



FISHING & INTERVENTION

# HYDRAULIC WIRELINER JAR

Manual D460

**THE LEGACY  
LIVES ON**

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## OVERVIEW

The dependable Hydraulic Wireline Jar utilizes a hydraulic system that permits controlled jarring in measuring line or stranded wireline operations when electrical continuity below the jar is not required. Such operations include permanent well completion services; setting and pulling gas lift valves, chokes, and other retrievable downhole tubing equipment; and cable services such as swabbing, bailing, and fishing.

Its simple hydraulic system permits the operator to control the intensity of the blow within a broad range — from a light blow as needed for measuring line, to one of forceful impact required for stranded wireline. It is particularly valuable in fishing, swabbing, and permanent well completion operations.

## USES

Logan Hydraulic Wireline Jars may be used for any wireline operation that does not require electrical continuity to tools or instruments below the Jar.

Such operations include permanent well completion services; setting and pulling gas lift valves, chokes, and other retrievable downhole tubing equipment; and cable services such as swabbing, bailing, and fishing. It is particularly valuable in fishing, swabbing, and permanent well completion operations.

## CONSTRUCTION

The Logan Hydraulic Wireline Jar essentially consists of two separate assemblies: a sliding mandrel within a hydraulic chamber (middle body assembly). When the tool is completely assembled, these two principal assemblies freely move in relationship to each other. Their movement is controlled by the hydraulic fluid.

The sliding mandrel assembly includes a top sub, mandrel with integral piston, valve plug, and a valve plug seat. The middle body assembly consists of the bottom sub, middle body, middle body insert, and a balance piston.

Seal ring assemblies are installed in the critical areas — mandrel, balance piston, and valve plug — that are subject to high internal pressure. Seals are made of DuPont Viton® seals, a material that is well known for its excellent (400°F/200°C) heat resistance and resistance to aggressive fuels and chemicals.

The middle body insert for the 1-1/8", 1-1/4", and 1-1/2" O.D. Jars is a two-piece design with an insert bushing. This arrangement allows easier installation of the mandrel seal, two (2) mandrel non-extrusion rings, and two (2) seal protector. The 1-3/4", 2-1/8", and 2-3/4" O.D. Jars have larger bores in the middle body inserts that allow a one-piece seal sub-assembly.

The integral piston on the lower end of the mandrel rests in the middle body cylinder when the jar is in the closed position. A freely moving balance piston, located in the lower end of the middle body, equalizes the internal pressure of the tool with the well pressure. This balance piston also accommodates any internal hydraulic fluid expansion so high internal pressures do not occur. A valve in the piston allows the free passage of fluid to permit the jar to close freely.

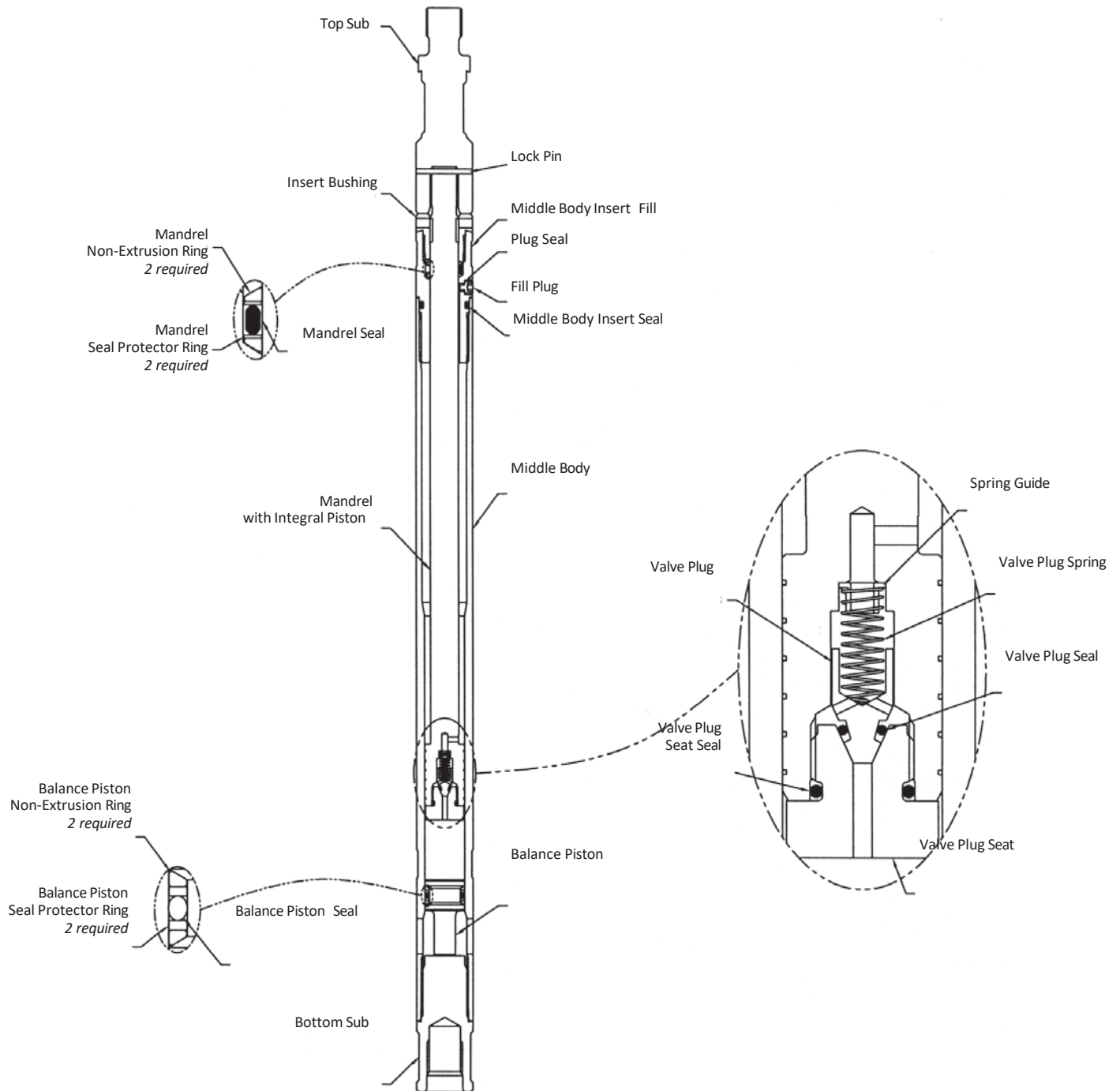
The top sub is constructed with wrench flats and a fishing neck. A lock pin secures the mandrel to the top sub and provides safety against loosening and backing off during operation during operation.

