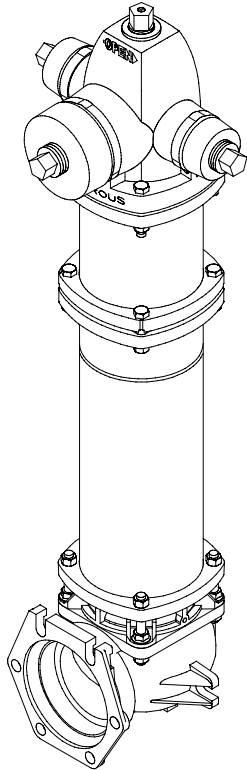


WATEROUS

Fire Hydrant Rod Replacement and Remediation Program Owner's Instructions

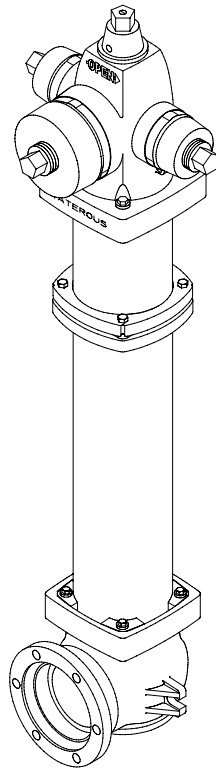
Form No.	Date	Revision Date
H-475	09/09/08	

Pacer & Trend Hydrants



Pacer Hydrant
Model WB67-250

IL1405-A



Trend Hydrant
Model WB77

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 **AMERICAN FLOW CONTROL**
American-Darling Valve and Waterous
A DIVISION OF AMERICAN CAST IRON PIPE COMPANY



Read through instructions carefully before performing any repairs to the Pacer or Trend Hydrant.

Safety Information



Read through the safety information prior to performing any repairs or replacement of the hydrant operating rod.

WARNING

Solvent Vapor Hazard. May result in respiratory problems or nausea.

When cleaning parts of the hydrant with cleaning solvent, avoid inhaling the solvent vapors. Use only in well ventilated areas.

WARNING

Combustible Vapor Hazard. May result in a flash fire.

When cleaning parts of the hydrant with cleaning solvent, use only in areas with adequate ventilation. Vapors released from the solvent are combustible and may cause a flash fire should an ignition source be present.

CAUTION



Loud noise levels. May cause temporary or permanent hearing loss.

Always wear protective hearing equipment (custom molded ear plugs, sound-reducing head gear) when operating the die grinder.

CAUTION



Metallic Particle Hazard. May cause irritation or permanent injury to the eyes.

Always wear proper eye protection when using the die grinder to prevent metallic particles from entering the eye.



CAUTION

Lifting Hazard. May result in personal injury.

Ensure physical capability before attempting to lift, and always use proper lifting techniques to avoid personal injury.

WARNING

Traffic Protection. May result in serious personal injury or death.

When repairing the hydrant, use appropriate signage and cautionary items to protect the worker from being struck by a moving vehicle.

WARNING

Spray Paint Vapor Hazard. May result in irritations to the eyes, nose and throat.

When using spray paint to touch up areas of the hydrant, use only with adequate ventilation and wear appropriate breathing protection to prevent irritations from the paint vapors.

Introduction and Project General Description

These instructions cover the course of action for remediation and replacing upper operating rods of Waterous Pacer and Trend Fire Hydrants that were lubricated with Chevron Food Grade Grease. The instructions are separated into two parts – the first part addresses the Pacer Model WB67-250 with cast year markings of 1999 through 2004, and the second part addresses the Trend Model WB77 with cast year markings of 1999 through 2004.

Remediation of the Pacer fire hydrants entails locating the affected fire hydrants, removal of the upper operating rod, removal and cleaning of the grease and oil from the internal parts, installation of a replacement operating rod, applying lubrication, reassembly, and testing.

Remediation of the Trend fire hydrants entails locating the affected fire hydrants, removal of the operating mechanism assembly as a single unit, installation of a replacement operating mechanism assembly, applying lubrication, reassembly, and testing.

Remediation / Operating Rod Replacement Equipment and Materials

Waterous Company recommends the use of the following equipment and materials for the remediation of these fire hydrants. Material Safety Data Sheets (MSDS) covering some of the materials are included in the Appendices.

Parts Cleaning Solvent

A degreasing solvent with chemistry similar to mineral spirits, such as Safety-Kleen Premium Gold Solvent, is used for removal and cleaning of existing grease and oil on parts.

Waterous Hydrant Lubricating Grease

Waterous part number V 3174, Citgo Clarion Food Machinery Grease, furnished in a 5-pound plastic tub, is used where lubricating with grease is specified. Waterous part number V 1934, which is the same grease in a 1-pint tub, may also be used. Waterous will furnish appropriate quantities of this material.

Waterous Hydrant Lubricating Oil

Waterous part number V 3175, Lubriplate FMO-350-AW USP petroleum mineral oil with additives, furnished in 1-gallon plastic bottles, is used where lubricating with oil is specified. Waterous part numbers V 1935 and V 2551, which is the same oil in 16-oz and 4-oz plastic bottles, may also be used. Waterous will furnish appropriate quantities of this material.

Parts Washer and Cleaning Brush

A portable parts-washer with 5-gallon solvent capacity, hinged cover, air or electric powered circulating pump and brush with integral flow-through hose for dispensing pressurized solvent is suitable for cleaning the grease and oil from parts. An example of a parts washer is Safety-Kleen Manual Bench-top Parts Washer, Model 14, part number 1160, with 115 VAC 0.3A electric circulating pump.

Pneumatic Die Grinder and Rotary Wire Brushes

A high-speed (20,000 rpm), hand-held, air or electric-powered tool with mandrel-mounted wire brushes can be used to clean the nozzle cap threads. An example of a die-grinder is Chicago Pneumatic brand RediPower model RP9111, 20,000 rpm free speed, 0.46 hp, die-grinder with 1/4inch collet. An example of a rotary wire brush is Weiler brand, item number 17909, narrow-face, concave, 2-1/2 inch diameter, .006 inch wire-size, 20,000 maximum RPM.

Angle-Drive Impact Wrench

A battery-powered or pneumatic angle-drive wrench permits rapid removal and installation of the coupling nuts and upper rod for some break-off lengths without removing the upper standpipe. An example of a battery-powered wrench is Ingersoll Rand IQv Series Cordless Ratchet, Model R380, with 3/8 in. drive, and 14.4V rechargeable battery.

Ductile Iron Pacer Hydrants from 1999 through 2004

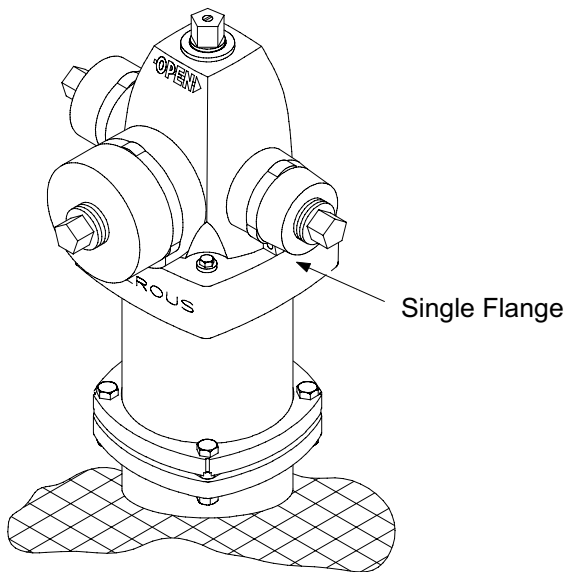
Pacer Remediation / Rod Replacement Procedure

Identifying Affected Pacer Fire Hydrants

The affected Waterous Pacer fire hydrants include only ductile-iron versions of Pacer hydrants that bear cast year markings of 1999 through 2004. Ductile-iron Pacer hydrants were manufactured beginning in 1996 and can be visually differentiated from the older gray-iron Pacer hydrants, which were manufactured from 1967 until 1996, by the appearance of the flange at the nozzle section. The

ductile-iron Pacer has two separate flanges at the joint between the nozzle section and the upper standpipe, each of which is about 1-inch in thickness. The gray-iron Pacer has a single flange at that location that is about 3-inches in thickness. For illustrations showing these visual differences and the location of the cast year markings, see Figures 1 and 2.

