|  |  |
| --- | --- |
|  |  |
| 890-120-00-1 | 890-120-00-2 |
|  |  |
| 890-120-00-3# |  |
|  |  |
| 890-120-15-1$ | 890-120-15-2 |
|  |  |
| 890-120-15-3 |  |
|  |  |
| 890-120-30-1 | 890-120-30-2 |
|  |  |
| 890-120-30-3 |  |
|  |  |
| 890-120-45-1D | 890-120-45-2D$ |
|  |  |
| 890-120-45-3D |  |
|  |  |
| 890-120-45-1S# | 890-120-45-2S# |
|  |  |
| 890-120-45-3S |  |
|  |  |
| 890-120-60-1# | 890-120-60-2 |
|  |  |
| 890-120-60-3 |  |
|  |  |
| 890-120-75-1 | 890-120-75-2 |
|  |  |
| 890-120-75-3 |  |
|  |  |
| 890-120-90-1 | 890-120-90-2 |
|  |  |
| 890-120-90-3$ |  |

图名中带有#表示由于技术原因，DIC测量系统采集变形信息不完整；

$表示对应的试件发生单边焊缝破坏，如未表示默认试件发生双边焊缝同时破坏。

试验结果讨论：1）相同角度焊缝同切平的试件890-120-X-1/2极限荷载出现明显差异的有三组：15°、45D°、90°。分析其原因：890-120-15-1和890-120-45D-2破坏模式是单边焊缝破坏，890-120-90-2试件初始安装时偏心严重，双方焊缝受力不均匀，导致承载力下降。