## OPERATION

The Logan Hydraulic Wireline Jar is made up in the string just above the tools or equipment to be run. It is recommended that several sinker bars with an outside diameter that corresponds to the Jar be assembled above the tool. The weight of the sinker bars will determine the intensity of the jarring blow. They will also aid in closing the jar. The assembled tool is run into and out of the well like any other fishing tool but on measuring line or stranded wireline.

To provide an effective means to bump up or down, whichever may be required during the operation, a Logan Tubular Wireline Jar may be assembled in the string immediately above the Logan Hydraulic Wireline Jar. The zero point or depth measuring reference should take the length of the stroke of the Jar into account. Otherwise, no special precautions or considerations are necessary. The stroke length of each Jar is listed on pages 7–12. The stroke length of a Jar can be checked by measuring its length when it is open and closed. The difference between these two measurements is the stroke length.

When the Jar is in the closed position, the integral piston (which is part of the mandrel) rests in the restricted inside diameter of the middle body. When an upward strain is placed on the wireline, the mandrel assembly is pulled upward. This upward movement is impeded because the hydraulic fluid must pass through the extremely narrow passage between the integral piston of the mandrel and the restricted inside diameter of the middle body. Fluid resistance stops after the integral piston passes into the larger inside diameter of the middle body. The mandrel assembly then travels upward at a constantly accelerating velocity until the shoulder on the integral piston



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strikes the middle body insert. The upward jarring blow transmits energy to the tools installed below the Jar. The jarring force transmitted by the piston is proportional to the strain taken on the string. A greater strain on the string increases the intensity of the blow, while a lighter strain on the string will lessen the intensity.

**WARNING: At no time during the pull cycle should the maximum recommended load be exceeded. Refer to Chart A – Strength Data on page 6 for pull loads.**

An upward strain on the wireline is created by reeling the hoist until the wireline is stretched. Set the hoist brake and wait for the Jar to strike. After the Jar has struck, slack off the string to allow the Jar to close.

Repeat the jarring action by pulling another strain on the string. The frequency of the blows struck can be as rapid as the operator can pick up and slack off the running string.

## MAINTENANCE

After prolonged field service, the Logan Hydraulic Wireline Jar should be disassembled, cleaned, inspected, and redressed.

The Logan Hydraulic Wireline Jar will usually come out of the hole in the open position.

**CAUTION: If the Jar comes out of the hole in the closed or cocked position, it should not be left hanging, especially with any amount of weight suspended from the tool. If the Jar is allowed to fall the length of its free stroke, bodily harm or damage to the rig or working string could result.**

To prevent corrosion, all exposed surfaces should be cleaned and greased prior to closing the Jar for storage.

## DISASSEMBLY

Disassembly should be conducted in a clean, well-equipped shop. Proceed as follows:

1. Secure the Jar horizontally in a suitable vise. Clamp on the middle body.
2. Remove the bottom sub.
3. Before removing the fill plug, place an open-mouthed container under the middle body insert to catch the oil as it drains from the Jar. Remove the fill plug and allow the oil to drain. Slowly slide out the mandrel and force the oil out with the piston.

**CAUTION: The Jar could contain residual well pressure. Care should be taken when draining oil from the tool to avoid bodily harm.**

4. Loosen and remove the middle body insert from the middle body.
5. Remove the middle body sub-assembly consisting of the top sub, mandrel, and middle body insert from the middle body. Lay it aside.
6. With the aid of a wood dowel or brass rod, remove the balance piston from the middle body.
7. Remove the middle body from the vise and set it aside.
8. Secure the top sub/mandrel sub-assembly in the vise. Clamp on the top sub.
9. Loosen and remove the valve plug seat from the piston. Remove the valve plug and valve plug spring.
10. Using a punch, remove the lock pin from the top sub.
11. Loosen and remove the mandrel from the top sub.

