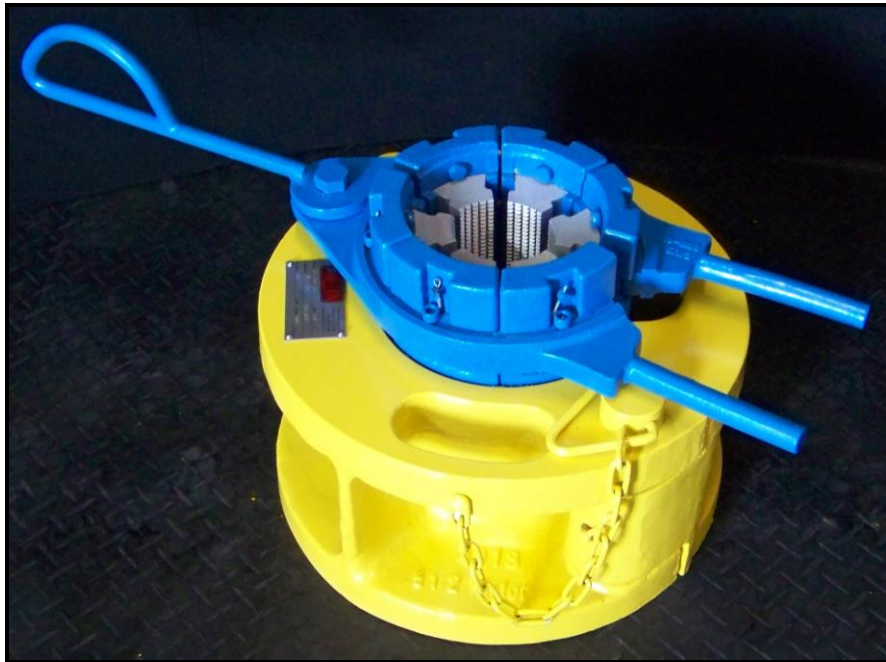




Model TS-100 Tubing Spider  
Installation, Operation, Service and Parts Book Manual



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## **Terms and Conditions**

1. All WPI WELLKIN packing slips and invoices must show Buyer's purchase order number.
2. All shipments MUST contain packing slips.
3. **CONTRACT:** This order will become a binding contract upon receipt by WPI WELLKIN of Buyer's PO, receipt by Buyer of a written acknowledgement by WPI WELLKIN and receipt by WPI WELLKIN of a down payment in the amount specified in the contract.
4. This contract may be modified as mutually agreed by the Buyer and WPI WELLKIN.
5. **PAYMENT TERMS:** The payment terms are specified on the commercial offer from WPI WELLKIN. The Buyer agrees to the payment terms by acceptance of the bid.
6. **DELIVERY:** Time is of the essence. WPI WELLKIN will attempt to deliver the material early if possible. WPI WELLKIN will make best efforts to supply all material on a timely basis. If the delivery will run over the contract delivery date, WPI WELLKIN will notify the Buyer giving reason for delay. The current delivery estimate is specified on the commercial offer. The Buyer agrees to the delivery terms by acceptance of the bid.

When necessary, WPI WELLKIN will notify the Buyer in advance of completion of the order and Buyer will appoint an authorized representative or employee to inspect the material on a date and site as designated by WPI WELLKIN. Transportation, lodging and all other expenses portal to portal for Buyer representative or employee to witness and accept the material is the expense of the Buyer.

All costs associated with preparation, crating, insurance and ocean freight of the goods to the final destination to be at Buyer's expense.

7. **CANCELLATION:** This contract is considered to be special order and not subject to cancellation. Both parties hereto shall be given consideration in case of delays in delivery caused by fire, strike, riot, war, act of God, delay of carriers, governmental order or regulation, complete or partial shutdown of plant by reason of inability to obtain sufficient raw materials or power or any other similar or different contingency beyond the reasonable control of the respective parties.
8. **WARRANTIES AND REMEDIES:** WPI WELLKIN expressly warrants that all supplies, materials and parts covered by this contract will conform to the specifications in the contract as applicable and will meet or exceed industry standards for such equipment. WPI WELLKIN will supply Buyer with operations manuals and parts books for the material where applicable. Certificates of Compliance are available upon request.

