VIKRANT AUTO INDUSTRIES

WORK INSTRUCTION

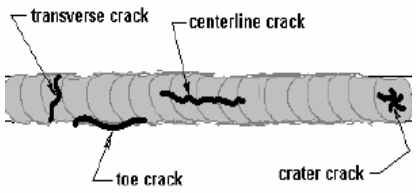
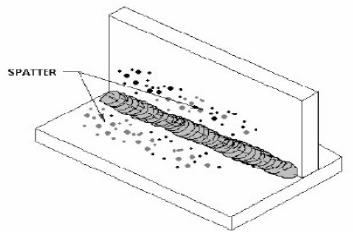
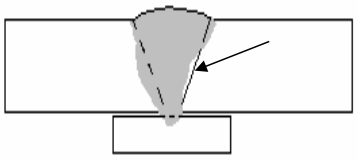
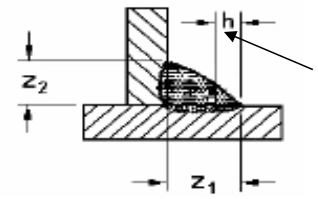
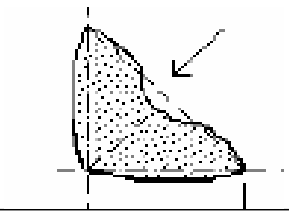
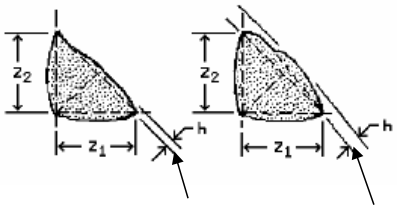
WI No. :25 **Date : 05/09/2017** **Rev.No.: 0** **Rev. Date :**

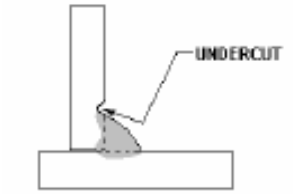
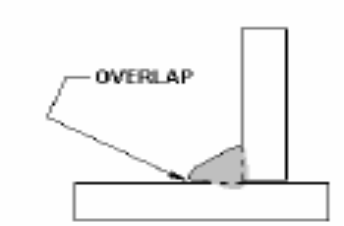
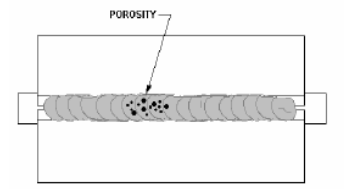
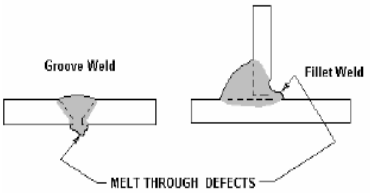
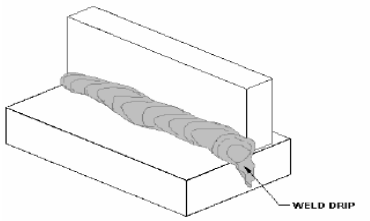
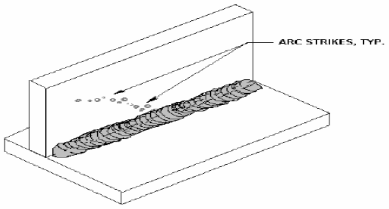
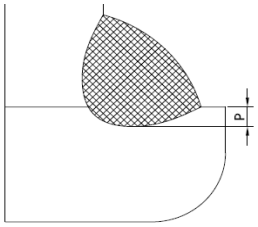
TITLE : WELDING STANDARD

