Operation Manual

Single Joint Elevators

Type SJ

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Change Description

Rev	Change
A	Original Release
B	Re-Issue as new with corrections and updates

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SAFETY

READ THIS MANUAL BEFORE USING EQUIPMENT

Equipment supplied by Texas International Oilfield Tools is intended for installation and use in controlled environments involving hazardous operations and situations.

Only authorized and trained personnel shall install, maintain, operate and/or repair equipment supplied by Texas International Oilfield Tools, LTD. Equipment shall be used only for the purpose for which it is intended.

The User is responsible for ensuring the equipment is in safe working order prior to use. Texas International Oilfield Tools, LTD is not responsible for injuries or equipment damage that arises from equipment neglect or misuse.

The User is responsible for ensuring the safety of all personnel within the vicinity of the equipment. Texas International Oilfield Tools recommends a hazard assessment be performed by qualified safety representatives prior to using equipment. All personnel shall possess and use Personal Protective Equipment (PPE) and must be trained at minimum on rig safety, rig procedures, and equipment operation.

Hazard Labels Used in this Manual

DANGER is represented by this hazard symbol and signifies the highest level of risk. Failure to observe and heed this information may result in serious bodily injury or death.

WARNING is represented by this hazard symbol and signifies potential hazards of medium risk. Failure to observe and heed this information may result in significant bodily injury, catastrophic equipment failure, and/or environmental contamination.

CAUTION is represented by this hazard symbol and signifies potential hazards of low risk. Failure to observe and heed this information may result in bodily injury and/or equipment damage.

NOTICE symbol denotes items of importance unrelated to personal injury which highlight additional information provided to aid the user during installation, commissioning, operating, and/or maintaining equipment.

Notes, cautions, warnings, explanations, and information are provided herein to advise readers to take deliberate action to protect personnel from potential injury or lethal conditions. Please pay close attention to these advisories.

INTRODUCTION

Texas International Oilfield Tools (TIOT) offers Single Joint (SJ) elevators for hoisting tubulars. SJ elevators are intended for use in hoisting single segments of casing or collared tubulars.

The SJ elevator has a simple latch which locks simultaneously when the elevator closes. A latch lock pin is provided and fixed to the elevator. When installed correctly, the latch lock pin prevents the latch from opening.
Two strategically positioned handles are provided for safe operator use.

During operation, SJ elevators are suspended using the elevator ears which are strategically placed to avoid picking up tubulars with the elevator inverted.

FIGURE 1

DANGER TIOT SJ elevators are rated for and can ONLY hoist up to 5 short tons (4.54 metric tons).

SPECIFICATIONS

Single Joint Weight by Body Size		
Size Range (Inches)	**Body Part Number**	**Weight (lbs)**
1.66” – 2-7/8”	T39039-XXX	21
3-1/2” – 4-3/4”	T39039-XXX	30
5” – 5-3/4”	T39040-XXX	31
6” – 6-5/8”	T39040-XXX	40
7” – 7-3/4”	T70501-XXX	49
8-5/8” – 10-3/4”	T70502-XXX	60
11-3/4” – 13-5/8”	T70503-XXX	105
16”	T50504-XXX	117
18-5/8”	T70504-XXX	134
20”	T70504-XXX	161
21-1/2”	T70505-XXX	244
26”	T70505-XXX	317
28” – 30”	T70506-XXX	308

XXX Denotes Bore Code

Table 1

INSPECTION & LUBRICATION

Normal wear during use will eventually reduce the elevator's capability. Cracks, wear beyond specified limits, or the appearance of damage indicates impending failure and must be replaced or repaired by an authorized TIOT service facility.

Elevators are manufactured from cast alloys that require special welding and heat treat procedures and must not be repaired in the field. Improper welding and heat treating can further damage the tool and increase the potential for equipment failure and bodily injury.

Elevators require load testing after manufacture and again after repairs. If the elevator is subjected to overloading, jarring, or impact, the elevator must be pulled from service, inspected for damage, repaired, or scrapped, and must be load tested before and if returning the tool to service.

Remove the elevator from well center before performing any maintenance.

Routine lubrication and inspection are recommended, but criteria and frequency are only suggestions and should be adjusted according to the actual usage of the tool.

Lubricate the unit prior to and during use.

When using or storing the elevator, lubricate on a regular basis to protect the unit from conditions that can cause damage such as rust and corrosion.

The following is a suggested PM schedule. The tool owner/operator has the responsibility to deploy and/or adjust the program based upon tool use and condition.

