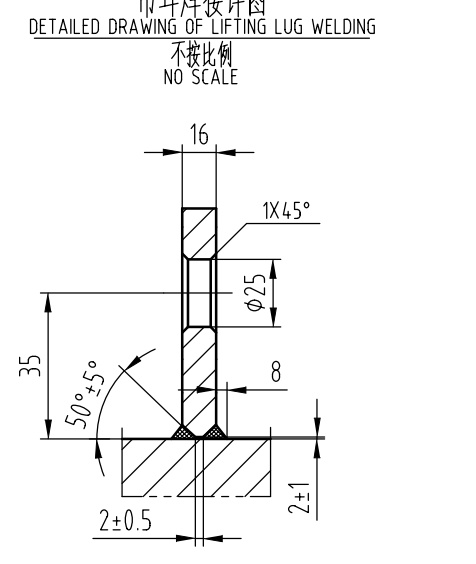
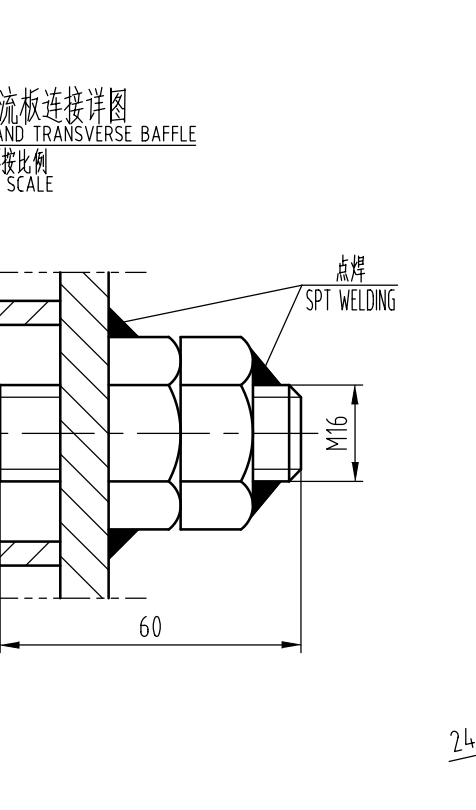
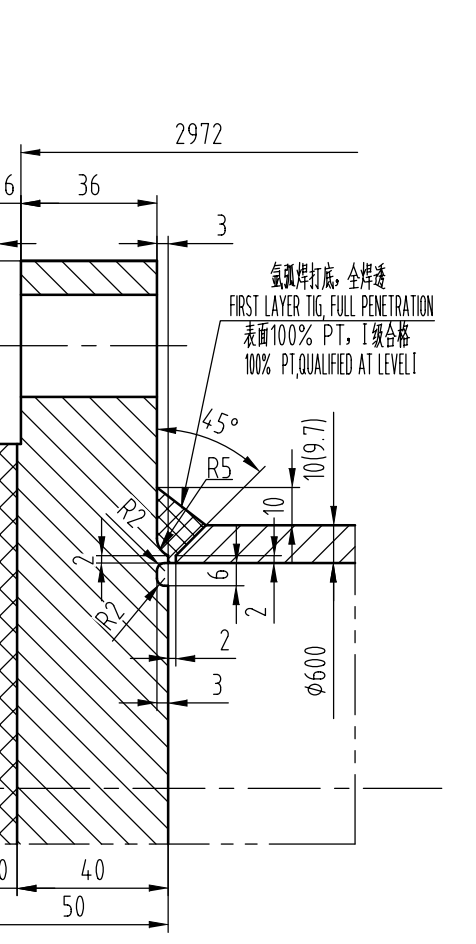
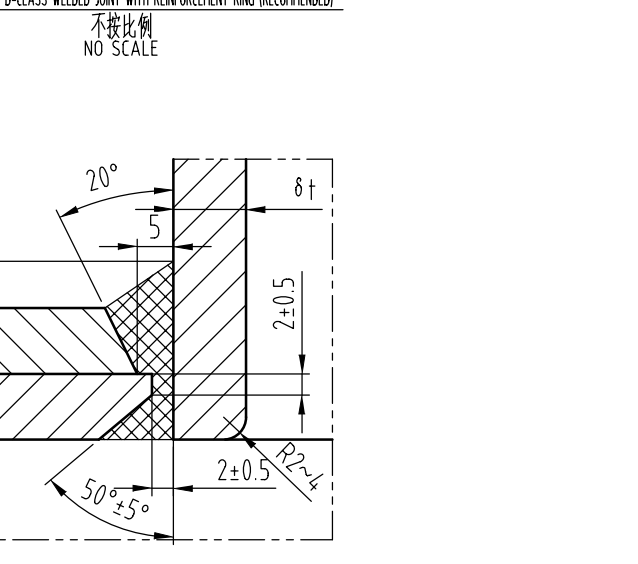
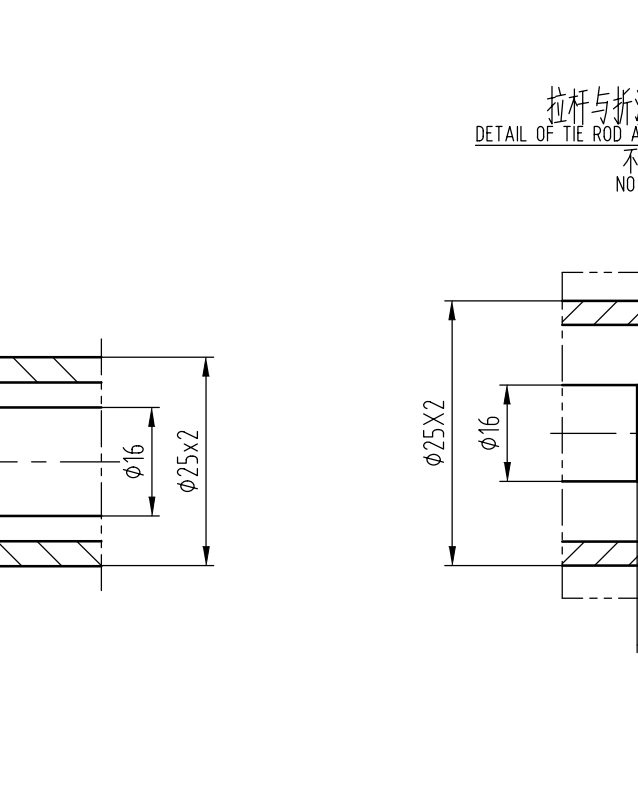
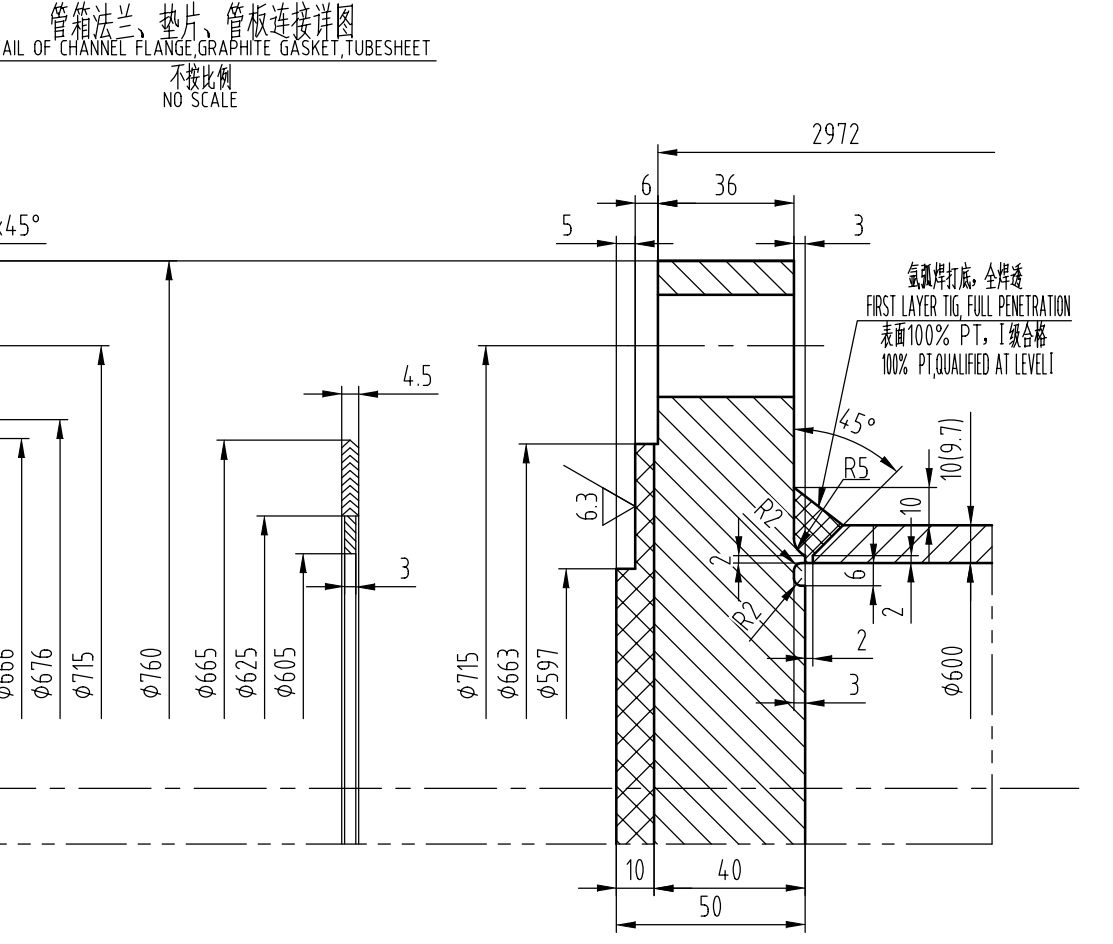
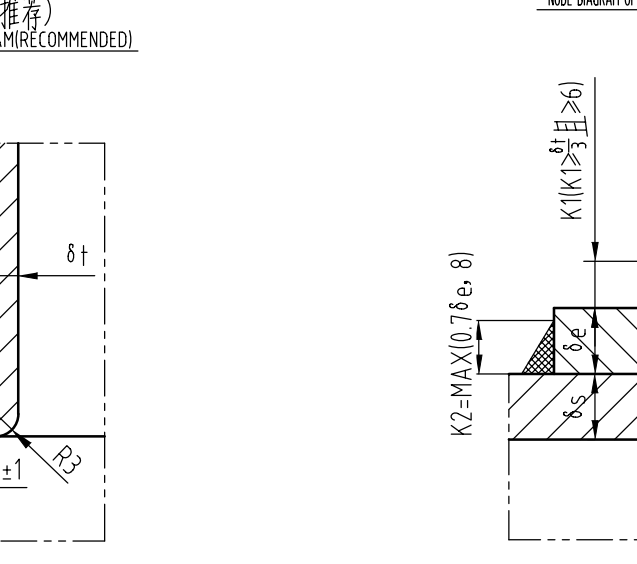
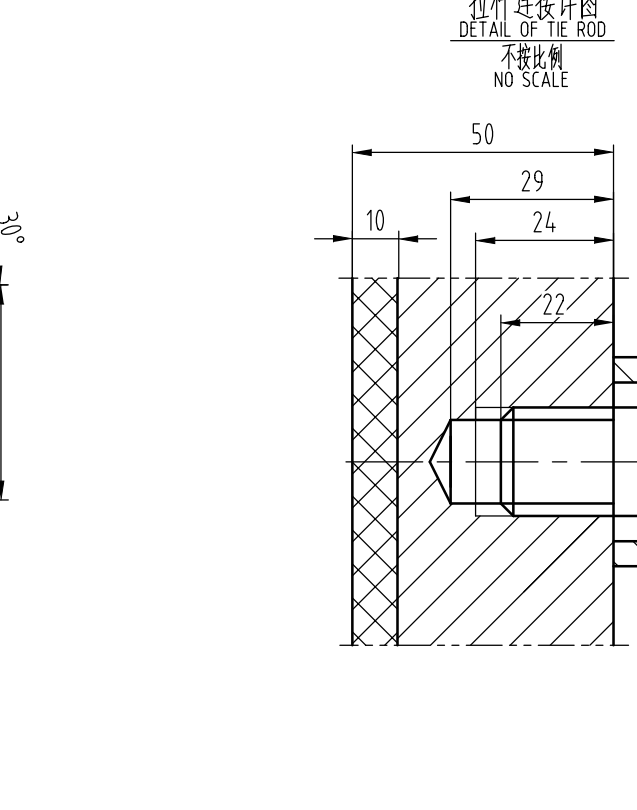
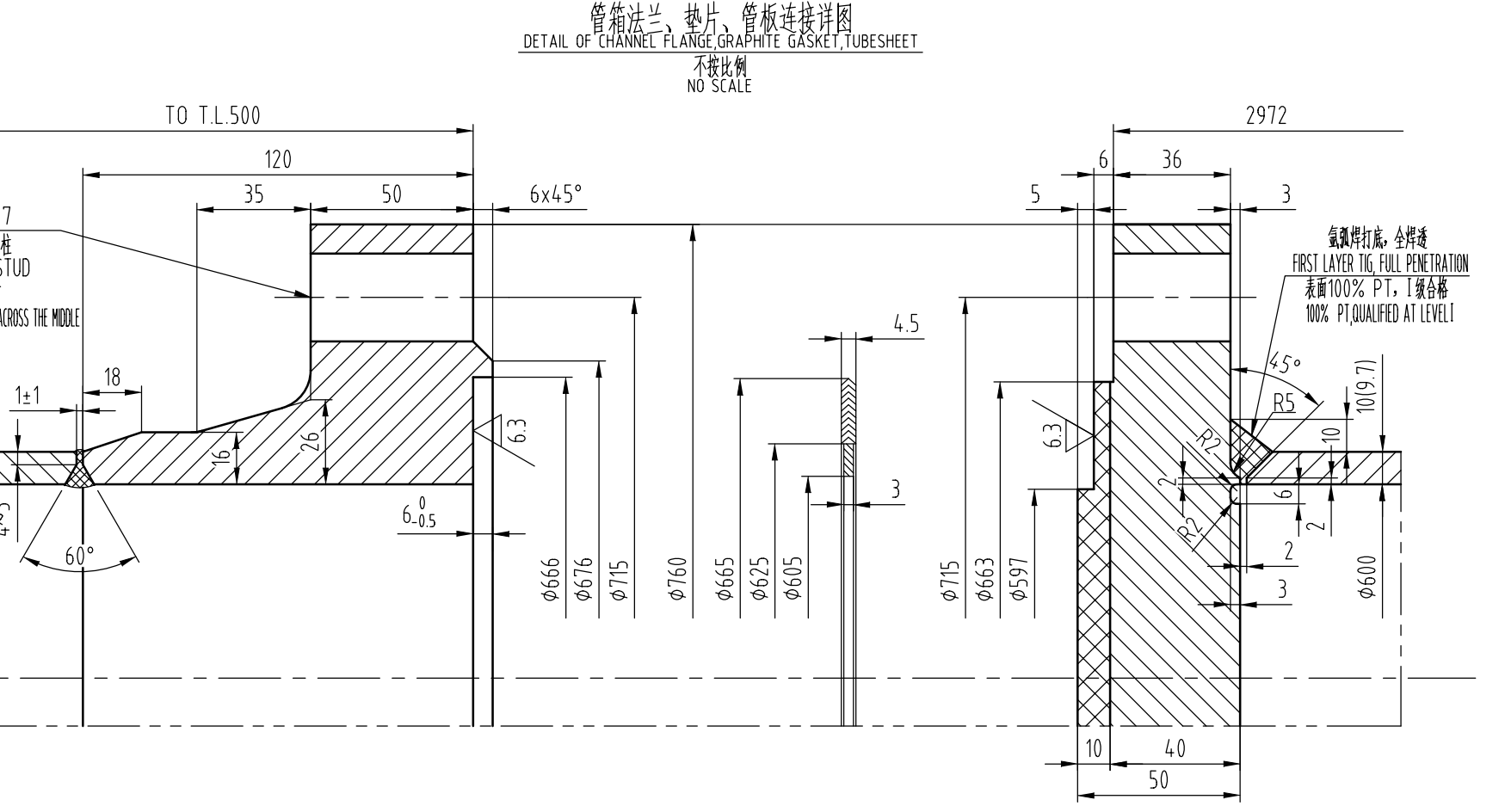
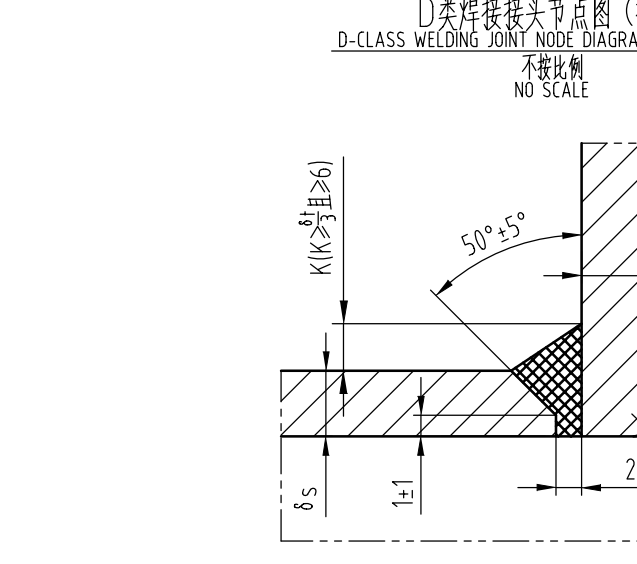
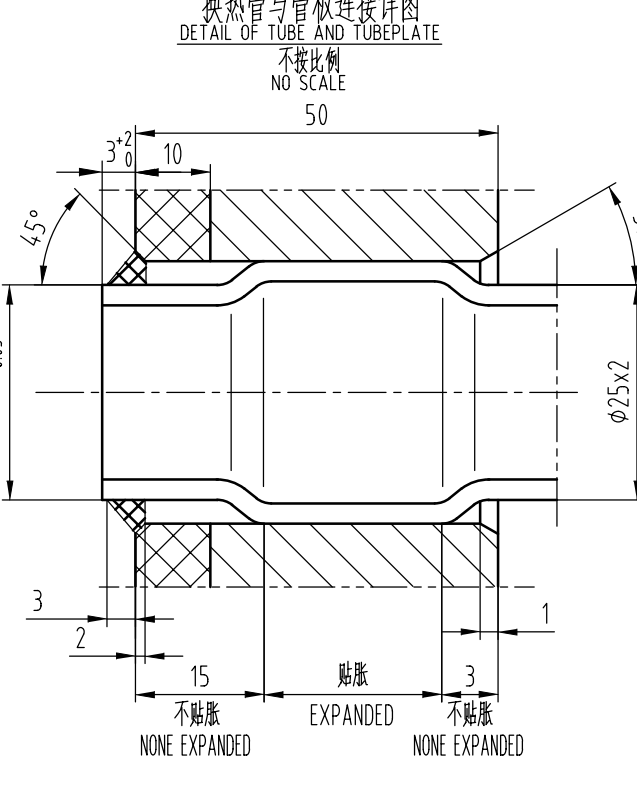
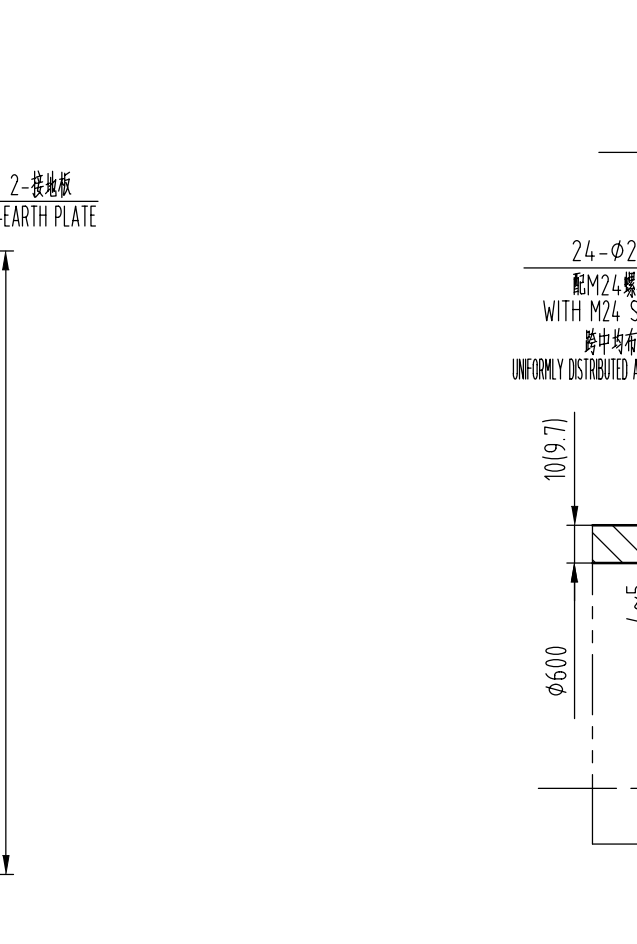
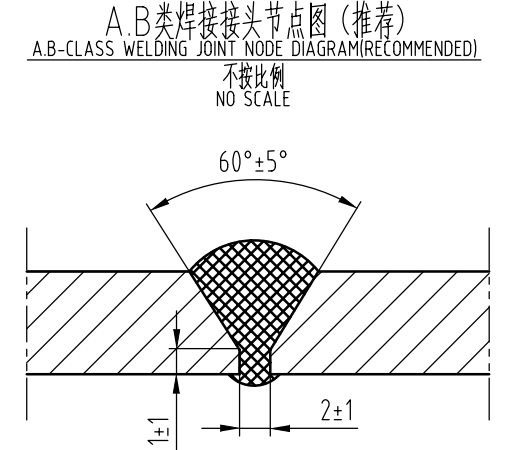
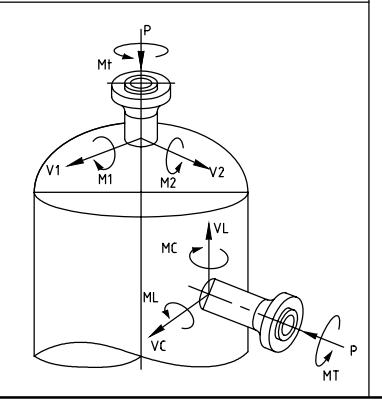
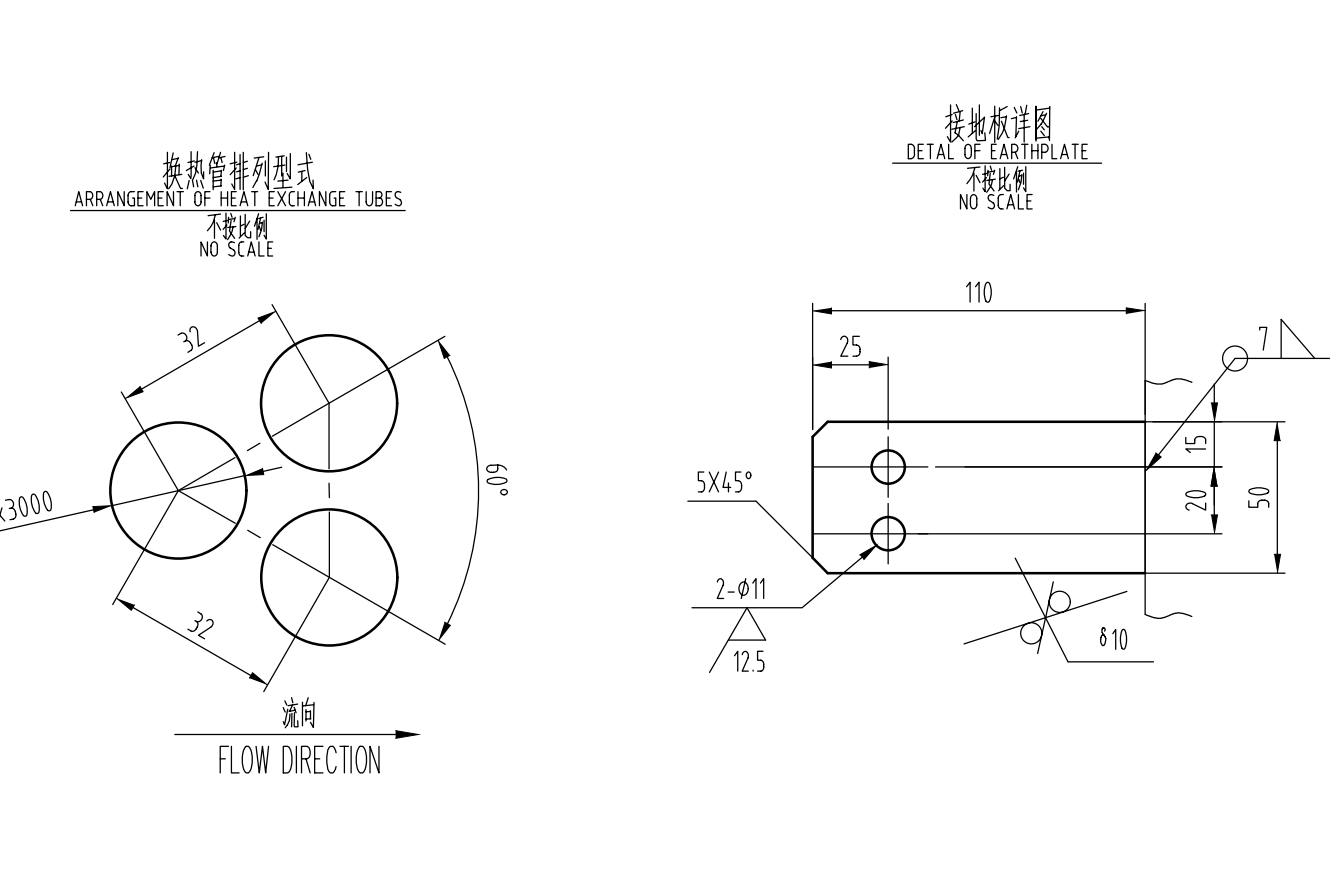


