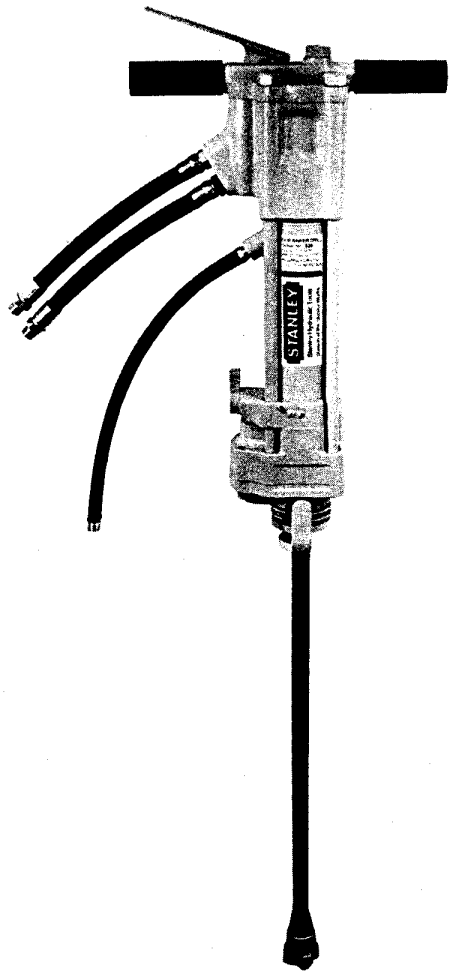
SK47
HYDRAULIC SINKER DRILL



Safety, Operation and Maintenance Manual

Focused on performance ™

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10323 3/94

SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing maintenance or repairs.

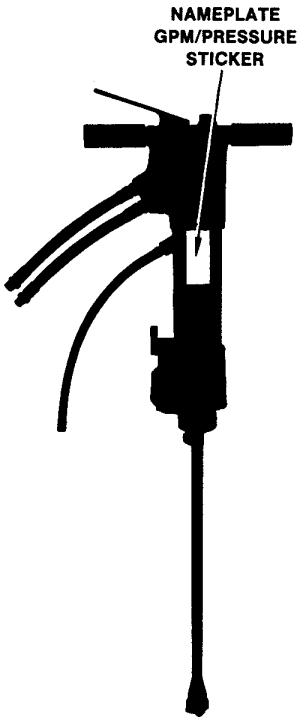
Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 3.

GENERAL SAFETY PRECAUTIONS

The SK47 Sinker Drill will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the sinker drill and hose before operation. Failure to do so could result in personal injury or equipment damage.

- Read all instructions carefully before operating the tool.
- New operators must start in a work area without bystanders. He/she must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Always wear safety equipment such as goggles, ear protection and safety shoes at all times when operating the tool.
- Never use tools around energized transmission lines. Know the location of buried or covered services before starting your work.
- Never wear loose clothing that can get entangled in the working end of the tool.
- Wear head protection.
- Do not overreach. Maintain proper footing and balance at all times.
- Do not inspect or clean the sinker drill with the power source operating or with operating pressure at the tool. Accidental engagement of the tool can cause serious in jury.
- Always connect hoses to the tool hose couplers before energizing the power source.
- Do not operate the sinker drill at fluid temperatures above 140°F/60°C. Operation at high temperatures can cause higher than normal temperatures at the tool which can result in operator discomfort.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

TOOL STICKERS AND TAGS



SK47
SINKER DRILL
SERIAL Nº
FLOW: 7-9 GPM
PRESS: 1500-2000 PSI
ACCUMULATOR CHG:
600 P.S.I. NITROGEN

STANLEY
Stanley Hydraulic Tools
Division of the Stanley Works

**NAMEPLATE
GPM/PRESSURE
STICKER**

A nameplate sticker is attached to the sinker drill at the location shown. Other stickers might also be attached as shown. Never exceed the flow and pressure levels specified on these stickers.

The information listed on these stickers must be legible at all times. Always replace them when worn or damaged. Replacements are available from your local Stanley distributor.

SAFETY TAGS

The safety tag at the right is attached to the sinker drill when shipped from the factory. Read and understand the safety instructions listed on this tag before removal. We suggest you retain this tag and attach it to the sinker drill when not in use.

DANGER

1. FAILURE TO USE HYDRAULIC HOSE LABELED AND CERTIFIED AS NON-CONDUCTIVE WHEN USING HYDRAULIC TOOLS ON OR NEAR ELECTRICAL LINES MAY RESULT IN DEATH OR SERIOUS INJURY.

   BEFORE USING HOSE LABELED AND CERTIFIED AS NON-CONDUCTIVE ON OR NEAR ELECTRICAL LINES BE SURE THE HOSE IS MAINTAINED AS NON-CONDUCTIVE. THE HOSE SHOULD BE REGULARLY TESTED FOR ELECTRIC CURRENT LEAKAGE IN ACCORDANCE WITH YOUR SAFETY DEPART-MENT INSTRUCTIONS.
2. A HYDRAULIC LEAK OR BURST MAY CAUSE OIL INJECTION INTO THE BODY OR CAUSE OTHER SEVERE PERSONAL INJURY.
   A. DO NOT EXCEED SPECIFIED FLOW AND PRESSURE FOR THIS TOOL. EXCESS FLOW OR PRESSURE MAY CAUSE A LEAK OR BURST.
   B. DO NOT EXCEED RATED WORKING PRESSURE OF HYDRAULIC HOSE USED WITH THIS TOOL. EXCESS PRESSURE MAY CAUSE A LEAK OR BURST.
   C. CHECK TOOL HOSE COUPLERS AND CONNECTORS DAILY FOR LEAKS. DO NOT FEEL FOR LEAKS WITH YOUR HANDS. CONTACT WITH A LEAK MAY RESULT IN SEVERE PERSONAL INJURY.

IMPORTANT

READ OPERATION MANUAL AND SAFETY INSTRUCTIONS FOR THIS TOOL BEFORE USING IT.

USE ONLY PARTS AND REPAIR PROCEDURES APPROVED BY STANLEY AND DESCRIBED IN THE OPERATION MANUAL.