**MANUFACTURED ITEMS:** WPI WELLKIN manufactured items must be free of material and workmanship defects for a period of 12 months from the date of delivery. If any items fail because of a manufacturing defect within that period of time, then that item will be replaced by WPI WELLKIN. Expendable / wear items are not covered under warranty. Examples of such items include, but are not limited to, the following - dies, inserts, brake bands, rollers, gears, chains, filters, belts, flexible couplings, slip bodies, spider bowls.

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Replacement of parts will be accomplished at WPI WELLKIN's facility or at a designated service point. WPI WELLKIN's liability is limited to replacement of defective parts only and does not include the cost of labor, communications, transportation or handling connected to the replacement of these parts. WPI WELLKIN will in no event be liable for consequential damages or contingent liabilities arising out of the failure of any parts to operate properly. No expressed, implied or statutory guarantee other than herein set forth is made or authorized to be made by WPI WELLKIN.

**DISTRIBUTED ITEMS:** Items distributed by WPI WELLKIN are subject to the warranty provided by the Original Equipment Manufacturer (OEM). Upon request, WPI WELLKIN will furnish Buyer with a warranty statement from the OEM for the applicable material. The OEM warranty will start on the items' delivery date.

9. **COMMISSIONING:** On request, WPI WELLKIN can supply a representative for material commissioning. The Buyer is responsible for portal to portal transportation costs and the current WPI WELLKIN day rate.

10. **BUYER'S PROPERTY:** All equipment or material furnished by WPI WELLKIN shall be the property of the Buyer after the WPI WELLKIN invoice is paid in full.

11. **PATENTS:** WPI WELLKIN holds the Buyer harmless from all claims, for infringement or alleged infringement of any patents arising out of the sale or use of the goods furnished pursuant to this contract.

12. **INDEPENDENT CONTRACT:** In the event that any goods ordered hereunder require in connection with the installation thereof, the services of a contractor engaged by WPI WELLKIN or a supervisor, engineer, or other employee connected with or employed by WPI WELLKIN, and WPI WELLKIN agrees to furnish same, either with or without charge, such contractor, supervisor, engineer, or other employee in performing such services shall not be deemed to be the agent or employee of the Buyer.

13. **INSURANCE:** WPI WELLKIN agrees to carry General Operations and Liability Insurance and other coverage as required in accordance with applicable state and federal laws of the U.S.A.

14. **COMPLIANCE WITH LAWS:** WPI WELLKIN warrants that in its performance of this contract it will comply with all applicable Federal, State and Local laws, regulations, rulings and orders of the U.S.A.

15. **ASSIGNMENT:** This contract may not be assigned without the written consent of the Buyer and any attempted assignment thereof shall be void.

16. **PROPRIETARY INFORMATION:** All plans, drawings, specification and the subject matter contained therein and all other information given to WPI WELLKIN in connection with performance on this Purchase Order involve valuable property rights of the Buyer and shall be held confidential by WPI WELLKIN, shall remain the property of the Buyer and shall not be used by WPI WELLKIN for any purpose other than those for which they have been prepared or supplied. WPI WELLKIN agrees that, as far as possible, it will keep confidential the making of this order and the terms hereof. WPI WELLKIN agrees not to use for publicity purposes any information as to notice of receipt of order, photographs, drawings and/or materials in connection with performance of the Order without obtaining the prior written consent of the Buyer.

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## **Table of Contents**

Terms and Conditions.....	2
Table of Contents .....	4
Spider Warnings .....	5
Spider General Information.....	6
Installation .....	6
Operation .....	6
Service.....	8
Parts Book.....	8

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## Spider Warnings

The tubing spider design integrates several safety features. However, the spider is only as safe as the operator using the unit. It is imperative that the operator and all other workers around the spider observe the warnings below. Failure to follow the instructions could result in **death, serious injury or equipment damage**.



