

# MINIMUM REQUIREMENT

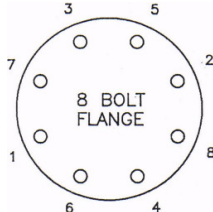
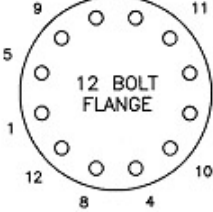
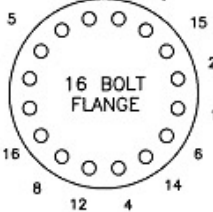
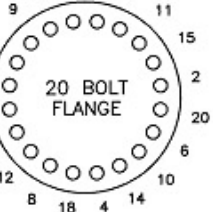
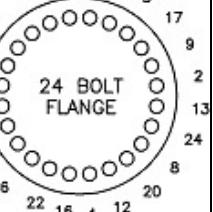
	<b>WP/SEA MINIMUM REQUIREMENTS</b> <b>Hot Bolting</b>	
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## MEMORY JOGGERS

Ensure that the following conditions are met before proceeding. If not met, address on WP/SEA.
➤ Communicate the <b>“RIGHT TO STOP WORK AUTHORITY POLICY”</b> and is exercised by all crewmembers and other personnel that believe something or some condition has changed. The job is to be stopped and accessed before proceeding. The WP/SEA may need to be modified or a new WP/SEA maybe required before starting the work task again.
➤ The flange to be "hot bolted" must have a minimum of eight (8) bolts.
➤ The operating pressure must be less that 75% of the maximum allowable working pressure (MAWP) of the piping or process system to be hot bolted. For example, if the MAWP is 1440 PSI, the operating pressure must be less than 1080 PSI (1440 x .75)
➤ The process temperature must be between 0°F and 160°F
➤ All flanges/associated equipment must be adequately supported & not subject to excessive vibration, pulsation, or shock/impact loading.
➤ The gasket area must not show signs of leakage and the piping, flanges, and bolts and nuts must not be significantly corroded (i.e., to the point of affecting the integrity of the metal).
➤ Existing flange bolts/nuts must be the correct size and grade and must be tight.
➤ No simultaneous hot work operations are being conducted within the designated work area
➤ The proper tools and materials required to complete the work are available and in good condition: properly-sized hammer wrenches and hammer; i.e. brass hammer if required; properly-sized bolts and nuts
➤ Offshore pipeline's require an approval from Mineral Management Service (MMS) must obtain before starting Hot Bolting Procedure
➤ Gas testing is to be carried out in hazardous areas immediately before starting Hot Bolting. Gas Detector at Worksite at all times.
➤ Hammer-striking may result in flying fragments
➤ Personnel must be aware of and stay alert to hammer-swinging
➤ If air saws are required for procedure, complete "non-welding hot work permit"
➤ Barriers and signs are to be erected. Barriers are to be removed as soon as practically possible
➤ Pollution protection must be in place below work site before starting Hot Bolt procedure
➤ Notify all personnel that you are starting to Hot Bolt a live system
➤ If applicable, check fuel, water and oil in air compressor before starting.
➤ Wherever possible, cables and hoses to be kept to minimum lengths, run through mouse holes, secured at regular intervals and kept away from ladders, walkways and wet areas. Where not possible warning notice should be posted.
➤ Check pins and whip checks must be fitted across all crows' foot connectors before starting Hot Bolting
➤ Verify access and escape routes are clear at all times or alternative routes marked and the work force informed.

**CONTINUED ON NEXT PAGE**

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<b>MINIMUM REQUIREMENTS</b>				
1) Verify <b>All</b> conditions identified in the “Memory Joggers” section are met (or are not applicable); if <b>ANY</b> are not met, <b>STOP</b> and add the necessary step to the WP/SEA to ensure the safest method possible.				
<ul style="list-style-type: none"> <li>▪ <b>CAUTION - Ensure hammer handle is dry and free of foreign material. If possible, use mechanical device to hold wrench when striking with hammer. Keep fingers and hands out of the way. Wear gloves, safety glasses at all times. Establish what communication process will be used between crewmembers.</b></li> </ul>				
2) Using proper sequence from diagram below: <ul style="list-style-type: none"> <li>• <b>carefully and safely</b> loosen one nut on first bolt using hammers and hammer wrenches,</li> <li>• use impact wrench to complete removal of nuts,</li> <li>• use hammer to beat bolt out; if necessary, use cold cut saw to cut bolt to complete removal, and replace new bolt and nuts and carefully and safely tighten nuts using impact wrench and/or hammers and hammer</li> </ul>				
 <p>8 BOLT FLANGE</p>	 <p>12 BOLT FLANGE</p>	 <p>16 BOLT FLANGE</p>	 <p>20 BOLT FLANGE</p>	 <p>24 BOLT FLANGE</p>
3) <b>Carefully and safely</b> repeat step #2 until all old bolts/nuts are replaced with new ones.				
<ul style="list-style-type: none"> <li>▪ <b>CAUTION - Maintain communications with the customer representative regarding “precautions”; if a significant change occurs or leaks are detected, STOP the “hot bolting” process; correct all unsafe conditions before continuing</b></li> </ul>				
4) Once all bolts and nuts are replaced, conduct final tightening following same number sequence.				
<ul style="list-style-type: none"> <li>▪ <b>NOTE - If leak develops and absorbent pads are used to collect liquids, properly dispose in DOT drums. Place all scrap iron into scrap iron basket and all paper and plastic waste in trash dumpster.</b></li> </ul>				
5) The equipment and location have been left in a clean, safe condition. All tools, equipment and barriers have been removed and all persons have been accounted for.				

**ENSURE MINIMUM REQUIREMENTS NUMBERS ARE RECORDED ON WP/SEA**