

114440 D-6031 Job No: 13961

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS (1) 10"-118 Sq. Ft.

as required by the provisions of the ASME Code rules, Section VIII, Division 1 FTSSX Heat Exchanger

1. Manufactured and certified by Perry Products Corporation, 25 Mt. Laurel Road, Hainesport, NJ 08036
(name and address of manufacturer)
2. Manufactured for Sofix Corporation, 101 Northgate Commercial Center, Chattanooga, TN 37415
(name and address of purchaser)
3. Location of installation Sofix Corporation, 2800 Riverport Road, Chattanooga, TN 37406
(name and address)
4. Type: Horizontal B-4615 -- D-91123-1 4236 1991
(horiz. or vert. tank) (mfr's. serial no.) (CRN) (drawing no.) (Nat'l. Bd. no.) (year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1989
(year)

Items 6-11 inclusive to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers.

6. Shell: SA312-T304 S/S .134" "0" 0'-10-3/4" O.D. 5'-11-3/4" Lg.
(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
7. Seams: Welded -- 85 -- -- -- 1
(long. (dbl., snl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., snl.)) (RT (spot, partial, or full)) (no. of courses)
8. Heads: (a) -- (b) --
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

| | Location (top, bottom, ends) | Minimum Thickness | Corrosion Allowance | Crown Radius | Knuckle Radius | Elliptical Ratio | Conical Apex Angle | Hemispherical Radius | Flat Diameter | Side to Pressure (convex or concave) |
|-----|------------------------------|-------------------|---------------------|--------------|----------------|------------------|--------------------|----------------------|---------------|--------------------------------------|
| (a) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| (b) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

If removable, bolts used (describe other fastenings): --

(mat'l., spec. no., gr., size, no.)

9. Type of jacket: -- Proof test: --
10. Jacket closure: -- If bar, give dimensions: -- If bolted, describe or sketch.
(describe as ogee & weld, bar, etc.)
11. MAWP: 85 at max. temp. 300 Min design metal temp.: 20 at 85 Hydro., pres. or comb. test pressure 145
(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA240-T304 10-3/4" O.D. 3/4" Thk. "0" Welded
(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
- Body Flanges: SA105 10-3/4" I.D. 150# Std. "0" Retained by Liner
(floating mat'l. (spec. no., gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)
13. Tubes: SA249-T304 5/8" 18 Ga. 121 straight
(mat'l. (spec. no., gr.)) (OD (in.)) (nom. thickness (in. or gauge)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: SA312-T304 S/S .165" "0" 0'-10-3/4" O.D. 1 @ 8" Lg.
(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
15. Seams: Welded -- 85 -- -- DBV 1
(long (dbl., snl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., snl.)) (RT (spot, partial, or full)) (no. of courses)
16. Heads: (a) SA105 C/S (b) --
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

| | Location (top, bottom, ends) | Minimum Thickness | Corrosion Allowance | Crown Radius | Knuckle Radius | Elliptical Ratio | Conical Apex Angle | Hemispherical Radius | Flat Diameter | Side to Pressure (convex or concave) |
|-----|------------------------------|-------------------|---------------------|--------------|----------------|------------------|--------------------|----------------------|---------------|--------------------------------------|
| (a) | R. End | 1-3/16 | "0" | -- | -- | -- | -- | -- | 10-3/4" | Concave |
| (b) | L. End | -- | -- | -- | -- | -- | -- | -- | -- | -- |

If removable, bolts used (describe other fastenings): (12) 7/8" Dia. x 5-1/2" Lg. C/S studs SA193 B7

(mat'l., spec. no., gr., size, no.)