- Observe, understand and follow all safety warnings.
- Never operate the spider above the rated design load.
- Use the correct size slip and insert. If the size does not match the tubing string, then the spider will not hold the tubing string.
- Do not operate without the bowl closed and pinned.
- Keep all body parts and clothing away from moving machinery.
- Only trained personnel should operate, adjust or repair this equipment. Heat treated alloy steels are used in the construction of the spider. No weld repair on any components is allowed. Any attempts to repair these items by welding will void all warranties and liability.
- Relocate the spider to a work area to avoid dropping items down the well when disassembly will take place.
- To lower/raise the slip assembly and avoid injury, only use the handles.
- Do not attempt to stop the tubing dynamically by setting the slip abruptly.
- This slip is not intended to be used as a backup for a torque device.

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## **Spider General Information**

### **Description**

The purpose of a tubing spider is to hold the load of the tubing string as it is lowered or raised from the well. The spider is made up of 2 principal assemblies: the bowl and the slip.

The bowl of the spider contains a machined taper that matches the slip bodies. Installed in the slip body are the inserts. The size of insert and slip matches the tubing string. During operation, the slip is manually raised or lowered via the handles.

### **Specifications**

Load rating 200000 lbs (54431 Kg)  
Material Heat treated steel

	<u>3-1/2" Bowl</u>	<u>5-1/2" Bowl</u>
Size range	1.05 - 3-1/2" (26.7 - 88.9 mm)	3-1/2 - 5-1/2" (88.9 - 139.7 mm)
Weight (with slips)	230 lbs (104 Kg)	280 lbs (127 Kg)
Weight (without slips)	170 lbs (77 Kg)	200 lbs (90 Kg)

### **Dimensions**

Bowl opening	5-1/4" (133.3 mm)	6-3/4" (171.4 mm)
Bowl flange width	13-1/4" (336.6 mm)	13-1/4" (336.6 mm)
Height (with slips)	8-3/4" (222.3 mm)	8-3/4" (222.3 mm)
Height (without slips)	12-3/8" (314.3 mm)	12-3/8" (314.3 mm)
Slot circle diameter	10 - 15" (254 - 381 mm)	11-1/4 - 15-1/4" (286 - 387 mm)

## **Installation**

Before any attempt is made to operate the tubing spider, the following section should be read, understood and then followed.

### **Inspection**

Before moving the spider over the well, ensure the correct size slip assembly and inserts match the tube diameter.

### **Mount**

The spider must be secured over the wellhead. The slotted holes in the base could be used to bolt the spider to an adapter plate.

## **Operation**

Keep the insert teeth and bowl clean from buildup of mud, grease, sand or other debris. Apply new grease to the back of the slip body and the inside of the bowl.

### **Lowering the Slip**

Ensure the tubing string is completely stopped. Manually lower the slip into the bowl. Then, slowly lower the load of the tubing string onto the slip.

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## **Raising the Slip**

Apply pressure to the slip handles. Then, slowly raise the tubing string with the slip riding along. Remove the slip once it clears the bowl.

## **Objects Larger than Spider Bore**

When an object is coming in or out of the well that has a diameter larger than the bore of the spider, then the tubing spider has to be removed. Ensure the weight of the tubing string is not being held by the spider. Remove the slip body. Then, remove the lock pin so the spider can be hinged open and removed from the string. Pass the object, and reinstall the tubing spider over the well. Close the spider and pin the lock pin back in place.

## **Slip Assembly**

The slip assembly must correlate with the size of tubing being held. The following instructions are for the replacement of the slip inserts. Refer to the warning section of the manual before working on the spider.

### ***Insert Replacement***

Use the following steps as a guide. Refer to the parts drawing in this manual for a visual aid. Wear protective eye gear and clothing as appropriate.