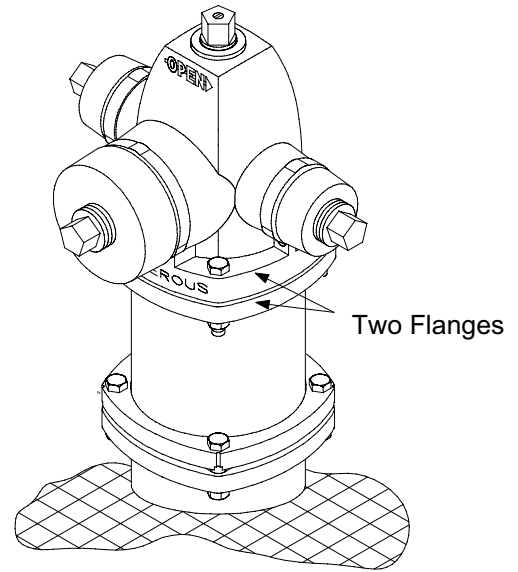
Figure 1. Pacer Model Hydrant Comparison



Gray-Iron

Model WB67

This Model is Not Part of Remediation Program



Ductile-Iron

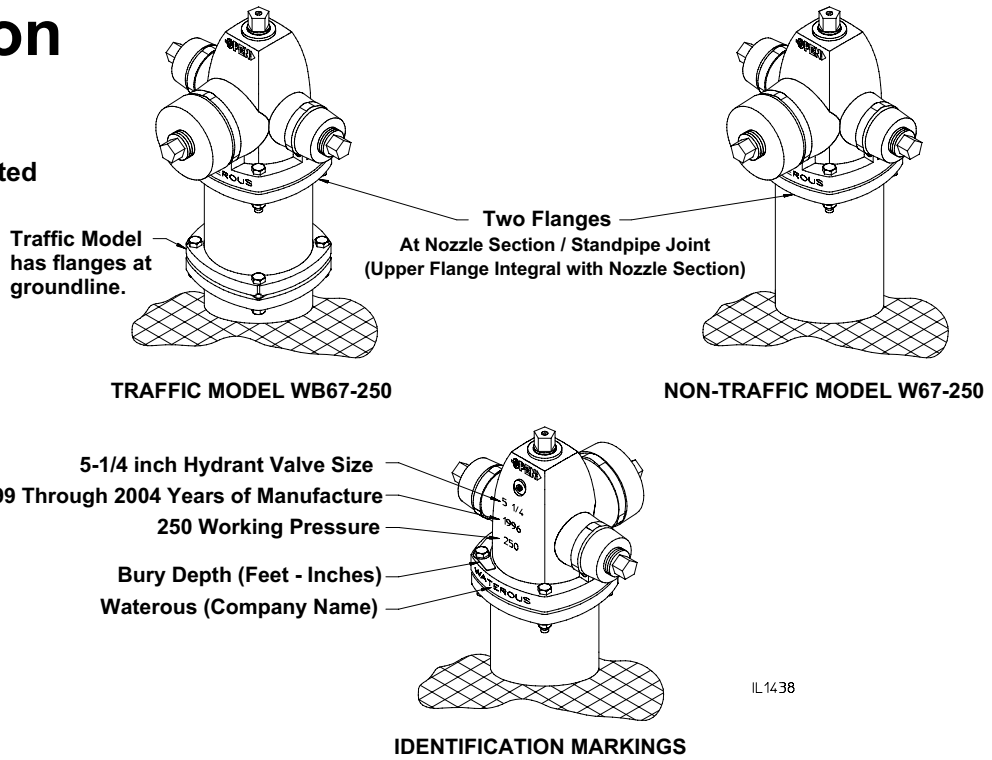
Model WB67-250

This Model with 1999-2004 Year Markings are Part of Remediation Program.

Figure 2. Pacer Hydrant Identification Markings

Ductile-Iron Pacer

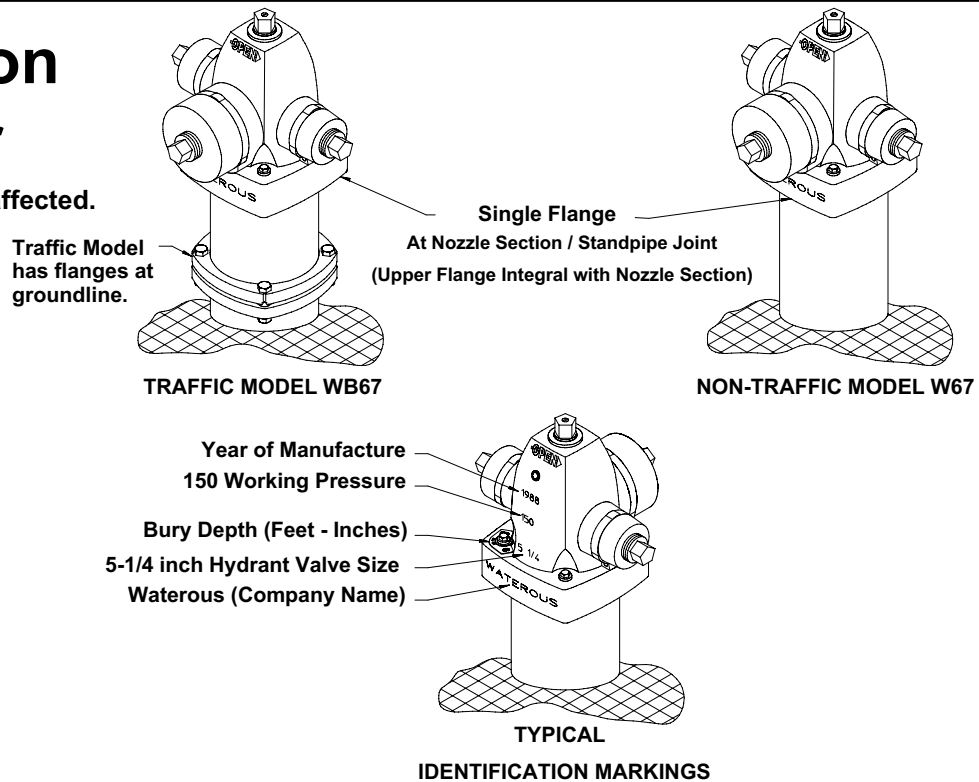
Models that are affected



5-1/4" Ductile Iron Pacer - Models W67-250 and WB67-250

Gray-Iron Pacer

Models that are not affected.



5-1/4" Gray Iron Pacer - Models WB67 and W67

Figure 3. Exploded View of Pacer Hydrant

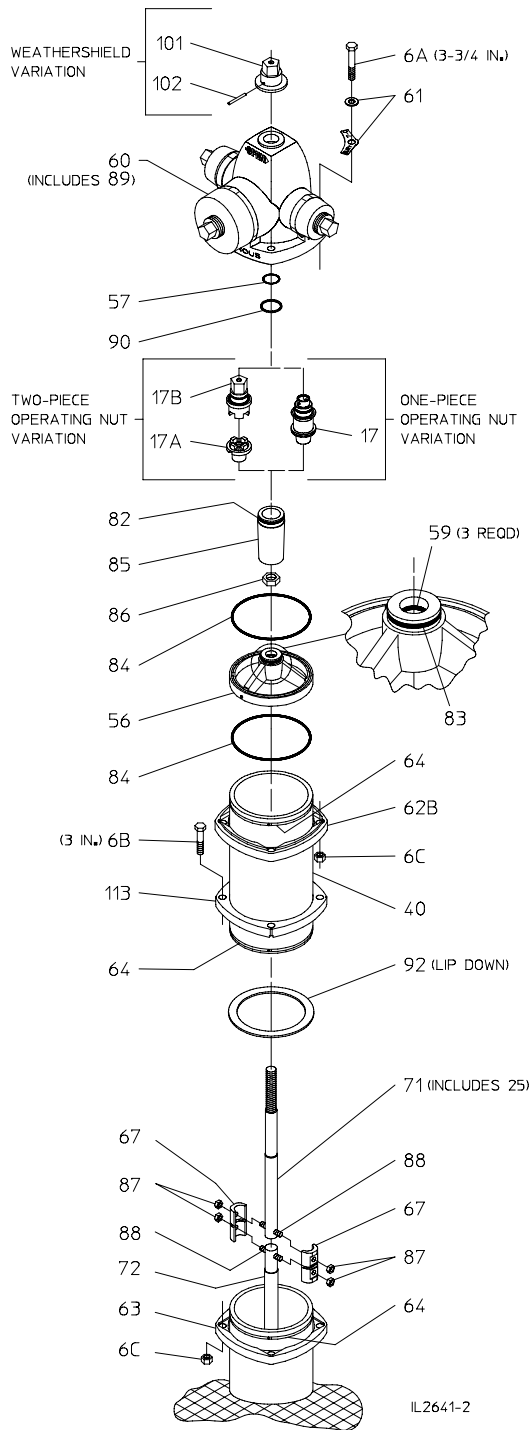


Table 1. Pacer Hydrants Parts Descriptions

3	O-ring (Lower valve seat), 5-5/8 x 6-3/64
5	Lower standpipe gasket
6A	Hex hd bolt, 5/8-11 x 3-3/4 in.
6B	Hex hd bolt, 5/8-11 x 3 in.
6C	Hex nut, 5/8-11
7	Drain plunger
8	Cotter pin, 1/4 x 1-1/2 in.
9A, 9B	Nozzle cap chain, single or double
10	Nozzle cap, hose or pumper
11	Cap gasket, hose or pumper
12	Nozzle, hose or pumper
16	Flat hd screw, 1/4-20 x 1/2 in.
17	Operating nut (one-piece)
17A	Lower operating nut
17B	Upper operating nut
25	Rod bushing
28	Rod (Non-Traffic model)
29	Lower standpipe (Traffic model)
29	Standpipe (Non-Traffic model)
30	Crossarm
31	Valve seat
34	Upper valve washer
35	Main valve rubber
36	Lower valve washer
37	Hydrant bottom
40	Upper standpipe (Traffic model)
54	Drain bushing
56	Support wheel
57	O-ring (Operating nut), 1-1/2 x 1-3/4
59	O-ring (Support wheel), 1-1/8 x 1-3/8
60	Nozzle section
61	Bury depth plate
61	Bury depth plate washer
62B	Upper standpipe flange
63	Standpipe flange
64	Flange lock ring
67	Coupling sleeve (two-halves)
71	Upper rod (Traffic model)
72	Lower rod (Traffic model)
77	O-ring (Upper valve seat), 5-7/8 x 6-1/4
81	Groove pin, 3/32 x 7/16 in.
82	O-ring (Upper tube seal), 2-3/8 x 2-5/8
83	O-ring (Lower tube seal), 1-7/8 x 2-1/8
84	Support wheel / lower standpipe gasket
85	Support tube
86	Stop nut, 1"- 8
87	Coupling nut, 1/2-20
88	Coupling stud, 1/2-20 x 2-9/16 in.
89	Nozzle section bushing
90	Thrust ring
92	Upper standpipe gasket

NOTE: Where grease is specified, use Citgo Clarion® Food Machinery Grease No. 2 (formerly named Citgo Mystic® FG-2 Food Machinery Grease).