**CAUTION: Use a wrench only on the wrench flats. Gouges or upsets on the polished mandrel surface will damage the seals and cause fluid leaks.**

11. Loosen and remove the mandrel from the top sub.
12. Slide off the middle body insert from the mandrel.
13. If applicable, secure the middle body insert in a vise to remove the insert bushing.
14. Remove all of the O-ring seals from the middle body insert, by pass valve, and the balance piston.
15. Examine the non-extrusion rings and seal protector rings. Replace any damaged or worn parts.

## ASSEMBLY

The Logan Hydraulic Wireline Jar is easily assembled using standard shop tools. A Logan Jar Service Kit is recommended.

Make sure all parts have been thoroughly cleaned, inspected, and lubricated prior to assembly. Replace any damaged or worn parts.

1. To replace a seal assembly, insert the non-extrusion ring (or rings) into the groove. The bevel of the non-extrusion ring should face the matching bevel of the groove.
2. Insert the seal protector ring (or rings) into the groove, against the flat face of the non-extrusion ring. Press and straighten the rings in place with the thumbs.
3. Insert the O-rings between the seal protector rings.
4. Position the seal assemblies and set them in place with the setting tool from the Jar Service Kit.
5. Secure the top sub horizontally in a vise. Clamp on the large outside diameter.

6. Screw the insert bushing into the middle body insert. Carefully slide them over the threaded end of the mandrel without damaging the seals in the process.
7. Screw the mandrel into the top sub. Use the wrench flats to tighten.
8. Insert the lock pin into the top sub and through the mandrel end. Drive in the lock pin with a light hammer until it is flush with the top sub O.D.
9. Install the check valve assembly, with the spring guide in the spring, and the valve plug and valve plug seat with their seals in place, into the piston end of the mandrel.
10. Reposition the tool in the vise, this time clamping on the O.D. of the middle body insert bushing. Tighten the middle body insert on the insert bushing.
11. Slide the middle body over the mandrel with the slotted end of the middle body facing towards the lower end of the mandrel.
12. Re-clamp the assembly vertically with the top sub down and the mandrel pulled out (with the Jar open) in the vise.
13. Pour 10-W-30 oil into the middle body until the oil overflows through the equalizing holes.  
  
*NOTE: If heavier jarring blows are desired, the Jar may be filled with a heavier weight oil.*
14. Insert the balance piston into the middle body with the stinger end facing towards the bottom sub.
15. Screw the bottom sub into the middle body and hand-tighten.

16. Clamp the assembly horizontally with the fill plug facing up in the vise. Remove the fill plug. Tighten the bottom sub.
17. Slowly close the Jar. When it is completely closed, insert and tighten the fill plug. Avoid over-tightening.
18. Tighten all connections. Refer to Chart B – Maximum Recommended Tightening Torques on page 6.

#### TESTING THE JAR

Test the Jar for operation by making up a lifting-type sub with a bail, or equivalent, to the top sub. Make up another sub that an 850 lb. weight can be attached and install it on the bottom sub.

Hang the Jar on a hoist (2,000 lb. minimum capacity). Suspend approximately 850 lbs. of dead weight from the bottom sub. Slack off the hoist until the weight rests on the floor and the Jar closes.

Rapidly hoist the Jar until the weight is raised off the floor by a height equal to the stroke of the Jar minus one (1) or two (2) inches. Begin clocking the time required for the Jar to stroke open as soon as the load is lifted.

The table below lists the approximate time required for a Logan Hydraulic Wireline Jar with an 850 lb. fixed pull load to stroke:

| Jar O.D. | Load (lbs) | Time Req'd to Stroke |
|----------|------------|----------------------|
| 1-1/8    | 850        | 30 sec to 1 min      |
| 1-1/4    | 850        | 45 sec to 1-1/2 min  |
| 1-1/2    | 850        | 1 to 2 min           |
| 1-3/4    | 850        | 1-1/2 to 2-1/2 min   |
| 2-1/8    | 850        | 2 to 3 min           |
| 2-3/4    | 850        | 2 to 3 min           |

**CAUTION: The hoist must have at least one (1) ton (2,000 lb.) capacity. Damage to the hoist or injury to rig personnel may occur if the hoist is too light. If leaks are detected at the seals, or if the Jar is low on fluid, the tool should be disassembled for repair.**

**CHART A — STRENGTH DATA**

| COMPLETE ASSEMBLY                   | Logan Part No. | 700-000 | 700-925 | 700-875 | 700-002 | 700-003 | 700-004 | 700-1000 | 700-1163 | 700-006 |
|-------------------------------------|----------------|---------|---------|---------|---------|---------|---------|----------|----------|---------|
|                                     | Bowen No.      | 35097   | 11740   | 11180   | 48383   | 51227   | 35518   | 79297    | 11550    | ...     |
| OUTSIDE DIAMETER (INCHES)           |                | 1-1/8   | 1-1/4   | 1-1/2   | 1-1/2   | 1-1/2   | 1-1/2   | 1-3/4    | 2-1/8    | 2-3/4   |
| MAXIMUM JARRING LOAD (LBS)          |                | 5,300   | 6,500   | 9,200   | 9,200   | 9,200   | 9,200   | 15,500   | 21,000   | 24,600  |
| TENSILE @ YIELD (LBS) AFTER JARRING |                | 22,000  | 22,000  | 37,500  | 37,500  | 37,500  | 37,500  | 54,500   | 92,500   | 131,500 |

Tensile strength is a calculated theoretical yield point and is considered accurate to  $\pm 20\%$ .

