



# G Series Elevator Operation Manual

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**Revision History**

<b>Rev</b>	<b>Date</b>	<b>Reason</b>
A	10/24/14	Issued for Use

**Description of Change**

<b>Rev</b>	<b>Change</b>
A	-

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# GENERAL



Figure 1 – MG Elevator

Texas International Oilfield Tools (TIOT) offers “G” series type center latch taper elevators for handling 18 degree external upset drill pipe. See Specifications table on page 5 for load capacity and size ranges. “G” series elevators should only be used with tubular having 18 degree external upset. The elevator is designed with two (2) halves of similar weights for good balance and easier opening and closing. Elevators are equipped with a latch and latch lock combination. To open, pull the latch lock handle out and swing the elevator apart. A guarded operating latch and an extra handle at the rear of the elevator allow for easier, safer operation. The latch and latch lock secures automatically when the elevator is closed around the pipe.



Use the ears for lifting elevator – NOT the handle

# CONVENTIONS




IMPORTANT SYMBOL IDENTIFICATION	
	<b>WARNING</b> to Operators / Users
	<b>CAUTION</b> to Operators / Users
	<b>NOTIFICATION</b> to Operators / Users

Table 1

# SAFETY

Texas International's equipment is used and installed in controlled rig environments involving hazardous operations and situations.

All personnel performing installation, operations, repair or maintenance on this elevator must have knowledge of rig procedure. All crew in the vicinity of operations should be trained on rig safety and tool operation.

# SPECIFICATIONS

Type	Size Range	Frame PN + BC	Capacity
MG	2-3/8" - 3-1/2"	T30157-XXX	100 Tons
RG	2-3/8" - 3-1/2"	T30156-XXX	150 Tons
RG	4" - 5-1/2"	T23540-XXX	150 Tons
MGG	3-1/2" - 5-1/2"	T35005-XXX	250 Tons
GG	4-1/2" - 5-1/2"	T31068-XXX	350 Tons

BC= Bore code shown as XXX above

Table 2

# PREVENTIVE MAINTENANCE



This is a suggested PM schedule. The tool owner has the responsibility to adjust the program according to actual tool usage



When there is suspicion that the elevator has been **overloaded**, it should be pulled from operation for an Annual type PM

Normal wear in course of use will eventually reduce the elevator's capability. Inspect the bore/taper, latch, latch pin and hinge pin regularly for wear. Cracks or the appearance of damage can indicate the need for repair, even impending failure, and requires prompt attention. The elevator must be either pulled from operation immediately or repaired.

## Daily (PM1) – While in use

- Apply EP 4 grease to grease port, springs, taper, and ears, as needed
- Inspect the contact surface of the ears. If surfaces are flattened or metal is rolled, the elevator should be pulled from operation for Annual (PM3)
- Check for wear on hinge pin by checking the vertical play between latch, body, and door
- Open and close the elevator 5 times slowly and 5 times quickly to ensure elevator works properly
- Visually check for damage and cracks – if found, pull from operation for repair
- Check for corrosion on pins and springs – if found, replace
- Look for worn, damaged, loose or missing parts – replace or tighten
- Inspect tack weld (see Figure 2). On MG series, check latch lock pin. On others, check latch spring pin. If broken, remove from operation and repair

## Semi-Annual (PM2)

- Try to open the latch by prying the latch between body and latch with a steel bar or screw driver – the latch lock prevents the latch from being opened (Figure 3). If the elevator opens during pry test, pull from operation for repair
- Verify taper dimension (see Figure 4)
- Remove coating and debris from critical areas
- Disassemble and perform Magnetic Particle Inspection (MPI) on critical areas as indicated on API Specification 8C
- Carry on daily PM

### Annual (PM3)

- Repeat daily and semi-annual PMs
- Performance load test
- MPI critical areas twenty four (24) hours after load test
- Repair cast as needed - recommend repairs be done by TIOT



Proof of load test and MPI are required after remanufacture or a major weld repair in a critical area



Figure 2: Tack weld



Figure 3: Pry test Instruction

## ELEVATOR WEAR DATA

The wear of the elevator bore affects its ability to support the required load. The 18 degree taper can round off and provide less contact area to support the tubular. A protractor attached to a straight edge is required to measure the angle. Since the taper does not wear evenly and begins to flatten, it is necessary to measure multiple areas and use the smallest angle to find contact. See Figure 4.