接管载荷表 NOZZLE LOAD TABLE						
接管 NOZZLE	P (N)	VC/V1 (N·m)	VL/V2 (N·m)	MC/M1 (N·m)	MT/Mt (N·m)	ML/M2 (N·m)
N01,N02	9600	7200	9600	3840	5760	4992
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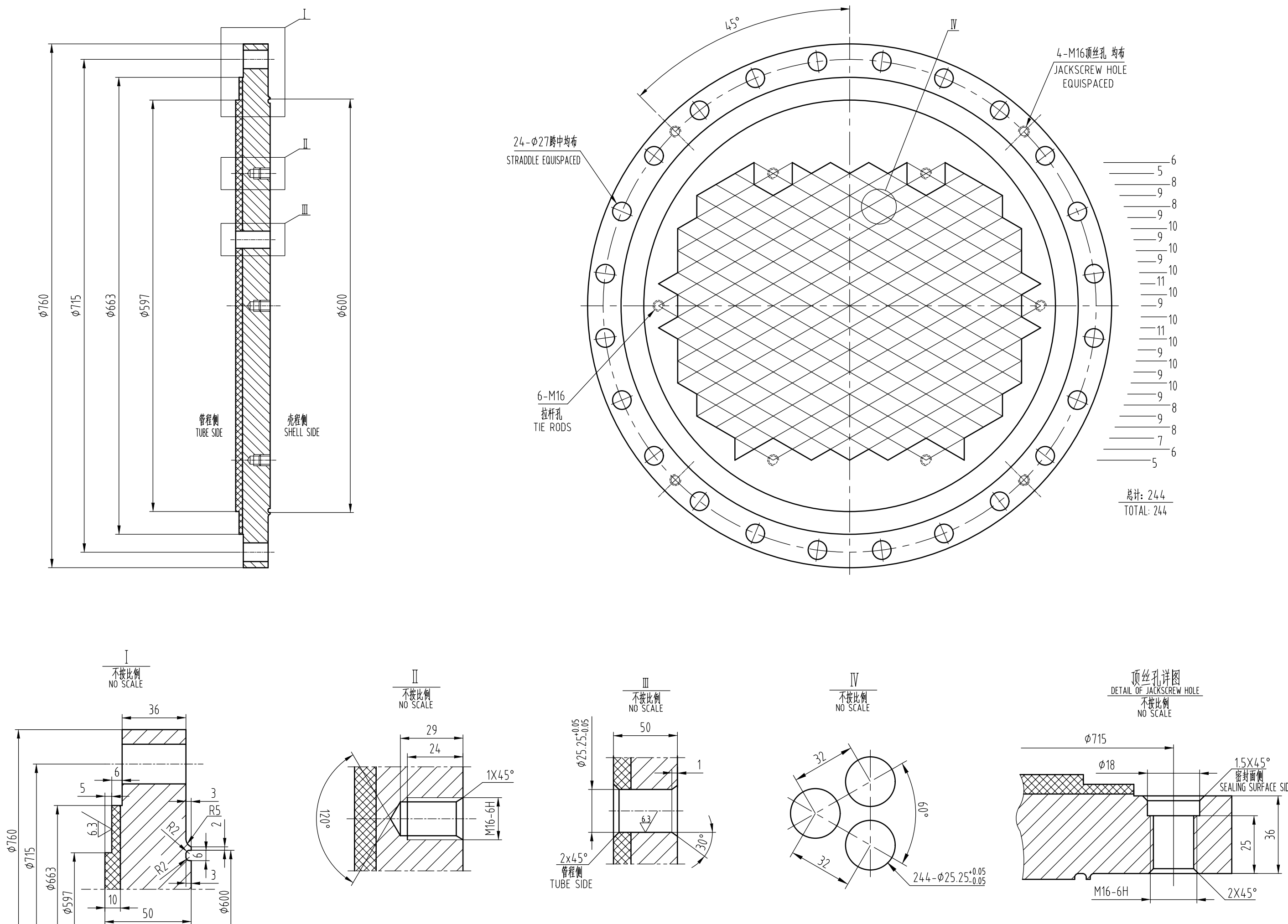