**CHART B — RECOMMENDED TIGHTENING TORQUES (FT-LBS)**

| COMPLETE ASSEMBLY                    | Logan Part No. | 700-000 | 700-925 | 700-875 | 700-002 | 700-003 | 700-004 | 700-1000 | 700-1163 | 700-006 |
|--------------------------------------|----------------|---------|---------|---------|---------|---------|---------|----------|----------|---------|
|                                      | Bowen No.      | 35097   | 11740   | 11180   | 48383   | 51227   | 35518   | 79297    | 11550    | ...     |
| OUTSIDE DIAMETER (INCHES)            |                | 1-1/8   | 1-1/4   | 1-1/2   | 1-1/2   | 1-1/2   | 1-1/2   | 1-3/4    | 2-1/8    | 2-3/4   |
| TOP SUB TO MANDREL                   |                | 40      | 35      | 75      | 75      | 75      | 75      | 135      | 325      | 350     |
| INSERT BUSHING TO MIDDLE BODY INSERT |                | 80      | 80      | 180     | 180     | 180     | 180     | 230      | ...      | ...     |
| MIDDLE BODY INSERT TO MIDDLE BODY    |                | 90      | 160     | 210     | 210     | 210     | 210     | 390      | 690      | 900     |
| MIDDLE BODY TO BOTTOM SUB            |                | 130     | 190     | 300     | 300     | 300     | 300     | 440      | 800      | 725     |

Makeup torques are the maximum recommended makeup torques for each connection and are set at 50% of the calculated theoretical yield torque.

## Hydraulic Wireline Jar

|                    |                |                |                |                |                |                |                |                 |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| OUTSIDE DIAMETER   |                | 1-1/8          | 1-1/4          | 1-1/2          | 1-1/2          | 1-1/2          | 1-1/2          | 1-3/4           |
| CONNECTIONS        |                | 5/8            | 15/16          | 15/16          | 15/16          | 15/16          | 15/16          | 3/4             |
| PIN UP - BOX DOWN  |                | 11 THD         | 10 THD         | 10 THD         | 10 THD         | 10 THD         | 10 THD         | SR              |
| LENGTH OF STROKE   |                | 6-3/4          | 9-1/4          | 8-3/4          | 8-3/4          | 20             | 12             | 10              |
| COMPLETE ASSEMBLY  | Logan Part No. | <b>700-000</b> | <b>700-925</b> | <b>700-875</b> | <b>700-002</b> | <b>700-003</b> | <b>700-004</b> | <b>700-1000</b> |
|                    | Bowen No.      | 35097          | 11740          | 11180          | 48383          | 51227          | 35518          | 79297           |
| TOP SUB            | Logan Part No. | <b>AL1000</b>  | <b>AL1001</b>  | <b>AL1002</b>  | <b>AL1002</b>  | <b>AL1002</b>  | <b>AL1002</b>  | <b>AL1003</b>   |
|                    | Bowen No.      | 35098          | 11741          | 10761          | 10761          | 10761          | 10761          | 12761           |
| MIDDLE BODY        | Logan Part No. | <b>AL2000</b>  | <b>AL2001</b>  | <b>AL2002</b>  | <b>AL2002</b>  | <b>AL2003</b>  | <b>AL2004</b>  | <b>AL2005</b>   |
|                    | Bowen No.      | 35099          | 11744          | 11182          | 11182          | 51228          | 35519          | 12765           |
| MIDDLE BODY INSERT | Logan Part No. | <b>AL3000</b>  | <b>AL3001</b>  | <b>AL3002</b>  | <b>AL3002</b>  | <b>AL3002</b>  | <b>AL3002</b>  | <b>AL3003</b>   |
|                    | Bowen No.      | 35100          | 29486          | 28652          | 28652          | 28652          | 28652          | 79298           |
| INSERT BUSHING     | Logan Part No. | <b>AL4000</b>  | <b>AL4001</b>  | <b>AL4002</b>  | <b>AL4003</b>  | <b>AL4002</b>  | <b>AL4003</b>  | <b>AL4006</b>   |
|                    | Bowen No.      | 35101          | 33572          | 33571          | 35085          | 33571          | 35085          | 79299           |
| MANDREL            | Logan Part No. | <b>AL5000</b>  | <b>AL5001</b>  | <b>AL5002</b>  | <b>AL5003</b>  | <b>AL5004</b>  | <b>AL5005</b>  | <b>AL5006</b>   |
|                    | Bowen No.      | 35102          | 11742          | 11184          | 35086          | 51229          | 35520          | 79300           |
| BOTTOM SUB         | Logan Part No. | <b>AL6000</b>  | <b>AL6001</b>  | <b>AL6002</b>  | <b>AL6002</b>  | <b>AL6002</b>  | <b>AL6002</b>  | <b>AL6003</b>   |
|                    | Bowen No.      | 35103          | 11747          | 11181          | 11181          | 11181          | 11181          | 12767           |