2）试件理论承载力与实际承载力发生冲突的有试件890-120-60-3和890-120-90-3，其原因与试件初始安装偏心和试件双边焊缝加工质量不均匀一致有关。

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|  | 极限荷载 | 断裂荷载 | 极限荷载对应的变形 | | | | | 断裂荷载对应的变形 | | | | | 荷载比 | 变形比 | 破坏方式 |
|  |  |  | 有字的一边 | 无字的一边 | 平均 | 两侧变形差值 | 差值/平均值 | 有字的一边 | 无字的一边 | 平均 | 两侧变形差值 | 差值/平均值 |  |  |  |
| 890-120-0-1 | 293.946 | 285.319 | 0.596 | 0.552 | 0.574 | 0.044 | 0.077 | 0.715 | 0.671 | 0.693 | 0.044 | 0.063 | 0.971 | 1.207 | 双边 |
| 890-120-0-2 | 327.812 | 290.960 | 0.506 | 0.469 | 0.487 | 0.037 | 0.076 | 0.635 | 0.596 | 0.616 | 0.039 | 0.063 | 0.888 | 1.265 | 双边 |
| 890-120-0-3 | 359.747 |  |  |  |  |  |  |  |  |  |  |  |  |  | 双边 |
| 890-120-15-1 | 339.013 | 214.655 | 0.079 | 0.135 | 0.107 | 0.056 | 0.523 | 0.114 | 0.230 | 0.172 | 0.116 | 0.674 | 0.633 | 1.611 | 单边 |
| 890-120-15-2 | 492.144 | 314.159 | 0.334 | 0.298 | 0.316 | 0.036 | 0.114 | 0.555 | 0.477 | 0.516 | 0.078 | 0.151 | 0.638 | 1.631 | 双边 |
| 890-120-15-3 | 530.461 | 451.739 | 0.256 | 0.232 | 0.244 | 0.024 | 0.098 | 0.268 | 0.239 | 0.254 | 0.029 | 0.114 | 0.852 | 1.039 | 双边 |
| 890-120-30-1 | 426.655 | 354.767 | 0.061 | 0.060 | 0.061 | 0.001 | 0.016 | 0.061 | 0.061 | 0.061 | 0.000 | 0.000 | 0.832 | 1.001 | 双边 |
| 890-120-30-2 | 446.813 | 437.754 | 0.107 | 0.143 | 0.125 | 0.036 | 0.288 | 0.114 | 0.162 | 0.138 | 0.048 | 0.348 | 0.980 | 1.103 | 双边 |
| 890-120-30-3 | 633.470 | 632.700 | 0.392 | 0.362 | 0.377 | 0.030 | 0.080 | 0.420 | 0.399 | 0.409 | 0.021 | 0.051 | 0.999 | 1.085 | 双边 |
| 890-120-45D-1 | 427.736 | 425.446 | 0.111 | 0.096 | 0.104 | 0.015 | 0.144 | 0.122 | 0.100 | 0.111 | 0.022 | 0.198 | 0.995 | 1.068 | 双边 |
| 890-120-45D-2 | 381.074 | 343.208 | 0.046 | 0.096 | 0.071 | 0.050 | 0.704 | 0.055 | 0.138 | 0.096 | 0.083 | 0.865 | 0.901 | 1.355 | 单边 |
| 890-120-45D-3 | 673.314 | 639.104 | 0.398 | 0.406 | 0.402 | 0.008 | 0.020 | 0.533 | 0.507 | 0.520 | 0.026 | 0.050 | 0.949 | 1.293 | 双边 |
| 890-120-45S-1 | 570.230 |  |  |  |  |  |  |  |  |  |  |  |  |  | 双边 |
| 890-120-45S-2 | 561.090 |  |  |  |  |  |  |  |  |  |  |  |  |  | 双边 |
| 890-120-45S-3 | 619.918 | 619.061 | 0.334 | 0.293 | 0.314 | 0.041 | 0.131 | 0.373 | 0.336 | 0.354 | 0.037 | 0.105 | 0.999 | 1.129 | 双边 |
| 890-120-60-1 | 413.900 |  |  |  |  |  |  |  |  |  |  |  |  |  | 双边 |
| 890-120-60-2 | 388.803 | 353.214 | 0.174 | 0.223 | 0.199 | 0.050 | 0.250 | 0.177 | 0.234 | 0.205 | 0.056 | 0.273 | 0.908 | 1.035 | 双边 |
| 890-120-60-3 | 429.782 | 424.088 | 0.066 | 0.064 | 0.065 | 0.002 | 0.026 | 0.070 | 0.067 | 0.069 | 0.003 | 0.045 | 0.987 | 1.062 | 双边 |
| 890-120-75-1 | 421.506 | 340.486 | 0.243 | 0.230 | 0.237 | 0.013 | 0.055 | 0.247 | 0.233 | 0.240 | 0.015 | 0.061 | 0.808 | 1.015 | 双边 |
| 890-120-75-2 | 357.058 | 347.553 | 0.204 | 0.221 | 0.212 | 0.017 | 0.081 | 0.206 | 0.223 | 0.214 | 0.016 | 0.076 | 0.973 | 1.011 | 双边 |
| 890-120-75-3 | 449.002 | 447.537 | 0.203 | 0.195 | 0.199 | 0.008 | 0.039 | 0.209 | 0.199 | 0.204 | 0.011 | 0.052 | 0.997 | 1.023 | 双边 |
| 890-120-90-1 | 404.293 | 304.214 | 0.209 | 0.310 | 0.259 | 0.101 | 0.391 | 0.242 | 0.377 | 0.310 | 0.135 | 0.437 | 0.752 | 1.194 | 双边 |
| 890-120-90-2 | 329.312 | 292.764 | 0.105 | 0.119 | 0.112 | 0.014 | 0.126 | 0.110 | 0.121 | 0.116 | 0.011 | 0.099 | 0.889 | 1.033 | 双边 |
| 890-120-90-3 | 396.071 | 356.592 | 0.268 | 0.163 | 0.216 | 0.104 | 0.484 | 0.343 | 0.193 | 0.268 | 0.150 | 0.560 | 0.900 | 1.242 | 单边 |

