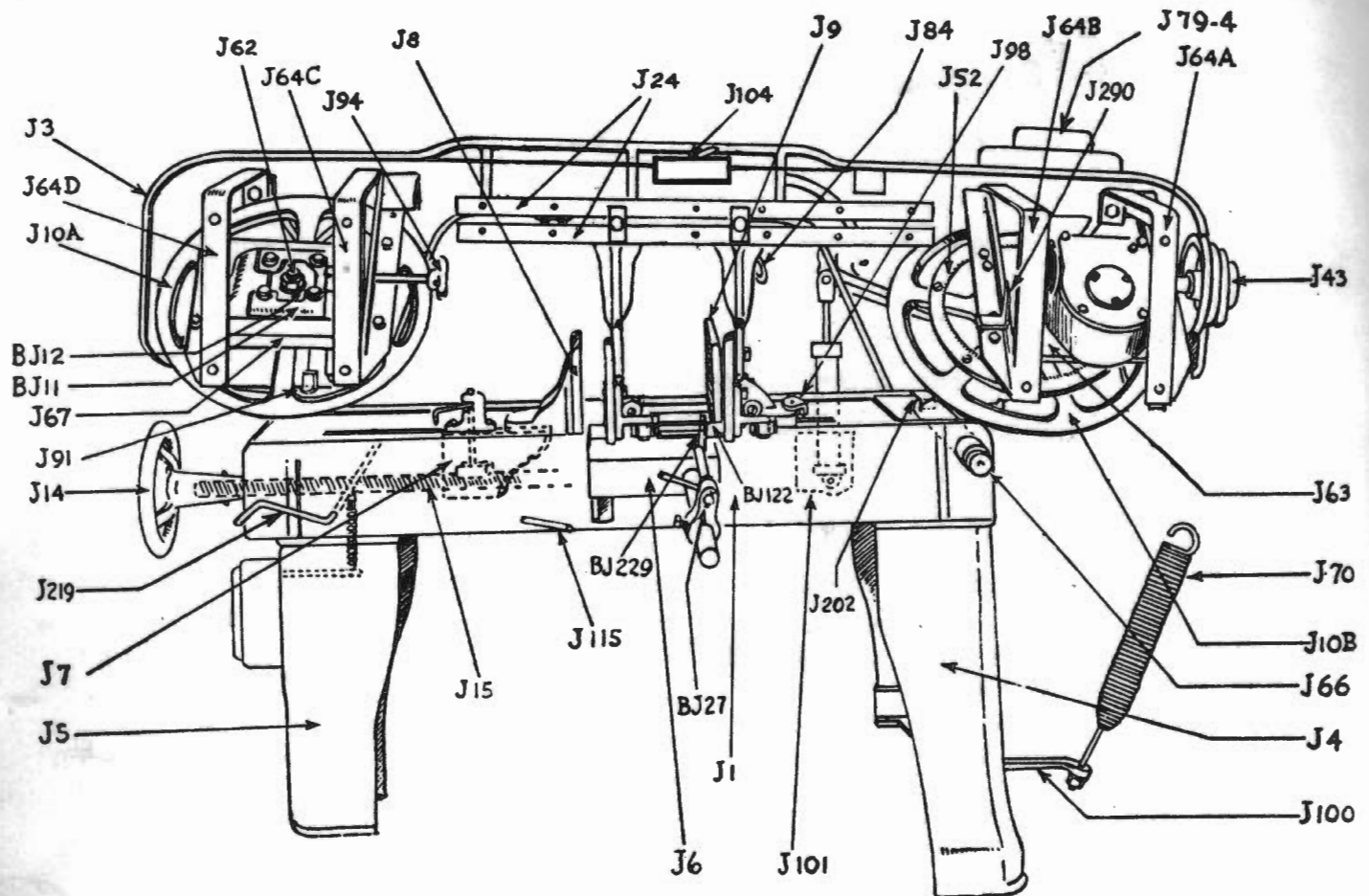
CAUTION — Remember — you cannot make a defective blade cut straight by adjusting the guides.
NEVER START A NEW BLADE ON AN OLD CUT.