TAG TO BE REMOVED ONLY BY TOOL OPERATOR.

SEE OTHER SIDE15875

DANGER

   D. DO NOT LIFT OR CARRY TOOL BY THE HOSES. DO NOT ABUSE HOSE. DO NOT USE KINKED, TORN OR DAMAGED HOSE.
3. MAKE SURE HYDRAULIC HOSES ARE PROPERLY CONNECTED TO THE TOOL BEFORE PRESSURIZING SYSTEM. SYSTEM PRESSURE HOSE MUST ALWAYS BE CONNECTED TO TOOL "IN" PORT. SYSTEM RETURN HOSE MUST ALWAYS BE CONNECTED TO TOOL "OUT" PORT REVERSING CONNECTIONS MAY CAUSE REVERSE TOOL OPERATION WHICH CAN RESULT IN SEVERE PERSONAL INJURY.
4. DO NOT CONNECT CLOSED-CENTER TOOLS TO OPEN-CENTER HYDRAULIC SYSTEMS. THIS MAY CAUSE EXTREME SYSTEM HEAT AND/OR SEVERE PERSONAL INJURY.

   DO NOT CONNECT OPEN-CENTER TOOLS TO CLOSED-CENTER HYDRAULIC SYSTEMS. THIS MAY RESULT IN LOSS OF OTHER HYDRAULIC FUNCTIONS POWERED BY THE SAME SYSTEM AND/ OR SEVERE PERSONAL INJURY.
5. BYSTANDERS MAY BE INJURED IN YOUR WORK AREA. KEEP BYSTANDERS CLEAR OF YOUR WORK AREA.
6. WEAR HEARING, EYE, FOOT, HAND AND HEAD PROTECTION.
7. TO AVOID PERSONAL INJURY OR EQUIPMENT DAMAGE, ALL TOOL REPAIR, MAINTAINANCE AND SERVICE MUST ONLY BE PERFORMED BY AUTHORIZED AND PROPERLY TRAINED PERSONNEL.

IMPORTANT

READ OPERATION MANUAL AND SAFETY INSTRUCTIONS FOR THIS TOOL BEFORE USING IT.

USE ONLY PARTS AND REPAIR PROCEDURES APPROVED BY STANLEY AND DESCRIBED IN THE OPERATION MANUAL.

TAG TO BE REMOVED ONLY BY TOOL OPERATOR.

SEE OTHER SIDE15875

SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.

DANGER

This safety symbol may appear on the tool. It is used to alert the operator of an action that could place him/her or others in a life threatening situation.

⚠ WARNING

This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.

IMPORTANT

This safety symbol appears in these instructions to identify an action or condition that could result in damage to the tool or other equipment.

Always observe safety symbols. They are included for your safety and for the protection of the tool.

LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

EQUIPMENT PROTECTION AND CARE

IMPORTANT

In addition to the Safety Precautions on pages 1 thru 3 of this manual, observe the following for equipment protection and care.

- Always store an idle sinker drill in a clean, dry space safe from damage or pilferage.
- Do not force a small sinker drill to do the job of a heavy-duty drill.Operate the tool within its rated capacity.
- Keep tool bits sharp for maximum drill performance. Make sure drill bits are not chipped or rounded on the striking end.
- Never operate a sinker drill without a tool bit or without holding it against the work surface. This puts excessive strain on the sinker drill.
- Always keep critical tool markings, such as labels and warning stickers legible.
- Always replace hoses, couplings and other parts with replacement parts recommended by Stanley Hydraulic Tools. Hydraulic supply hoses must have a minimum working pressure rating of 2500 psi/175 bar. Air hoses must have a minimum working pressure of 150 psi/10 bar. All hoses must have an oil-resistant inner surface and an abrasion-resistant outer surface. Whenever near electrical conductors, use "clean" certified and labeled (nonmetallic braid) nonconductive hose.
- Tool repair should be performed by experienced personnel only.
- Make sure all couplers are wiped clean before connection.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling hydraulic tools. Failure to do so may result in damage to the quick couplers and cause overheating of the hydraulic system.
- Do not attempt to drill without air, even for short periods of time. Air flow must be continuous during drilling operations to avoid clogging of air passages and/or back flushing of drill chips into the sinker drill.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

Hydraulic hose types authorized for use with Stanley Hydraulic Tools are as follows:

❶ Labeled and certified non-conductive

❷ Wire braided (conductive)

❸ Fabric braided (not certified or labeled non-conductive)

Hose ❶ listed above is the only hose authorized for use near electrical conductors.

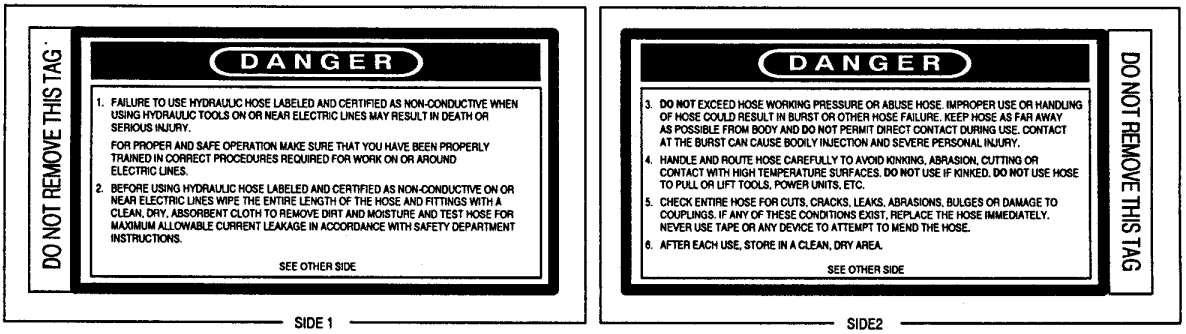
Hoses ❷ and ❸ listed above are **conductive** and **must never** be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hoses purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag can be obtained at no charge from your Stanley distributor.