1. Remove the slip assembly to a work area.
2. Remove the cotter pin from the insert keeper pin.
3. Knock out the insert keeper pins.
4. Slide or drive the slip inserts out of the slip body groove.
5. Clean the built up debris out of the slip body. Apply a new coating of grease to the slip body.
6. Install the new slip inserts by aligning the vertical groove in the insert with the slip body.

*Notes: 1) Orient insert so teeth will grab tubing. 2) Always replace inserts in a full set.*

7. Drive the insert keeper pins back into their corresponding holes.
8. Reinstall the cotter pins or replace with new ones. Spread the legs of the pins to keep them from falling out.

## **Troubleshooting**

The following table addresses possible solutions to problems that may occur during operation.

**Table 1: Troubleshooting the Spider**

Problem	Solution
Slip insert teeth are not gripping tubing	1) Clean the teeth. Verify they are clean from built up debris such as dirt, mud, grease, sand, etc. 2) Inspect the teeth for damage. Replace inserts if any of the teeth are worn, broken or chipped. 3) Verify the insert is not too loose in the

	slip body. If the insert can move vertically 1/10" or more, then it is too loose. Replace the slip body assembly. 4) Verify the correct size slip assembly and inserts are being used for the diameter of the tubing string.
Slip assembly, when landed, is below the bottom of the bowl	1) Replace the slip assembly. If the new slip extends below the bowl, then the spider bowl needs to be replaced.

## **Service**

It is important to maintain the spider in a condition that will provide continued safe operation. The following sections highlight items that need to be addressed over the life of the unit.

### **Daily**

1. Clean and grease the back of the slip.
2. Clean and grease the inside of the spider bowl.
3. Inspect inserts for debris or wear.

### **Weekly**

1. Clean and grease the insert slots in the slip body.

### **Monthly**

1. Inspect the critical areas of the wear areas (slip back, handles, hinge pin, inserts, bowl, etc.)

### **As Required Maintenance**

1. Replace slip inserts.
2. Replace slip.
3. Replace bowl.

## **Parts Book**

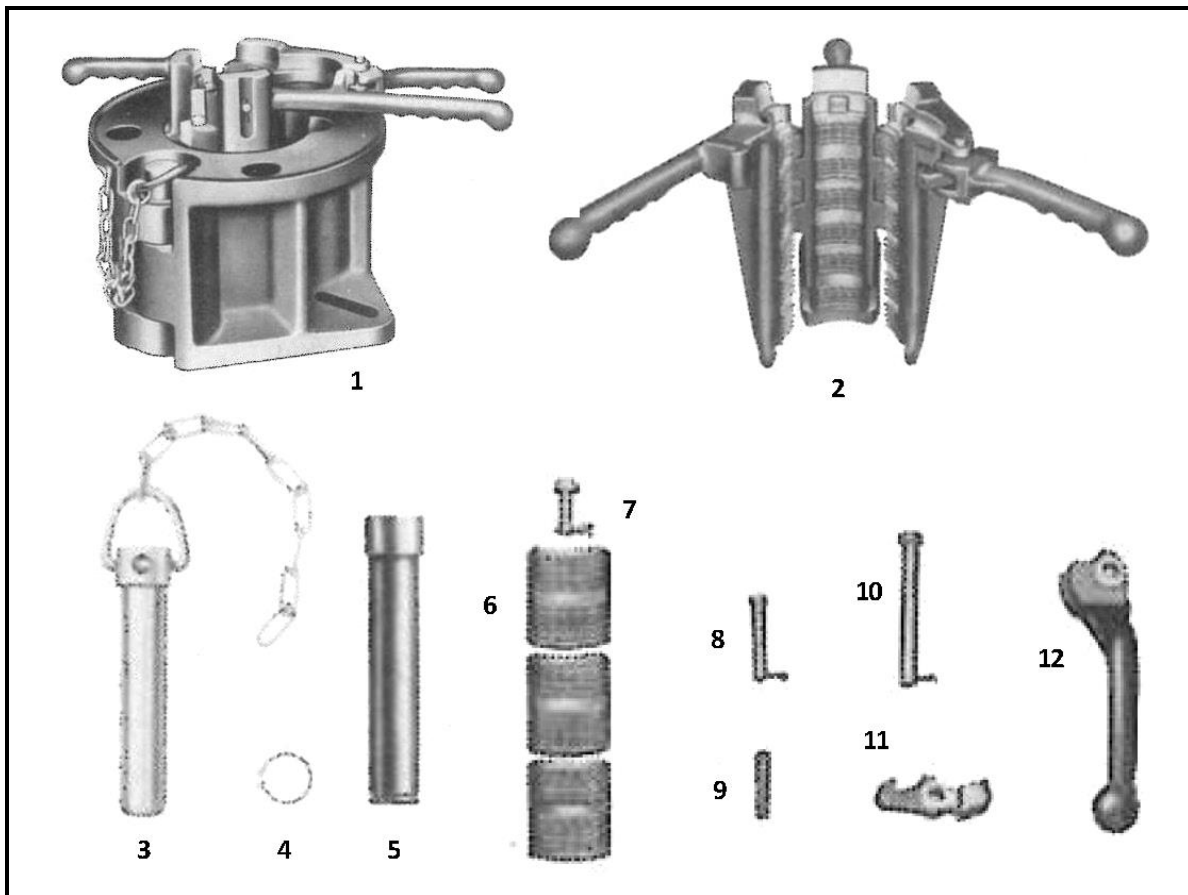
Below is a parts list for the tubing spider and drawing with corresponding item numbers.

