

MTE Report No: 56624
Part#: 14396.3
WO#: 929321

Certificate of compliance and test report – welded or brazed cylinders
Manufactured under Dept. of Transportation regulations

Manufacturer: MANCHESTER TANK & EQUIP.

Location: 3400 Wismann Lane, QUINCY, IL 62301-1256 USA

CYLINDER DESCRIPTION AND DESIGN CRITERIA:

DOT spec. 4BW Service Pressure: 400 psi
Nominal size: 16.000in. O.D.x 37.250in. Long Test Pressure: 800 psi
Nominal volumetric capacity: 235.0 lb Minimum wall: 0.173 in.
Tare weight range: 130.68 - 133.32 lb Calculated stress @ T.P: 34965 psi
Joint Efficiency: Spot X-Ray for 90% Joint Efficiency.

MANUFACTURING PROCESS:

Construction: (Welded, brazed, type seams, etc) These Cylinders were made by process of electric arc welding semi-elliptical heads to a rolled shell. The Longitudinal butt seam was butt welded, per 178.61-(d)(3)(i). The circumferential seams were Joggle butt welded, per 178.61(d)(2).

MATERIAL AND HEAT TREATMENT: _____

Material was type 3 authorized in Table 1 of Appendix A of Part 178.

The material was identified by Heat Numbers: 213408,C79546

REPORT DETAILS:

Quantity: 13 Test date: 07/2017
Serial# Range: AA869381 – AA869393 Heat no. or code: 192RH,175CS
Identifying symbol: M4502 Lot numbers: 1 - 1
MARKINGS: _____ Inspector's mark: PR

MANUFACTURED FOR: STOCK

CONSIGNEE TO: _____

I hereby certify that I have determined that cylinders described on this report comply with the requirements of Dept. of Transportation specification Title 49 CFR, Part 178.61

Remarks: Tare Weights include valves.

Signed: 
Peggy Reeves

Location: QUINCY, IL

Date: 08-02-17

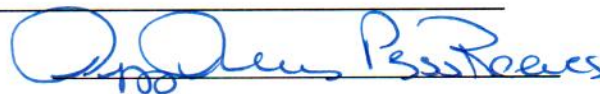
Record of chemical analysis of material for cylinders

Serial no range: AA869381 to AA869393 inclusiveCylinder size: 16.000in. O.D. x 37.250in. longCylinder Manufacturer: MANCHESTER TANK & EQUIP.

| Heat and Code number. | Type of Analysis (ladle/check) | Chemical Analysis | | | | | | | | | |
|-----------------------------------------------------------------------|--------------------------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------------------|--|
| | | C Ni | Mn Cu | P Cr | S Mo | Si Ti | Al Mg | Cb Zn | V Fe | Other 1 Name - Sym Other 2 Name - Sym | |
| 192RH - 213408 MANUF BY: RAO TESTED BY: RAO | Ladle | 0.040 0.100 | 0.850 0.140 | 0.016 0.080 | 0.004 0.010 | 0.020 0.001 | 0.020 0.000 | 0.000 0.000 | 0.001 0.000 | - - | |
| 175CS - C79546 MANUF BY: NUCOR STEEL TESTED BY: NUCOR STEEL | Ladle | 0.040 0.030 | 0.860 0.090 | 0.009 0.050 | 0.004 0.020 | 0.020 0.001 | 0.022 0.000 | 0.037 0.000 | 0.001 0.000 | - - | |

Material manufacturer: Manufacturers listed in above data.

The above analyses have been verified to comply with material authorized by the specification. Chemical Analyses were made by Companies listed in above data.


Location: QUINCY, ILDate: 08-02-17

Record of physical test of material for cylinders

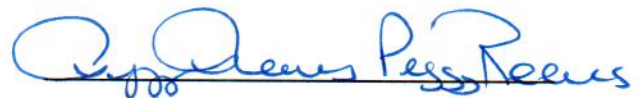
Serial no range: AA869381 to AA869393 inclusiveCylinder size: 16.000 in. O.D. x 37.250 in. longCylinder Manufacturer: MANCHESTER TANK & EQUIP.Type of heat treatment: Cylinders were heat treated in excess of 1100F, in accordance with the 4BW Cylinder Spec.

| First Serial# Last Serial# Min Wall Thick Wall Stress | Lot number | Heat Code | Yield strength Psi | Tensile strength Psi | Yield/ tensile ratio* | Elongation % in Inches** Length % | Red in area % | Weld test * tensile bend | Flat test * | Burst test * | Cycle test * |
|----------------------------------------------------------------|----------------------------|-------------------------|--------------------------|-----------------------------|-----------------------------|--------------------------------------------|---------------------|-----------------------------------|-------------------|--------------------|--------------------|
| AA869381 AA869393 0.212 in 28539 psi | 1-HT 1-HB 1-S 1-W | 192RH 192RH 175CS | 52609 54497 | 77380 81824 76373 | % % | 17.5 16.8 | 77.5 72.4 | SAT SAT | | PASS | |

HT – Head Top HB – Head Bottom S – Side Wall W – Weld PM – Parent Material SAT - Satisfactory

* Where applicable

** Insert gage length of specimen


Location: QUINCY, ILDate: 08-02-17

Record of hydrostatic tests of cylinders (sample basis)

Serial no range: AA869381 to AA869393 inclusiveCylinder size: 16.000 in. O.D. x 37.250 in. longCylinder Manufacturer: MANCHESTER TANK & EQUIP.Test method: Water Jacket method, per CGA C-1.Test pressure: 800 psi

| Lot # | Serial # Range | Lot Size | Permanent Expansion Cm ³ | Total Expansion Cm ³ | % Ratio of Permanent to Total Expansion | Volumetric Capacity (lbs.) |
|-------|---------------------|----------|----------------------------------------|------------------------------------|-----------------------------------------|-------------------------------|
| 1 | AA869381 - AA869393 | 13 | 10.00 | 270.00 | 3.7 | 235.0 |

The above results represent sample cylinders selected from each lot. All other cylinders in the lot were subjected To a proof pressure of 800 psi and showed no defects.

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