NOTE: Removal of the upper operating rod may be performed while the main hydrant valve is closed and pressurized, or the auxiliary (hydrant shut-off) valve may be closed prior to performing this work.

Refer to Figure 3 to find locations of parts referenced in instructions.

WARNING

Traffic Protection. May result in serious personal injury or death.

When repairing the hydrant, use appropriate signage and cautionary items to protect the worker from being struck by a moving vehicle.

Exposing the Upper Operating Rod

1. Check that the hydrant main valve is in the closed position and remove a nozzle cap to verify that water pressure has been relieved from the inside of the hydrant.
2. At the nozzle section, remove bolts (6A), nuts (6C) and allow flange (62B) to slide down the upper (break-off) standpipe. Depth plate and plain washer (61) will come off with bolts.
3. Turn upper operating nut (17B) or weathershield nut (101) in the opening direction to separate the nozzle section (60) and the support wheel (56). If the operating nut is the one-piece type and the weathershield is in place, the nut must be completely unthreaded from the operating rod before removing the nozzle section. Remove the nozzle section.

CAUTION

Lifting Hazard. May result in personal injury.

Ensure physical capability before attempting to lift, and always use proper lifting techniques to avoid personal injury.

4. Remove operating nut (17B) from the nozzle section (60). To remove the weathershield-type operating nut, drive out pin (102) and remove weathershield (101), then remove the upper operating nut.

NOTE: Bushing (89) is cemented into the nozzle section (60). Removing it is not necessary unless it is damaged. If replacement is necessary, contact the Waterous Company.

5. Unscrew lower operating nut (17A) and remove support tube (85).
6. Unscrew hex stop nut (86) from operating rod (71) and remove support wheel (56).

Operating Rod Removal

Two methods may be used for removing the operating rod. The first method is to remove the upper standpipe (see Step 1) and the second is to remove the rod with the upper standpipe in place (continue to Step 2).

1. **Removing the Upper Standpipe:** If removing the upper standpipe (40), remove bolts (6B) and nuts (6C) and lift off upper standpipe (40). Note that flange (113) and (62B) will remain attached to the upper standpipe (40). It is not necessary to remove these flanges.
2. Remove two coupling nuts (87), leaving one nut in place on the stud and coupling of the lower rod and one on the stud and coupling on the opposite side of the upper rod. Remove the upper operating rod.
3. Remove the coupling half (67) from the upper rod.
4. Operating rod will be returned to Waterous. See *Storing, Labeling and Packaging Rods for Return* on Page 8.

Cleaning Hydrant Parts

1. Using a bottle brush and solvent-type parts washer, remove and thoroughly clean any existing grease from the support wheel (56), the support tube (85), the stop nut (86) and the upper and lower operating nut (17A and 17B, or in the case of the one-piece operating nut, 17).

WARNING

Solvent Vapor Hazard. The following injuries or conditions may occur when using cleaning solvent.

Inhalation

When cleaning parts of the hydrant with cleaning solvent, avoid inhaling vapors. Use only in well ventilated areas.

Combustion

When cleaning parts of the hydrant with cleaning solvent, use only in areas with adequate ventilation. Vapors released from the solvent are combustible and may cause a flash fire should an ignition source be present.

2. Submerge parts in water to remove traces of the solvent or grease from the cleaned parts.

NOTE: Properly dispose of or recycle used solvent in accordance with the solvent manufacturer's recommendations and any local and state requirements.

3. Examine the O-ring seals for damage and replace any damaged seals.

Operating Rod Installation

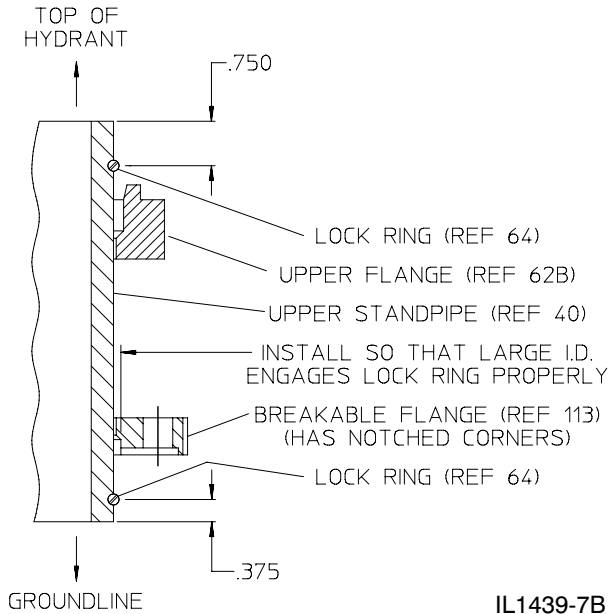
1. Install one coupling half (67) and new nut (87) onto the upper rod of the replacement rod and tighten nut with 30 ft-lbs of torque.
2. Place the replacement upper rod into position above the lower rod, inserting the stud of the upper rod into the hole of the coupling half (67) that remained attached to the lower rod. Thread on new coupling nuts and tighten the nuts on the studs with 30 ft-lbs of torque.

Hydrant Reassembly

If the upper standpipe was left in place, skip to Step 3.

1. Orientate upper standpipe (40) as shown in Figure 4.

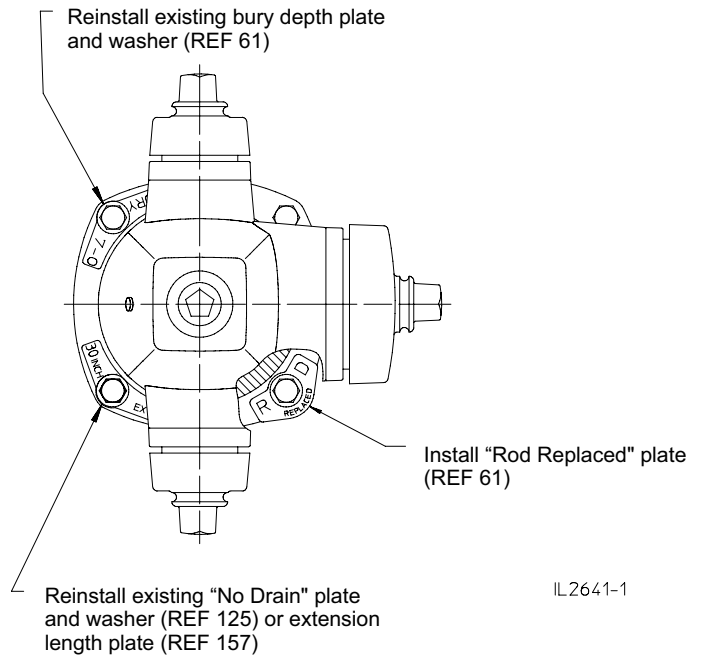
**Figure 4. Upper Standpipe
(Breakable Flange Orientation)**



IL1439-7B

12. Install bury-depth plate and washer (61) and any other plates and washers that may have been removed such as extension or "No-Drain" plates, in the proper positions. Install the "Rod-Replaced" plate to identify that the rod was replaced and cleaned in accordance with these instructions. See Figure 5 for the proper positions for these plates.

Figure 5. Plate Installation

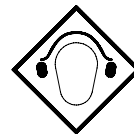


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2. Place gasket (92) on the lower standpipe with the lip pointing downward. Position the upper standpipe (40) on the lower standpipe and install bolts (6B) through the flanges (113) and (63). Install nuts (6C) and tighten the four bolts evenly.
3. Apply grease to the O-ring and gasket grooves in support wheel (56), and to the bore and three O-rings (59). Install the two gaskets (84) and apply grease to the lower tube seal (83).
4. Install hex stop nut (86), turning it down to end of thread. Snug up with a torque of 30 lb-ft (30 lb at end of 12 in. wrench).
5. Apply grease to the brass bushing on the rod (71) and to the lower end of the operating threads.
6. Grease O-ring (82) in upper end of support tube (85). Slide tube down over operating rod (71) until it is seated on support wheel (56).
7. Pour 4-oz of lubricating oil into the support tube (85).
8. Grease lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support wheel (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support wheel (56) against upper standpipe (40). Be sure support wheel (56) is centered on upper standpipe (40).
9. Apply grease to all of the exposed operating rod threads.
10. Grease Teflon thrust ring (90) and O-ring (57) in operating nut (17B or 17). If hydrant has a two-piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.
11. Carefully lower nozzle section (60) over operating nut (17B or 17) until it seats on support wheel (56). Rotate nozzle section (60) to desired position.

13. Make sure flange (62B) is seated properly under the nozzle section and tighten all bolts and nuts evenly to 80 to 100 lb-ft (80 to 100 lb. force applied at the end of 12 in. wrench).

CAUTION



Loud noise levels. May cause temporary or permanent hearing loss.

Always wear protective hearing equipment (custom molded ear plugs, sound-reducing head gear) when operating the die grinder.

CAUTION



Metallic Particle Hazard. May cause irritation or permanent injury to the eyes.

Always wear proper eye protection when using the die grinder to prevent metallic particles from entering the eye.

14. Remove the nozzle caps, clean the cap threads as needed and lubricate the cap threads with grease.
15. Leaving one cap removed, install the other caps onto the nozzles.