Inspection Criteria with Checklist

PM1	**Daily**	**Visual Inspection & Maintenance while tool is in use.**
☐	OK	1. Apply EP 4 grease to grease ports, springs, and ears, as needed.
☐	OK	2. Open and close the elevator and number of times slowly and several times quickly to check functionality.
☐	OK	3. Inspect the contact surface of the ears. If surfaces are flattened or metal is rolled, pull the elevator from operation for PM3 inspection (below) and contact TIOT for replacement or repair, as necessary.

☐	OK	4. Verify straightness of the safety pin – if bent, replace the pin.
☐	OK	5. Check for wear on hinge pin by checking for play between latch, and body.
☐	OK	6. Visually check for damage and cracks – if found, pull from operation for PM3 inspection (below) and contact TIOT for replacement or repair, as necessary.
☐	OK	7. Check for corrosion on pins and springs – if found, replace the affected item(s).
☐	OK	8. Look for worn, damaged, loose, or missing parts – replace or tighten, as necessary.

PM2	**Bi-Annual**	**Perform PM1 plus the following additional inspections:**
☐	OK	1. Perform PM1.
☐	OK	2. Verify bore dimension is within specified limits (see Table 2)
☐	OK	3. Disassemble and remove coating and debris from critical areas.
☐	OK	4. Perform Magnetic Particle Inspection (MPI) on critical areas as indicated in Figure 3 and per API Specification 8C.
☐	OK	5. Contact TIOT for replacement or repair if indications are found.
PM3	**Annual**	**Perform PM1 and PM2 plus the following additional inspections:**
☐	OK	1. Perform PM1 and PM2.
☐	OK	2. Disassemble and remove coating and debris from critical areas.
☐	OK	3. Perform proof load test.
☐	OK	4. Twenty-four (24) hours after proof load test, perform Magnetic Particle Inspection (MPI) on critical areas as indicated in Figure 3 and per API Specification 8C.
☐	OK	5. Contact TIOT for replacement or repair if indications are found.

⚠WARNING

Proof load test and MPI are always recommended after refurbishment or repair.

Lubrication Checklist		
Daily and prior to use:		
☐	OK	1. Grease hinge and latch pins.
☐	OK	2. Grease underside of elevator ears.
☐	OK	3. Grease bores.
☐	OK	4. Grease springs.

ELEVATOR WEAR DATA

Wear in the bore affects the elevator's ability to support rated loads. Elevators with bore measurements exceeding "Max Bore Diameter" limits shown in Tables 4 thru 6 shall be either remanufactured or scrapped. Contact TIOT for assistance in determining wear results.

Maximum Allowable Wear Limit			
		Max Allowable Bore Diameter	
Tubular Size	Bore Size Code	Inches	Millimeters
1.66"	154	1.794	45.5
2-3/8"	158	2.512	63.8
2-7/8"	160	3.013	76.5
3-1/2"	162	3.639	92.4
4"	164	4.139	105.1
4-1/2"	129	4.659	118.3
4-3/4"	130	4.913	124.8
5"	131	5.168	131.3
5-1/2"	132	5.676	144.2
5-3/4"	133	5.931	150.6
6"	134	6.185	157.1
6-5/8"	135	6.821	173.3
7"	136	7.203	183.0
7-5/8"	137	7.838	199.1
8-5/8"	139	8.856	224.9
9"	140	9.238	234.6
9-5/8"	141	9.873	250.8
9-7/8"	649	10.128	257.3
10"	831	10.255	260.5
10-1/8"	846	10.382	263.7
10-3/4"	142	11.018	279.9
11-3/4"	143	12.036	305.7
13-3/8"	144	13.664	347.1
13-5/8"	596	13.918	353.5
14"	690	14.300	363.2
16"	145	16.335	414.9
18"	723	18.370	466.6
18-5/8"	146	19.006	482.8
20"	147	20.405	518.3
21-1/2"	148	21.925	556.9
22"	688	22.431	569.7
24"	630	24.456	621.2
26"	650	26.481	672.6
28"	693	28.506	724.1
30"	644	30.531	775.5

Table 2

Minimum Elevator Ear Thickness		
Elevator Sizes	**Min. Thickness Inches**	**Min. Thickness mm**
Elevators with Bore size under 20”	0.728	18.5
Elevators with Bore Sizes Over 20”	0.846	21.5