设计数据表		DESIGN SPECIFICATION	
设计参数		设计、制造与检验标准	
DESIGN DATA		STANDARD OF DESIGN, FABRICATION AND INSPECTION	
压力容器类别	壳程	管程	1. 固定式压力容器安全技术监察规程 TSG 21-2016(含第1号修改单)
VESSEL CLASSIFICATION	II	II	2. 压力容器 GB/T 150.1-150.4-2011
管束类别	I级	I级	3. 压力容器 NB/T 151-2014 1级管束
CLASS OF BUNDLE	I级	I级	4. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	5. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	6. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	7. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	8. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	9. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	10. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	11. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	12. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	13. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	14. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	15. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	16. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	17. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	18. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	19. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	20. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	21. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	22. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	23. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	24. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	25. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	26. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	27. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	28. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	29. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	30. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	31. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	32. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	33. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	34. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	35. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	36. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	37. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	38. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	39. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	40. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	41. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	42. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	43. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	44. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	45. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	46. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	47. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	48. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	49. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	50. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	51. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	52. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	53. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	54. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	55. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	56. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	57. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	58. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	59. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	60. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	61. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	62. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	63. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	64. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	65. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	66. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	67. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	68. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	69. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	70. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	71. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	72. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	73. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	74. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	75. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	76. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	77. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	78. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	79. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	80. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	81. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	82. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	83. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	84. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	85. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	86. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	87. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	88. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	89. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	90. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	91. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	92. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	93. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	94. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	95. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	96. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	97. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	98. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	99. 压力容器 NB/T 4704.2-2014
工作压力	kg/cm ² G	5.1	100. 压力容器 NB/T 4704.2-2014