16. Perform the following test to verify the function of the hydrant and its connection to a pressurized water source:
 - a. Turn the operating nut slowly in the opening direction until water flows from the nozzle.
 - b. If flushing of the hydrant is to be performed, do so now. See AWWA Manual M17, *Installation, Field Testing and Maintenance of Fire Hydrants*, for special cautions to be observed and warnings about the use of rigid diverters when flushing.
 - c. Slowly turn the operating nut in the closing-direction until flow stops.
 - d. Install the cap on the open nozzle.
 - e. Counting the number of turns, open the main valve to verify that it takes at least 18-turns to open fully. Verify ease of operation.
 - f. With the main valve fully open, check for leaks from joints. Remove the oil level plug and check for leakage of water into the oil reservoir. Replace the plug.
 - g. Close the main valve completely and then turn the operating nut in the opening-direction about 1/4-turn to relieve force from the operating mechanism.
 - h. Loosen a nozzle cap to verify that pressure has been fully relieved from the hydrant and then remove the cap.
 - i. For draining type hydrants, verify that the standpipe is draining. Pump water from the standpipe of non-draining type hydrants.
 - j. As needed, repair any leaks and/or conditions that prevent full opening of the main valve.

Replacement of Extraordinary Parts

Certain parts will be supplied to you by Waterous as they are needed to replace unusable parts that are not routinely supplied and do not appear on the list of typical rod replacement parts in Table 3 of Appendix A. Other parts may be needed for repairs unrelated to the remediation project. See Appendix A for the list of "Use as Needed" parts in Table 4 and for instructions for identifying the specific parts that are needed for the particular hydrants.

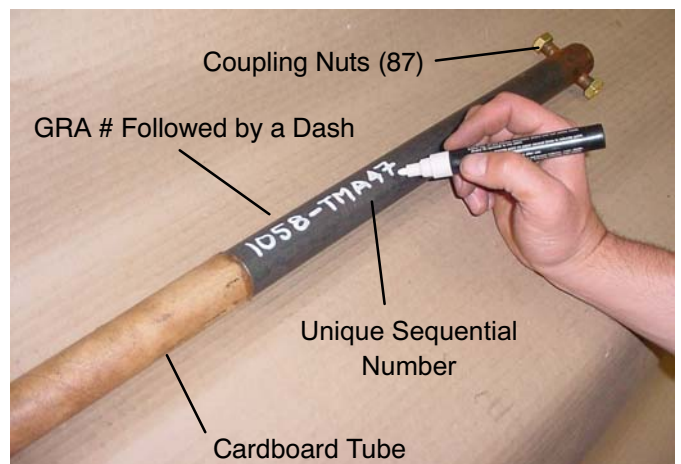
Recording Information on Log Sheet

1. Upon completion of the remediation and rod replacement, pertinent information should be recorded on the Waterous Log Sheet, form number H-445.
 - a. Information recorded on the Log Sheet should include the following:
 - i. The city or water district where the hydrant is located
 - ii. The address or other description of the hydrant's location
 - iii. The hydrant's ID number. (See the following section for more details.)
 - iv. The date that the remediation and rod replacement was completed.
 - v. The hydrant model.
 - vi. The hydrant's year of manufacture.

Storing, Labeling and Packaging Rods for Return

1. Rods stored for return to Waterous must be protected from rain or other sources of water and moisture.
2. Certain rods will be refurbished and re-used so special handling and protection during shipping is required to prevent damage.
3. Create a unique hydrant Identification number.
 - a. Each rod should be labeled with a unique identification (ID) number.
 - b. The first four digits of the ID should be the GRA number that was assigned during the process of ordering parts and materials for this project.
 - c. Following the GRA number place a dash (-) and two or three letters of the service crew's initials.
 - d. Following the service crew's initials write a sequential number that begins at one (1) for the first rod and increases by one for each rod removed by a crew.
 - e. An example of an ID number is "1035-JTS247" for a service contractor whose GRA number is 1035, the service technician is John T. Smith, and the rod is the 247th one to be removed by John Smith's service crew.
4. Use a light-colored paint-marker to write the rod hydrant ID code legibly on the rod in an area adjacent to the operating threads. Clean grease or oil from the area as needed to achieve adhesion between the marking paint and the steel surface of the rod.

Figure 6. Packaged and Labeled Rod Example - Pacer



5. Place cardboard tube over operating threads and copper bushing and thread the used nuts (87) onto the studs to protect the rod during shipment.
6. Stack the rods neatly in a wood-sided pallet or plastic shipping tote, alternating the direction of each rod to stagger the positions of the protruding coupling studs. The maximum capacity of each wood-sided pallet or tote is 1800 pounds. The maximum quantities of rods that may be shipped per pallet or tote are listed below:
 - a. 275-rods of 20-5/8 inch length (from hydrants with 10-inch break-off standpipe length)
 - b. 200-rods of 26-5/8 inch length (from hydrants with 16-inch break-off standpipe length)

- c. 165-rods of 32-5/8 inch length (from hydrants with 22-inch break-off standpipe length)
 - d. 135-rods of 38-5/8 inch length (from hydrants with 28-inch break-off standpipe length)
 - e. 115-rods of 44-5/8 inch length (from hydrants with 34-inch break-off standpipe length)
- 3. Complete a Waterous bill of lading (BOL) for each shipment. Each shipment may consist of one or more containers. Note the approximate weight of each container on the BOL.
 - a. For estimating the weight of the rods and containers, please refer to the weights shown below:
 - i. Wood-sided pallet: 90 pounds each
 - ii. 20-5/8 inch rod: 6.17 pounds each
 - iii. 26-5/8 inch rod: 8.24 pounds each
 - iv. 32-5/8 inch rod: 10.31 pounds each
 - v. 38-5/8 inch rod: 12.38 pounds each
 - vi. 44-5/8 inch rod: 14.45 pounds each

Arranging for Shipping Rods

- 1. Smaller quantities of rods may be returned when necessary, but if possible, accumulate at least 50 rods before arranging for shipping.
 - 2. Securely attach a Waterous shipping label to each pallet or container of rods to be returned. Write the GRA number and the number of rods that are in each container on each shipping label.
- 4. Contact the designated shipping company to schedule a pick-up.

Operating Mechanism Replacement Procedure

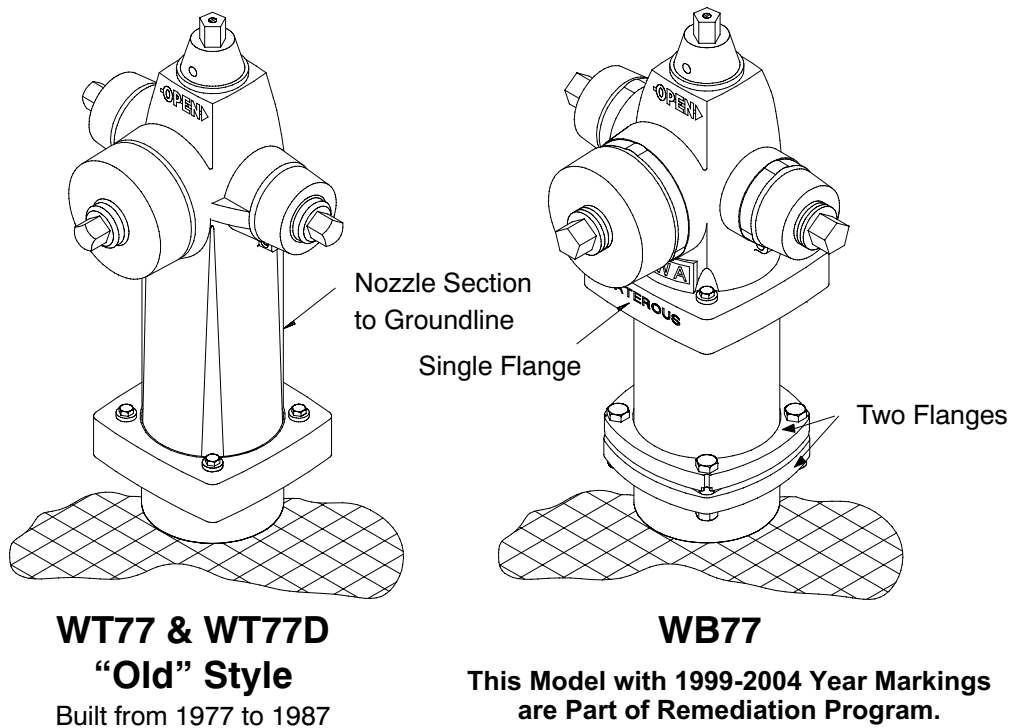
Locating Affected Trend Fire Hydrants

The affected Waterous Trend fire hydrants include only the Model WB77 versions that bear cast year markings of 1999 through 2004. Trend Model WB77 fire hydrants were manufactured beginning in 1987 and can be visually differentiated from the older Model WT77 and WT77D hydrants, which were manufactured from 1977 until 1987. Following is a list of the visual differences between these models.

- The WT77 & WT77D “Old Style” Trend nozzle section extends down to the groundline.
- The WB-77 Trend has a short nozzle section with two flanges at the ground line.

For illustrations showing these visual differences and the location of the cast year markings, see Figures 7 and 8.