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|  | 试件理论承载力 | 试件实际承载力 | 比值 | 平均剪切边 | 平均焊缝长度 | 试件理论强度 | 试件实际强度 | 试件理论强度平均值 | 试件实际强度平均值 | 试件理论强度平均值-相较侧面角焊缝比值 | 试件实际强度平均值-相较侧面角焊缝比值 | 公式 |
| 890-120-0-1 | 420.71 | 295.60 | 0.703 | 5.20 | 28.68 | 705.30 | 495.56 | 660.83 | 516.22 | 1.00 | 1.00 | 1.000 |
| 890-120-0-2 | 387.02 | 327.98 | 0.847 | 5.10 | 28.31 | 669.70 | 567.55 |  |  |  |  |  |
| 890-120-0-3 | 450.07 | 359.75 | 0.799 | 5.86 | 31.63 | 607.49 | 485.57 |  |  |  |  |  |
| 890-120-15-1 | 513.44 | 339.04 | 0.660 | 5.01 | 41.97 | 610.80 | 403.33 | 639.47 | 517.31 | 0.97 | 1.00 | 1.066 |
| 890-120-15-2 | 577.90 | 492.15 | 0.852 | 4.96 | 43.86 | 664.53 | 565.92 |  |  |  |  |  |
| 890-120-15-3 | 585.61 | 530.61 | 0.906 | 5.40 | 42.20 | 643.09 | 582.69 |  |  |  |  |  |
| 890-120-30-1 | 710.53 | 426.77 | 0.601 | 5.08 | 54.22 | 644.41 | 387.05 | 647.70 | 435.62 | 0.98 | 0.84 | 1.177 |
| 890-120-30-2 | 748.76 | 446.81 | 0.597 | 5.06 | 54.67 | 677.15 | 404.08 |  |  |  |  |  |
| 890-120-30-3 | 772.26 | 640.80 | 0.830 | 5.34 | 58.15 | 621.53 | 515.73 |  |  |  |  |  |
| 890-120-45D-1 | 686.21 | 428.98 | 0.625 | 4.95 | 46.79 | 741.45 | 463.51 | 739.63 | 506.77 | 1.12 | 0.98 | 1.297 |
| 890-120-45D-2 | 664.88 | 381.11 | 0.573 | 4.88 | 45.84 | 742.50 | 425.60 |  |  |  |  |  |
| 890-120-45D-3 | 783.97 | 673.33 | 0.859 | 5.65 | 47.24 | 734.93 | 631.21 |  |  |  |  |  |
|  | 试件理论承载力 | 试件实际承载力 |  | 平均剪切边 | 平均焊缝长度 | 试件理论强度 | 试件实际强度 | 试件理论强度平均值 | 试件实际强度平均值 | 试件理论强度平均值-相较侧面角焊缝比值 | 试件实际强度平均值-相较侧面角焊缝比值 |  |
| 890-120-45S-1 | 531.98 | 570.23 | 1.072 | 5.00 | 70.01 | 760.11 | 814.77 | 752.91 | 789.80 | 1.14 | 1.53 | 1.297 |
| 890-120-45S-2 | 548.57 | 561.09 | 1.023 | 5.13 | 69.08 | 774.80 | 792.47 |  |  |  |  |  |
| 890-120-45S-3 | 588.75 | 619.93 | 1.053 | 5.88 | 69.23 | 723.82 | 762.15 |  |  |  |  |  |
| 890-120-60-1 | 501.03 | 413.90 | 0.826 | 5.27 | 58.32 | 815.60 | 673.77 | 806.57 | 692.83 | 1.22 | 1.34 | 1.403 |
| 890-120-60-2 | 477.33 | 388.80 | 0.815 | 5.19 | 56.90 | 807.99 | 658.14 |  |  |  |  |  |
| 890-120-60-3 | 459.68 | 431.07 | 0.938 | 5.07 | 56.98 | 796.13 | 746.58 |  |  |  |  |  |
| 890-120-75-1 | 461.16 | 421.58 | 0.914 | 5.26 | 51.60 | 849.90 | 776.95 | 821.47 | 753.87 | 1.24 | 1.46 | 1.475 |
| 890-120-75-2 | 438.01 | 357.06 | 0.815 | 5.15 | 51.36 | 828.07 | 675.02 |  |  |  |  |  |
| 890-120-75-3 | 436.24 | 449.10 | 1.029 | 5.38 | 51.60 | 786.45 | 809.62 |  |  |  |  |  |
| 890-120-90-1 | 405.34 | 404.39 | 0.998 | 4.70 | 50.44 | 854.90 | 852.89 | 822.67 | 760.56 | 1.24 | 1.47 | 1.500 |
| 890-120-90-2 | 400.21 | 329.41 | 0.823 | 4.96 | 49.19 | 820.45 | 675.29 |  |  |  |  |  |
| 890-120-90-3 | 417.11 | 396.51 | 0.951 | 5.28 | 49.80 | 792.66 | 753.51 |  |  |  |  |  |