



# TEST REPORT

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**Report Number:** 907-15010

**Report Issued:** March 2<sup>nd</sup>, 2015

**Client:** Thermaco  
646 Greensboro St.  
Asheboro, NC 27203

**Project Number:** 24390

**Contact:** Bill Batten

**Source of Samples:** Samples were manufactured at the Thermaco facility in Asheboro, North Carolina and witnessed tested by Dale E. Holloway of IAPMO R&T Lab. Samples are manufactured in good condition.

**Date of Testing:** February 23<sup>rd</sup>, 2015 through February 27<sup>th</sup>, 2015

**Sample Description:** Model “TZ-1826” Grease Interceptor.

Refer to the manufacturer’s drawings and installation instructions for more detailed measurements and information.

**Scope of Testing:** The above grease interceptor was witnessed tested to meet the requirements of ASME A112.14.3-2000 (Reaffirmed 2004) “Grease Interceptors”.

**Conclusion:** The “TZ-1826” Grease Interceptor DID COMPLY with the requirements of ASME A112.14.3-2000 (Reaffirmed 2004) for “Grease Interceptors”.

By the signature below, I certify that all the testing and preparation for this report was performed under direct supervision of IAPMO R&T Lab, unless otherwise stated.

Witness tested and reported by,

A handwritten signature in black ink that reads "Dale E. Holloway". The signature is written in a cursive, flowing style.

Dale E. Holloway, Regional Technical Manager  
IAPMO R&T Lab

**Primary Standards: ASME A112.14.3-2000 (Reaffirmed 2004)**

- |     |                                   |     |                                    |
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Test Results: All test and evaluations were conducted per the written procedures in the specific standards.

**ASME A112.14.3-2000 (Reaffirmed 2004)**

**2 General Requirements:**

2.1 Design: **COMPLIES**

The grease interceptor complies with all the applicable requirements of ASME B1.20.1 and ASTM A888.

2.2 Rating: **COMPLIES**

The unit tested was a "Type A" - Units with an external flow control, with air intake (vent): directly connected.

The manufacturer's installation instruction's identifies installation parameters consistent with the test parameters.

2.3 Inlet and Outlet Connections: **COMPLIES**

Inlet and Outlet connections - Hubless coupling is compliant with ASTM A888

2.4 Flow Controls and/or Vents: **COMPLIES**

2.4.1 Flow control and Vents or air intakes were used.

2.4.2 When a flow control and/or vent is used during testing for rating a grease interceptor, the rating of the unit did not exceed the maximum flow through the flow control.

The manufacturer's literature reflected that the rating was achieved with the flow control and vent attached, and that the flow control and vent was installed with the unit.

### 3 Testing

#### 3.1 Construction of Test Equipment:

##### 3.1.1 Test Sink: **COMPLIES**

Length - 8 ft. (8 ft)  
Width - 2 ft. (2 ft)  
Depth - 12.5" (12.5 inches)

Corrosion Resistant Material - stainless steel (yes)

Number of compartments - 2 (2)  
Compartment length - 4 (4 ft)

Structurally reinforced - yes (yes)  
Supported on legs - yes (yes)  
Rim height with legs - 3' (3 ft)  
Legs structurally supported - yes (yes)

The flow rate was 100 gpm, therefore two sinks (with two compartments) were used.

##### 3.1.1.1 Sink Waste Connections: **COMPLIES**

Each sink compartment was fitted with a 1-1/2" standard sink waste connection with flange, crossbars, slip joint tailpiece, and locknut.

The waste connections were located on opposite sides of the center partition in the corner formed by the side of the sink and the center partition.

##### 3.1.1.2 Water Level Gauges: **COMPLIES**

Each compartment was equipped with a gauge connection and a water level gauge with gauge glass.

Each gauge connection was fitted into the bottom of a sink compartment and in close proximity to the waste outlet.

Each gauge was mounted on the outside of the sink, adjacent to its respective gauge connection, and extended diagonally upward from the bottom center to the top outside corners.