接管载荷表		NOZZLE LOAD TABLE	
接管	P	VC/V1	VL/V2
N01,N02	9600	7200	9600
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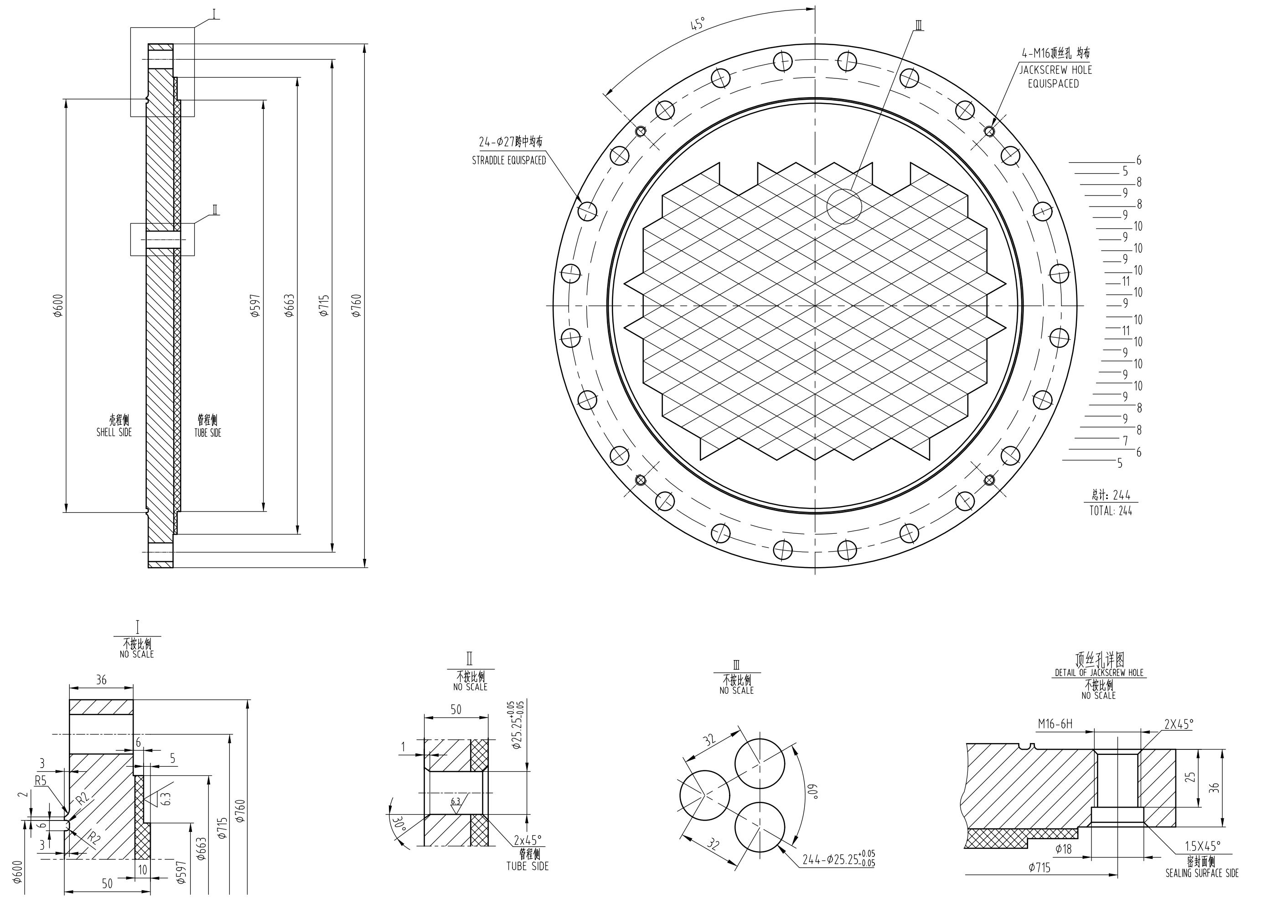
技术要求:

- 本标准附录6.10.6.10.6.11.7.4.7.5.7.6.7.7.8.7.9.7.10.7.11.7.12.7.13.7.14.7.15.7.16.7.17.7.18.7.19.7.20.7.21.7.22.7.23.7.24.7.25.7.26.7.27.7.28.7.29.7.30.7.31.7.32.7.33.7.34.7.35.7.36.7.37.7.38.7.39.7.40.7.41.7.42.7.43.7.44.7.45.7.46.7.47.7.48.7.49.7.50.7.51.7.52.7.53.7.54.7.55.7.56.7.57.7.58.7.59.7.60.7.61.7.62.7.63.7.64.7.65.7.66.7.67.7.68.7.69.7.70.7.71.7.72.7.73.7.74.7.75.7.76.7.77.7.78.7.79.7.80.7.81.7.82.7.83.7.84.7.85.7.86.7.87.7.88.7.89.7.90.7.91.7.92.7.93.7.94.7.95.7.96.7.97.7.98.7.99.7.100.7.101.7.102.7.103.7.104.7.105.7.106.7.107.7.108.7.109.7.110.7.111.7.112.7.113.7.114.7.115.7.116.7.117.7.118.7.119.7.120.7.121.7.122.7.123.7.124.7.125.7.126.7.127.7.128.7.129.7.130.7.131.7.132.7.133.7.134.7.135.7.136.7.137.7.138.7.139.7.140.7.141.7.142.7.143.7.144.7.145.7.146.7.147.7.148.7.149.7.150.7.151.7.152.7.153.7.154.7.155.7.156.7.157.7.158.7.159.7.160.7.161.7.162.7.163.7.164.7.165.7.166.7.167.7.168.7.169.7.170.7.171.7.172.7.173.7.174.7.175.7.176.7.177.7.178.7.179.7.180.7.181.7.182.7.183.7.184.7.185.7.186.7.187.7.188.7.189.7.190.7.191.7.192.7.193.7.194.7.195.7.196.7.197.7.198.7.199.7.200.7.201.7.202.7.203.7.204.7.205.7.206.7.207.7.208.7.209.7.210.7.211.7.212.7.213.7.214.7.215.7.216.7.217.7.218.7.219.7.220.7.221.7.222.7.223.7.224.7.225.7.226.7.227.7.228.7.229.7.230.7.231.7.232.7.233.7.234.7.235.7.236.7.237.7.238.7.239.7.240.7.241.7.242.7.243.7.244.7.245.7.246.7.247.7.248.7.249.7.250.7.251.7.252.7.253.7.254.7.255.7.256.7.257.7.258.7.259.7.260.7.261.7.262.7.263.7.264.7.265.7.266.7.267.7.268.7.269.7.270.7.271.7.272.7.273.7.274.7.275.7.276.7.277.7.278.7.279.7.280.7.281.7.282.7.283.7.284.7.285.7.286.7.287.7.288.7.289.7.290.7.291.7.292.7.293.7.294.7.295.7.296.7.297.7.298.7.299.7.300.7.301.7.302.7.303.7.304.7.305.7.306.7.307.7.308.7.309.7.310.7.311.7.312.7.313.7.314.7.315.7.316.7.317.7.318.7.319.7.320.7.321.7.322.7.323.7.324.7.325.7.326.7.327.7.328.7.329.7.330.7.331.7.332.7.333.7.334.7.335.7.336.7.337.7.338.7.339.7.340.7.341.7.342.7.343.7.344.7.345.7.346.7.347.7.348.7.349.7.350.7.351.7.352.7.353.7.354.7.355.7.356.7.357.7.358.7.359.7.360.7.361.7.362.7.363.7.364.7.365.7.366.7.367.7.368.7.369.7.370.7.371.7.372.7.373.7.374.7.375.7.376.7.377.7.378.7.379.7.380.7.381.7.382.7.383.7.384.7.385.7.386.7.387.7.388.7.389.7.390.7.391.7.392.7.393.7.394.7.395.7.396.7.397.7.398.7.399.7.400.7.401.7.402.7.403.7.404.7.405.7.406.7.407.7.408.7.409.7.410.7.411.7.412.7.413.7.414.7.415.7.416.7.417.7.418.7.419.7.420.7.421.7.422.7.423.7.424.7.425.7.426.7.427.7.428.7.429.7.430.7.431.7.432.7.433.7.434.7.435.7.436.7.437.7.438.7.439.7.440.7.441.7.442.7.443.7.444.7.445.7.446.7.447.7.448.7.449.7.450.7.451.7.452.7.453.7.454.7.455.7.456.7.457.7.458.7.459.7.460.7.461.7.462.7.463.7.464.7.465.7.466.7.467.7.468.7.469.7.470.7.471.7.472.7.473.7.474.7.475.7.476.7.477.7.478.7.479.7.480.7.481.7.482.7.483.7.484.7.485.7.486.7.487.7.488.7.489.7.490.7.491.7.492.7.493.7.494.7.495.7.496.7.497.7.498.7.499.7.500.7.501.7.502.7.503.7.504.7.505.7.506.7.507.7.508.7.509.7.510.7.511.7.512.7.513.7.514.7.515.7.516.7.517.7.518.7.519.7.520.7.521.7.522.7.523.7.524.7.525.7.526.7.527.7.528.7.529.7.530.7.531.7.532.7.533.7.534.7.535.7.536.7.537.7.538.7.539.7.540.7.541.7.542.7.543.7.544.7.545.7.546.7.547.7.548.7.549.7.550.7.551.7.552.7.553.7.554.7.555.7.556.7.557.7.558.7.559.7.560.7.561.7.562.7.563.7.564.7.565.7.566.7.567.7.568.7.569.7.570.7.571.7.572.7.573.7.574.7.575.7.576.7.577.7.578.7.579.7.580.7.581.7.582.7.583.7.584.7.585.7.586.7.587.7.588.7.589.7.590.7.591.7.592.7.593.7.594.7.595.7.596.7.597.7.598.7.599.7.600.7.601.7.602.7.603.7.604.7.605.7.606.7.607.7.608.7.609.7.610.7.611.7.612.7.613.7.614.7.615.7.616.7.617.7.618.7.619.7.620.7.621.7.622.7.623.7.624.7.625.7.626.7.627.7.628.7.629.7.630.7.631.7.632.7.633.7.634.7.635.7.636.7.637.7.638.7.639.7.640.7.641.7.642.7.643.7.644.7.645.7.646.7.647.7.648.7.649.7.650.7.651.7.652.7.653.7.654.7.655.7.656.7.657.7.658.7.659.7.660.7.661.7.662.7.663.7.664.7.665.7.666.7.667.7.668.7.669.7.670.7.671.7.672.7.673.7.674.7.675.7.676.7.677.7.678.7.679.7.680.7.681.7.682.7.683.7.684.7.685.7.686.7.687.7.688.7.689.7.690.7.691.7.692.7.693.7.694.7.695.7.696.7.697.7.698.7.699.7.700