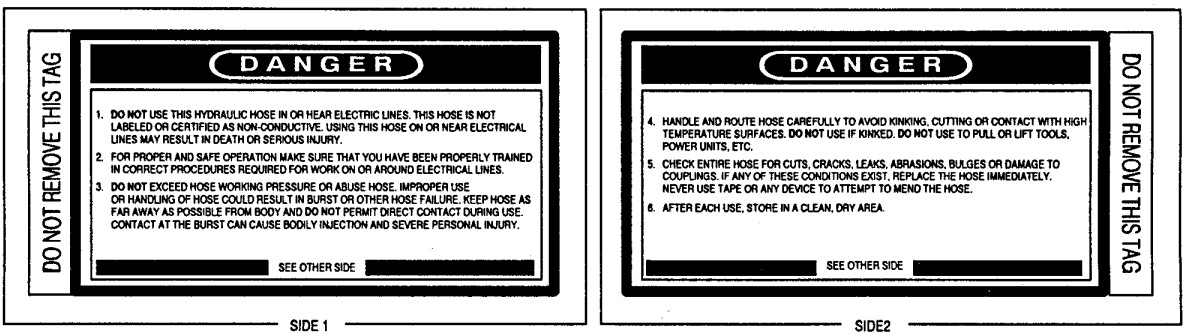
❶ CERTIFIED NON-CONDUCTIVE HOSE

This tag is attached to all certified and labeled **non-conductive** hose.



❷ AND ❸ WIRE- AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE)

This tag is attached to all **conductive** hose.



HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose **must be equal to or higher than** the relief valve setting on the hydraulic system used to power the sinker drill.

HYDRAULIC SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 7-9 gpm/26-105 lpm at an operating pressure of 1500 psi/105 bar. Recommended relief valve setting is 2100-2250 psi/145-155 bar.

- The system should have no more than 250 psi/17 bar backpressure, measured at the tool end of the operating hoses. The system conditions for measurement are at maximum fluid viscosity of 400 ssu/82 centistokes (minimum operating temperatures).

- The hydraulic system should have sufficient heat rejection capacity to limit the maximum fluid temperature to 140°F/60°C at the maximum expected ambient temperature. The recommended minimum cooling capacity is 5 hp/3.73 kW at a 40° F/22° C difference between ambient temperature and fluid temperature.

- The hydraulic system should have a minimum of 25 micron filtration. It is recommended that filter elements be sized for a flow of at least 30 gpm/114 lpm for cold temperature startup and maximum dirt holding capacity.

- The hydraulic fluid used should have a viscosity between 100 and 400 ssu/20 and 82 centistokes at the maximum and minimum expected operating temperatures. Hydraulic fluids of petroleum base with antiwear and non-conductive properties and viscosity indexes over 140 will meet the recommended requirements over a wide range of operating temperatures.

- The recommended hose size is 0.500 inch/12 mm I.D. up to 50 ft/15 m long and 0.625 inch/16 mm I.D. minimum up to 100 ft/30 m long.

OPERATING INSTRUCTIONS

TO INSTALL THE TOOL BIT

1. Rotate the latch toward the operating lever side of the drive motor.

2. Insert the drill steel into the drive hex of the motor assembly.

⚠ WARNING

Do not place your fingers between the latch and drill steel when closing the latch.

3. Rotate the latch toward the drill steel.

4. Use only drill steel with a hex 7/8-inch x 4-1/4 inch/11 cm long shank above the drill steel collar.

CONNECTING HOSES

1. Wipe all hose couplers with a clean lint-free cloth before making connections.

2. Connect the hydraulic hoses from the power supply to the couplers on the tool hoses. It is good practice to connect the return hoses first and disconnect them last to minimize or avoid trapped pressure within the tool.

3. Blow out the air receiver and air hose to remove any accumulated dirt and moisture from the air line. Make sure the air inlet coupler is free of dirt before making the connection at the tool.

4. Remove the hydraulic circuit control valve to the "ON" position.

5. Turn on the air supply to the tool.

Note: If coupled hoses are left in the sun, pressure increase within the hose may make them difficult to connect. When possible, connect the free ends of the operating hoses together.

TOOL OPERATION

1. Observe all safety precautions.

2. Install the appropriate drill steel for the job. The SK47 is intended to drill holes up to 2-inches/50 mm in diameter and up to 10 ft/3m in depth.

3. Place the drill steel firmly on the surface to be drilled. Do not operate the sinker drill without the drill steel in contact with the work surface.

4. Several methods can be used to reduce the tendency for the drill to "walk" on the surface to be drilled before the hole is initiated.

If the trigger is partially depressed,the piston will cycle at low speed, without tool bit rotation, allowing a start hole to be made. This will keep the drill in place when full power is applied.

Rotating the motor control lever straight up will shut off all rotation allowing the operator to establish a starting hole prior to full application.

5. The rotation control lever controls rotation speed from 0 to approximately 300 rpm. Normal drilling is best accomplished with the lever halfway between fully on and straight up off position.

Note: Normal drill rotation is counterclockwise when viewed from the top of the tool. The clockwise rotation position of the motor control lever has been blocked with a roll pin stop to avoid unscrewing a drill bit at the bottom of the drilled hole.

6. When drilling deep holes, it is advantageous to stop drilling every 1 to 2 minutes. This allows the receiver and hoses to charge and provide a short burst of air when the tool is again turned on to clear excess cuttings from the hole.

7. Keep the drill steel centered in the hole.

8. Insufficient air flow can cause the drill steel to bind in the hole.

9. Apply adequate feed pressure to the sinker drill to maintain optimum drilling performance.

COLD WEATHER OPERATION

If the sinker drill is to be used in cold weather, preheat the hydraulic fluid at low engine speed. When using the normally recommended oils, oil should be at or above 50° F/10° C (400 ssu/880 centistrokes) before use.

Damage to the hydraulic system or sinker drill can result from use with fluid that is too viscous or thick.

FLUSHING REQUIREMENTS

- The SK47 is designed for air flushing only.
- The minimum of 15 CFM/7 liters per second at 75 psi/5 bar of compressed air should be used for flushing the chips out of the drilled hole.

- The minimum recommended hose size is 3/8-inch/10 mm I.D. and must have a minimum working pressure rating of 150 psi/10 bar or 150 percent of the maximum pressure produced by the system, whichever is higher.