The gauges were calibrated to read directly the number of inches of water in the sink compartments above the sink waste flange.

##### 3.1.1.3 Movable Sink Partitions: **NOT APPLICABLE**

Each compartment of the sink was fitted with a movable partition, making it possible to regulate the size of the compartment to any desired capacity.

3.1.2 Skimming Tank: **COMPLIES**

The skimming tank was rectangular in shape; open at the top and equipped with a stationary baffle located approximately 3 feet from the end of the tank receiving the discharge from the interceptor.

The baffle extended the width of the tank and to within 4 inches of the bottom of the tank.

Tank Length - 12' See Note 1 below

Tank Width - 36" See Note 1 below

Tank Depth - 28" See Note 1 below

Note 1- The tank was designed to the requirements in the 2014-15 draft of ASME A112.14.3 for flows of 100 gpm or more.

Tank was made of corrosion resistant material - yes (yes)

Tank was structurally reinforced - yes (yes)

Waste outlet diameter - 4" (4 inches)

The waste outlet was connected to the bottom of the tank at one end and trapped to retain approximately 26 inches of water in the tank.

The tank provided a 4 inch bottom drain valve to permit draining and cleaning.

3.2 Installation of Testing Equipment:

3.2.1 Direct Connection Test Types A, B, and C:

Findings- The "TZ-1826" was a Type A unit.

3.2.1.1 Waste Piping: **COMPLIES**

The combined horizontal waste, vertical waste riser, interceptor inlet, and discharge piping shall; be 2 inches for test flows of 50 gpm or less and 3 inches for test flows over 50 gpm.

Findings - Test flow was 100 gpm. Pipe size was 3" inches.

3.2.1.2 Sink and Interceptor Locations: **COMPLIES**

The sink was located with the sink rim 13 feet above the outside bottom of the grease interceptor being tested.

3.2.1.3 Skimming Tank Location: **COMPLIES**

The skimming tank was located low enough, with respect to the interceptor, for the discharge piping from the interceptor to clear the tank rim by not less than 3 inches.

3.2.1.4 Installation of Waste Piping: **COMPLIES**

- (a) *Sink Connections*- The sink outlet waste connection from each sink compartment was 1-½ inches in size and each connection was fitted with a quick-opening gate valve.
- (b) *Combined Horizontal Waste Piping*- The combined horizontal waste piping into which the sink outlets connect were installed with the center line 11 inches below the bottom of the sink and properly hung and braced from the sink reinforcement and supports.  
The waste pipe was fitted to the inlet of a flow control and vent.
- (c) *Flow Control and/or Vent Device (Optional)*- The flow control and device was adequate in size for the interceptor to be tested and was equipped with the proper size orifice and/or other details to provide the proposed flow rate of the subject interceptor. The waste piping on either side of the flow control and vent was fitted with unions to permit removal of the device.
- (d) *Vertical Waste Riser*- The vertical waste riser was connected to the outlet of the flow control and vent device and extended downward to connect to the grease interceptor inlet by means of an elbow and a short horizontal nipple.
- (e) *Interceptor Discharge*- The discharge pipe from the interceptor outlet to the skimming tank had a minimum pitch of 1/8 inch per foot and was provided with a 2 inch vent properly located to prevent siphoning of the interceptor.
- (f) *Interceptor Connections*- When inlet and outlet openings of the interceptor exceed 2 inches or 3 inches for test flows exceeding 50 gpm, reducing couplings were used to permit connections of the 2 inch or 3 inch.