TECHNICAL REQUIREMENTS:

1. THE TUBE SHEET MATERIAL $\frac{1}{2}$ "MM SHALL BE MANUFACTURED, INSPECTED, AND ACCEPTED IN ACCORDANCE WITH NB/T 47008-2017 "CARBON STEEL AND ALLOY STEEL FORGINGS FOR PRESSURE EQUIPMENT," WITH GRADE III BEING ACCEPTABLE. THE MATERIAL SHALL BE SUPPLIED IN THE NORMALIZED CONDITION.
2. THE TUBE SHEET SHALL BE MADE BY FORGING AND OVERLAY WELDING. THE OVERLAY WELDING METHOD SHALL USE STRIP OVERLAY WELDING (OR A SUPERIOR WELDING METHOD, MANUAL WELDING MAY BE USED FOR SPECIAL STRUCTURES); THE OVERLAY WELDING SHALL CONSIST OF AT LEAST TWO LAYERS WITH THE FIRST LAYER BEING A TRANSITION LAYER AND THE REMAINING LAYERS BEING CORROSION-RESISTANT LAYERS. THE TOTAL THICKNESS OF THE OVERLAY WELDING SHALL BE 10mm. AFTER OVERLAY WELDING, THE CHEMICAL COMPOSITION WITHIN 2mm DEPTH BELOW THE SURFACE OF THE CORROSION-RESISTANT LAYER SHALL BE INSPECTED TO MEET THE REQUIREMENTS OF S37603. THE SURFACE OF THE ENTIRE OVERLAY WELDING LAYER SHALL BE FLAT, WITH A FLATNESS TOLERANCE OF 1MM. THE THICKNESS OF THE OVERLAY WELDING LAYER SHALL BE UNIFORM, WITH THE DIFFERENCE BETWEEN THE THICKEST AND THINNEST PARTS BEING ≤ 1 mm. THE THICKNESS OF THE TRANSITION LAYER SHALL BE 3mm.
3. BEFORE OVERLAY WELDING, THE SURFACE TO BE WELDED SHALL BE CLEANED OF OIL, RUST, AND OTHER IMPURITIES. THE SURFACE SHALL THEN UNDERGO 100% MT (MAGNETIC PARTICLE TESTING) INSPECTION, AND NO DEFECTS SUCH AS CRACKS SHALL BE ALLOWED. THE RESULTS SHALL COMPLY WITH GRADE OF NB/T 47013-2015. THE INTERPASS TEMPERATURE DURING OVERLAY WELDING SHALL BE STRICTLY CONTROLLED, AS DETERMINED BY THE WELDING PROCEDURE QUALIFICATION.
4. AFTER COMPLETING THE OVERLAY WELDING OF THE TRANSITION LAYER, STRESS RELIEF TREATMENT SHALL BE PERFORMED, FOLLOWED BY 100% PT (PENETRANT TESTING) INSPECTION, COMPLYING WITH GRADE I OF NB/T 47013-2015. SUBSEQUENTLY, THE CORROSION-RESISTANT LAYER SHALL BE OVERLAY WELDED. AFTER COMPLETING THE OVERLAY WELDING OF THE CORROSION-RESISTANT LAYER AND MACHINING (BEFORE DRILLING), 100% PT INSPECTION SHALL BE PERFORMED, COMPLYING WITH GRADE I OF NB/T 47013-2015. AFTER MACHINING (BEFORE DRILLING), THE OVERLAY WELDED SURFACE SHALL ALSO UNDERGO 100% UT (ULTRASONIC TESTING) INSPECTION, WITH THE ACCEPTANCE CRITERIA COMPLYING WITH GRADE I OF NB/T 47013-2015.
5. OTHER REQUIREMENTS FOR OVERLAY WELDING SHALL ALSO COMPLY WITH THE PROVISIONS OF CLAUSE 9.4 OF HG/T 20584-2020. AFTER COMPLETING THE OVERLAY WELDING AND PASSING THE INSPECTION, THE SEALING SURFACE, JACKING SCREW HOLES, BOLT HOLES, AND TUBE HOLES OF THE TUBE SHEET SHALL BE MACHINED.
6. THE SEALING SURFACE OF THE TUBE SHEET SHALL BE PERPENDICULAR TO THE AXIS, WITH A PERPENDICULARITY TOLERANCE OF 0.30mm.
7. THE DIAMETER OF THE TUBE HOLES ON THE TUBE SHEET SHALL ALLOW NO MORE THAN 4% OF THE TUBE HOLES TO EXCEED THE UPPER DEVIATION OF $\phi 25.25^{+0.05}_{-0.05}$, BUT NOT EXCEEDING 50% OF THE CORRESPONDING UPPER DEVIATION.
8. THE TUBE HOLES SHALL BE STRICTLY PERPENDICULAR TO THE SEALING SURFACE OF THE TUBE SHEET, WITH A PERPENDICULARITY TOLERANCE OF 0.08mm. THE SURFACE OF THE TUBE HOLES SHALL BE CLEAN, FREE OF BURRS, IRON CHIPS, RUST SPOTS, OIL STAINS, AND OTHER IMPURITIES THAT MAY AFFECT THE QUALITY OF EXPANSION OR WELDING CONNECTIONS. THE HOLE SURFACE SHALL NOT HAVE LONGITUDINAL OR SPIRAL SCRATCHES THAT MAY AFFECT THE QUALITY OF EXPANSION.
9. AFTER DRILLING, $\geq 96\%$ OF THE TUBE HOLES ON THE TUBE SHEET SHALL HAVE A BRIDGE WIDTH OF ≥ 0.3 mm, WITH A MINIMUM BRIDGE WIDTH OF 4.05mm ALLOWED FOR NO MORE THAN 4% OF THE TUBE HOLES.
10. THE DIAMETER OF THE BOLT HOLE CENTER CIRCLE ON THE TUBE SHEET AND THE CHORD LENGTH BETWEEN ADJACENT BOLT HOLES SHALL HAVE A LIMIT DEVIATION OF ± 0.6 mm; THE CHORD LENGTH BETWEEN ANY TWO BOLT HOLES SHALL HAVE A LIMIT DEVIATION OF ± 15 mm.
11. THE BASIC DIMENSIONS OF THE THREADS SHALL COMPLY WITH GB/T 196-2003 "GENERAL PURPOSE METRIC SCREW THREADS - BASIC DIMENSIONS," AND THE THREAD TOLERANCES SHALL COMPLY WITH GB/T 197-2018 "GENERAL PURPOSE METRIC SCREW THREADS - TOLERANCES."
12. UNLESS OTHERWISE SPECIFIED, THE LIMIT DEVIATIONS FOR LINEAR DIMENSIONS OF MACHINED AND NON-MACHINED SURFACES SHALL COMPLY WITH GRADE M AND GRADE C OF GB/T 1804-2000, RESPECTIVELY.
13. AFTER COMPLETING THE MACHINING OF THE TUBE SHEET, THE SEALING SURFACE SHALL BE PROTECTED FROM DAMAGE.
14. PRESSURE-RETAINING COMPONENTS MADE OF S37603 MATERIAL AND ITS WELDED JOINTS (INCLUDING WELDING PROCEDURE QUALIFICATION) SHALL UNDERGO INTERGRANULAR CORROSION TESTING (ACCORDING TO METHOD B OF GB/T 4334-2020). THE AVERAGE CORROSION RATE SHALL NOT EXCEED $160 \mu\text{m} \cdot \text{h}^{-1}$. THE SAMPLING AND BATCHING OF CORROSION TEST SPECIMENS SHALL COMPLY WITH THE PROVISIONS OF CLAUSE 8 OF GB/T 21433-2008.