- Air hoses must have an oil-resistant inner surface and an abrasion-resistant exterior surface. When severe operating conditions make the possibility of cutting or damaging the hose likely, the hose shall be of extraply armored, or other protective construction.

- Pressure regulators shall be used to limit maximum air pressure at the tool to 100 psi/7 bar.

- An accessible means for shutting off the air supply to the sinker drill should be provided.

- Automatic filtering systems are recommended.

SERVICE INSTRUCTIONS

Good maintenance practices will keep the sinker drill on the job and increase its service life.

A very important maintenance practice is to keep the hydraulic fluid clean at all times. Contaminated hydraulic fluid causes rapid wear and/or failure of internal parts.

Follow the procedures contained in the HYDRAULIC SYSTEM REQUIREMENTS section of this manual to ensure peak performance from the tool.

Never disassemble the sinker drill unless proper troubleshooting procedures have isolated the problem. Then, only disassemble it to the extent necessary to replace the defective part. KEEP CONTAMINANTS SUCH AS DIRT AND GRIT AWAY FROM INTERNAL PARTS AT ALL TIMES.

Always determine and correct the cause of the problem prior to reassembly. Further wear and tool failure can result if the original cause s not corrected.

PRIOR TO DISASSEMBLY

- Clean exterior of tool.
- Note orientation of seals before removing them. Install new seals in the same way.
- Obtain Seal Kit, part number 09542.

SINKER DRILL DISASSEMBLY

1. Secure the drill in a bench vise, with the "IN" and "OUT" ports facing up and clamp on the air tube assembly between the side rods. Soft vise jaws are recommended.

2. Remove the pigtail hose assemblies.

Note: The drill is filled with oil and will drip from the ports when the hoses are removed.

3. Remove the charge valve cap from top of handle. See the parts list illustrations on page 19.

IMPORTANT

Discharge the accumulator.

4. Remove the four side rods. Remove the handle assembly to expose the on-off valve spool and accumulator diaphragm. Remove the motor assembly by tapping on top of the motor flange with a plastic or rubber hammer. Slide the flow sleeve out of the air tube assembly. Carefully secure the flow sleeve tube in the bench vise.

5. Remove the accumulator valve block by tapping on its underside with a plastic or rubber hammer. Tap on alternate sides to ensure that the valve block comes off straight without binding.

6. Remove the piston from the flow sleeve assembly.

7. Remove the accumulator diaphragm and on-off valve from accumulator valve block, taking care not to damage the valve stem. The valve, bushing and associated seals will come out as an assembly. Turn the valve block upside down to remove the valve spring.

8. Clamp the accumulator valve block in a bench vise with the "IN" and "OUT" ports facing upward, being careful not to over-tighten the vise, distorting the block.

IMPORTANT

Do not over-tighten the vise and distort the block.

9. Remove the porting block from the accumulator valve block using a 3/8-16-thread slide hammer or Tamper Sleeve Tool, part number 01120.

10. To disassemble the flow sleeve assembly, proceed as follows:

a. Remove the piston if not previously removed.

b. Place the flow sleeve assembly, automatic valve body down, on the Flow Sleeve Removal Tool, part number 04919, which in turn is placed on the Flow Sleeve Removal Tube, part number 04910.

c. Using an arbor press and an aluminum disc to protect the flow sleeve, push on the flow sleeve to remove the automatic valve body from the flow sleeve tube.

IMPORTANT

Use a rag in the bottom of the removal tube to protect the automatic valve body when it drops out.

d. The automatic valve, four 1/4 x 1-1/2 inch/38 long mm push pins (from the flow sleeve) and two 3/16 x 1-1/4 inch/32 mm can now be removed.

e. To remove the flow sleeve from the flow sleeve tube, remove the automatic valve body and associated parts from within the flow sleeve removal tube, and continue pushing on the flow sleeve until it drops out.

IMPORTANT

Use a rag in the bottom of the removal tube to protect the flow sleeve when it drops out.

MOTOR DISASSEMBLY

1. Place an aluminum plate or Bridge Plate, part number 05047, in an arbor press. The bridge plate is supplied in Bearing Puller Kit, part number 05064.

2. Place the motor assembly (consisting of drive motor control block assembly, motor chamber, motor plate and associated parts) on the plate with the latch facing upward. Rotate the latch to the open position and use Latch Removal Tool, part number 05045, to press down the spring back up to allow removal of the wire retaining ring.

3. Remove the latch, latch washers, springs, and spring back-up.

4. Place the motor assembly in a bench vise (do not over-tighten), then remove the two 3/8-16 x 1-3/4 inch/44 mm long capscrews and one 1/4-20 x 3/4-inch/19 mm long capscrew.

5. Separate the three parts of the motor housing and remove the idler gear, drive gear and key, allowing the drive hex to be pushed out through the drive motor control block end of the drive motor chamber.

6. Remove the bearings as required using Bearing Puller Kit, part number 05064.

7. To remove the motor control valve assembly, loosen the set screw in the lever and remove lever. Remove the retaining ring and reattach the lever to pull the valve assembly out.

8. To remove the motor delay valve spool and spring, remove the o-ring plug from the motor control block using a 1/4-inch hex wrench.

PRIOR TO ASSEMBLY

- Clean all parts with a degreasing solvent.
- Ensure that all seals that were exposed during disassembly have been replaced with new parts.
- Apply clean grease or o-ring lubricant to all parts during reassembly.
- Obtain seal kit (Part Number 09542) so that all seals exposed during disassembly can be replaced.

Note: For orientation of parts identified in the following procedures, see the parts list exploded view illustration at the center of this manual.

MOTOR ASSEMBLY

1. Support the four corners of the motor plate, making sure it is level, in an arbor press.

2. Press new bearings in place using Pushers, part numbers 05044 and 05061, with the bearing split lines facing each other.

3. Place an aluminum plate or Tool Bridge Plate, part number 05067, in an arbor press. The bridge plate is supplied in Bearing Puller Kit, part number 05064. The latch end should face upward.

4. Install the latch parts with Assembly Tool, part number 05879 and 05062, in the following order: latch (in open position), latch washer, four wave springs, latch washer, four additional wave springs, spring back-up, assembly guide and wire retaining ring. Place the pusher over the guide and press with the arbor press until the wire retaining ring snaps in place.