3.2.2 Indirect Connection Test Type D: **NOT APPLICABLE**

3.3 Preliminary Test Procedure:

3.3.1 Media Analysis: **COMPLIES**

pH of water - 6.4 (6.0 to 8.0)

Specific Gravity of Lard - 0.875 at 150°F (0.875 ± 0.005 at 150°F)

3.3.2 Establishing Sink Compartment Capacity: **COMPLIES**

Capacity of compartment 1- 120 gallons (1.2 x flow rate of interceptor)

Capacity of compartment 2- 120 gallons (1.2 x flow rate of interceptor)

3.3.3 Establishing Vol. of Incremental Discharge: (based on 10" water above sink outlet): **COMPLIES**

Compartment 1 Discharge - 100 gallons (equal to flow rate of interceptor)

Compartment 2 Discharge - 100 gallons (equal to flow rate of interceptor)

3.3.4 Computation of Flow Rate: **FOLLOWED**

The flow rate from the sink was computed by timing the rate of drainage of the first 9 ½" of water from the sink compartment, measured from the 10" mark to the datum line ½" above the sink outlet flange.

3.3.4.1 Check Flow Rate Tests: **COMPLIES**

Test number	Compartment	Time (sec)	gpm	Based on Time
1	1	84	67.9	-
2	1	82	69.5	-
3	1	85	67.1	-
			<b>Avg: 68.2</b>	
1	2	85	67.1	-
2	2	83	68.7	-
3	2	86	66.3	-
			<b>Avg: 67.4</b>	
1	1 & 2 simultaneous	113	100.9	Compartment 1
2	1 & 2 simultaneous	109	104.6	Compartment 1
3	1 & 2 simultaneous	113	100.9	Compartment 1
			<b>Avg: 102.1</b>	
1	1 & 2 simultaneous	110	103.6	Compartment 2
2	1 & 2 simultaneous	110	103.6	Compartment 2
3	1 & 2 simultaneous	111	102.7	Compartment 2
			<b>Avg: 103.3</b>	

For all of the above flow rates, the time for total discharge did not exceed 126 seconds.

3.3.4.2 Calibrated Drainage Flow Rates: **COMPLIES**

Proposed flow rate of Interceptor being tested - 100 gpm.

The average of the above calibrated flow rates for simultaneous discharge was equal and didn't exceed by not more than 5% the proposed flow rated of the interceptor being tested.

Findings - 102.7 gpm average ( 105 gpm max.)

3.4 Skimming Procedure: **FOLLOWED**

The skimming procedure was initiated 5 minutes after the increment to be skimmed has discharged into the tank. The baffles were used alternately until the amounts of grease collected in the procedure are less than 1% by visual observation. Upon completion of the skimming procedure, water shall be drained from the bottom of the pail by means of a spigot. The remainder of the water was collected as describe in the procedure until only a few drops are observed. The lard is then weighed to the nearest ½ gram.

- 3.5 Rating Test Procedure :  
See Table 1 of test report for Rating Testing.
- 3.5.1 Test Media: **FOLLOWED**  
Certification tests were conducted with fresh, unused lard and water as defined and both within a temperature range from 150°F to 160°F.
- 3.5.2 Ratio of Lard to Water: **FOLLOWED**  
The test lard was introduced into one compartment, during each incremental discharge, in the ratio of 1 lb. of lard for each 5 gallons of water in that compartment. Consequently, the proportion of lard to the total amount of water discharged from both sink compartments during each increment was 1 lb. for each 10 gallons respectively. The required amount of test lard, within the above temperature range, was weighed out and poured into the test compartment of the sink.  
Findings- 20 lbs per increment used
- 3.5.3 Test Increments: **FOLLOWED**
- 3.5.3.1 Each test increment consisted of the simultaneous discharge of water from both sink compartments and the lard from the test compartment.
- 3.5.3.2 During the first test increment, the lard was poured into compartment 1 while compartment 2 discharged clear water. During the second test increment the lard was poured into compartment 2 while the water in compartment 1 remained clear.
- 3.5.4 Flow Rates: **FOLLOWED**  
The drainage period for each increment was gauged and timed on the basis of the flow from the compartment containing the clear water. The flow rate from the sink was computed and recorded for each increment. (See Table 1 of test report).
- 3.5.5 Efficiency Determinations: **FOLLOWED**  
The grease was removed from the skimming tank and the efficiency of the interceptor was computed at intervals of five increments or less until the average efficiency reached 93% or less and/or the incremental efficiency reached 85% or less (See Table 1 of test report).