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**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets



## Hydraulic Wireline Jar

|                                       |                |                |                |                |                |                |                |                 |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| OUTSIDE DIAMETER                      |                | 1-1/8          | 1-1/4          | 1-1/2          | 1-1/2          | 1-1/2          | 1-1/2          | 1-3/4           |
| CONNECTIONS                           |                | 5/8            | 15/16          | 15/16          | 15/16          | 15/16          | 15/16          | 3/4             |
| PIN UP - BOX DOWN                     |                | 11 THD         | 10 THD         | 10 THD         | 10 THD         | 10 THD         | 10 THD         | SR              |
| LENGTH OF STROKE                      |                | 6-3/4          | 9-1/4          | 8-3/4          | 8-3/4          | 20             | 12             | 10              |
| COMPLETE ASSEMBLY                     | Logan Part No. | <b>700-000</b> | <b>700-925</b> | <b>700-875</b> | <b>700-002</b> | <b>700-003</b> | <b>700-004</b> | <b>700-1000</b> |
|                                       | Bowen No.      | 35097          | 11740          | 11180          | 48383          | 51227          | 35518          | 79297           |
| BALANCE PISTON                        | Logan Part No. | <b>AL7000</b>  | <b>AL7001</b>  | <b>AL7002</b>  | <b>AL7002</b>  | <b>AL7002</b>  | <b>AL7002</b>  | <b>AL7003</b>   |
|                                       | Bowen No.      | 35104          | 11746          | 11185          | 11185          | 11185          | 11185          | 12766           |
| VALVE PLUG                            | Logan Part No. | <b>AL8000</b>  | <b>AL8000</b>  | <b>AL8000</b>  | <b>AL8000</b>  | <b>AL8000</b>  | <b>AL8000</b>  | <b>AL8000</b>   |
|                                       | Bowen No.      | 11189          | 11189          | 11189          | 11189          | 11189          | 11189          | 11189           |
| VALVE PLUG SPRING                     | Logan Part No. | <b>AL9000</b>  | <b>AL9000</b>  | <b>AL9000</b>  | <b>AL9000</b>  | <b>AL9000</b>  | <b>AL9000</b>  | <b>AL9000</b>   |
|                                       | Bowen No.      | 834            | 834            | 834            | 834            | 834            | 834            | 834             |
| VALVE PLUG SEAT                       | Logan Part No. | <b>AL10000</b> | <b>AL10000</b> | <b>AL10001</b> | <b>AL10001</b> | <b>AL10001</b> | <b>AL10001</b> | <b>AL10001</b>  |
|                                       | Bowen No.      | 11745          | 11745          | 11186          | 11186          | 11186          | 11186          | 11186           |
| FILL PLUG                             | Logan Part No. | <b>AG10004</b> | <b>AG10000</b> | <b>AG10000</b> | <b>AG10000</b> | <b>AG10000</b> | <b>AG10000</b> | <b>AG10000</b>  |
|                                       | Bowen No.      | 39941          | 617            | 617            | 617            | 617            | 617            | 617             |
| LOCK PIN                              | Logan Part No. | <b>AL11000</b> | <b>AL11001</b> | <b>AL11002</b> | <b>AL11002</b> | <b>AL11002</b> | <b>AL11002</b> | <b>AL11003</b>  |
|                                       | Bowen No.      | 15136          | 16010          | 13432          | 13432          | 13432          | 13432          | 18183           |
| SPRING GUIDE                          | Logan Part No. | <b>AL16000</b> | <b>AL16000</b> | <b>AL16000</b> | <b>AL16000</b> | <b>AL16000</b> | <b>AL16000</b> | <b>AL16000</b>  |
|                                       | Bowen No.      | 48307          | 48307          | 48307          | 48307          | 48307          | 48307          | 48307           |
| MANDREL<br>NON-EXTRUSION RING         | Logan Part No. | <b>L365-11</b> | <b>L365-11</b> | <b>L365-15</b> | <b>L365-15</b> | <b>L365-15</b> | <b>L365-15</b> | <b>L365-17</b>  |
|                                       | Bowen No.      | 365-11         | 365-11         | 365-15         | 365-15         | 365-15         | 365-15         | 365-17          |
|                                       | No. Req'd      | 2              | 2              | 2              | 2              | 2              | 2              | 2               |
| MANDREL SEAL<br>PROTECTOR RING        | Logan Part No. | <b>L375-11</b> | <b>L375-11</b> | <b>L375-15</b> | <b>L375-15</b> | <b>L375-15</b> | <b>L375-15</b> | <b>L375-17</b>  |
|                                       | Bowen No.      | 375-11         | 375-11         | 375-15         | 375-15         | 375-15         | 375-15         | 375-17          |
|                                       | No. Req'd      | 2              | 2              | 2              | 2              | 2              | 2              | 2               |
| BALANCE PISTON NON-<br>EXTRUSION RING | Logan Part No. | <b>L366-11</b> | <b>L366-11</b> | <b>L366-16</b> | <b>L366-16</b> | <b>L366-16</b> | <b>L366-16</b> | <b>L366-20</b>  |
|                                       | Bowen No.      | 366-11         | 366-11         | 366-16         | 366-16         | 366-16         | 366-16         | 366-20          |
|                                       | No. Req'd      | 2              | 2              | 2              | 2              | 2              | 2              | 2               |
| BALANCE PISTON SEAL<br>PROTECTOR RING | Logan Part No. | <b>L82-11</b>  | <b>L82-11</b>  | <b>L82-16</b>  | <b>L82-16</b>  | <b>L82-16</b>  | <b>L82-16</b>  | <b>L82-20</b>   |
|                                       | Bowen No.      | 82-11          | 82-11          | 82-16          | 82-16          | 82-16          | 82-16          | 82-20           |
|                                       | No. Req'd      | 2              | 2              | 2              | 2              | 2              | 2              | 2               |

