

1. Title	Repair hydraulic installations		
2. Code	EMPERM301A		
3. Range	Repair hydraulic installations in general industrial plants, power plants or other places.		
4. Level	3		
5. Credits	12		
6. Competency	<p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1      Composition of hydraulic drive system</p> <ul style="list-style-type: none"> <li>◆ Know about the hydraulic drawings of hydraulic systems <ul style="list-style-type: none"> <li>• Components and their functions in the system</li> <li>• Graphic symbols of the system</li> </ul> </li> <li>◆ Know about the working principles of various types of hydraulic pumps and motors <ul style="list-style-type: none"> <li>• Classification of various types of hydraulic pumps and motors</li> <li>• Characteristic curve of main performance parameters</li> </ul> </li> <li>◆ Know about the working principles of various types of hydraulic cylinders <ul style="list-style-type: none"> <li>• Classification and characteristics of hydraulic cylinders</li> </ul> </li> <li>◆ Know about the working principles of various types of hydraulic control valves <ul style="list-style-type: none"> <li>• Classification and characteristics of various types of hydraulic control valves</li> </ul> </li> <li>◆ Know about the effect of physical properties of the working medium of hydraulic systems on the system <ul style="list-style-type: none"> <li>• Classification of hydraulic working medium</li> <li>• Requirements of hydraulic systems on working medium</li> </ul> </li> <li>◆ Know about the classification and materials of seals <ul style="list-style-type: none"> <li>• Know about the composition of the accessories ( such as hydraulic pipes )</li> </ul> </li> </ul> <p>6.2      Methods and procedures of repairing various types of hydraulic pumps, hydraulic motors, hydraulic cylinders and hydraulic control valves</p> <ul style="list-style-type: none"> <li>◆ Repair various types of hydraulic pumps <ul style="list-style-type: none"> <li>• Gear pumps</li> <li>• Vane pumps</li> <li>• Ram pumps</li> </ul> </li> <li>◆ Repair various types of hydraulic motors</li> <li>◆ Repair various types of hydraulic cylinders</li> <li>◆ Repair various types of hydraulic control valves <ul style="list-style-type: none"> <li>• Pressure control valves</li> <li>• Flow control valves</li> <li>• Direction control valves</li> <li>• Cartridge valves</li> <li>• Electrolyte proportional valves</li> </ul> </li> </ul>		

	<p>6.3 Professionalism in installing, diagnosing and repairing hydraulic equipment</p> <ul style="list-style-type: none"> <li>◆ Carry out the following on working medium <ul style="list-style-type: none"> <li>• Pollution inspection</li> <li>• Tracking of the sources of pollutants</li> <li>• Filtering of pollutants</li> <li>• Change of working medium</li> </ul> </li> <li>◆ Inspect and change various types of seal rings <ul style="list-style-type: none"> <li>• O ring seal</li> <li>• Lip ring seal</li> <li>• Coaxial seal and supporting ring</li> <li>• Mechanical seal</li> <li>• Dust proof ring</li> </ul> </li> <li>◆ Repair the accessories <ul style="list-style-type: none"> <li>• Accumulator</li> <li>• Oil tank</li> <li>• Cooler</li> </ul> </li> <li>◆ Hydraulic pipes (such as steel pipe and high pressure plastic hose) and fittings</li> <li>◆ Follow repair guidelines to install and repair common faults in hydraulic installations <ul style="list-style-type: none"> <li>• Pressure out of control</li> <li>• Speed out of control</li> <li>• Action out of control</li> <li>• Temperature abnormally high</li> </ul> </li> <li>◆ Follow repair guidelines to install, diagnose and repair hydraulic drive system and various types of control loops <ul style="list-style-type: none"> <li>• Pressure control loops</li> <li>• Speed control loops</li> <li>• Direction control loops</li> </ul> </li> <li>◆ Eliminate the vibration and noise of the hydraulic system</li> <li>◆ Follow the requirements of working guidelines to handle and dispose hydraulic oil</li> </ul>
7. Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are:</p> <ul style="list-style-type: none"> <li>(i) Capable to repair various types of hydraulic pumps, hydraulic motors, hydraulic cylinders control valves, hydraulic seal devices and accessories independently;</li> <li>(ii) Capable to diagnose the faults of hydraulic equipment and repair them independently; and</li> <li>(iii) Capable to complete simple repair reports for various types of hydraulic pumps, hydraulic motors, hydraulic cylinders control valves, hydraulic seal devices and accessories.</li> </ul>
8. Remarks	<p>The credit value of this unit of competency is set on the presumption that the person already possesses the techniques of using basic fault repairing instruments.</p>