Remedies for Troubles That May Develop

1. **BACK OF BLADE BREAKING OUT PIECES.**
Wheel Kant — blade may be riding too high on wheel and is scraping against flange. Do not change factory setting unless necessary. See instructions on Page 3 for adjustment.
2. **BACK OF BLADE SWEDGING OVER**
Caused by loose blade, guides too far apart, soft blade, too heavy cutting pressure or pressure all on one guide.
3. **TEETH STRIPPING**
(A) Brushes should be clean and square to blade. Clogged brushes will not remove chips that become welded to point of tooth.
(B) Multiple cutting or stacking — be sure all pieces are held securely as one loose piece will cause teeth to strip.
(C) Do not slam blade down onto cut, but ease blade into cut until there is sufficient bearing surface for the teeth to bear full weight of the frame.
(D) Always use the hydraulic to control descent of frame when cutting thin section material.
4. **CUTTING "IN" OR "OUT".**
(A) Set worn off one side of blade due to hard spot in material being cut.
(B) Defective blade — Always try a new blade, properly tightened before altering guides.
(C) Be sure blade is properly tightened.
(D) A defective blade will not cut straight regardless of guide adjustment.
(E) Too much pressure on blade — see "Cutting Pressure" page 2.

Care of Hydraulic Frame Control

Keep unit filled with mineral oil, viscosity 100-150 at 100°F. Low oil supply will cause head of machine to become "bouncy" as air replaces oil under piston. To correct, remove air bleed screw on hydraulic top, fill and then remove entire unit from machine. Pull piston out 4" with unit in upright position, open valve and with unit in an INVERTED POSITION force piston rod back into cylinder. Now, with unit in normal position, refill and reinstall on machine.



Order by These Numbers

Bed	J-1
Right Frame (Not indicated)	J-2
Left Frame	J-3
Back Leg	J-4
Front Leg	J-5
Tip-Off Block	J-6
Hold-Down Block	J-7
Moving Vise Jaw	J-8
Standing Vise Jaw	J-9
Idle Wheel	J-10A
Drive Wheel	J-10B
Slide Block	BJ-11
Rocker Block	BJ-12
Vise Hand Wheel	J-14
Vise Screw	J-15
Guide Ways (2 required)	J-24
Stock Stop	BJ-27
Motor Pulley	J-42
Drive Pulley	J-43
Internal Ring Gear	J-52
Wheel Axle	J-62
Gear Case Plate	J-63
Frame Bracket Set	J-64A J-64B J-64C J-64D
Pivot Bar	J-66
Slide Ways	J-67
Balonce Spring	J-70
V-Belt	J-77
(Advise Number from old belt)	
Motor — 110-60-1 1/2 H. P.	J-79-1
Motor — 220-440-60-3 1/2 H. P.	J-79-2
Motor — 220-440-60-3 3/4 H. P.	J-79-3
(Serial No. of machine and if motor mounted outside or underneath).	
Tail Nuts	J-84
Frame Rest	J-91
Tension Screw	J-94
Vise Hold-Down Clamp	J-98

Spring Perch	J-100
Outboard Bearing Casting	J-101
Slide Weight	J-104
Hydraulic Control Rod Handle	J-115
Hydraulic Control Rod	J-115-1
Brush Holder	BJ-122
Pivot Bar Drift Lock	J-202
Shut Off Arm (Specify Single or 3 Phase)	J-219
Brush Holder Guard	J-229

PARTS NOT ILLUSTRATED, BUT EASILY IDENTIFIED

Frame Handle	J-93
Motor Frame Hanger Base	BJ-106B
Motor Hanger Base	BJ-107
Frame Covers:(a) Front Cover	J-126A
(b) Rear Cover	J-126B
Switch Handle Guard	J-126C
Switch — Bryant Toggle 3972 - S. H.	BJ-160-1
Starter — A & B No. 609-3 phase	BJ-160-2
(c) Pulley Guard	J-223
Blade Guard — After Serial 5383	J-230
Brush Kit (To Replace Old 2 in. Brushes)	J-233
Pump Bracket	J-290
Stem Casters	J-300
Stock Stand	J-304