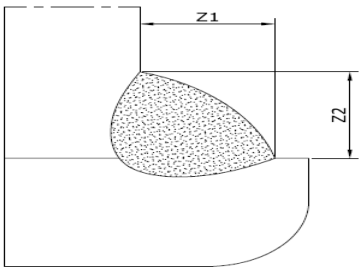
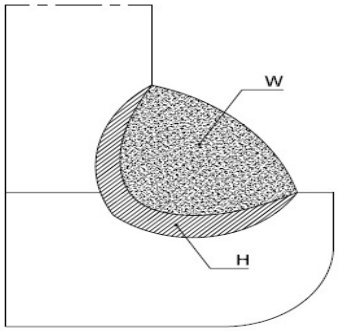
PURPOSE : The purpose of this document is to establish and maintain weld quality consistent with industry standard practice at minimum cost

SCOPE : This document contains workmanship and quality acceptance requirements for arc welding e.g. SMAW, GMAW

REFERENCES : ENS0211, MAT4125S of CNH; CPS301,CPS302, CPS303 of MF and ISO2553-1992

Characteristics	Description	Acceptance Limits
1) Cracks		**Not permitted**
2) Weld Spatter		**Not permitted**
3) Incomplete Fusion		**Not permitted**
4) Unequal weld leg size		Minimum leg size(Z_2) / Maximum h ≤ size(Z_1-Z_2) 3mm / 2.0mm 4mm / 2.0mm 5mm / 2.0mm 6mm / 2.0mm 7mm / 2.0mm 8mm / 2.0mm 9mm / 3.0mm 10mm / 3.0mm 11mm / 3.0mm 12mm / 3.0mm
5) Concavity		**Not permitted**
6) Convexity		Specified Weld Size Minimum Leg Length / Maximun Convexity Permitted 1.6mm / 0.8mm 2.0mm / 0.8mm 3.0mm / 1.2mm 4.0mm / 1.2mm 5.0mm / 1.6mm 6.0mm / 1.6mm 8.0mm / 2.0mm 10.0mm / 2.0mm 12.0mm / 2.5mm

Characteristics	Description	Acceptance Limits
7) Undercut		**1)For material thickness < 6mm 10% of material thickness to entire length of weld 2) For material thickness < 6mm 0.8mm to entire length of weld**
8) Overlap		**Not permitted**
9) Porosity		**Not permitted**
10) Unfilled crater	Where welding is in the groove is notfilled completely	**85% fill minimum**
11) Missing weld	Where welding is missing in the place place specifically required.	**Not permitted**
12) Mislocated weld	Where welding is present but not in the place specifically required.	**Not permitted**
13) Melt through		**Not permitted**
14) Weld drip (end melt)		**Not permitted**
15) Arc strikes		**Not permitted**
16) Penetration		**15% of weld Leg Size unless otherwise specified**

<table>
<tr><th>Characteristics</th><th>Description</th><th>Acceptance Limits</th></tr>
<tr><td>17) Weld Leg Size tolerance</td><td> 
</td><td>
<table>
<tr><th>Specified Weld Size
Minimum Leg Length</th><th>Maximun Leg Size</th></tr>
<tr><td>1.6mm</td><td>2.4mm</td></tr>
<tr><td>2.0mm</td><td>2.8mm</td></tr>
<tr><td>3.0mm</td><td>3.8mm</td></tr>
<tr><td>4.0mm</td><td>5.2mm</td></tr>
<tr><td>5.0mm</td><td>6.6mm</td></tr>
<tr><td>6.0mm</td><td>8.5mm</td></tr>
<tr><td>8.0mm</td><td>11.0mm</td></tr>
<tr><td>10.0mm</td><td>14.0mm</td></tr>
<tr><td>12.0mm</td><td>18.0mm</td></tr>
</table>
</td></tr>
<tr><td>18) Weld Hardness</td><td rowspan="2"> 
</td><td>W - Weld
40 HRC (400HV) maximum unless and otherwise specified</td></tr>
<tr><td>19) H.A.Z Hardness</td><td>H - HAZ (Heat affected zone)
42 HRC (425 HV) maximum maximum unless and otherwise specified is case of Hardened & Tempered base material</td></tr>
</table>

Prepared by: PANKAJ RANA

Approved by: M A Khan