Figure 4: Measuring taper angle



Remove from service any elevator of less than 16 degrees



Ensure tubular is not out of tolerance

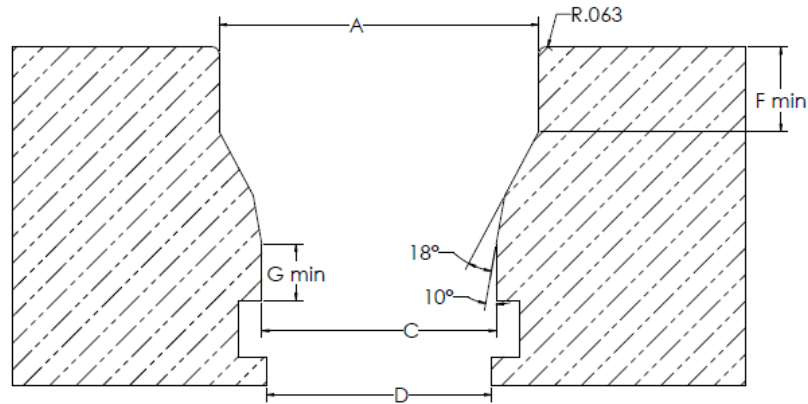


Figure 5: 18 degree taper angle

Ear Radius ( R ) <i>based on tons</i>	Minimum <i>in inches</i>
100	1
150	1 1/2
250	1 7/8
350	1 7/8

Table 3

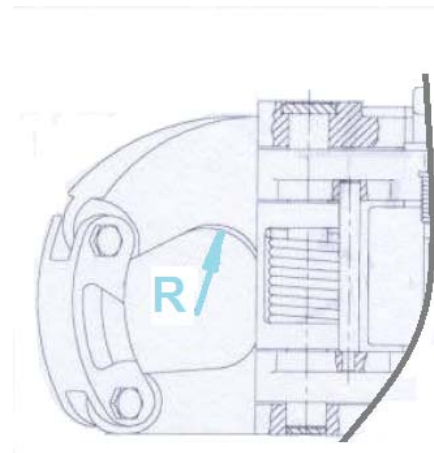


Figure 6



Model	MG	RG	MGG	GG
<b>Total Clearance</b>				
Hinge Pin	0.030	0.030	0.030	0.045
Latch Pin	0.030	0.030	0.030	0.035