- 3.5.6 Duration of the Test: **FOLLOWED**  
The testing was continued until the average efficiency reached 85% or less and/or the incremental efficiency reached 75% or less.
- 3.5.7 Determination of Grease Retention Capacity: **FOLLOWED**  
Maximum grease retention capacity was established at the increment preceding two successive increments in which either the average efficiency is less than 90% or the incremental efficiency is less than 80 %.
- 3.5.8 Performance Requirements for Rating: **COMPLIES**  
The interceptor did conform with or exceeded the following requirements at the breakdown point:  
(a) Had an average efficiency of 90% or more.  
Findings – 99.2 %  
  
(b) Had an incremental efficiency of 80% or more.  
Findings – 99.5%  
  
(c) Had retained not less than 2 lbs of grease for each 1 gpm average flow rate as determined during the testing.  
Findings – 218.2 lbs.
- 3.5.9 Rated Capacities: **COMPLIES**  
Standard rating flow rate and grease retention capacities for grease interceptors were tested in accordance with the above test procedure and did conform with the requirement of ASME A112.14.3-2000.  
Findings- Flow Rate 100 gpm  
Grease Retention Capacity Rating - 200 lbs.  
Actual Grease Retention Capacity - 1826.73 lbs.

#### 4 Labeling, Installation, and Maintenance

- 4.1 Labeling: **COMPLIES**  
Products were labeled with the following information:  
(a) Manufacturer's name - Thermaco (yes)  
(b) Model number - TZ-1826 (yes)  
(c) Rated flow(s) - yes (yes)  
(d) "Inlet" and "Outlet" - yes (yes)  
(e) ASME A112.14.3 - yes (yes)  
(f) Product type by rating - yes (yes)  
(g) Efficiency at the rated capacity - yes (yes)
- 4.2 Installation Instructions: **COMPLIES**  
The grease interceptor was provided with complete installation instructions, including but not limited to the following:



- (a) Flow control and/or vent requirements - yes (yes)
- (b) Separate trapping requirements - yes (yes)
- (c) Elevation and accessibility requirements - yes (yes)
- (d) Safety and health-related instructions - yes (yes)
- (e) Cleanout locations - yes (yes)
- (f) Instructions that show the clearances required for maintenance, cleaning, and hazard prevention - yes (yes)
- (g) Cautions against installation in any manner except as tested and rated - yes (yes)

4.3 Maintenance Instructions: **COMPLIES**

Units were provided with complete maintenance instructions including but not limited to the following:

- (a) Maintenance Instructions - yes (yes)
- (b) Safety and health provisions - yes (yes)

Each grease interceptor was provided with service instructions which included a trouble-shooting guide as well as instructions for performing necessary servicing or for obtaining servicing.