5. Install the bearings in the motor chamber using the motor plate in the same manner as in step 3. (Separate support at the four corners is not necessary.)

6. To assemble the motor components, start by sliding the drive hex through the motor chamber from the control valve side.

7. Place the key in the drive hex and slide the drive gear in place over the drive hex and key.

8. Install the idler gear in the bearing/counterbore of the motor chamber.

9. Place an o-ring in the irregular groove of the motor chamber and apply grease to retain it in place.

10. Install a white back-up ring followed by a quad ring through the bearing and into the seal groove of the motor plate.

11. Slide the motor plate over the drive hex. Align the dowel pins and idler gear, then press together until the motor chamber and motor plate come together.

12. Secure the two sections together using the two 3/8-16 x 1-3/4 inch/44 mm long capscrews, tighten to 25 ft lb/34 Nm.

13. Place the thrust washer over exposed end of the drive hex on the control valve side of the motor chamber (grey or brass side down). Install the thrust back-up washer with its small diameter outward.

14. Place the gasket on the motor chamber with a light film of grease or oil for retention. Align with the dowel pin and o-rings counter bores. Install the two o-rings in the small counterbores of the motor chamber.

15. Install a white back-up ring and a quad ring seal in the seal counter bore of the motor control block.

16. Push the motor control block over the drive hex. Align the roll pins and push squarely using an arbor press until mated with the motor chamber. Install one 1/4-20 x 3/4-inch/19 mm long capscrew to hold the housings together.

17. Replace the control valve in its bore followed by the tapered washer (large diameter of taper facing up), and retaining ring. Make sure the retaining ring is properly seated in its groove (tapping on the ring with a small punch may be required). When replacing the lever, make sure the setscrew enters the hole in the valve stem.

18. Install the small piston cup seal in the motor control valve block with the lips down. Install the seal washer and larger cup seal (32) with the lips facing outward.

19. Install the motor delay valve spool (small end first) into the bore of the motor control block followed by the spring and o-ring and o-ring plug.

SINKER DRILL ASSEMBLY

1. Using an arbor press and an aluminum disc or accumulator cylinder puller, part number 05640, to protect the flow sleeve, push the flow sleeve (with the eight holes on its end facing up) into the flow sleeve tube (o-ring groove up) until flush with the tube. Be sure to lubricate the entire bore of the flow sleeve tube prior to assembly (see the parts list illustration).

2. Install the four 1/4x 1-1/2 inch/38 mm long push pins (tapered end up) in the flow sleeve.

3. Install the two 3/16 x 1-1/4 inch/32 mm long push pins (tapered end up) in the automatic valve body. Install the automatic valve (small diameter first) into the automatic valve body.

IMPORTANT

The push pins must be installed so the flat, ground faces bear on the flange of the automatic valve.

4. Align the roll pin and place the automatic valve body (with the side holes up) on top of the flow sleeve. Allow the automatic valve to drop and pilot into the bore of the flow sleeve.

5. Using an aluminum disc or accumulator cylinder puller, part number 05640, to protect the parts, push the automatic valve body into the flow sleeve tube until the shoulder of the automatic valve body stops on top of the flow sleeve tube.

6. Install the piston (small end first) into the flow sleeve assembly from the automatic valve body end.

7. Install the porting block into the end of the automatic valve body with proper roll pin alignment.

8. Place the flow sleeve assembly in a bench vise, being careful not to over-tighten or distort the tube, and install the accumulator valve block. Rotate the flow sleeve so that the motor roll pin alignment hole will locate the motor control valve lever under the handle on the valve lever side.

9. Remove the assembly from the vise and slide the tube seal over the flow sleeve tube. Install the air tube assembly, then reclamp the assembly in the vise.

10. Slide the motor assembly over the piston. Align the roll pin in the motor control block with the corresponding hole in the flow sleeve (the hole opposite the notch in the end of the flow sleeve). Tap on the end of the motor assembly until it fully engages with the flow sleeve tube.

11. Install the spring,valve spool and bushing with its wiper ring facing outward) in the bore of the accumulator valve block. The bushing should project from the accumulator valve block approximately 0.200-inch/5 mm.

12. Apply a light coating of WD40 lubricant to the accumulator diaphragm and install in the accumulator bore.

13. Install the handle assembly.

14. Install the side rods.

15. Tighten alternate side rod nuts in 15 lb ft/ 20 Nm increments to 60 lb ft/80 Nm as shown in figure 1.

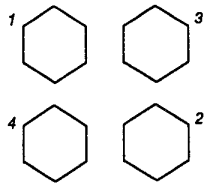


Figure 1.

16. Charge the accumulator with nitrogen to 600 psi/42 bar. It may be necessary to charge 50-75 psi/ 4-5 bar high to overcome the pressure drop through the charging valve. Refer to the Charging Instructions given in this manual.

17. Install the charge valve cap.

18. Install the pigtail hose assemblies.

CHARGING THE ACCUMULATOR

CHECK ACCUMULATOR PRESSURE (See Figure 2)

To check or charge the accumulator, the following equipment is required:

- Accumulator tester, part number 02835.
- Charging assembly, part number 06545 (includes a regulator, hose and fittings).
- NITROGEN bottle with an 800 psi/56 bar minimum charge.

a. Remove the charging valve cap (or plug) from the sinker drill.

b. Holding the chuck end of Tester, part number 02835, turn the gauge fully counter-clockwise to ensure that the stem inside the chuck is completely retracted.

c. Thread the tester onto the charging valve of the tool accumulator (do not advance the gauge-end into the chuck end. Turn as a unit). Seat the chuck on the accumulator charging valve and hand tighten only.

d. Advance the valve stem by turning the gauge-end clockwise until a pressure is indicated on the gauge (charge pressure should be 500-700 psi/34-48 bar).

e. If pressure is OK, unscrew the gauge-end from the chuck to retract the stem, then unscrew the entire tester assembly from the tool accumulator charging valve. If pressure is low, charge the accumulator as described in the following section.

f. Install the charging valve cap (or plug).