Table 4

## CRITICAL AREA MAP

Darken areas are defined as critical

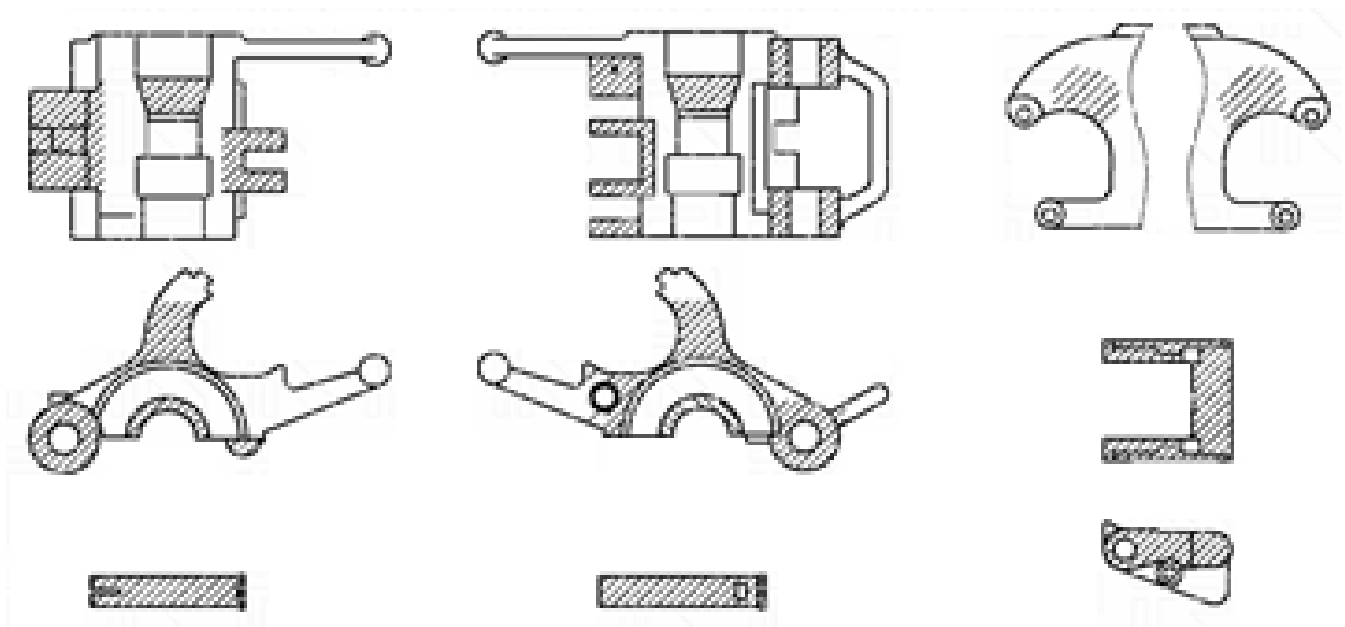


Figure 7

# TROUBLESHOOTING

Failure Mode	Possible Cause	Possible Solution
Deformed pin holes	Overload	Scrap the tool Pull elevator from operation and carry on PM 3
	Wear	Verify pin clearance (see Table 5)
Bent pins	Overload	Perform PM 3
Elevator does not open	Corrosion	Pry open, clean and lubricate.
	Overload	Carry on PM 3 Scrap the tool
Elevator does not close	Oversized tubular	Select properly sized elevator
Elevator does not hang level	Link length difference	Use same length slings/links

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 on a suitable container or pallet

## SPARE PARTS LIST

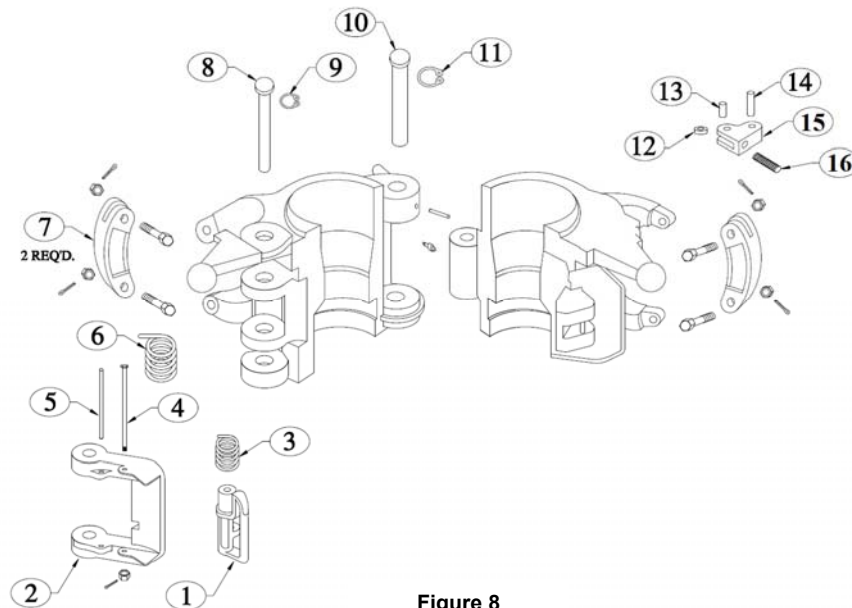


Figure 8

Spare Parts List							
Model →			MG	RG	RG	MGG	GG
Frame →			T30157	T30156	T23540	T35005	T31068
#	Component	Req	P/N				
1	LATCH LOCK	1	T11764	T23729	T13152		
2	LATCH	1	T11763	T23543	T13151	T34906	T31071
3	LATCH LOCK SPRING	1	N/A	T13188			
4	LATCH LOCK BOLT	1	T11759	T23553	T15101		
5	LATCH SPRING PIN	1	N/A	T23548	T13185		
6	LATCH SPRING	1	T11766	T23546	T13155	T34909	T18416
7	LINK BLOCK	2	T26817	T9519			
8	LATCH PIN	1	T26814	T23544	T24045	T34907	T33999
9	LATCH SETTING RING	2	N/A			T5306	T5063
10	HINGE PIN	1	T26813	T23569	T23545	T34908	T33998
11	HINGE SETTING RING	2	N/A			T5309	T5071
12	DOOR CATCH ROLLER	1	N/A			T12734	
13	DOOR CATCH ROLLER PIN	2	N/A			T12735	
14	DOOR CATCH ARM PIN	1	N/A			T12916-1	
15	DOOR CATCH ARM	1	N/A			T12732	
16	DOOR CATCH SPRING	1	N/A			T9561	
17**	LATCH CAM	1	T11581	N/A			
18**	HINGE PIN RETAINER	1	T5176	080024		N/A	
19**	LATCH PIN RETAINER	1	T8156	080027		N/A	

\*\* Not shown

Table 6

Every Company has to have a Toolbox  
at Texas International Oilfield Tools.

*We provide the tools to fuel the  
world!*



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