### Pictures of "TZ-1826" Grease Interceptor



TABLE 1 – Test Results per ASME A112.14.3-2000

TZ-1826 Grease Interceptor					INCREMENTAL				ACCUMULATED			
Test No.	Grease Sink	Water Sink	Drop Time (sec)	Flow Rate (GPM)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)
1	1	2	110	103.6	-	-	-	-	20	-	-	-
2	2	1	111	102.7	-	-	-	-	40	-	-	-
3	1	2	112	101.8	-	-	-	-	60	-	-	-
4	2	1	111	102.7	-	-	-	-	80	-	-	-
5	1	2	111	102.7	100	0.96	99.04	99.0%	100	0.96	99.04	99.0%
6	2	1	112	101.8	-	-	-	-	120	-	-	-
7	1	2	110	103.6	-	-	-	-	140	-	-	-
8	2	1	110	103.6	-	-	-	-	160	-	-	-
9	1	2	110	103.6	-	-	-	-	180	-	-	-
10	2	1	113	100.9	100	0.74	99.26	99.3%	200	1.70	193.30	99.2%
11	1	2	110	103.6	20	0.10	19.90	99.5%	220	1.80	218.2	99.2%
12	2	1	110	103.6	-	-	-	-	240	-	-	-
13	1	2	109	104.6	-	-	-	-	260	-	-	-
14	2	1	111	102.7	-	-	-	-	280	-	-	-
15	1	2	112	101.8	-	-	-	-	300	-	-	-
16	2	1	113	100.9	-	-	-	-	320	-	-	-
17	1	2	112	101.8	-	-	-	-	340	-	-	-
18	2	1	111	102.7	140	0.67	139.33	99.5%	360	2.47	357.53	99.3%
19	1	2	111	102.7	-	-	-	-	380	-	-	-
20	2	1	111	102.7	-	-	-	-	400	-	-	-
21	1	2	112	101.8	-	-	-	-	420	-	-	-
22	2	1	110	103.6	-	-	-	-	440	-	-	-
23	1	2	109	104.6	100	0.31	99.69	99.7%	460	2.78	457.22	99.4%
24	2	1	111	102.7	-	-	-	-	480	-	-	-
25	1	2	112	101.8	-	-	-	-	500	-	-	-
26	2	1	112	101.8	-	-	-	-	520	-	-	-
27	1	2	111	102.7	-	-	-	-	540	-	-	-
28	2	1	110	103.6	100	0.32	99.68	99.7%	560	3.10	556.90	99.4%
29	1	2	111	102.7	-	-	-	-	580	-	-	-

Performance Requirement

Maximum Capacity

TZ-1826 Grease Interceptor					INCREMENTAL				ACCUMULATED			
Test No.	Grease Sink	Water Sink	Drop Time (sec)	Flow Rate (GPM)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)
30	2	1	112	101.8	-	-	-	-	600	-	-	-
31	1	2	110	103.6	-	-	-	-	620	-	-	-
32	2	1	111	102.7	-	-	-	-	640	-	-	-
33	1	2	110	103.6	100	0.34	99.66	99.7%	660	3.44	656.56	99.5%
34	2	1	112	101.8	-	-	-	-	680	-	-	-
35	1	2	111	102.7	-	-	-	-	700	-	-	-
36	2	1	112	101.8	-	-	-	-	720	-	-	-
37	1	2	111	102.7	-	-	-	-	740	-	-	-
38	2	1	112	101.8	100	0.38	99.62	99.6%	760	3.82	756.18	99.5%
39	1	2	110	103.6	-	-	-	-	780	-	-	-
40	2	1	112	101.8	-	-	-	-	800	-	-	-
41	1	2	110	103.6	-	-	-	-	820	-	-	-
42	2	1	110	103.6	-	-	-	-	840	-	-	-
43	1	2	110	103.6	100	0.11	99.89	99.9%	860	3.93	856.07	99.5%
44	2	1	112	101.8	-	-	-	-	880	-	-	-
45	1	2	111	102.7	-	-	-	-	900	-	-	-
46	2	1	110	103.6	-	-	-	-	920	-	-	-
47	1	2	109	104.6	-	-	-	-	940	-	-	-
48	2	1	111	102.7	100	0.29	99.71	99.7%	960	4.22	955.78	99.6%
49	1	2	109	104.6	-	-	-	-	980	-	-	-
50	2	1	110	103.6	-	-	-	-	1000	-	-	-
51	1	2	110	103.6	-	-	-	-	1020	-	-	-
52	2	1	111	102.7	-	-	-	-	1040	-	-	-
53	1	2	111	102.7	100	0.87	99.13	99.1%	1060	5.09	1054.91	99.5%
54	2	1	112	101.8	-	-	-	-	1080	-	-	-
55	1	2	111	102.7	-	-	-	-	1100	-	-	-
56	2	1	112	101.8	-	-	-	-	1120	-	-	-
57	1	2	111	102.7	-	-	-	-	1140	-	-	-
58	2	1	111	102.7	100	0.56	99.44	99.4%	1160	5.65	1154.35	99.5%