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**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## Hydraulic Wireline Jar

|                                 |                |                  |                  |                  |                  |                  |                  |                  |
|---------------------------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| OUTSIDE DIAMETER                |                | 1-1/8            | 1-1/4            | 1-1/2            | 1-1/2            | 1-1/2            | 1-1/2            | 1-3/4            |
| CONNECTIONS                     |                | 5/8              | 15/16            | 15/16            | 15/16            | 15/16            | 15/16            | 3/4              |
| PIN UP - BOX DOWN               |                | 11 THD           | 10 THD           | 10 THD           | 10 THD           | 10 THD           | 10 THD           | SR               |
| LENGTH OF STROKE                |                | 6-3/4            | 9-1/4            | 8-3/4            | 8-3/4            | 20               | 12               | 10               |
| COMPLETE ASSEMBLY               | Logan Part No. | <b>700-000</b>   | <b>700-001</b>   | <b>700-875</b>   | <b>700-002</b>   | <b>700-003</b>   | <b>700-004</b>   | <b>700-1000</b>  |
|                                 | Bowen No.      | 35097            | 11740            | 11180            | 48383            | 51227            | 35518            | 79297            |
| VITON O-RING PACKING SET        | Logan Part No. | <b>28000-008</b> | <b>28000-009</b> | <b>28000-010</b> | <b>28000-010</b> | <b>28000-010</b> | <b>28000-010</b> | <b>28000-011</b> |
|                                 | Bowen No.      | 35106            | 11754            | 11191            | 11191            | 11191            | 11191            | 79327            |
| <i>Consists of:</i>             |                |                  |                  |                  |                  |                  |                  |                  |
| MANDREL SEAL                    | Logan Part No. | <b>568-112</b>   | <b>568-112</b>   | <b>568-210</b>   | <b>568-210</b>   | <b>568-210</b>   | <b>568-210</b>   | <b>568-212</b>   |
|                                 | Bowen No.      | 568112           | 568112           | 568210           | 568210           | 568210           | 568210           | 568212           |
| BALANCE PISTON SEAL             | Logan Part No. | <b>568-113</b>   | <b>568-113</b>   | <b>568-211</b>   | <b>568-211</b>   | <b>568-211</b>   | <b>568-211</b>   | <b>568-215</b>   |
|                                 | Bowen No.      | 568113           | 568113           | 568211           | 568211           | 568211           | 568211           | 568215           |
| MIDDLE BODY INSERT SEAL (LARGE) | Logan Part No. | <b>568-116</b>   | <b>568-116</b>   | <b>568-215</b>   | <b>568-215</b>   | <b>568-215</b>   | <b>568-215</b>   | <b>568-218</b>   |
|                                 | Bowen No.      | 568116           | 568116           | 568215           | 568215           | 568215           | 568215           | 568218           |
| MIDDLE BODY INSERT SEAL (SMALL) | Logan Part No. | ...              | ...              | ...              | ...              | ...              | ...              | ...              |
|                                 | Bowen No.      | ...              | ...              | ...              | ...              | ...              | ...              | ...              |
| VALVE PLUG SEAL                 | Logan Part No. | <b>568-007</b>   | <b>568-007</b>   | <b>568-007</b>   | <b>568-007</b>   | <b>568-007</b>   | <b>568-007</b>   | <b>568-007</b>   |
|                                 | Bowen No.      | 568007           | 568007           | 568007           | 568007           | 568007           | 568007           | 568007           |
| VALVE PLUG SEAT SEAL            | Logan Part No. | <b>568-110</b>   | <b>568-110</b>   | <b>568-112</b>   | <b>568-112</b>   | <b>568-112</b>   | <b>568-112</b>   | <b>568-112</b>   |
|                                 | Bowen No.      | 568110           | 568110           | 568112           | 568112           | 568112           | 568112           | 568112           |
| FILL PLUG SEAL                  | Logan Part No. | ...              | <b>568-005</b>   | <b>568-005</b>   | <b>568-005</b>   | <b>568-005</b>   | <b>568-005</b>   | <b>568-005</b>   |
|                                 | Bowen No.      | ...              | 568005           | 568005           | 568005           | 568005           | 568005           | 568005           |

