Metal One

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Recommended Field Running Procedure for MO-4TP Connections

Rev. 0: Released

1. IDENTIFICATION

MO-4TP is a threaded-and-coupled connection with the following features:

- Available in sizes from 5-1/2” through 13-3/8”.
- A robust thread design featuring a large thread height and a steep taper.
- The 4 TPI thread design helps prevent cross-threading, while the steep taper enables quick make-up.
- A special pin nose design ensures pin nose-to-pin nose contact when properly made up.

2. RUNNING

2.1 RUNNING PREPARATION

- Always use a stabbing guide.
- Unless a special compound is specified by the customer, use the thread compound recommended in Appendix A. The compound shall be clean, uncontaminated, and thoroughly stirred.
- Ensure that the tong remains horizontal.
- Verify the alignment of the travelling block and rotary table (see Section 2.4, Stabbing).

2.2 THREAD INSPECTION

- Ensure that the connections are thoroughly clean and dry.
- Visually inspect the connections to confirm that they are free of burrs, tears, or other damage and that the thread surfaces are in good condition.
- Visually inspect the connections to ensure they are free from burrs or tears and that the thread surfaces are reasonably uniform throughout.
- Any “mash” on either the pin or the box connection is unacceptable.

2.3 THREAD COMPOUND (DOPE)

- Prior to stabbing, apply a moderate amount of thread compound to both the pin and box connections.
- Apply the thread compound uniformly to all thread surfaces using a soft brush.

2.4 STABBING

With the joint hanging freely in the derrick, verify vertical alignment to ensure that the pin is positioned directly above the box. Proper vertical alignment, whether achieved by a stabber, stabbing arm, or travelling block, shall be maintained throughout the make-up operation. Install the stabbing guide on the box connection in the rotary table. Lower the pipe slowly into the box connection to avoid thread damage. After stabbing, remove the stabbing guide and ensure that the pipe remains vertically aligned.

2.5 POWER MAKE-UP

Engage the power tong at least 100 mm (4 in.) above the thread runout on the pin to ensure that the dies do not contact the coupling face during make-up. If a backup tong is used, it shall never be applied directly to the coupling and shall always be positioned below the coupling.

The backup line shall be maintained at 90° to the tong and pipe axis in both the vertical and horizontal planes. Ensure that the elevators are not supporting any portion of the pipe weight.

Using the power tong, make up the connection at a speed not exceeding 25 rpm. Ensure that the tong does not slip during make-up and damage the pipe body.

Torque build-up normally does not begin until 4 to 5 complete turns have been made. Torque then increases gradually until the two pin noses come into contact, at which point the torque rises rapidly and a torque spike will be observed on the torque gauge.

Make up the connection to the specified torque and position using a torque gauge. Confirm that the final make-up meets the acceptance criteria specified in Section 2.6.

2.6 ACCEPTANCE CRITERION FOR MAKE-UP

Recommended torque values are provided in Appendix A. When a thread compound with a higher friction factor than those specified in this procedure is used during field running, the following torque conversions shall be applied.

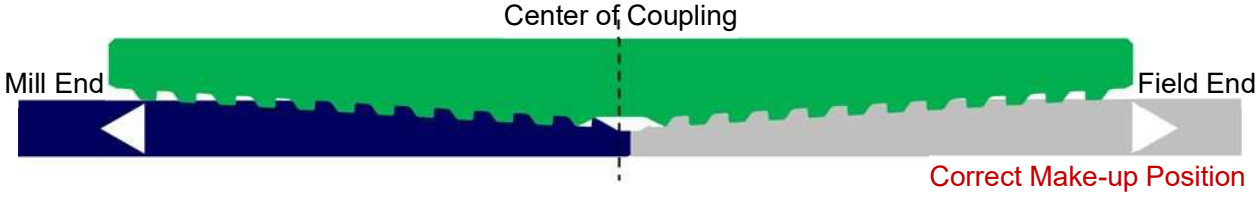
<table>
<tr><th>Friction Factor (FF)*</th><th>Conversion Coefficient</th><th colspan="2">Conversion of Recommended Torque</th></tr>
<tr><td>0.8 <= FF <= 1.2</td><td>1.0</td><td colspan="2">No conversion is needed.</td></tr>
<tr><td rowspan="3">1.2 < FF</td><td rowspan="3">FF minus 0.2</td><td>If FF is 1.5</td><td>Converted MUT shall be 1.3 x MO Recommended MUT.</td></tr>
<tr><td>If FF is 2.0</td><td>Converted MUT shall be 1.8 x MO Recommended MUT.</td></tr>
<tr><td>If FF is 2.5</td><td>Converted MUT shall be 2.3 x MO Recommended MUT.</td></tr>
</table>

* Friction Factor is relative to API RP 5A3

The connection shall initially be made up to the minimum specified torque. If shouldering does not occur, the torque may be gradually increased up to the maximum specified torque.