ACCUMULATOR CHARGING PROCEDURE

a. Perform steps a through d of the Accumulator Checking Procedure above.

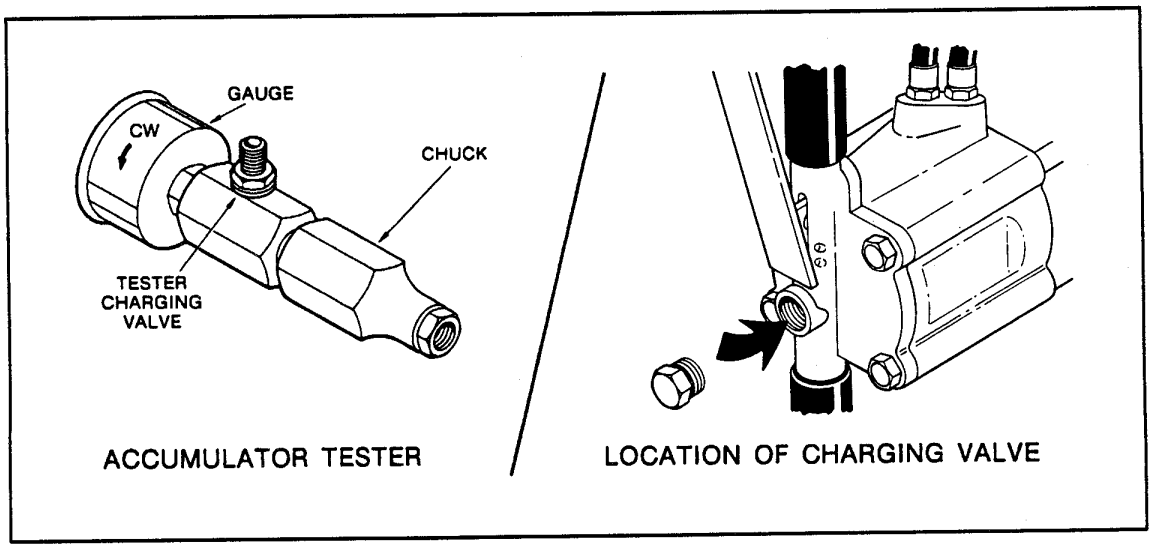


Figure 3.

b. Connect the chuck of the charging assembly to the charging valve on the accumulator tester or, if preferred, remove the tester from the tool charging valve and connect the charging assembly chuck directly to the tool charging valve.

c. Adjust the regulator to the charging pressure of 600 psi/42 bar.

Note: It may be necessary to set the regulator at 650 to 700 psi/45-48 bar to overcome any pressure drop through the charging system.

d. Open the valve on the charging assembly hose.

e. When the accumulator is fully charged, close the valve on the charging assembly hose and remove the charging assembly chuck from the accumulator tester or tool charging valve.

f. If the accumulator tester has been used, be sure to turn the gauge end fully counter-clockwise before removing the tester from the charging valve of the tool.

g. Install the charge valve cap.

GENERAL SERVICE NOTES

1. If the drill is repainted after servicing, do not allow paint to enter the "IN" and "OUT" ports or the bore of the motor assembly.

2. If the handle grips need to be replaced:

   a. Remove the old grips and clean the handle.

   b. Wash the new grips with solvent, then with soap and water.

   c. With the grips and handle clean and dry, simply push on the grips. DO NOT lubricate the parts. The grips will not be secure on the handle if any grease or oil is used.

TROUBLESHOOTING

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation of the sinker drill, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the tool as listed in the table. Use a flowmeter known to be accurate. Check the flow with the hydraulic oil temperature at least 80°F/27°C.

PROBLEM	CAUSE	REMEDY
Sinker does not run.	Power unit not functioning.	Check power unit for proper flow and pressure (7-9 gpm at 1500-2000 psi/26-34 lpm at 105-140 bar).
	Couplers or hoses blocked.	Remove restriction.
	Flow direction reversed/pressure and return hoses reversed at ports.	Be sure hoses are connected to their proper ports.
	Mechanical failure of piston or automatic valve.	Disassemble spike driver and inspect for damaged parts.
Sinker does not drill effectively.	Power unit not functioning.	Check power unit for proper flow and pressure (7-9 gpm at 1500-2000 psi/26-34 lpm at 105/140 bar).
	Couplers or hoses blocked.	Remove restriction.
	Low accumulator charge (pressure hose will pulse more than normal).	Recharge accumulator. Replace diaphragm if charge loss continues.
	Fluid too hot (above 140°F/60°C).	Provide cooler to maintain proper fluid temperature (140°F/60°C max).
	Insufficient air flow.	15-25 CFM/7-12 liters per second minimum required.
Sinker drill operates slow.	Low gpm supply from power unit.	Check power source for proper flow (7-9 gpm/26-34 lpm).

PROBLEM	CAUSE	REMEDY
Sinker drill operates slow. (Cont.)	High back pressure.	Check hydraulic system for excessive backpressure (over 250 psi/17 bar).
	Couplers or hoses blocked.	Remove obstruction.
	Orifice or internal passage blocked.	Remove restriction.
	Fluid too hot (above 140°F/60°C) or too cold (below 60°F/16°C).	Check power unit for proper oil temperature. Bypass cooler to warm fluid up, or provide cooler to maintain proper temperature.
	Relief valve set too low.	Adjust relief valve to 2100-2250 psi/145-155 bar.
Sinker drill gets hot.	Hot fluid going through tool.	Check power unit. Be sure flow rate is not too high causing part of the fluid to go through the relief valve. Provide cooler to maintain proper fluid temperature (140°F/60°C max).
		Check relief valve setting.
		Eliminate flow control devices.
Fluid leakage on drill bit.	Lower piston or drive hex seal failure.	Replace seals.
Fluid leakage around trigger.	Valve spool seal failure.	Replace seals.
Low rotation torque.	Motor not completely broken in.	Continued operation or break-in with motor break-in block will correct.
	Damage to motor clearances.	Repair as required.
	Mechanical binding during drilling.	Take care to guide drill straight. Clear the hole frequently.
	Insufficient air flow.	15-25 CFM/7-12 liters per second minimum required.
	Low rotation torque or speed can be caused by non functioning motor delay valve.	Remove spring and assemble to verify cause, make sure valve moves freely in bore without sticking.