Figure 7. Trend Model Hydrant Comparisons



This Model is Not Part of Remediation Program

Figure 8. Trend Hydrant Identification Markings

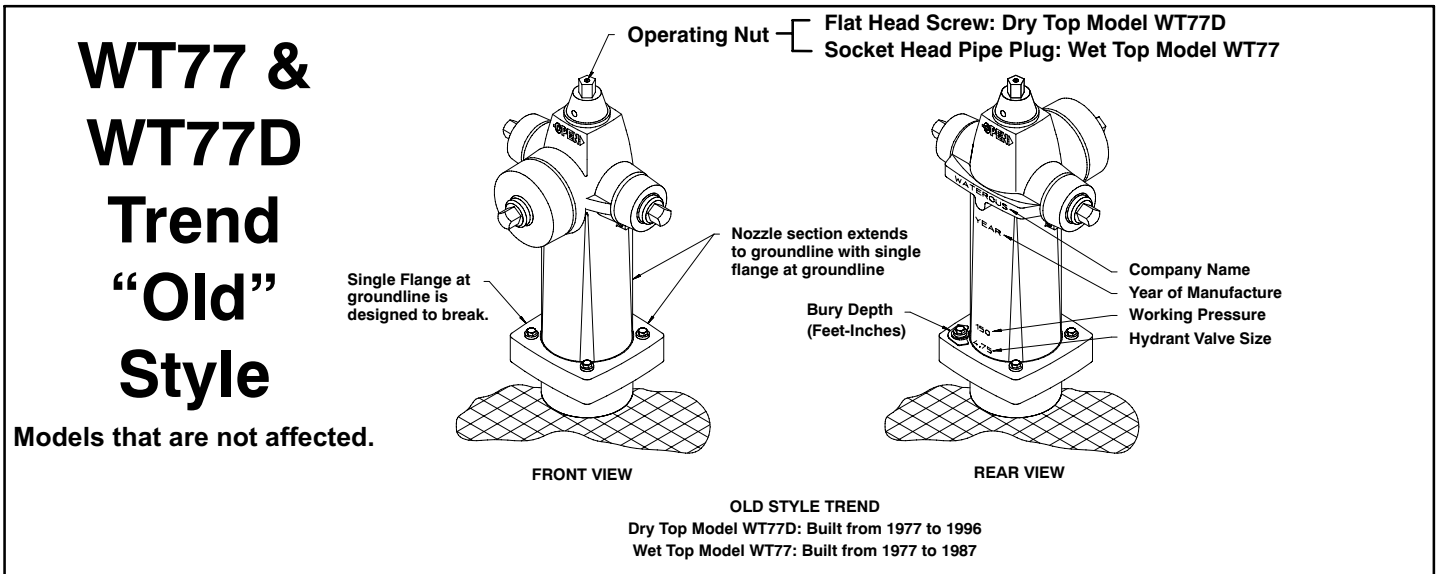
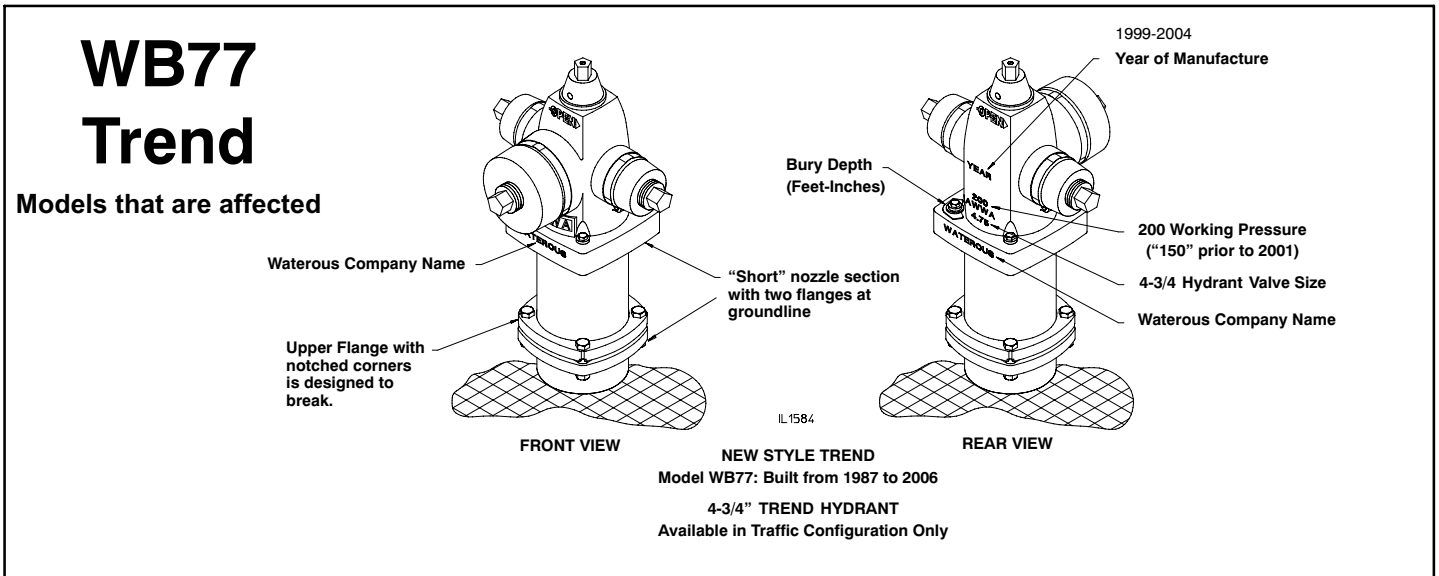


Figure 9. Exploded View of Trend Hydrant (WB77)

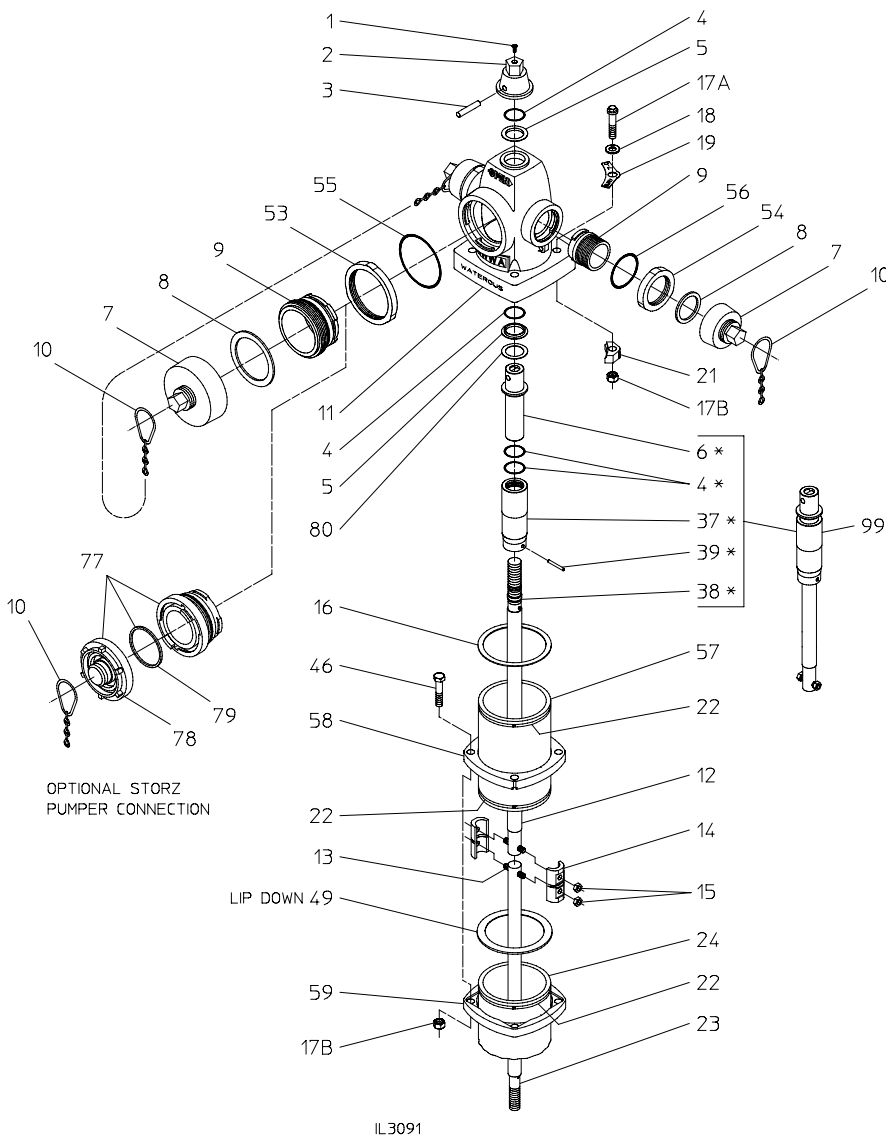


Table 2. Trend Hydrants Part Descriptions

1	Flat hd screw, 1/4-20 x 1/2 in.
2	Weathershield nut
3	Spirol pin, hvy, 1/2 x 2-3/4 in.
*4	O-ring (weathershield nut, operating nut housing, Nozzle section), 1-3/4 x 2
5	Thrust bushing
*6	Operating nut
7	Nozzle cap, hose or pumper
8	Cap gasket, hose or pumper
9	Nozzle, hose or pumper
10	Nozzle cap chain, single or double
11	Nozzle section
12	Upper rod
13	Coupling stud, 1/2-20 x 2-9/16 in.
14	Coupling sleeve (two halves)
15	Coupling nut, 1/2-20
16	Standpipe gasket
17A	Hex hd bolt, 5/8-11 x 3 in.
17B	Hex nut, 5/8-11
18	Bury depth plate washer
19	Bury depth plate
21	Lock ring clamp
22	Flange lock ring
23	Lower rod
24	Lower standpipe
*37	Operating nut housing
*38	O-ring (upper rod), 1 x 1-1/4
*39	Spirol pin, hvy, 1/4 x 2-1/4 in.
46	Hex hd bolt, 5/8-11 x 3 in.
49	Standpipe gasket (with lip)
53	Pumper nozzle retainer
54	Hose nozzle retainer
55	O-ring (pumper nozzle), 5-1/4 x 5-3/4
56	O-ring (hose nozzle), 3-1/4 x 3-5/8
57	Upper standpipe
58	Breakable flange
59	Standpipe flange
77	Nozzle, pumper, Storz (with cap and gasket)
78	Nozzle cap, pumper, Storz
79	Cap gasket, pumper, Storz
80	Thrust washer (Teflon)
*99	Operating Mechanism Assembly

* Operating Mechanism Assembly components.

NOTE: Removal of the operating mechanism assembly may be performed while the main hydrant valve is closed and pressurized, or the auxiliary (hydrant shut-off) valve may be closed prior to performing this work.