7	左管板 8-50 LEFT TUBESHEET	16Mn四堆焊S31603 16MnMOVWELAY WELDINGS31603	110	HRQ1-00130-01	HRQ1-00130
件号 ITEM NO.	名称 DESCRIPTION	材料 MATERIAL	重量(kg) WEIGHT	所在图号 DWG. NO.	总图号 ASSEMBLY DWG. NO.



技术要求:

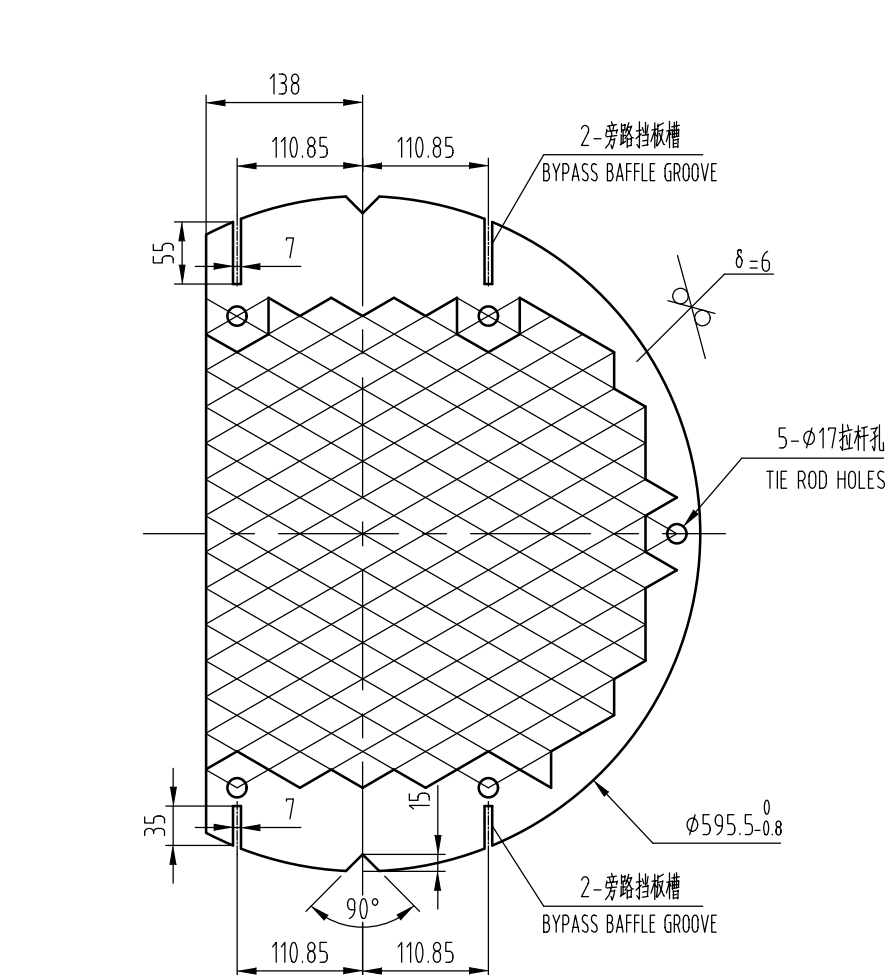
- 本标准附录16中由GB/T 47008-2017《承压设备用复合钢板制压力容器焊接规程》进行修改、调整和补充。
2. 本标准采用有限焊接材料，埋弧方法采用带极埋弧焊性能更优的埋弧工艺。结构钢埋弧焊可不开坡口，埋弧至少由两层组成，第一层为过渡层，其余为熔焊层，熔焊层厚度10mm。埋弧后应修磨熔焊层表面以下2mm深度以内的氧化皮，满足S31603的要求。整个埋弧表面应平整，平面度公差为1mm，埋弧层厚度应均匀，熔层与熔渣之差不大于1mm，过渡层厚度为3mm。
3. 在埋弧前，应修磨待埋弧表面、熔渣和熔渣余量，而后待埋弧表面进行100%PT检测，不得有裂纹等缺陷存在。结果按NB/T 47013.4-2015中的1级合格。埋弧过程中应严格控制层间温度，具体由工艺人员确定。
4. 钢板埋弧焊接完成后应进行熔渣力学处理，而后进行100%PT检测，按NB/T 47013.5-2015中的1级合格；然后再次埋弧熔焊，熔焊层焊接完毕且加工后（钻孔前）进行100%PT检测，按NB/T 47013.5-2015中的1级合格。加工后（钻孔前）的埋弧表面应进行100%UT检测，合格标准按NB/T 47013.3-2023中1级合格。
5. 埋弧其它要求应符合HG/T20584-2020中4.8条要求。埋弧工艺应由焊接合格焊工加工至表面平整、无杂质、熔渣和熔渣孔。
6. 修磨熔焊表面与轴垂直，其垂直度公差为0.30mm。
7. 修磨熔渣垂直，为不大于4%的熔渣垂直度超出0.25±0.05，也不超出相应公差值的50%。
8. 熔渣应平整至表面垂直度，其垂直度公差为0.08mm。修磨熔渣表面应光滑平整，不得有影响熔渣连接接头质量的毛刺、锐角、熔渣、油污等；孔表面不应有影响熔渣连接头质量的纵向或倾斜状缺陷等缺陷。
9. 修磨熔渣后≥96%的熔渣宽度应满足≥5.83mm，光剂≤4%的熔渣剂的最小熔渣宽度为4.05mm。
10. 修磨上壁柱中心距直径和相邻两壁柱直径长度偏差为±0.6mm；两壁柱两壁柱长度偏差为±15mm。
11. 螺柱的基本尺寸按GB/T 196-2003《普通螺柱 基本尺寸》的规定，螺柱公差按GB/T 197-2018《普通螺柱 公差》的规定。
12. 除注明外，机械加工面和机械制孔面尺寸控制按照规范，分别按GB/T 1804-2000中的f和H的规定。
13. 修磨加工完成后应进行表面防腐处理。
14. 承压元件用S31603材料，其焊接接头（包括焊接工艺评定）按GB/T4334-2020方法B进行表面漏磁检测，平均漏磁率应不大于1.6q/m²·h，漏磁峰值和磁链按GB/T4334-2008第8条规定执行。

TECHNICAL REQUIREMENTS:

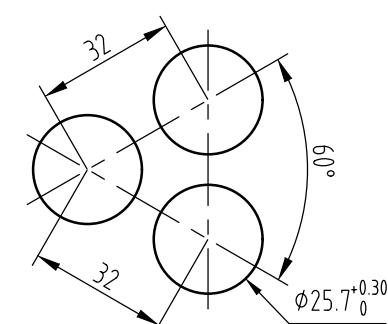
- THE TUBE SHEET MATERIAL 16MM SHALL BE MANUFACTURED, INSPECTED, ACCEPTED IN ACCORDANCE WITH NB/T 47008-2017 "CARBON STEEL AND ALLOY STEEL FORGINGS FOR PRESSURE EQUIPMENT," WITH GRADE III BEING ACCEPTABLE. THE MATERIAL SHALL BE SUPPLIED IN THE NORMALIZED CONDITION.
- 2.THE TUBE SHEET SHALL BE MADE BY FORGING AND OVERLAY WELDING. THE OVERLAY WELDING METHOD SHALL USE STRIP OVERLAY WELDING (OR A SUPERIOR WELDING METHOD; MANUAL WELDING MAY BE USED FOR SPECIAL STRUCTURES). THE OVERLAY WELDING SHALL CONSIST OF AT LEAST TWO LAYERS, WITH THE FIRST LAYER BEING A TRANSITION LAYER AND THE REMAINING LAYERS BEING CORROSION-RESISTANT LAYERS. THE TOTAL THICKNESS OF THE OVERLAY WELDING SHALL BE 10mm. AFTER OVERLAY WELDING, THE CHEMICAL COMPOSITION WITHIN 2mm DEPTH BELOW THE SURFACE OF THE CORROSION-RESISTANT LAYER SHALL BE INSPECTED TO MEET THE REQUIREMENTS OF 53603. THE SURFACE OF THE ENTIRE OVERLAY WELDING LAYER SHALL BE FLAT, WITH A FLATNESS TOLERANCE OF 1MM. THE THICKNESS OF THE OVERLAY WELDING LAYER SHALL BE UNIFORM, WITH THE DIFFERENCE BETWEEN THE THICKEST AND THINNEST PARTS BEING ≤ 1 mm. THE THICKNESS OF THE TRANSITION LAYER SHALL BE 3mm.
- 3.BEFORE OVERLAY WELDING, THE SURFACE TO BE WELDED SHALL BE CLEANED OF OIL, RUST, AND OTHER IMPURITIES. THE SURFACE SHALL THEN UNDERGO 100% MT (MAGNETIC PARTICLE TESTING) INSPECTION, AND NO DEFECTS SUCH AS CRACKS SHALL BE ALLOWED. THE RESULTS SHALL COMPLY WITH GRADE OF NB/T 47013-2015. THE INTERPASS TEMPERATURE DURING OVERLAY WELDING SHALL BE STRICTLY CONTROLLED, AS DETERMINED BY THE WELDING PROCEDURE QUALIFICATION.
- 4.AFTER COMPLETING THE OVERLAY WELDING OF THE TRANSITION LAYER, STRESS RELIEF TREATMENT SHALL BE PERFORMED, FOLLOWED BY 100% PT (PENETRANT TESTING) INSPECTION, COMPLYING WITH GRADE I OF NB/T 47013-2015. SUBSEQUENTLY, THE CORROSION-RESISTANT LAYER SHALL BE OVERLAY WELDED. AFTER COMPLETING THE OVERLAY WELDING OF THE CORROSION-RESISTANT LAYER AND MACHINING (BEFORE DRILLING), 100% PT INSPECTION SHALL BE PERFORMED, COMPLYING WITH GRADE I OF NB/T 47013-2015. AFTER MACHINING (BEFORE DRILLING), THE OVERLAY WELDED SURFACE SHALL ALSO UNDERGO 100% UT (ULTRASONIC TESTING) INSPECTION, WITH THE ACCEPTANCE CRITERIA COMPLYING WITH GRADE I OF NB/T 47013-2023.
- 5.OTHER REQUIREMENTS FOR OVERLAY WELDING SHALL ALSO COMPLY WITH THE PROVISIONS OF CLAUSE 9.4 OF HG/T 20584-2020. AFTER COMPLETING THE OVERLAY WELDING AND PASSING THE INSPECTION, THE SEALING SURFACE, JACKING SCREW HOLES, BOLT HOLES, AND TUBE HOLES OF THE TUBE SHEET SHALL BE MACHINED.
- 6.THE SEALING SURFACE OF THE TUBE SHEET SHALL BE PERPENDICULAR TO THE AXIS, WITH A PERPENDICULARITY TOLERANCE OF 0.30mm.
- 7.THE DIAMETER OF THE TUBE HOLES ON THE TUBE SHEET SHALL ALLOW NO MORE THAN 4% OF THE TUBE HOLES TO EXCEED THE UPPER DEVIATION OF $\phi 25.25^{+0.05}_{-0.05}$, BUT NOT EXCEEDING 50% OF THE CORRESPONDING UPPER DEVIATION.
- 8.THE TUBE HOLES SHALL BE STRICTLY PERPENDICULAR TO THE SEALING SURFACE OF THE TUBE SHEET, WITH A PERPENDICULARITY TOLERANCE OF 0.08mm. THE SURFACE OF THE TUBE HOLES SHALL BE CLEAN, FREE OF BURRS, IRON CHIPS, RUST SPOTS, OIL STAINS, AND OTHER IMPURITIES THAT MAY AFFECT THE QUALITY OF EXPANSION OR WELDING CONNECTIONS. THE HOLE SURFACE SHALL NOT HAVE LONGITUDINAL OR SPIRAL SCRATCHES THAT MAY AFFECT THE QUALITY OF EXPANSION.
- 9.AFTER DRILLING, $\geq 96\%$ OF THE TUBE HOLES ON THE TUBE SHEET SHALL HAVE A BRIDGE WIDTH OF ≥ 5.83 mm, WITH A MINIMUM BRIDGE WIDTH OF 4.05mm ALLOWED FOR NO MORE THAN 4% OF THE TUBE HOLES.
- 10.THE DIAMETER OF THE BOLT HOLE CENTER (CIRCLE ON THE TUBE SHEET AND THE CHORD LENGTH BETWEEN ADJACENT BOLT HOLES) SHALL HAVE A LIMIT DEVIATION OF ± 0.6 mm. THE CHORD LENGTH BETWEEN ANY TWO BOLT HOLES SHALL HAVE A LIMIT DEVIATION OF ± 15 mm.
- 11.THE BASIC DIMENSIONS OF THE THREADS SHALL COMPLY WITH GB/T 196-2003 "GENERAL PURPOSE METRIC SCREW THREADS - BASIC DIMENSIONS," AND THE THREAD TOLERANCES SHALL COMPLY WITH GB/T 197-2018 "GENERAL PURPOSE METRIC SCREW THREADS - TOLERANCES."
- 12.UNLESS OTHERWISE SPECIFIED, THE LIMIT DEVIATIONS FOR LINEAR DIMENSIONS OF MACHINED AND NON-MACHINED SURFACES SHALL COMPLY WITH GRADE M AND GRADE C OF GB/T 1804-2000, RESPECTIVELY.
- 13.AFTER COMPLETING THE MACHINING OF THE TUBE SHEET, THE SEALING SURFACE SHALL BE PROTECTED FROM DAMAGE.
- 14.PRESSURE-RETAINING COMPONENTS MADE OF 53603 MATERIAL AND ITS WELDED JOINTS (INCLUDING WELDING PROCEDURE QUALIFICATION) SHALL UNDERGO INTEGRAL/RANDOM CORROSION TESTING ACCORDING TO METHOD B OF GB/T 4334-2020. THE AVERAGE CORROSION RATE SHALL NOT EXCEED $166\text{mm}^3/\text{m}^2 \cdot \text{H}$. THE SAMPLING AND BATCHING OF CORROSION TEST SPECIMENS SHALL COMPLY WITH THE PROVISIONS OF CLAUSE 8 OF GB/T 21433-2008.

15	右管板 6-50 RIGHT TUBESHEET	16Mn凹焊管 S31603 16Mn OVERLAY WELDINGS31603	110	HRQ01-00130-01	HRQ01-00130
件号 ITEM NO.	名称 DESCRIPTION	材料 MATERIAL	重量(kg) WEIGHT	所在图号 DWG NO.	总图号 ASSEMBLY DWG NO.
校核 CHECK	制图 DRAWING	审核 REVIEW	签名 SIGN	日期 DATE	日期 DATE
人员 STAFF	姓名 SHE	日期 DATE	人员 STAFF	姓名 SHE	日期 DATE
设计 DESIGN	黄鹏王	2025.5.7	焊接 WELDING	材料 MATERIAL	设备名称 EQUIPMENT
校核 CHECK	刘瑞	2025.5.7	标准号 STANDARD	板厚 REV	气体冷却器 E-2303 GAS COOLER
审核 REVIEW	张强	2025.5.7	比例 SCALE	第 1 张 共 1 张 SHEET NO. 1 OF 1	图号 DWG NO.
			批准 APPROVAL	1:5	HRQ01-00130-01

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管孔排列详图
DETAILED DRAWING OF PIPE HOLE ARRANGEMENT
不按比例
NO SCALE



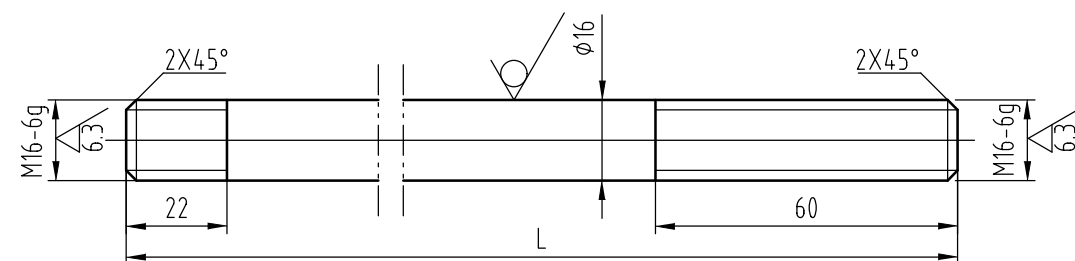
技术要求:

- 1、折流板应平整，平面度公差为3mm。
- 2、相邻两孔中心距极限偏差为 ± 0.3 mm，允许有4%相邻两孔中心距极限偏差为 ± 0.5 mm，任意两管孔中心距极限偏差为 ± 1 mm。
- 3、钻孔后去除管孔周边毛刺。
- 4、折流板整圆下料，所有折流板夹装在一起同时钻孔后切割。

TECHNICAL REQUIREMENTS:

1. THE BAFFLE SHOULD BE FLAT WITH A FLATNESS TOLERANCE OF 3MM.
2. THE MAXIMUM DEVIATION OF THE CENTER DISTANCE BETWEEN ADJACENT TWO HOLES IS $\pm 0.3\text{MM}$, WITH A ALLOWABLE DEVIATION OF 4%.
THE MAXIMUM DEVIATION OF THE CENTER DISTANCE BETWEEN ADJACENT TWO HOLES IS $\pm 0.5\text{MM}$, AND THE MAXIMUM DEVIATION OF
THE CENTER DISTANCE BETWEEN ANY TWO PIPE HOLES IS $\pm 1\text{MM}$.
3. REMOVE BURRS AROUND THE PIPE HOLE AFTER DRILLING.
4. ROUND CUTTING OF BAFFLE PLATES, ALL BAFFLE PLATES CLAMPED TOGETHER AND DRILLED SIMULTANEOUSLY BEFORE CUTTING.

13	折流板 $\delta=6$ BAFFLE PLATE	Q235B	4	HRQ01-00130-02	HRQ01-00130
件号 ITEM NO.	名称 DESCRIPTION	材料 MATERIAL	重量(kg) WEIGHT	所在图号 DWG. NO.	总图号 ASSEMBLY DWG. NO.