SPECIFICATIONS

Weight	52 lbs/24 kg
Pressure Range	1500-2000 psi/105-140 bar
Flow Range	7-9 gpm/26-34 lpm
Optimum Flow	9 gpm/34 lpm
Connect Size	3/8 Male Pipe Hose End
Length	23 in./35 cm
Width	14 in./35 cm
System Type	o.c. or c.c. HTMA TYPE 2/EHTMA TYPE D
Port Size	Hydraulic SAE 8 O-Ring, Air 3/8 inch NPT
Shank Size	7/8 inch Hex x 4-1/4 inch/22 mm x 108 mm

NOTE

Weights, dimensions and operating specifications listed are subject to change without notice. Where specifications are critical to your application, please consult the factory.

ACCESSORIES

PART NO.	DESCRIPTION
Drill Steels	**TOOLS**
05172	7/8 in./22 mm Hex x 4-1/4 in./108 mm H-thread 12 in./30.5 cm U.C.
05173	7/8 in./22 mm Hex x 4-1/4 in./108 mm H-thread 18 in./46 cm U.C.
05174	7/8 in./22 mm Hex x 4-1/4 in./108 mm H-thread 24 in./61 cm U.C.
05175	7/8 in./22 mm Hex x 4-1/4 in./108 mm H-thread 36 in./91 cm U.C.
05176	7/8 in./22 mm Hex x 4-1/4 in./108 mm H-thread 48 in./122 cm U.C.

U.C. Denotes measurement from tip of drill to underside of collar.

Carbide Rock Bits	
05177	1-3/8 in./9.5 mm Dia. H-thread
05178	1-1/2 in./38.1 mm Dia. H-thread
05179	1-5/8 in./16 mm Dia. H-thread
05180	1-3/4 in./19 mm Dia. H-thread
05181	1-7/8 in./22 mm Dia. H-thread
04914	2 in./50.8 mm Dia. H-thread
	TEST EQUIPMENT
02853	Accumulator Tester
03189	20 gpm/75 lpm Flowmeter
04182	Flow and Pressure Tester
06545	Accumulator Charge Kit

SERVICE TOOLS

PART NO.	DESCRIPTION
01120	Tamper Sleeve Tool
04337	O-Ring Tool Kit
04910	Flow Sleeve Removal Tube
04919	Flow Sleeve Removal Tube
05044	Bearing Installation Tool
05045	Latch Removal Tool
05061	Bearing Installation Tool
05062	Latch Installation Tool
05064	Bearing Puller Kit
05640	Accumulator Cylinder Puller
05879	Latch Installation Tool
09542	Seal Kit

WARRANTY

Hand held tools and their parts are warranted against defects in materials and workmanship for a period of twelve months from the date of purchase, except for cutting parts, steels and other parts not manufactured by Stanley (such as impact mechanisms, alternators, regulators and hoses).

The Warranty Registration Card packed with the tool must be filled out and returned to Stanley upon receipt of the tool.

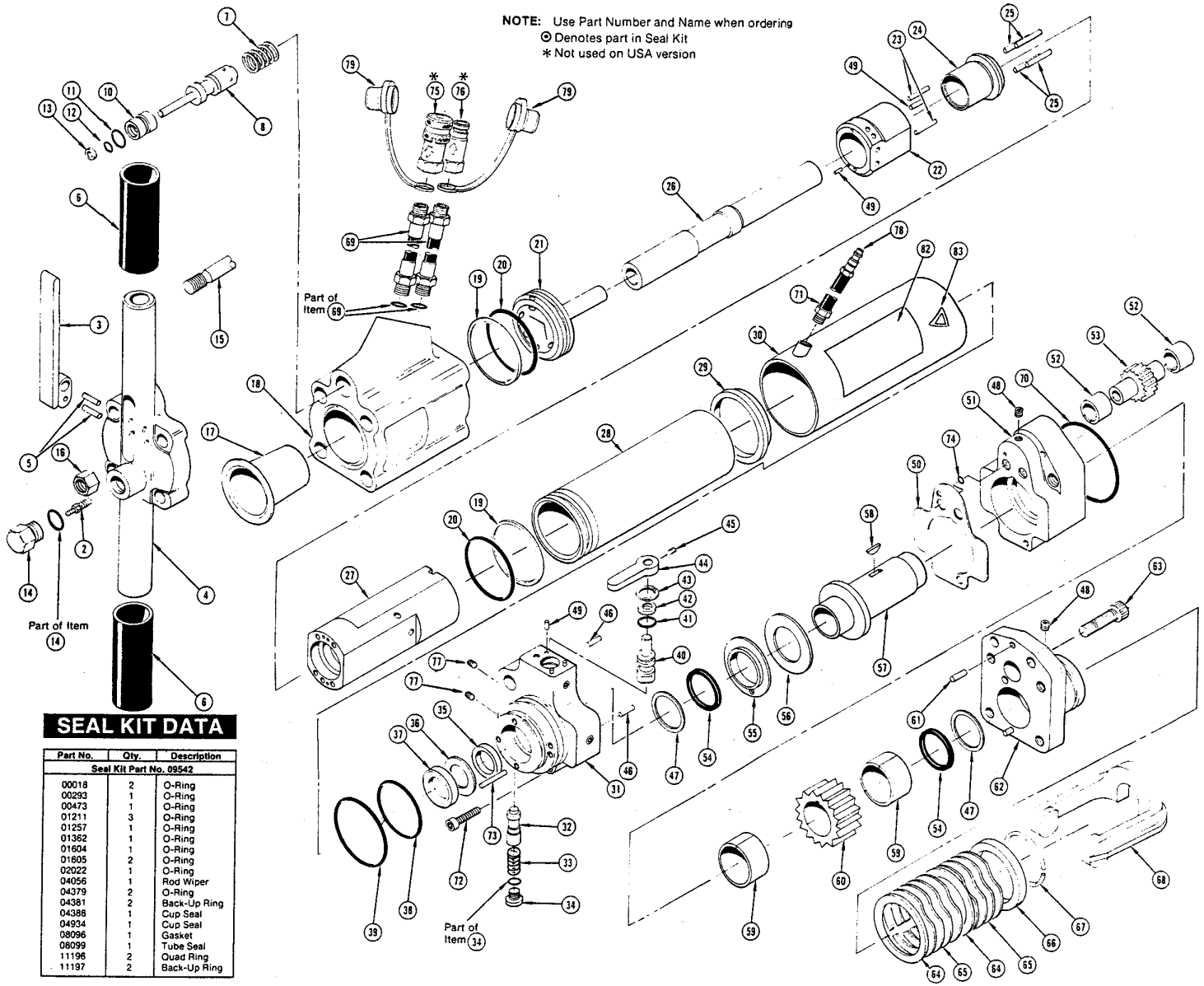
Stanley reserves the right to replace or repair only those parts which under our examination prove to have been defective at the time of purchase.