17. MAWP: 35/FV at max. temp. 300 Min design metal temp.: 20 at 35/FV Hydro., pres. or comb. test pressure 60
(psi) (°F) (°F) (psi) (psi)

FORM U-1 (back)

18. Nozzles, inspection and safety valve openings:

| Purpose (inlet, outlet, drain, etc.) | Number | Dis. or Size | Type | Mat'l. | Nom. Thickness | Reinforcement Material | How Attached | Location |
|--------------------------------------|--------|--------------|--------|------------|----------------|------------------------|--------------|----------|
| Inlet | 1 | 4" | CL-150 | SA312 T304 | Sch #10 | Inherent | Welded | Bonnet |
| Outlet | 1 | 2" | CL-150 | SA312 T304 | Sch #10 | Inherent | Welded | Bonnet |
| Inlet and Outlet | 2 | 2" | CL-150 | SA312 T304 | Sch #10 | Inherent | Welded | Shell |

19. Supports: Skirt -- Lugs 2 Legs -- Other -- Attached Welded to main shell
(yes or no) (no.) (no.) (describe) (where and how)

20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____

(name of part, item number, mfr's. name and identifying stamp)

Unit not designed for lethal service. Unit designed for non-corrosive service. Unit hydro-tested in horizontal position. Exempt from impact testing per Code paragraphs UG-20 (b), UCS-66 and UHA-51. Safety valve connection located elsewhere in system. One bonnet consisting of 10"x4" Sch #10 concentric reducer T-304, SA403.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization no. 4328 expires Dec. 31, 19 91.

Date 8-19-91 Name Perry Products Corporation Signed J. H. J. H. J.
(manufacturer) (representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Perry Products Corporation at Hainesport, NJ.

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of New Jersey and employed by Lumbermens Mutual Casualty Co. of Long Grove, IL

of _____ have inspected the pressure vessel described in this Manufacturers' Data Report on 8-18-, 19 91, and state that, to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 8/19/91 Signed [Signature] Commissions N97050, NJ 476
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19 _____.

Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the state or province of _____ and employed by _____

of _____ have compared the statements in this Manufacturers' Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

C-6031 Job No: 13961

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS (1) 10"-118 Sq. Ft.

as required by the provisions of the ASME Code rules, Section VIII, Division 1 FTSSX Heat Exchanger

1. Manufactured and certified by Perry Products Corporation, 25 Mt. Laurel Road, Hainesport, NJ 08036
(name and address of manufacturer)
2. Manufactured for Sofix Corporation, 101 Northgate Commercial Center, Chattanooga, TN 37415
(name and address of purchaser)
3. Location of installation Sofix Corporation, 2800 Riverport Road, Chattanooga, TN 37406
(name and address)
4. Type: Horizontal B-4615 -- D-91123-1 4236 1991
(horiz. or vert., tank) (mfr's. serial no.) (CRN) (drawing no.) (Nat'l. Bd. no.) (year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1989
(year)
- 1989 -- --
(addenda (Date)) (Code Case no.) (special service per UG-120(d))

Items 6-11 inclusive to be completed for single wall vessels, jackets or jackets of vessels, or shells of heat exchangers.

6. Shell: SA312-T304 S/S .134" "0" 0'-10-3/4" O.D. 5'-11-3/4" Lg.
(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
7. Seams: Welded -- 85 -- -- -- -- 1
(long. (dbl., singl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., singl.)) (RT (spot, partial, or full)) (no. of courses)

8. Heads: (a) -- (b) --
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

| | Location (top, bottom, ends) | Minimum Thickness | Corrosion Allowance | Crown Radius | Knuckle Radius | Elliptical Ratio | Conical Apex Angle | Hemispherical Radius | Flat Diameter | Side to Pressure (convex or concave) |
|-----|------------------------------|-------------------|---------------------|--------------|----------------|------------------|--------------------|----------------------|---------------|--------------------------------------|
| (a) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| (b) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

If removable, bolts used (describe other fastenings): --

(mat'l., spec. no., gr., size, no.)