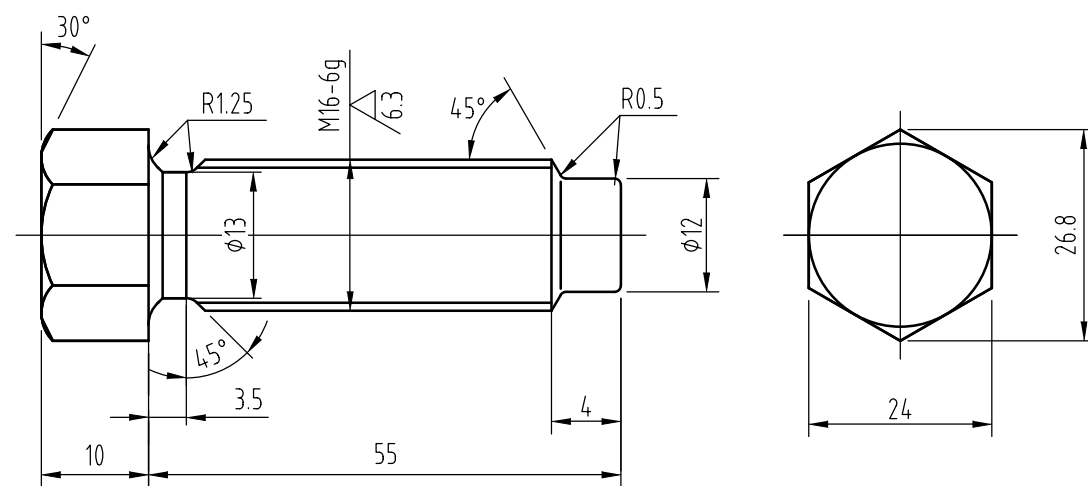
技术要求:

- 1、螺紋的基本尺寸符合GB/T196-2003《普通螺紋基本尺寸》的規定。
- 2、螺紋公差與配合符合GB/T197-2018《普通螺紋公差》的規定。
- 3、螺紋表面不允許有裂紋、碰撞和毛刺，其餘按GB/T5779.1-2000規定。

TECHNICAL REQUIREMENTS:

1. THE BASIC DIMENSIONS OF THREADS COMPLY WITH THE PROVISIONS OF GB/T196-2003 "BASIC DIMENSIONS OF GENERAL THREADS".
2. THE THREAD TOLERANCE AND FIT SHALL COMPLY WITH THE PROVISIONS OF GB/T197-2018 GENERAL THREAD TOLERANCE.
3. CRACKS, COLLISIONS, AND BURRS ARE NOT ALLOWED ON THE SURFACE OF THE THREAD, AND THE REST SHALL COMPLY WITH THE PROVISIONS OF GB/T5779.1-2000.

27	长拉杆 TIE ROD	Q235B	4	HRQ01-00130-02	HRQ01-00130
26	短拉杆 TIE ROD	Q235B	3.7	HRQ01-00130-02	HRQ01-00130
件号 ITEM NO.	名称 DESCRIPTION	材料 MATERIAL	重量(kg) WEIGHT	所在图号 DWG. NO.	总图号 ASSEMBLY DWG. NO.



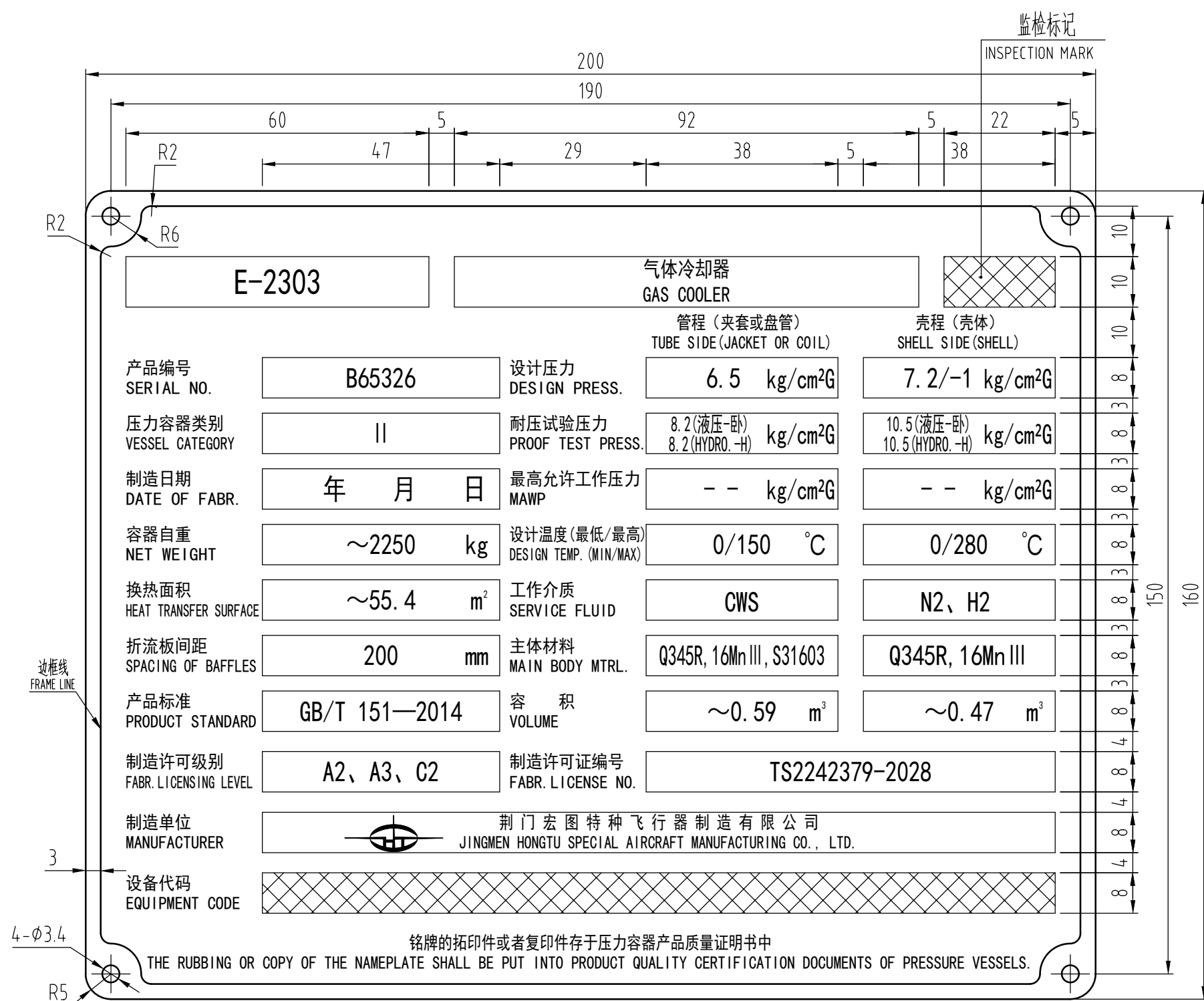
技术要求:

- 1、螺纹的基本尺寸符合GB/T196-2003《普通螺纹基本尺寸》的规定。
- 2、螺纹表面不允许有裂纹、碰撞和毛刺。

TECHNICAL REQUIREMENTS:

1. THE BASIC DIMENSIONS OF THREADS COMPLY WITH THE PROVISIONS OF GB/T196-2003 "BASIC DIMENSIONS OF GENERAL THREADS".
2. CRACKS, COLLISIONS, AND BURRS ARE NOT ALLOWED ON THE SURFACE OF THE THREAD.

14	顶丝 M16x55 JACKSCREW	S30408	0.12	HRQ01-00130-02	HRQ01-00130
件号 ITEM NO.	名称 DESCRIPTION	材料 MATERIAL	重量(kg) WEIGHT	所在图号 DWG. NO.	总图号 ASSEMBLY DWG. NO.




技术要求:

- 1、边框线与 之间除文字外的表面, 以及 内的文字, 刻深 0.2mm, 涂黑色。
- 2、 外的文字字体为黑体字, 文字高度为 2.5mm, 内的文字字体和高度见 22150-STD-EQ001.2。
- 3、 内填写的具体内容见 22150-STD-EQ001.2 中的说明。
- 4、文字应排列整齐、紧凑、匀称。

TECHNICAL REQUIREMENTS:

1. ALL THE SURFACE EXCEPT LETTERS BETWEEN FRAME LINE AND [] , AND THE LETTERS IN [] TO BE ETCHED 0.2mm IN DEPTH AND BLACKED.
2. LETTERS OUT OF [] SHALL BE BOLDFACE WITH HEIGHT 2.5mm, THE LETTERS IN [] , THE FONT TYPE AND HEIGHT REFER TO 22150-STD-EQ0012.
3. PARTICULAR CONTENT TO BE FILLED IN [] REFER TO THE REQUIREMENT IN 22150-STD-EQ0012.
4. ALL LETTERS SHALL BE REGULAR, COMPACT AND WELL PROPORTIONED.

3		A	RIVETS	铆钉 3x10	4	ML2	/	/			
2		A	NAMEPLATE BRACKET I	铭牌托架 I-H-200	1	Q345R		4.8	22150-STD-EQ00102		
1		A	NAMEPLATE	铭牌 δ=1	1	S30408		0.25			
序号 ITEM NO.	图号 DWG NO.	版本 ISSU	英文名称 ENGLISH NAME	中文名称和标准号 CHINESE NAME & STANDARD NO	数量 QTY	材 料 MATERIAL	单件 EACH	总计 TOT	备 注 REMARK		
							质量 WEIGHT (KG)				
10			铭牌及铭牌座 NAMEPLATE AND NAMEPLATE HOLDER	组合件 ASSEMBLY	5.05			HRQ1-00130-02	HRQ1-00130		
件号 ITEM NO.			名 称 DESCRIPTION	材 料 MATERIAL	重量(kg) WEIGHT			所在图号 DWG. NO.	总图号 ASSEMBLY DWG. NO.		

						 荆门宏图特种飞行器制造有限公司 JINGMEN HONGTU SPECIAL AIRCRAFT MANUFACTURING CO., LTD.	
标记 MARK	处数 NUM	更改编号 ACT NO.	签名 SIG	日期 DATE			
人员 STAFF	签名 SIG	日期 DATE	人员 STAFF	签名 SIG	日期 DATE	质量 WEIGHT(kg)	/
制图 DRAWING			工艺 CRAFT WORKING			材料 MATERIAL	工
设计 DESIGN	肖鹏飞	2025.5.7	焊接 WELDING			版本 REV.	D
校核 CHECK	刘辉	2025.5.7	标准化 STANDARD			比例 SCALE	/
审核 REVIEW	肖鹏飞	2025.5.7	批准 APPROVAL			第 1 张 共 1 张 SHEET NO. 1 OF 1	设备名称 EQUIPMENT NAME 气体冷却器 E-2303 GAS COOLER 图号 DWG.NO. HRQ01-00130-02
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