### ACCESSORIES

|                             |                |                   |                  |                   |                   |                   |                   |                   |
|-----------------------------|----------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| SERVICE KIT                 | Logan Part No. | <b>28001-013</b>  | <b>28001-014</b> | <b>28001-015</b>  | <b>28001-015</b>  | <b>28001-015</b>  | <b>28001-015</b>  | <b>28001-016</b>  |
|                             | Bowen No.      | 35105             | 11751            | 11178             | 11178             | 11178             | 11178             | 15997             |
| MANDREL BODY SETTING TOOL   | Logan Part No. | <b>AG1000-10</b>  | <b>AG1000-11</b> | <b>AG1000-15</b>  | <b>AG1000-15</b>  | <b>AG1000-15</b>  | <b>AG1000-15</b>  | <b>AG1000-17</b>  |
|                             | Bowen No.      | 22709-10          | 22709-11         | 22709-15          | 22709-15          | 22709-15          | 22709-15          | 22709-17          |
| BALANCE PISTON SETTING TOOL | Logan Part No. | <b>AL13000-11</b> | <b>AL13001</b>   | <b>AL13000-16</b> | <b>AL13000-16</b> | <b>AL13000-16</b> | <b>AL13000-16</b> | <b>AL13000-20</b> |
|                             | Bowen No.      | 22729-11          | 11753            | 22729-16          | 22729-16          | 22729-16          | 22729-16          | 22729-20          |

*Innovex reserves the right to change or discontinue designs without notice.*

#### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

#### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## Hydraulic Wireline Jar

|                           |                |          |         |  |  |  |  |
|---------------------------|----------------|----------|---------|--|--|--|--|
| OUTSIDE DIAMETER          |                | 2-1/8    | 2-3/4   |  |  |  |  |
| CONNECTIONS               |                | 7/8      | 1-9/16  |  |  |  |  |
| PIN UP - BOX DOWN         |                | SR       | 10 THD  |  |  |  |  |
| LENGTH OF STROKE (INCHES) |                | 11-5/8   | 20      |  |  |  |  |
| COMPLETE ASSEMBLY         | Logan Part No. | 700-1163 | 700-006 |  |  |  |  |
|                           | Bowen No.      | 11550    | ...     |  |  |  |  |
| TOP SUB                   | Logan Part No. | AL1004   | AL1005  |  |  |  |  |
|                           | Bowen No.      | 11543    | ...     |  |  |  |  |
| MIDDLE BODY               | Logan Part No. | AL2006   | AL2007  |  |  |  |  |
|                           | Bowen No.      | 11537    | ...     |  |  |  |  |
| MIDDLE BODY INSERT        | Logan Part No. | AL3004   | AL3005  |  |  |  |  |
|                           | Bowen No.      | 11538    | ...     |  |  |  |  |
| INSERT BUSHING            | Logan Part No. | ...      | ...     |  |  |  |  |
|                           | Bowen No.      | ...      | ...     |  |  |  |  |
| MANDREL                   | Logan Part No. | AL5007   | AL5008  |  |  |  |  |
|                           | Bowen No.      | 11539    | ...     |  |  |  |  |
| BOTTOM SUB                | Logan Part No. | AL6004   | AL6005  |  |  |  |  |
|                           | Bowen No.      | 11536    | ...     |  |  |  |  |
| BALANCE PISTON            | Logan Part No. | AL7004   | AL7005  |  |  |  |  |
|                           | Bowen No.      | 11540    | ...     |  |  |  |  |
| VALVE PLUG                | Logan Part No. | AL8000   | AL8001  |  |  |  |  |
|                           | Bowen No.      | 11189    | ...     |  |  |  |  |
| VALVE PLUG SPRING         | Logan Part No. | AL9000   | AL9001  |  |  |  |  |
|                           | Bowen No.      | 834      | ...     |  |  |  |  |
| VALVE PLUG SEAT           | Logan Part No. | AL10001  | AL10002 |  |  |  |  |
|                           | Bowen No.      | 11186    | ...     |  |  |  |  |
| FILL PLUG                 | Logan Part No. | AG10002  | AG10003 |  |  |  |  |
|                           | Bowen No.      | 329      | ...     |  |  |  |  |
| LOCK PIN                  | Logan Part No. | AL11004  | AL11005 |  |  |  |  |
|                           | Bowen No.      | 42732    | ...     |  |  |  |  |
| SPRING GUIDE              | Logan Part No. | AL16000  | AL16001 |  |  |  |  |
|                           | Bowen No.      | 48307    | ...     |  |  |  |  |

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**When ordering, please specify:**

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- (2) Connections, if other than standard