9. Type of jacket: -- Proof test: --
10. Jacket closure: -- If bar, give dimensions: -- If bolted, describe or sketch.
(describe as ogee & weld, bar, etc.)
11. MAWP: 85 at max. temp. 300 Min design metal temp.: 20 at 85 Hydro., pres. or comb. test pressure 145
(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA240-T304 10-3/4" O.D. 3/4" Thk. "0" Welded
(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
- Body Flanges: SA105 10-3/4" I.D. 150# Std. "0" Retained by Liners
(floating mat'l. (spec. no., gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)
13. Tubes: SA249-T304 5/8" 18 Ga. 121 straight
(mat'l. (spec. no., gr.)) (OD (in.)) (nom. thickness (in. or gauge)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers or jackets of vessels or channels of heat exchangers.

14. Shell: SA312-T304 S/S .165" "0" 0'-10-3/4" O.D. 1 @ 8" Lg.
(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
15. Seams: Welded -- 85 -- -- DBW -- 1
(long. (dbl., singl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., singl.)) (RT (spot, partial, or full)) (no. of courses)
16. Heads: (a) SA105 C/S (b) --
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

| | Location (top, bottom, ends) | Minimum Thickness | Corrosion Allowance | Crown Radius | Knuckle Radius | Elliptical Ratio | Conical Apex Angle | Hemispherical Radius | Flat Diameter | Side to Pressure (convex or concave) |
|-----|------------------------------|-------------------|---------------------|--------------|----------------|------------------|--------------------|----------------------|---------------|--------------------------------------|
| (a) | R. End | 1-3/16 | "0" | -- | -- | -- | -- | -- | 10-3/4" | Concave |
| (b) | L. End | -- | -- | -- | -- | -- | -- | -- | -- | -- |

If removable, bolts used (describe other fastenings): (12) 7/8" Dia. x 5-1/2" Lg. C/S studs SA193 B7

(mat'l., spec. no., gr., size, no.)

17. MAWP: 35/FV at max. temp. 300 Min design metal temp.: 20 at 35/FV Hydro., pres. or comb. test pressure 60
(psi) (°F) (°F) (psi) (psi)

FORM U-1 (back)

18. Nozzles, inspection and safety valve openings:

| Purpose (inlet, outlet, drain, etc.) | Number | Dia. or Size | Type | Mat'l. | Nom. Thickness | Reinforcement Material | How Attached | Location |
|--------------------------------------|--------|--------------|--------|--------|----------------|------------------------|--------------|----------|
| Inlet | 1 | 4" | CL-150 | SA312 | Sch #10 | Inherent | Welded | Bonnet |
| | | | | T304 | | | | |
| Outlet | 1 | 2" | CL-150 | SA312 | Sch #10 | Inherent | Welded | Bonnet |
| | | | | T304 | | | | |
| Inlet and Outlet | 2 | 2" | CL-150 | SA312 | Sch #10 | Inherent | Welded | Shell |
| | | | | T304 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

19. Supports: Skirt -- Lugs 2 Legs -- Other -- Attached Welded to main shell
(yes or no) (no.) (no.) (describe) (where and how)

20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____

(name of part, item number, mfr's. name and identifying stamp)

Unit not designed for lethal service. Unit designed for non-corrosive service. Unit hydro-tested in horizontal position. Exempt from impact testing per Code paragraphs UG-20 (b), UCS-66 and UHA-51. Safety valve connection located elsewhere in system. One bonnet consisting of 10"x4" Sch #10 concentric reducer T-304, SA403.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization no. 4328 expires Dec. 31, 19 91.

Date 8-19-91 Name Perry Products Corporation Signed J. H. J. J. J.
(manufacturer) (representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Perry Products Corporation at Hainesport, NJ.

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of New Jersey and employed by Lumbermens Mutual Casualty Co. of Long Grove, IL

of _____ have inspected the pressure vessel described in this Manufacturers' Data Report on 8-18-, 19 91, and state that, to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 8/19/91 Signed [Signature] Commissions NB 7050, NJ 476
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19 _____.

Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the state or province of _____ and employed by _____

of _____ have compared the statements in this Manufacturers' Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)