Table 3

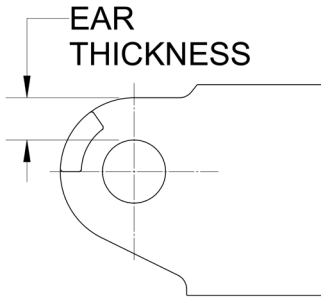

Figure 2

Maximum Allowable Wear Limits for Elevator Hinge Pins / Latch Pins					
Elevator Size		**1.66” – 5-3/4”**	**6” – 20”**	**21-1/2” – 24-1/2”**	**26” – 36”**
Hinge Pin Minimum Diameter	Inch	0.780	0.976	1.252	1.370
	mm	19.812	24.790	31.800	34.798
Hinge Pin Hole Maximum Diameter	Inch	0.796	0.993	1.268	1.386
	mm	20.218	25.222	32.207	35.204
Hinge Pin Hole Maximum Worn Dia.	Inch	0.802	0.999	1.275	1.393
	mm	20.370	25.374	32.385	35.382
Latch Pin Minimum Diameter	Inch	0.578			
	mm	14.681			
Latch Pin Hole Maximum Diameter	Inch	0.598			
	mm	15.189			
Latch Pin Hole Maximum Worn Dia.	Inch	0.602			
	mm	15.290			