Performance Requirement

Maximum Capacity

TZ-1826 Grease Interceptor					INCREMENTAL				ACCUMULATED			
Test No.	Grease Sink	Water Sink	Drop Time (sec)	Flow Rate (GPM)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)
59	1	2	111	102.7	-	-	-	-	1180	-	-	-
60	2	1	112	101.8	-	-	-	-	1200	-	-	-
61	1	2	112	101.8	-	-	-	-	1220	-	-	-
62	2	1	112	101.8	-	-	-	-	1240	-	-	-
63	1	2	111	102.7	100	0.62	99.38	99.4%	1260	6.27	1253.73	99.5%
64	2	1	110	103.6	-	-	-	-	1280	-	-	-
65	1	2	111	102.7	-	-	-	-	1300	-	-	-
66	2	1	112	101.8	-	-	-	-	1320	-	-	-
67	1	2	111	102.7	-	-	-	-	1340	-	-	-
68	2	1	112	101.8	100	0.79	99.21	99.2%	1360	7.06	1352.94	99.5%
69	1	2	111	102.7	-	-	-	-	1380	-	-	-
70	2	1	113	100.9	-	-	-	-	1400	-	-	-
71	1	2	113	100.9	-	-	-	-	1420	-	-	-
72	2	1	111	102.7	-	-	-	-	1440	-	-	-
73	1	2	111	102.7	100	0.74	99.26	99.3%	1460	7.80	1452.2	99.5%
74	2	1	112	101.8	-	-	-	-	1480	-	-	-
75	1	2	111	102.7	-	-	-	-	1500	-	-	-
76	2	1	111	102.7	-	-	-	-	1520	-	-	-
77	1	2	112	101.8	-	-	-	-	1540	-	-	-
78	2	1	112	101.8	100	1.46	98.54	98.5%	1560	9.26	1550.74	99.4%
79	1	2	111	102.7	20	0.36	19.64	98.2%	1580	9.62	1570.38	99.4%
80	2	1	112	101.8	20	0.33	19.67	98.4%	1600	9.95	1590.05	99.4%
81	1	2	111	102.7	20	0.18	19.82	99.1%	1620	10.13	1609.87	99.4%
82	2	1	112	101.8	20	0.18	19.82	99.1%	1640	10.31	1629.69	99.4%
83	1	2	111	102.7	20	0.17	19.83	99.2%	1660	10.48	1649.52	99.4%
84	2	1	112	101.8	20	0.31	19.69	98.5%	1680	10.79	1669.21	99.4%
85	1	2	111	102.7	20	0.22	19.78	98.9%	1700	11.01	1688.99	99.4%
86	2	1	111	102.7	20	0.31	19.69	98.5%	1720	11.32	1708.68	99.3%
87	1	2	112	101.8	20	0.18	19.82	99.1%	1740	11.50	1728.50	99.3%
88	2	1	112	101.8	20	0.32	19.68	98.4%	1760	11.82	1748.18	99.3%
89	1	2	111	102.7	20	0.24	19.76	98.8%	1780	12.06	1767.94	99.3%

Performance Requirement

Maximum Capacity

TZ-1826 Grease Interceptor					INCREMENTAL				ACCUMULATED			
Test No.	Grease Sink	Water Sink	Drop Time (sec)	Flow Rate (GPM)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)	Lbs added	Lbs skimmed	Lbs retained	Efficiency (%)
90	2	1	112	101.8	20	0.35	19.65	98.3%	1800	12.41	1787.59	99.3%
91	1	2	111	102.7	20	0.48	19.52	97.6%	1820	12.89	1807.11	99.3%
92	2	1	111	102.7	20	0.38	19.62	98.1%	1840	13.27	1826.73	99.3%
93	1	2	111	102.7	20	19.99	0.01	0.1%	1860	33.26	1826.74	99.2%
94	2	1	111	102.7	20	9.35	10.65	53.3%	1880	42.61	1837.39	97.7%

Performance Requirement

Maximum Capacity