Refer to Figure 9 to find locations of parts referenced in instructions.

Replacement of the Operating Mechanism Assembly

1. Check that the hydrant main valve is in the closed position and remove a nozzle cap to verify that water pressure has been relieved from the inside of the hydrant.
2. Drive out spirol pin (3) and turn the weathershield nut (2) in the closing direction to break the bond between the weathershield nut and the operating nut (6).
3. Remove the weathershield nut by prying between the weathershield and the nozzle section (11).
4. Remove hex hd bolts (46) and hex nuts (17B) at the traffic flange between the upper standpipe (57) and lower standpipe (24).
5. Insert a punch or rod into the 1/2-inch diameter cross-hole in the operating nut (6) and turn the operating nut in the opening direction until it is completely un-threaded from the operating rod.
6. Remove nozzle section (11) and upper standpipe (57) by lifting as a unit over the operating rod.

CAUTION

Lifting Hazard. May result in personal injury.

Ensure physical capability before attempting to lift, and always use proper lifting techniques to avoid personal injury.

7. Push the operating nut (6) into the interior of the nozzle section (11) and remove it from the upper standpipe (57).
8. Remove upper thrust bushing (5) from the nozzle section (11). Remove O-ring (4) and lower thrust bushing (5) from operating nut (6).
9. Remove two coupling nuts (87), leaving one nut in place on the stud and coupling of the lower rod and one on the stud and coupling on the opposite side of the upper rod. Remove the upper operating rod and coupling half (67).
10. Remove the coupling half (67) from the upper rod.
11. Thread the operating nut (6) onto the rod threads to protect the mechanism during shipping.
12. Operating mechanism assembly will be returned to Waterous. See *Storing, Labeling and Packaging Rods for Return* on Page 14.

Hydrant Reassembly

NOTE: Where grease is specified, use Citgo Clarion® Food Machinery Grease No. 2 (formerly named Citgo Mystic® FG-2 Food Machinery Grease).

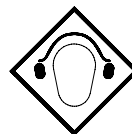
1. Install one coupling half (67) and a new nut (87) onto the upper rod of the replacement rod and tighten nut with 30 ft-lbs of torque.
2. Place the replacement upper rod into position above the lower rod, inserting the stud of the upper rod into the hole of the coupling half (67) that remained attached to the lower rod. Thread on new coupling nuts and tighten the nuts on the studs with 30 ft-lbs of torque.
3. Grease thrust and bearing surfaces of operating nut (6). Slip Teflon thrust washer (80) and one thrust bushing (5) over operating nut. The flange of the thrust bearing (5) must rest against the thrust washer (80) and the thrust surface of the operating nut (6).
4. Make sure lock ring (22) is properly installed in the standpipe groove.
5. Install standpipe gasket (49) on lower standpipe.
6. Lower nozzle section (11) and upper standpipe (57) as one piece onto operating nut (6) and rotate to desired position.
7. Insert a suitable punch or screwdriver in 1/2 in. diameter hole in operating nut (6). Turn in the closing direction until the lower face of the upper standpipe (57) barely contacts the gasket (16).
8. Install hex hd screws (49) and the Rod Replaced plate and hex nuts (17B) between upper standpipe (57) and lower standpipe (24) and tighten.
9. Slip O-ring (4) over operating nut (6) and into the bore of the nozzle section (11).
10. Install upper thrust bushing (5) on operating nut (6). Push down until bushing flange rests on top of the nozzle section (11).
11. Add 2 oz. of oil through opening in operating nut (6).

CAUTION

Do not add more than 2 oz. of oil.

12. Install weathershield cap (2) on operating nut (6). Line up holes in nut and cap and install spirol pin (3).

CAUTION



Loud noise levels. May cause temporary or permanent hearing loss.

Always wear protective hearing equipment (custom molded ear plugs, sound-reducing head gear) when operating the die grinder.

CAUTION



Metallic Particle Hazard. May cause irritation or permanent injury to the eyes.

Always wear proper eye protection when using the die grinder to prevent metallic particles from entering the eye.

13. Remove the nozzle caps, clean the cap threads as needed and lubricate the cap threads with grease.

14. Leaving one cap removed, install the other caps onto the nozzles.
15. Perform the following test to verify the function of the hydrant and its connection to a pressurized water source:
 - b. Turn the operating nut slowly in the opening direction until water flows from the nozzle.
 - c. If flushing of the hydrant is to be performed, do so now. See AWWA Manual M17, *Installation, Field Testing and Maintenance of Fire Hydrants*, for special cautions to be observed and warnings about the use of rigid diverters when flushing.
 - d. Slowly turn the operating nut in the closing-direction until flow stops.
 - e. Install the cap on the open nozzle.
 - f. Counting the number of turns, open the main valve to verify that it takes at least 18-turns to open fully. Verify ease of operation.
 - g. With the main valve fully open, check for leaks from joints. Remove the oil level plug and check for leakage of water into the oil reservoir. Replace the plug.
 - h. Close the main valve completely and then turn the operating nut in the opening-direction about 1/4-turn to relieve force from the operating mechanism.
 - i. Loosen a nozzle cap to verify that pressure has been fully relieved from the hydrant and then remove the cap.
 - j. For draining type hydrants, verify that the standpipe is draining. Pump water from the standpipe of non-draining type hydrants.
 - k. As needed, repair any leaks and/or conditions that prevent full opening of the main valve.

- iv. The date that the remediation and rod replacement was completed.
- v. The hydrant model.
- vi. The hydrant's year of manufacture.

Storing, Labeling and Packaging Rods for Return

1. Operating mechanism assemblies stored for return to Waterous should be protected from rain or other sources of water and moisture.
2. Certain parts of the operating mechanisms will be refurbished and re-used so special handling and protection during shipping is required to prevent damage.
3. The operating nut must be threaded onto the operating rod threads to protect the sealing surface of the nut.
4. The used coupling nuts, V1853, should be threaded onto the studs of the rod to protect the threads.
5. Create a hydrant Identification number.
 - a. Each rod should be labeled with a unique identification (ID) number.
 - b. The first four digits of the ID shall be the GRA number that was assigned during the process of ordering parts and materials for this project.
 - c. Following the GRA number should be a dash (-) and two or three letters of the service crew's initials.
 - d. Following the service crew's initials should be a sequential number that begins at one (1) for the first rod and increases by one for each rod removed by a crew.
 - e. An example of an ID number is "1035-JTS247" for a service contractor whose GRA number is 1035, the service technician is John T. Smith, and the rod is the 247th one to be removed by John Smith's service crew.
6. Use a light-colored paint-marker to write the rod hydrant ID code legibly on the rod in an area adjacent to the housing. Clean grease or oil from the area as needed to achieve adhesion between the marking paint and the steel surface of the rod. See Figure 10 for an example of a packaged and labeled rod.

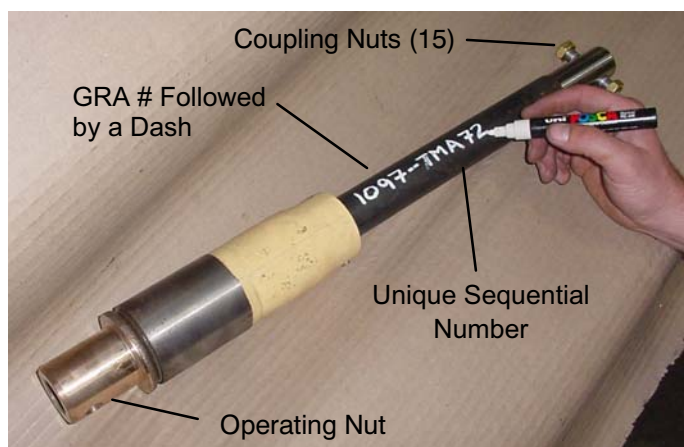
Replacement of Extraordinary Parts

Certain parts will be supplied to you by Waterous as they are needed to replace unusable parts that are not routinely supplied and do not appear on the list of typical rod replacement parts in Table 5 of Appendix B. Other parts may be needed for repairs unrelated to the remediation project. See Appendix B for the list of "Use as Needed" parts in Table 6 and for instructions for identifying the specific parts that are needed for the particular hydrants.

Recording Information on Log Sheet

1. Upon completion of the remediation and rod replacement, pertinent information should be recorded on the Waterous Log Sheet, form number H-445.
 - a. Information recorded on the Log Sheet shall include the following:
 - i. The city or water district where the hydrant is located
 - ii. The address or other description of the hydrant's location
 - iii. The hydrant's ID number. (See the following section for more details.)

Figure 10. Packaged and Labeled Rod Example - Trend



7. Stack the assemblies neatly in a wood-sided pallet or plastic tote, alternating the direction of each rod to stagger the positions of the protruding coupling studs. The maximum capacity of each wood-sided pallet or tote is 1800 pounds. The maximum quantity of operating mechanism assemblies that may be shipped in each pallet or tote is 100.

Arranging for Shipping Rods

1. Smaller quantities of rods may be returned when necessary, but if possible, accumulate at least 50 rods before arranging for shipping.
2. Securely attach a Waterous shipping label to each pallet or container of rods to be returned. Write the GRA number and the number of rods that are in each container on each shipping label.
3. Complete a Waterous bill of lading (BOL) for each shipment. Each shipment may consist of one or more containers. Note the approximate weight of each container on the BOL.
 - a. For estimating the weight of the rods and containers, please refer to the weights shown below:
 - i. Wood-sided pallet: 90 pounds each
 - ii. Operating Mechanism - 10" break-off: 14.2 lbs each
 - iii. Operating Mechanism - 16" break-off: 16.3 lbs each
4. Contact the designated shipping company to schedule a pick-up.