Table 4

CRITICAL AREA MAP

Hatching Represents Critical areas

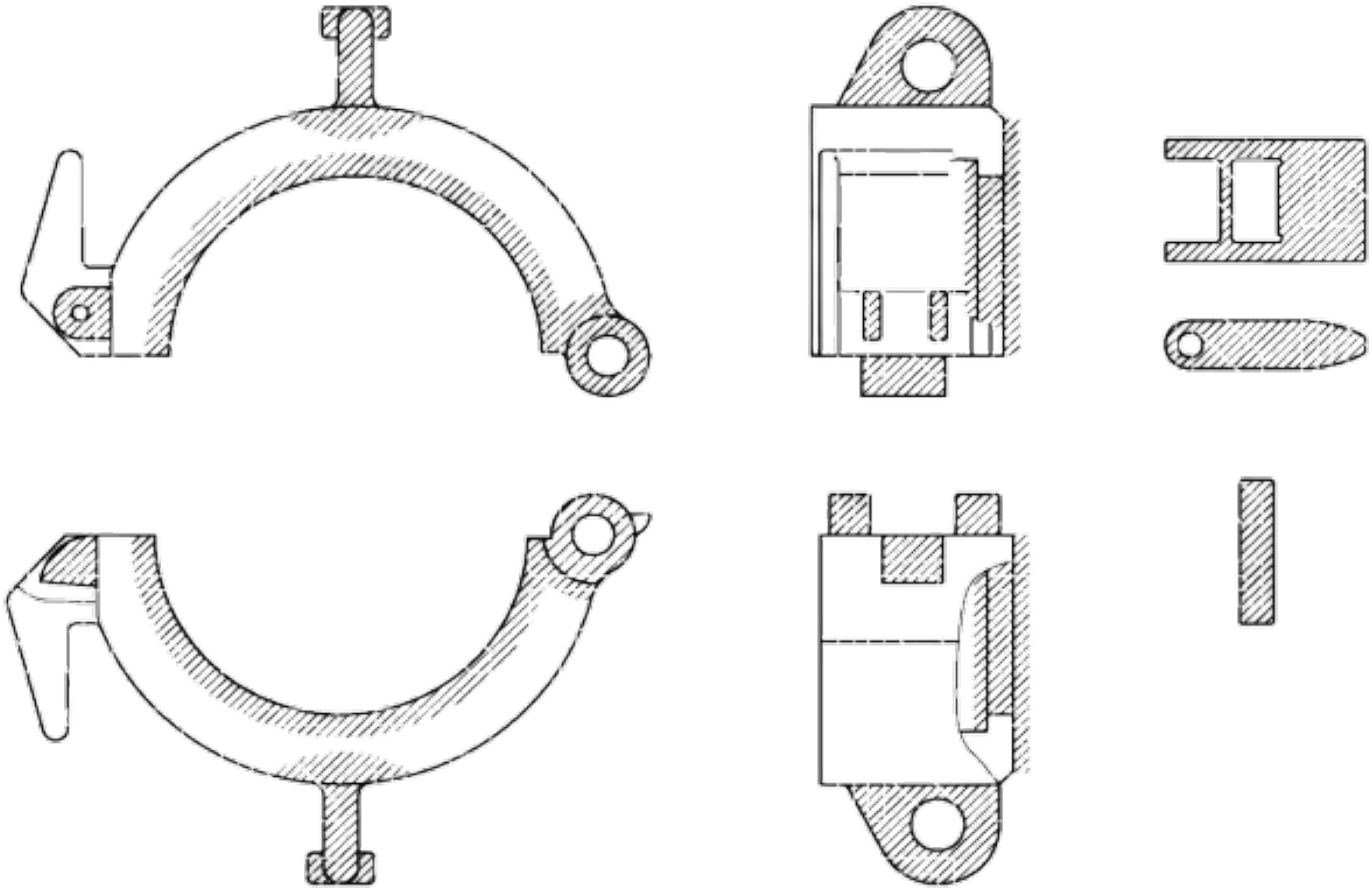

Figure 3

TROUBLESHOOTING

Issue	Possible Cause	Potential Solution
Deformed Pin Holes	Overload	Pull elevator from service and PM3
	Wear	
Bent Pins	Overload	
Elevator does not open	Overload	
	Corrosion	
	Defective Latch	
Elevator does not close	Bent Pin(s)	
	Oversize tubular	Verify selection of properly sized tool

Table 5

STORAGE AND TRANSPORTATION

- Unpainted surfaces should be coated with rust preventing agent
- Prevent excessive exposure to water and moisture
- Clean the tool after use – steam clean as needed; remove mud, debris and any other substances
- Transport the unit in a suitable container or pallet

PARTS LIST

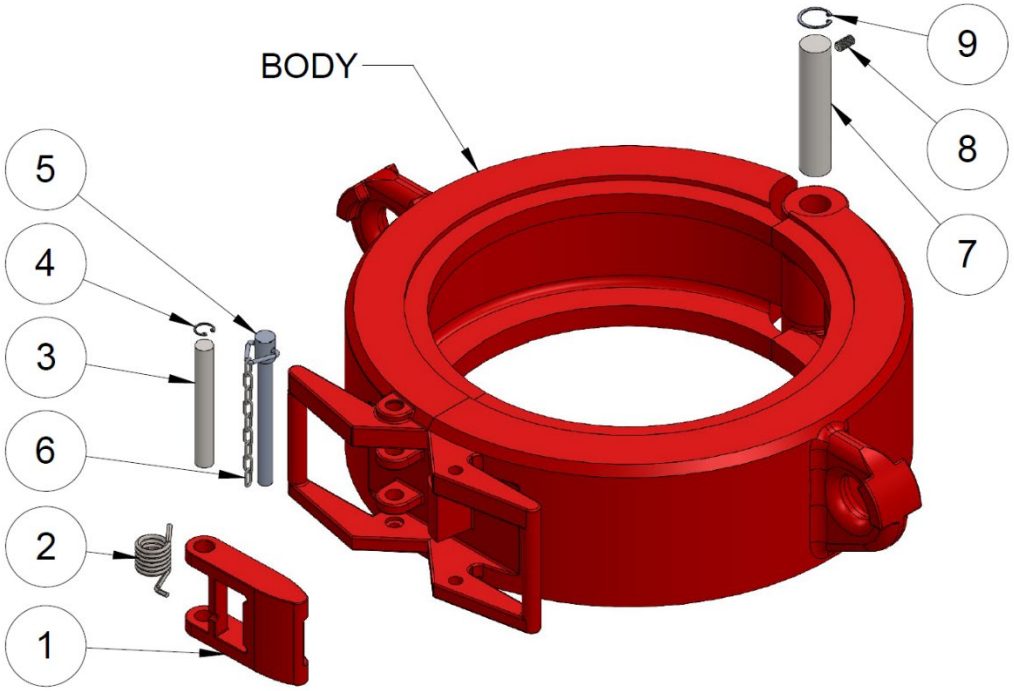

Figure 4

Parts List									
Body Part Number			T39039	T39040	T70501	T70502	T70503	T70504	T70505	T70506
Body Size			2-3/8" to 4-3/4"	5" to 6-5/8"	7" to 7-3/4"	8-5/8" to 10-3/4"	11-3/4" to 13-5/8"	16" to 20"	21-1/2" to 26"	28" to 30"
Item	**Description**	**Qty**	**Part Number**							
1	Latch	1	T200026				T8536-5624			
2	Latch Spring	1	7829-1							
3	Latch Pin	1	T33035							
4	Latch Pin Retainer	1	080099							
5	Latch Lock Pin	1	080052				T34439			
6	Latch Lock Pin Chain	1	080032							
7	Hinge Pin	1	T33032	T33032 / T200050	T200050				T200050 / T200051	T200051
8	* Hinge Pin Retainer	1	040445							
9	* Hinge Pin Retainer	1	080095	080095 / 080096	080096				080097 / 080098	080098

* Small bodies have a setscrew (Item 8) but may have a retaining ring (Item 9). Larger bodies have a Retaining Ring (Item 9).