**Table 2: Spider Parts List**

Item	Part Number	Qty.	Parts Description
1	7502-100	1	Type TS-100 3-1/2" spider bowl assembly, less slip body and inserts
	7502-103	1	Type TS-100 5-1/2" spider bowl assembly, less slip body and inserts
2	7502-104	1	Type TS-100 3-1/2" spider slip assembly, less inserts
	7502-70	1	Type TS-100 5-1/2" spider slip assembly, less inserts
3	7502-D-203	1	Lock pin with bail and chain
4	7502-103-X	1	Hinge pin retaining ring
5	7502-A-202	1	Hinge pin
<b>3-1/2" Slip Body Inserts and Parts</b>			
6	7502-A-5077	9	3-1/2" x 1.050" insert
	7502-A-5076	9	3-1/2" x 1.315" insert
	7502-A-5075	9	3-1/2" x 1.660" insert



	7502-A-5074	9	3-1/2" x 1.900" insert
	7502-A-5072	9	3-1/2" x 2-1/16" insert
	7502-A-5071	9	3-1/2" x 2-3/8" insert
	7502-A-5070	9	3-1/2" x 2-7/8" insert
	7502-A-5069	9	3-1/2" x 3-1/2" insert
7	7502-B-16	3	Insert keeper
8	7502-B-207	1	Latch pin with cotter
9	7502-C-207	1	Latch spring
10	7502-A-216	2	Hinge pin with cotter
11	7502-A-207	1	Latch
12	7502-A-214	1	Latch handle
<b>5-1/2" Slip Body Inserts and Parts</b>			
6	7502-F-26	12	5-1/2" x 3-1/2" insert
	7502-G-26	12	5-1/2" x 4" insert
	7502-C-26	12	5-1/2" x 4-1/2" insert
	7502-D-26	12	5-1/2" x 5" insert
	7502-A-26	12	5-1/2" x 5-1/2" insert
7	7502-F-32	4	Insert keeper
8	7502-B-207	1	Latch pin with cotter
9	7502-C-207	1	Latch spring
10	7502-A-216	3	Hinge pin with cotter
11	7502-A-207	1	Latch
12	7502-A-214	1	Latch handle



**Figure 1: Tubing Spider Parts**