Connection make-up shall be considered acceptable when all of the following criteria are satisfied:

- The two pin noses come into contact, as indicated by a sudden increase in torque ("spike") on the torque gauge.
- The base of the 3/8” triangle stamp on the pipe body is aligned with the coupling face.



Note: Base of 3/8” triangle stamp at Field End might go deeper relative to the coupling face

3. PULLING

The equipment required for pulling is basically the same as that used for running.

The back-up tong should be placed on the lower half of the coupling. Use of the rig tongs for this operation is not recommended. If a back-up tong is not available, ensure that the mill-end side of the coupling does not rotate. A paint line may be used as a visual indicator.

Proper vertical alignment, whether maintained by a stabber, stabbing arm, or travelling block, shall be maintained throughout the breakout operation.

Engage the power tong at the same location on the pipe used during make-up. Break out the connection using controlled torque. Do not “jerk” the connection. The rotational speed during breakout and spin-out shall not exceed 15 rpm. Once the threads have disengaged, a slight drop ("bump") of the pin into the box may be felt. Rotate the connection approximately 1/3 of a turn before lifting the pipe out of the box. When lifting out, care should be taken to ensure the threads are fully disengaged to prevent jump-out.

The use of a stabbing guide is recommended to protect the pin and facilitate lifting the pipe out of the box.

4. MINOR THREAD DAMAGE

Minor thread imperfections or light surface corrosion are acceptable. Minor damage to pin-end threads, such as burrs, can be repaired using a fine file, honing stone, or emery paper.

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APPENDIX-A MO-4TP RECOMMENDED TORQUE AT FIELD END FOR REGULAR COUPLING (W)

1. RECOMMENDED TORQUE (ft-lb)

OD	Weight	WT	J/K55			N/L80			P110		
Inch	lbs/ft	inch	Min	Max	Operational. Max.	Min	Max	Operational. Max	Min	Max	Operational. Max.
5-1/2"	15.50	0.275	4,000	4,900	6,300	4,700	5,800	7,500	5,800	7,100	10,700
	17.00	0.304	4,700	5,800	7,500	5,700	6,900	9,000	6,900	8,400	12,700
	20.00	0.361	6,100	7,500	9,700	7,300	8,900	11,600	9,000	11,000	16,600
	23.00	0.415	7,400	9,000	11,700	8,800	10,800	14,000	10,900	13,300	20,100
	26.00	0.476	8,800	10,800	14,000	10,500	12,900	16,700	12,900	15,700	23,800
	26.80	0.500	9,400	11,500	14,900	11,200	13,600	17,700	13,700	16,700	25,300
	29.70	0.562	10,600	13,000	16,900	12,800	15,600	20,300	15,600	19,100	28,900
6-5/8"	20.00	0.288	4,900	6,000	9,100	5,800	7,100	10,800	7,700	9,400	15,500
	24.00	0.352	6,900	8,400	12,800	8,300	10,100	15,300	10,800	13,200	21,800
	28.00	0.417	8,900	10,800	16,400	10,500	12,900	19,500	13,800	16,900	27,900
7	23.00	0.317	6,000	7,400	11,200	7,100	8,700	13,200	9,400	11,500	19,000
	26.00	0.362	7,600	9,300	14,100	9,100	11,100	16,800	11,800	14,500	23,900
	29.00	0.408	9,100	11,200	16,900	10,900	13,300	20,200	14,400	17,500	29,000
	32.00	0.453	10,600	13,000	19,700	12,700	15,600	23,600	16,600	20,300	33,600
	35.00	0.498	12,100	14,800	22,400	14,500	17,800	26,900	19,000	23,200	38,300
	38.00	0.540	13,400	16,400	24,800	16,000	19,600	29,700	20,900	25,500	42,200
7 5/8	26.40	0.328	7,500	9,100	13,800	8,900	10,800	16,400	11,500	14,000	23,200
	29.70	0.375	9,400	11,500	17,400	11,100	13,600	20,600	14,500	17,700	29,300
	33.70	0.430	11,600	14,100	21,400	13,800	16,900	25,600	18,000	22,000	36,300
	39.00	0.500	14,300	17,400	26,400	17,000	20,800	31,500	22,200	27,100	44,800
8 5/8	24.00	0.264	5,800	7,100	10,700	6,900	8,400	12,700	8,500	10,400	17,200
	28.00	0.304	8,000	9,800	14,900	9,500	11,600	17,600	11,900	14,600	24,100
	32.00	0.352	10,500	12,900	19,500	12,600	15,400	23,400	15,900	19,400	32,100
	36.00	0.400	13,000	15,900	24,100	15,600	19,100	28,900	19,800	24,100	39,900
9 5/8	36.00	0.352	12,800	15,600	23,700	15,300	18,700	28,400	18,900	23,100	38,200
	40.00	0.395	15,600	19,100	28,900	18,700	22,900	34,700	23,100	28,300	46,700
	43.50	0.435	18,200	22,200	33,700	21,800	26,600	40,300	27,000	33,000	54,600
	47.00	0.472	20,500	25,000	37,900	24,500	30,000	45,400	30,500	37,300	61,700
	53.50	0.545	24,900	30,400	46,100	29,900	36,600	55,400	37,400	45,700	75,500