**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## Hydraulic Wireline Jar

|   |                       |                 |                  |  |  |  |  |
|---|-----------------------|-----------------|------------------|--|--|--|--|
| <b>OUTSIDE DIAMETER</b>                       |                       | 2-1/8           | 2-3/4            |  |  |  |  |
| <b>CONNECTIONS</b>                            |                       | 7/8             | 1-9/16           |  |  |  |  |
| <b>PIN UP - BOX DOWN</b>                      |                       | SR              | 10 THD           |  |  |  |  |
| <b>LENGTH OF STROKE (INCHES)</b>              |                       | 6-3/4           | 20               |  |  |  |  |
| <b>COMPLETE ASSEMBLY</b>                      | <b>Logan Part No.</b> | <b>700-1163</b> | <b>700-006</b>   |  |  |  |  |
|   | Bowen No.             | 11550           | ...              |  |  |  |  |
| <b>MANDREL<br/>NON-EXTRUSION RING</b>         | <b>Logan Part No.</b> | <b>L365-21</b>  | <b>L365-27</b>   |  |  |  |  |
|   | Bowen No.             | 365-21          | 365-27           |  |  |  |  |
|   | No. Req'd             | 2               | 2                |  |  |  |  |
| <b>MANDREL SEAL<br/>PROTECTOR RING</b>        | <b>Logan Part No.</b> | <b>L375-21</b>  | <b>L375-27</b>   |  |  |  |  |
|   | Bowen No.             | 375-21          | 375-27           |  |  |  |  |
|   | No. Req'd             | 2               | 2                |  |  |  |  |
| <b>BALANCE PISTON<br/>NON-EXTRUSION RING</b>  | <b>Logan Part No.</b> | <b>L366-24</b>  | <b>L366-28.5</b> |  |  |  |  |
|   | Bowen No.             | 366-24          | ...              |  |  |  |  |
|   | No. Req'd             | 2               | 2                |  |  |  |  |
| <b>BALANCE PISTON SEAL<br/>PROTECTOR RING</b> | <b>Logan Part No.</b> | <b>L82-24</b>   | <b>8-235</b>     |  |  |  |  |
|   | Bowen No.             | 82-24           | ...              |  |  |  |  |
|   | No. Req'd             | 2               | 2                |  |  |  |  |

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- (1) Name and number of assembly or part
- (2) Connections, if other than standard

**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## Hydraulic Wireline Jar

|                                    |                |           |           |  |  |  |  |
|------------------------------------|----------------|-----------|-----------|--|--|--|--|
| OUTSIDE DIAMETER                   |                | 2-1/8     | 2-3/4     |  |  |  |  |
| CONNECTIONS                        |                | 7/8       | 1-9/16    |  |  |  |  |
| PIN UP - BOX DOWN                  |                | SR        | 10 THD    |  |  |  |  |
| LENGTH OF STROKE (INCHES)          |                | 11-5/8    | 20        |  |  |  |  |
| COMPLETE ASSEMBLY                  | Logan Part No. | 700-1163  | 700-006   |  |  |  |  |
|                                    | Bowen No.      | 11550     | ...       |  |  |  |  |
| VITON O-RING PACKING SET           | Logan Part No. | 28000-012 | 28000-013 |  |  |  |  |
| Consists of:                       | Bowen No.      | 11553     | ...       |  |  |  |  |
| MANDREL SEAL                       | Logan Part No. | 568-216   | 568-222   |  |  |  |  |
|                                    | Bowen No.      | 568216    | 568222    |  |  |  |  |
| BALANCE PISTON SEAL                | Logan Part No. | 568-219   | 568-325   |  |  |  |  |
|                                    | Bowen No.      | 568219    | 568325    |  |  |  |  |
| MIDDLE BODY                        | Logan Part No. | 568-223   | 568-226   |  |  |  |  |
| INSERT SEAL (LARGE)                | Bowen No.      | 568223    | 568226    |  |  |  |  |
| MIDDLE BODY<br>INSERT SEAL (SMALL) | Logan Part No. | 568-211   | 568-224   |  |  |  |  |
|                                    | Bowen No.      | 568211    | 568224    |  |  |  |  |
| VALVE PLUG SEAL                    | Logan Part No. | 568-007   | 568-007   |  |  |  |  |
|                                    | Bowen No.      | 568007    | 568007    |  |  |  |  |
| VALVE PLUG                         | Logan Part No. | 568-112   | 568-112   |  |  |  |  |
| SEAT SEAL                          | Bowen No.      | 568112    | 568112    |  |  |  |  |
| FILL PLUG SEAL                     | Logan Part No. | 568-006   | 568-006   |  |  |  |  |
|                                    | Bowen No.      | 568006    | 568006    |  |  |  |  |

## Accessories

|                                |                |            |  |  |  |  |  |
|--------------------------------|----------------|------------|--|--|--|--|--|
| SERVICE KIT                    | Logan Part No. | 28001-017  |  |  |  |  |  |
|                                | Bowen No.      | 11554      |  |  |  |  |  |
| MANDREL BODY<br>SETTING TOOL   | Logan Part No. | AG1000-24  |  |  |  |  |  |
|                                | Bowen No.      | 22709-21   |  |  |  |  |  |
| BALANCE PISTON<br>SETTING TOOL | Logan Part No. | AL13000-24 |  |  |  |  |  |
|                                | Bowen No.      | 22729-24   |  |  |  |  |  |

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- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets



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