COOLANT PUMP PARTS

Input — Output Tubing	J-256
Bross Pump Elbows (2 required)	J-278
Bakelite Spur Gear	J-289
Pump Mounting Bracket	J-290
Pump Impeller	J-291
Intake Strainer Assembly	J-293

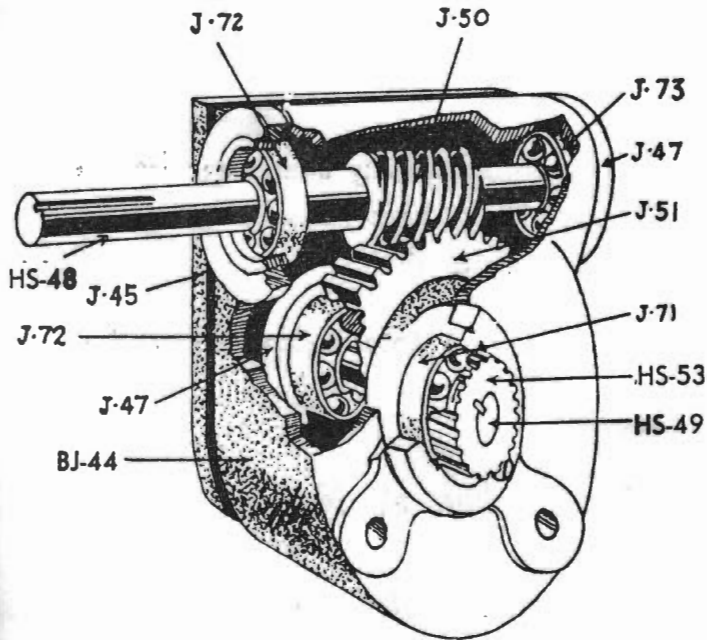
SUGGESTED ACCESSORIES AND SPARE PARTS

Blade Cleaning Brushes
Coolant pump impeller on wet machine
Stock Stand
Coolant System
Casters

BE SURE TO GIVE SERIAL NUMBER WHEN ORDERING PARTS

GEAR CASE PARTS

(See Fig. 1)



Gear Case	Must be ordered	{ BJ-44
Gear Case Cover	as a unit	{ BJ-45
Bearing Cap		BJ-47
Worm Gear Shaft		BJ-48
Spur Gear Shaft		J-49
Steel Worm		J-50
Bronze Worm Wheel		J-51
(Order in sets only)		
Spur Gear, 20 T		J-53
No. 87504 — Bearing		BJ-71
No. 77204 — Bearing		BJ-72
No. 77303 — Bearing		BJ-73
Oil Seal (Not illustrated) (2 required)		BJ-137

WISE UNIT PARTS

(See Fig. 2)

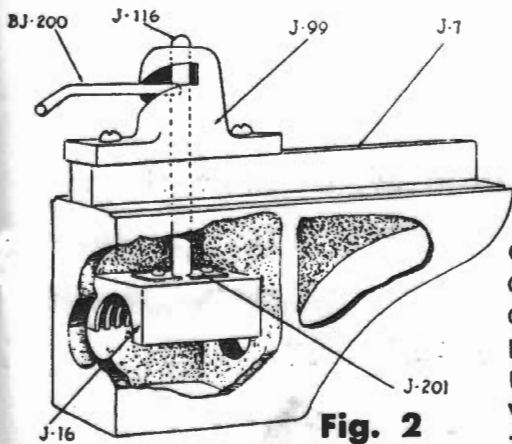


Fig. 2
WISE UNIT

Hold Down Block	J-7
Vise Nut	J-16
Vise Lift	J-99
Vise Lift Pin	J-116
Vise Lift and Stock Stop Pin Handles	BJ-200
Vise Nut Plate	J-201

GUIDE UNIT PARTS

(See Fig. 3)

Guide Arm (2 required)	J-19
Guide Holder	J-20
Guide Link	J-21
Eccentric Axle (2 required)	J-22
Upper Guide Axle (2 required)	BJ-23A
W-201PP Bearing (4 required)	J-25
77500 Bearings (2 required)	BJ-26
Guide Bushing	BJ-75
Brush Holder (New Style)	BJ-122
Wire Cleaning Brush (New Style)	BJ-133-1