Table 6

DIMENSIONS

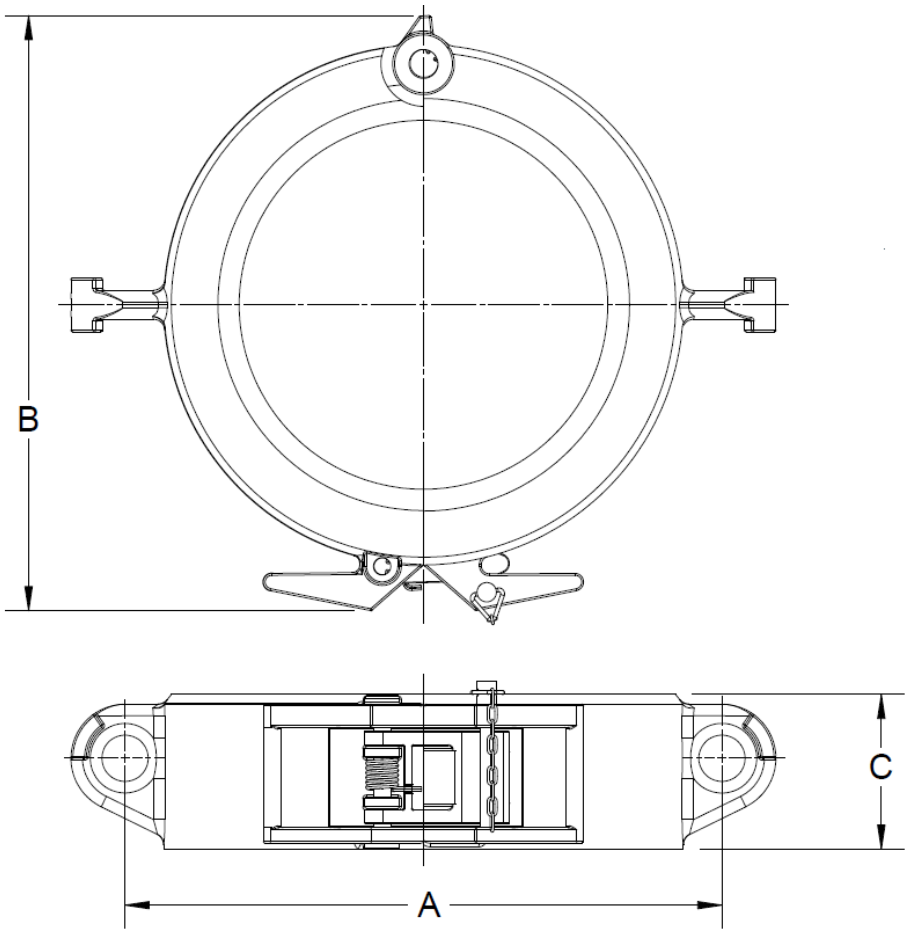

Figure 5

Dimensions						
Body Part Number	**Bore Code**	**Size (Inches)**	**A (Inches)**	**B (Inches)**	**C (Inches)**	**Weight (lbs)**
T39039	117	2-7/8”	7-3/4”	7”	4-1/4”	21
	164	4”	11-1/4”	8-1/2”	4-1/4”	30
T39040	123	5”	12-3/8”	12”	4-1/4”	31
	135	6-5/8”	13-7/8”	12”	4-3/4”	40
T70501	136	7”	15-1/4”	12”	4-3/4”	49
T70502	141	9-5/8”	17-1/2”	16”	4-5/8”	60
	142	10-3/4”	18-3/8”	16”	4-7/8”	60
T70503	596	13-5/8”	22-3/4”	19”	5-1/8”	105
T70504	145	16”	25-3/8”	24”	5-1/8”	117
	146	18-5/8”	27-3/4”	24”	5-1/8”	134
	147	20”	29-1/4”	24”	5-1/8”	161
T70505	149	24”	34-1/2”	31”	5-1/4”	244
	650	26”	38-1/8”	31”	5-1/4”	317
T70506	644	30”	40-1/2”	33”	5-3/8”	308

Dimensions/weights are for reference only.
Table is not comprehensive, other bore sizes are available. Contact TIOT for more information.

Table 7

Every Company has to have a Toolbox.

At Texas International Oilfield Tools,

We provide the tools to fuel the World!