Shipping charges are pre-paid by the customer unless otherwise authorized by Stanley.

The warranty is void if maximum flow and pressure ratings are exceeded.

There is no other warranty expressed or implied.

SERVICE AND REPAIR NOTES



SEAL KIT DATA

Part No.	Qty.	Description
Seal Kit Part No. 09542		
00018	2	O-Ring
00293	1	O-Ring
00473	1	O-Ring
01211	3	O-Ring
01257	1	O-Ring
01362	1	O-Ring
01604	1	O-Ring
01605	2	O-Ring
02022	1	O-Ring
04056	1	Rod Wiper
04379	2	O-Ring
04381	2	Back-Up Ring
04386	1	Cup Seal
04934	1	Cup Seal
08096	1	Gasket
08099	1	Tube Seal
11196	2	Quad Ring
11197	2	Back-Up Ring

PARTS LIST

Item No.	Part No.	Qty.	Description
1	07975	1	Handle Assembly (Includes items 2 thru 5)
2	01650	1	Charge Valve
3	04371	1	Trigger
4	07483	1	Handle
5	07492	2	Spirol Pin 1/4 x 1-1/4
6	07424	2	Handle Grip (NATO version only)
	02494	2	Handle Grip
7	04058	1	Spring
8	04077	1	Valve Spool-Open Center
	15188	1	Valve Spool-Open Constant On
9	07699	1	Bushing Assembly (Includes items 10 thru 12)
10	04057	1	Bushing
11	00293	1	O-Ring 11/16 x 7/8 x 3/32 ⊙
12	01362	1	O-Ring 5/16 x 7/16 x 1/16 ⊙
13	04056	1	Rod Wiper ⊙
14	07493	1	Charge Valve Cap
15	08087	4	Side Rod
16	04374	4	Locknut 5/8-11
17	07479	1	Accumulator Diaphragm
18	07484	1	Accumulator Valve Block
19	04381	2	Back-Up Ring ⊙
20	04379	2	O-Ring 2-9/16 x 2-3/4 x 3/32 ⊙
21	08088	1	Porting Block
22	08089	1	Automatic Valve Body
23	04571	2	Push Pin 3/16 x 1-1/4
24	04382	1	Automatic Valve
25	04605	4	Push Pin 1/4 x 1-1/2
26	08091	1	Piston
27	08090	1	Flow Sleeve
28	04383	1	Flow Sleeve Tube
29	08099	1	Tube Seal ⊙
30	08100	1	Air Tube Assembly
31	08092	1	Drive Motor Control Block Assembly
	16446	1	Drive Motor Control Block Assembly W/O Delay Valve
32	08097	1	Valve Spool
33	08098	1	Spring
34	08104	1	O-Ring Plug - 3/8 SAE Hex Socket Head
35	04934	1	Cup Seal ⊙
36	04780	1	Washer
37	04386	1	Cup Seal ⊙
38	02022	1	O-Ring 2-1/4 x 2-1/2 x 1/8 ⊙
39	00473	1	O-Ring 2-3/4 x 3 x 1/8 ⊙
40	04937	1	Motor Control Valve
41	01211	3	O-Ring 5/8 x 3/4 x 1/16 ⊙
42	04938	1	Washer
43	04940	1	Retaining Ring
44	04939	1	Lever
45	01607	1	Setscrew 1/4-20 x 1/4
46	01749	2	Roll Pin 5/32 x 1/2
47	11197	2	Back-Up Ring ⊙
48	00783	2	Pipe Plug 1/16-27 NPT
49	02900	5	Roll Pin 1/8 x 1/2
50	08096	1	Gasket ⊙
51	08095	1	Motor Chamber
52	03826	2	Bearing Garlock 13DU12
53	04033	1	Idler Gear
54	11196	2	Quad Ring ⊙
55	04949	1	Thrust Back-Up Washer
56	04948	1	Thrust Washer
57	08094	1	Drive Hex
58	04787	1	Key
59	04947	2	Bearing
60	05975	1	Drive Gear
61	00713	2	Dowel Pin 1/4 x 1
62	08093	1	Motor Plate
63	00682	2	Capscrew 3/8-16 x 1-3/4 HSH
64	04756	2	Latch Washer
65	07083	8	Wave Spring
66	04759	1	Spring Back-Up
67	04761	1	Retaining Ring
68	18445	1	Latch
69	01652	2	Hose Assembly
70	01257	1	O-Ring 3-1/2 x 3-5/8 x 1/16 ⊙
71	04801	1	Hose Assembly
72	00759	1	Capscrew 1/4-20 x 3/4
73	00114	1	Roll Pin 5/32 x 1
74	00018	2	O-Ring 7/16 x 1/2 x 1/16 ⊙
75	03972	1	Female Coupler *
76	03973	1	Male Coupler *
77	18643	4	Setscrew, 10-24 x 5/16
78	12131	1	Nipple, Schrader #3543 (NATO version only)
79	03288	2	Dust Cap (NATO version only)
80	06343	1	Plastic Plug (USA version only) (not illustrated)
81	06345	2	Plastic Plug (USA version only) (not illustrated)
82	08103	1	Name Tag
83	11207	1	Circuit Type-D Sticker
84	12197	1	Compliance Certificate (French version only)
85	12195	1	Compliance Sticker (French version only)

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