HYDRAULIC UNIT PARTS

(See Fig. 4)

Hydraulic Yoke	J-13
Cylinder Head	BJ-30
Cylinder Base	BJ-31
Oil Fill Cup	BJ-32
Piston	BJ-119
Hyd. Piston Nut	BJ-120
3/8 Steel Ball	BJ-128
Hyd. Spring	BJ-129
Cup Leathers	BJ-130
Valve	BJ-131
Brass Elbow	BJ-132
Cylinder	J-203
Piston Rod	J-204
Hyd. Tie Rods (3 req.)	J-205
Return Line	J-206
Valve Coupling	BJ-207
Hyd. Stop Spring	J-33

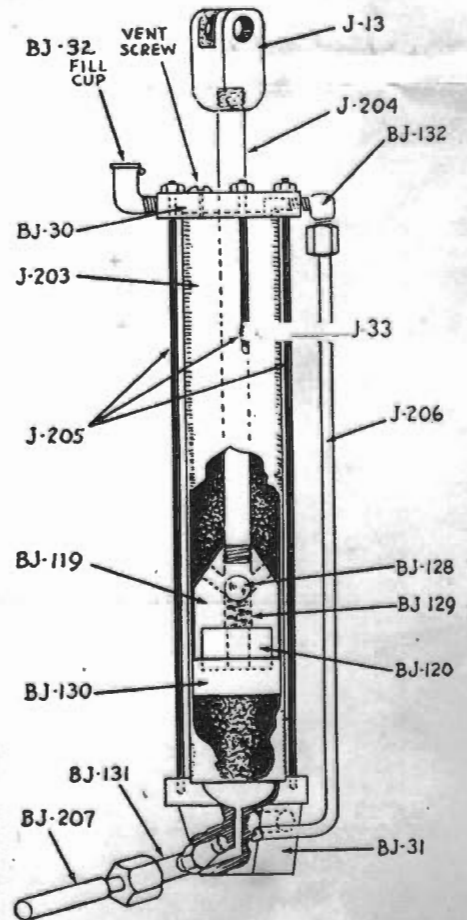


Fig. 4
HYDRAULIC UNIT

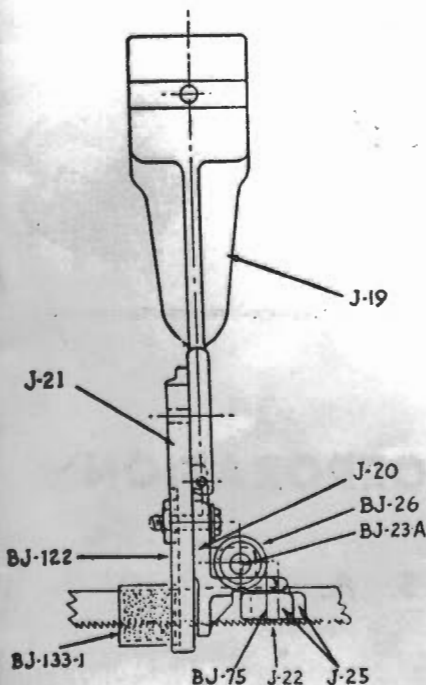


Fig. 3
GUIDE UNIT

GUARANTEE

All workmanship and material in JOHNSON Equipment is unconditionally guaranteed for one year of service from date of delivery. Any defective materials or parts not due to abuse or carelessness in operating the unit will be replaced free of charge.

In case of MOTOR TROUBLE, avail yourself of services of nearest Motor Builders Service Station. Or contact Manufacturer on name plate of motor.

When Ordering Parts Give Serial Number of Machine

*Factory Not Responsible For Any Charges For Repair Or Adjustment
UNLESS AUTHORIZED IN WRITING*

BESIDES having service parts for your immediate need, we maintain a complete stock of blades for our customers at all times.

ORDER YOUR BLADES FROM THE FACTORY

*Our Vast Experience is at your disposal —
Consult us freely!*

JOHNSON MANUFACTURING CORPORATION

PHONE DIAL NA 9-8661

ALBION, MICHIGAN, U. S. A.