OD	Weight	WT	J/K55			N/L80			P110		
Inch	lbs/ft	inch	Min	Max	Operational. Max.	Min	Max	Operational. Max	Min	Max	Operational. Max.
10 3/4	40.50	0.350	15,400	18,800	28,500	16,900	20,700	34,200	20,400	24,900	45,300
	45.50	0.400	17,900	21,900	36,200	21,400	26,200	43,300	26,000	31,800	57,800
	51.00	0.450	19,500	23,800	43,300	23,300	28,500	51,800	31,400	38,300	69,700
	55.50	0.495	20,200	24,700	49,900	27,000	32,900	59,900	36,300	44,300	80,600
	60.70	0.545	20,400	25,000	56,800	30,700	37,600	68,300	41,500	50,800	92,300
	71.10	0.650	25,600	31,200	71,000	29,300	35,800	85,600	33,500	41,000	116,400
11 3/4	47.00	0.375	17,100	20,900	38,000	20,300	24,800	45,100	27,000	33,000	60,000
	54.00	0.435	19,700	24,100	48,700	25,900	31,600	57,500	34,800	42,600	77,400
	60.00	0.489	23,400	28,700	57,900	31,000	37,900	68,900	41,900	51,200	93,000
	81.69	0.691	32,800	40,000	91,000	48,800	59,700	108,500	66,800	81,600	148,400
	89.83	0.765	36,900	45,100	102,500	55,200	67,400	122,600	75,600	92,300	167,900
13 3/8	54.50	0.380	19,600	24,000	48,500	25,700	31,500	57,200	34,700	42,500	77,200
	61.00	0.430	24,300	29,700	59,900	28,700	35,000	70,800	43,200	52,900	96,100
	68.00	0.480	25,700	31,400	71,300	30,300	37,100	84,300	51,700	63,200	114,900
	72.00	0.514	24,800	30,300	78,700	29,400	35,900	93,200	57,300	70,100	127,400

Note 1: Operational Max. Torque can be applied in the following cases.

1) When the actual make-up torque (MUT) exceeds the recommended Max. Torque shown in the table, the connection shall be considered acceptable if the torque does not exceed the Operational Max. Torque.
2) If the connection cannot be properly made up within the recommended Max. Torque range, the MUT may be increased up to the Operational Max. Torque.

Note 2: For material grades not specified in the table above, the following conversion shall be applied:

Material Grade	Applicable Torque
85 ksi	Use N/L80 torque values
90 ksi	Use N/J80 torque values x 1.1
95 ksi	Use P110 torque values
125 ksi	Use P110 torque values x 1.1

2. THREAD COMPOUND (DOPE) RECOMMENDED

1) API Modified
2) Bestolife 2000 series
3) Topco TK-II for thermal application