Appendices

Appendix A - Pacer Parts Lists (Remediation / Replacement) 17

Appendix B - Trend Parts Lists (Replacement) 18

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Appendix D - Shipping Label 47

Appendix E - Contact Information 48

Appendix A - Pacer Rod Replacement Parts Lists

Items listed in Table 3 are supplied for use for all hydrants requiring removal and replacement of the grease and rod. Items listed in Table 4 are provided when requested to be "used-as-needed" to replace parts removed and found to be unusable.

Table 3. Typical Rod Replacement Parts List - Pacer Hydrants

Ref No.	Part Number	Description	Quantity per Hydrant
-	63396	Rod Replaced Plate	1
-	V 3175	Hydrant Lubricant, Mineral Oil, 1 Gallon	1 Gallon / 30 hydrants
-	V 3174	Food Grade Grease, 5 lbs	5 lbs / 35 hydrants
-	V 3546	Bottle Brush	N/A
-	V 3547	Grease Application Brush, 5/8 in. diameter	N/A
71	73087-L (typical, See Note 1)	Upper Rod Assembly	1
61	W 4010-CA	Plain Washer, 5/8 in.	1
87	V 1853	Coupling Nut, 1/2-20 UNF	1

Note:

- When ordering Ref. No. 71, Upper Rod Assembly, the opening direction (Open-Left or Open-Right) and the upper standpipe length must be specified.

Table 4. Rod Replacement "Use As Needed" Parts List - Pacer Hydrants

Ref No.	Part Number	Description	Quantity per Hydrant
6A	W 1010-60HTSP	Hex Head Bolt, 5/8-11 x 3-3/4	4
6B	W 1010-48HTSP	Hex Head Bolt, 5/8-11 x 3	4
6C	W 2010-SP	Hex Nut, 5/8-11	8
7	6493-5 (typical)	Hose Cap (See Note 1)	2
7	6521-5 (typical)	Pumper Cap (See Note 1)	1
10	5204-1	Hose Cap Gasket	2
11	62489 (typical)	Hose Nozzle (See Note 2)	2
11	71996 (typical)	Pumper Nozzle (See Note 2)	1
10	5044-1	Pumper Cap Gasket	1
17	62567 (typical)	One Piece Operating Nut (see Note 5)	1
17A	51470-L (typical)	Lower Operating Nut (see Note 5)	1
17B	62022	Upper Operating Nut, Weather Shield	1
56	72503	Support Wheel Assembly	1
57	W3724-4D	O-ring, 1-1/2 x 1-3/4	1
59	W 3718-4UH	O-ring, 1-1/8 x 1-3/8	3
62B	81976	Upper Standpipe Flange (see Note 6)	1
63	61724-2	Standpipe Flange (see Note 6)	1
64	50676	Lock Ring	3
67	62266	Half Coupling (Iron)	2
82	W 3738-4	O-ring, 2-3/8 x 2-5/8	1
83	W 3730-4	O-ring, 1-7/8 x 2-1/8	1
84	51479	Support Gasket	2
85	62989	Support Tube	1
86	W 2416-CA (typical)	Stop Nut (RH Thread for Open-Left hydrants)	1
90	V 1954	Thrust Ring	1
92	52248	Standpipe Gasket	1
99	W 6604-B	Pipe Plug, 1/4" NPT, Recessed Socket	1
102	W33008-36SS	Spirol Pin, 1/4 x 2-1/4	1
113	72929	Breakable Standpipe Flange, G. I.	1
116	W 3784-8	Pumper Nozzle Retainer Seal	1
117	62585	Pumper Nozzle Retainer (See Note 3)	1
118	W 3752-6	Hose Nozzle Retainer Seal	2
119	62584 (typical)	Hose Nozzle Retainer (See Note 4)	2

Notes:

- When ordering Ref. No.7, Hose or Pumper Cap, thread specification and wrench nut number must be specified. Caps are furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.
- When ordering Ref. No. 11, Hose or Pumper Nozzle, the thread specification must be furnished.
- The Ref. No. 117, Pumper Nozzle Retainer, is furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.
- When ordering the Ref. No. 117, Hose Nozzle Retainer, the thread specification must be furnished. The Hose Nozzle Retainer is furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.
- When ordering Ref No. 17, One Piece Operating Nut or 17A, Lower Operating Nut, the opening direction must be specified.
- The Ref No. 62B, Upper Standpipe Flange, Ref No. 63, Standpipe Flange, and Ref No. 113, Breakable Standpipe Flange, are furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.

Appendix B - Trend Remediation Parts Lists (Rod Replaced)

Items listed in Table 5 are supplied for use on all hydrants where the operating mechanism is to be replaced. Items listed in Table 6 are provided when requested to be "used-as-needed" to replace parts removed and found to be unusable.

Table 5. Typical Operating Mechanism Assembly Parts List - Trend Hydrants

Ref No.	Part Number	Description	Quantity per Hydrant
4	W 3728-4UH	O-ring, 1-3/4 x 2	1
5	51767	Nozzle Section Bushing	2
15	V 1853	Coupling Nut, 1/2-20 UNF	1
18	W 4010-CA	Plain Washer, 5/8	1
-	V 3175	Mineral Oil, Hydrant Lubricant, 1 Gallon Plastic Jug	2 oz.
-	V 3174	Food Grade Grease, 5 lb.	5 lb / 50 hydrants
-	63396	Rod Replaced Plate	1
80	51475	Thrust Washer (Teflon)	1
99	73156-L (typical)	Operating Mechanism Assembly (includes parts listed below) (See Note 1)	1
Operating Mechanism Assembly			
Ref No.	Part Number	Description	Quantity per Hydrant
6	62225-L (typical)	Operating Nut, O.L.	1
12	62227-L (typical)	Upper Rod, O.L.	1
13	51481	Knurled Stud, 1/2-20 x 2-9/16	1
15	V 1853	Coupling Nut, 1/2-20 UNF	2
37	62226	Operating Nut Housing	1
38	W 3716-4UH	O-ring, 1 x 1-1/4 in.	1
39	W 33008-36SS	Spirol Pin, 1/4 x 2-1/4	1

Note:

- When ordering Ref. No. 99, Operating Mechanism Assembly, the opening direction (Open-Left or Open-Right) and the upper standpipe length must be specified.

Table 6. Use-As-Needed Parts List - Trend Hydrants

Ref No.	Part Number	Description	Quantity per Hydrant
3	W33016-44SS	Spirol Pin, 1/2 x 2-3/4	1
14	62266	Half Coupling (Iron)	2
16	51772	Nozzle Section Gasket	1
17B	W 2010-SP	Hex Nut, 5/8-11	4
21	61726	Lock Ring Clamp	4
22	51771	Lock Ring	2
46	W1010-48HTSP	Hex Head Bolt, 5/8-11 x 3	4
49	52117	Upper Standpipe Gasket	1
7	6493-5 (typical)	Hose Cap (See Note 1)	2
7	6521-5 (typical)	Pumper Cap (See Note 1)	1
10	5204-1	Hose Cap Gasket	2
10	5044-1	Pump Cap Gasket	1
11	62489 (typical)	Hose Nozzle (See Note 2)	2
11	71996 (typical)	Pumper Nozzle (See Note 2)	1
116	W 3784-8	Pumper Nozzle Retainer Seal	1
117	62585	Pumper Nozzle Retainer (See Note 3)	1
118	W 3752-6	Hose Nozzle Retainer Seal	2
119	62584 (typical)	Hose Nozzle Retainer (See Note 4)	2

Notes:

- When ordering Ref. No.7, Hose or Pumper Cap, thread specification and wrench nut number must be specified. Caps are furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.
- When ordering Ref. No. 11, Hose or Pumper Nozzle, the thread specification must be furnished.
- The Ref. No. 117, Pumper Nozzle Retainer, is furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.
- When ordering the Ref. No. 117, Hose Nozzle Retainer, the thread specification must be furnished. The Hose Nozzle Retainer is furnished with primer coating only. The top coat is to be applied in the field to match the color of the hydrant.

Appendix C - Waterous Hydrant Enamel

Following is a list of the colors of Waterous acrylic hydrant enamel for painting certain parts of Pacer and Trend Model Fire Hydrants..

Waterous Acrylic Hydrant Enamel in Aerosol Spray Cans

Part Number	Color
M 4104-AS	Red
M 4105-AS	Green
M 4106-AS	Yellow
M 4107-AS	Orange
M 4109-AS	White
M 4110-AS	Black
M 4111-AS	Silver
M 4122-AS	International Orange
M 4125-AS	Sea Green
M 4134-AS	Sunfast Red
M 4135-AS	Spanish Yellows
M 4137-AS	National Blue
M 4138-AS	Lime Yellow
M 4152-AS	Houston Blue
M 4154-AS	Safety Yellow
M 4157-AS	Emerald Green
M 4158-AS	Red Siliconized
M 4160-AS	Burgundy
M 4163-AS	Beige
M 4166-AS	Beaded White
M 4167-AS	Beaded Yellow
M 4168-AS	Beaded Silver
M 4169-AS	Safety Yellow
M 4170-AS	Pantone Purple
M 4171-AS	Naperville Orange
M 4172-AS	508A Centari White
M 4173-AS	Lime Green
M 4177-AS	Antique Linen
M 4181-AS	Dark Emerald Green
M 4182-AS	Federal Safety Yellow
M 4184-AS	Silver Metallic
M 4186-AS	Reflective Silver
M 4189-AS	Safety Blue
M 4190-AS	Safety Yellow

Appendix D

Material Safety Data Sheets

Listed are the material safety data sheets for the chemicals and material used in the remediation and replacement of the hydrant operating rods. Please read through the information prior to using any of the items listed.

- Lubriplate FMO-AW Mineral Oil
- Safety-Kleen Solvent
- Acrylic Enamel Spray Paint
- Citgo Clarion® Food Machinery Grease No.2



LUBRIPLATE®

MATERIAL SAFETY DATA SHEET

Section 1

PRODUCT NAME OR NUMBER:

LUBRIPLATE FMO-85-AW, FMO-150-AW, FMO-200-AW,
FMO-350-AW, FMO-500-AW, FMO-900-AW, FMO-1100-AW,
FMO-1700-AW, FMO-2400-AW, FMO-3800-AW

FORMULA:

USP Mineral Oil and Additives

GENERIC/CHEMICAL NAME:

Petroleum Lubricating Oil

Manufacturer's Name

Fiske Brothers Refining Co.

Address

1500 Oakdale Ave., Toledo, Ohio 43605 - 129 Lockwood St., Newark, NJ 07105

NSF Registration No's: 122670, 132661, 122668,

122665, 122664, 122675, 122687, 122667, 122671, 122673

Emergency Telephone Number

1-800-255-3924 - CHEM-TEL (24 hour)

Telephone Number for Information

419-691-2491 - Toledo Office

Section 2 - Hazardous Ingredients/Identity Information

<u>Hazardous Components</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits Recommended</u>	<u>% (optional)</u>
Oil Mist in Air (Not Encountered in Normal Usage)	5mg/m ³	5mg/m ³		

Hazardous Material Identification System (HMIS): Health - 1, Flammability - 1, Reactivity - 0

Not a Controlled Product under (WHMIS) - Canada

Special Protection: See Section 9

Section 3 - Health Hazard Data

Threshold Limit Value 5 mg/m³ for oil mist in air. OSHA Regulation 29 CFR 1910.1000

Effects of Overexposure Prolonged or repeated skin contact may cause skin irritation. Product contacting the eyes may cause eye irritation. Human health risks vary from person to person. As a precaution, exposure to liquids, vapors, mists and fumes should be minimized. This product has a low order of acute oral toxicity, but minute amounts aspirated into the lungs during ingestion may cause mild to severe pulmonary injury.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 4 - Emergency and First Aid Procedures

EYE CONTACT: Flush with clear water for 15 minutes or until irritation subsides. If irritation persists, consult a physician.

SKIN CONTACT: Remove any contaminated clothing and wash with soap and warm water. If injected by high pressure under skin, regardless of the appearance or its size, contact a physician IMMEDIATELY. Delay may cause loss of affected part of the body.

INHALATION: Vapor pressure is very low and inhalation at room temperature is not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician.

INGESTION: If ingested, call a physician immediately. Do not induce vomiting.

Section 5 - Fire and Explosion Hazard Data

Flash Point (Method Used) COC - 335 - 495°F **Flammable Limits** **LEL** 0.9% **UEL** 7.0%

Extinguishing Media Foam, Dry Chemical, Carbon Dioxide or Water Spray (Fog)

Special Fire Fighting Procedures Cool exposed containers with water. Use air-supplied breathing equipment for enclosed or confined spaces.

Unusual Fire and Explosion Hazards Do not store or mix with strong oxidants. Empty containers retain residue. Do not cut, drill, grind, or weld, as they may explode.

PRODUCT NAME OR NUMBER - LUBRIPLATE FMO-AW SERIES

Section 6 - Physical/Chemical Characteristics

Boiling Point	>550°F	Specific Gravity (H₂O = 1)	0.87 - 0.89
Vapor Pressure (mm Hg.)	<0.01	Melting Point	Liquid
Vapor Density (AIR = 1)	>5	Evaporation Rate (Butyl Acetate = 1)	<0.01
Solubility in Water	Negligible		
Appearance and Odor	Colorless, transparent oil with mineral oil odor.		

Section 7 - Reactivity Data

Stability	Unstable Stable X	Conditions to Avoid	N/A
Incompatibility (Materials to Avoid)	Avoid contact with strong oxidants like liquid chlorine, concentrated oxygen.		
Hazardous Decomposition or Byproducts	May form SO ₂ . If incomplete combustion, Carbon Monoxide.		
Hazardous Polymerization	May Occur Will Not Occur X	Conditions to Avoid	N/A

Section 8 - Spill or Leak Procedures

Steps to be taken in case material is released or spilled

Recover liquid, wash remainder with suitable petroleum solvent or add absorbent. Keep petroleum products out of sewers and watercourses. Advise authorities if product has entered or may enter sewers and watercourses.

Waste disposal method

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste disposal facility or site.

Section 9 - Special Protection Information

Respiratory Protection (Specify type)	Normally not needed		
Ventilation	Local Exhaust Mechanical (General)	Used to capture fumes and vapors	Special N/A Other N/A
Protective Gloves	Use oil-resistant gloves, if needed.	Eye Protection	If chance of eye contact, wear goggles.
Other Protective Equipment	Use oil-resistant apron, if needed.		

Section 10 - Special Precautions

Precautions to be taken in handling and storing

Keep containers closed when not in use. Do not handle or store near heat, sparks, flame, or strong oxidants.

Other Precautions

Avoid breathing oil mist. Remove oil-soaked clothing and laundry before reuse. Cleanse skin thoroughly after contact.

The above information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Fiske Brothers Refining Company. The data on these sheets relates only to the specific material designated herein. Fiske Brothers Refining Company assumes no legal responsibility for use or reliance upon this data.

**SAFETY KLEEN PREMIUM SOLVENT
SAFETY-KLEEN PREMIUM GOLD SOLVENT
MATERIAL SAFETY DATA SHEET FOR USA AND CANADA**



SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SAFETY-KLEEN PREMIUM SOLVENT
SAFETY-KLEEN PREMIUM GOLD SOLVENT

SYNONYMS: Parts Washer Solvent; Petroleum Distillates; Petroleum Naphtha;
Naphtha, Solvent; Stoddard Solvent; Mineral Spirits.

PRODUCT CODE: 6605, 6638

PRODUCT USE: Cleaning and degreasing metal parts.
If this product is used in combination with other products, refer to the
Material Safety Data Sheet for those products.

24-HOUR EMERGENCY PHONE NUMBERS

These numbers are for emergency use only. If you desire non-emergency product information, please call a phone number listed below.

MEDICAL:	TRANSPORTATION (SPILL):
1-800-752-7869	1-800-468-1760

SUPPLIER: Safety-Kleen Systems, Inc.
5400 Legacy Drive
Cluster II, Building 3
Piano, Texas 75024
USA
1-800-669-5740
www.Safety-Kleen.com

TECHNICAL INFORMATION: 1-800-669-5740 Press 1 then Enter 7500

MSDS FORM NUMBER: 82658 **ISSUE:** September 12, 2003

ORIGINAL ISSUE: January 26, 1995 **SUPERSEDES:** July 8, 2003

PREPARED BY: Product MSDS Coordinator **APPROVED BY:** MSDS Task Force

SAFETY-KLEEN PREMIUM SOLVENT
SAFETY-KLEEN PREMIUM GOLD SOLVENT
MATERIAL SAFETY DATA SHEET FOR USA AND CANADA

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

WT%	NAME	SYNONYM	CAS NO.	OSHA PEL**	ACGIH TLV®		LDa	LCb
					STEL	TWA		
100	Distillates (petroleum), hydrotreated light	N. Av.	64742-47-8	500` ppm 2900` mg/m ³	N. Av.	100` ppm	N. Av.	5000` mg/kg 5500` mg/m3/4h

**OSHA Final PEL value (enforceable). Some States have adopted more stringent values.

N. Av. = Not Available
 `Oral-Rat LD₅₀

b Inhalation-Rat LC50

`Based on Stoddard Solvent

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE

Liquid, clear, colorless to pale yellow, mild hydrocarbon odor.

WARNING!

PHYSICAL HAZARDS

Combustible liquid and vapor.

HEALTH HAZARDS

May be harmful if inhaled.

May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.

May be harmful if swallowed.

Contains material that may cause central nervous system and kidney damage.

ENVIRONMENTAL HAZARDS

Not toxic to aquatic life.

SAFETY-KLEEN PREMIUM SOLVENT
SAFETY-KLEEN PREMIUM GOLD SOLVENT
MATERIAL SAFETY DATA SHEET FOR USA AND CANADA

POTENTIAL HEALTH EFFECTS

INHALATION (BREATHING): High concentrations of vapor may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

EYES: May cause irritation.

SKIN: May cause irritation. Not likely to be absorbed in harmful amounts.

INGESTION (SWALLOWING): May be harmful if swallowed. May cause throat irritation, nausea, vomiting, and central nervous system effects as noted under **INHALATION (BREATHING)**. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing respiratory tract (nose, throat, and lungs), central nervous system, kidney, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

CHRONIC: Prolonged or repeated inhalation may cause toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated exposure may cause central nervous system and kidney damage. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, swelling (dermatitis) and/or burns..

CANCER INFORMATION: CARCINOGENICITY. No known carcinogenicity. For more information, see SECTION 11:

Also see **SECTION 15: CALIFORNIA.**

POTENTIAL ENVIRONMENTAL EFFECTS

Product is not toxic to aquatic life. Also see SECTION 12: ECOLOGICAL INFORMATION.

SECTION 4: FIRST AID MEASURES

INHALATION (BREATHING): Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.

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EYES: If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.

SKIN: Remove affected clothing and shoes. Wash skin thoroughly with soap and water. Get medical attention if irritation or pain develops or persists.

INGESTION (SWALLOWING): Do NOT induce vomiting. Immediately get medical attention. Call 1-800-752-7869 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIANS: Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-752-7869 for additional information.

SECTION 5: FIRE FIGHTING MEASURES
--

FLASH POINT: 148°F (64°C) (approximately) Tag Closed Cup

FLAMMABLE LIMITS IN AIR: **LOWER:** 0.7 VOL% (minimum) **UPPER:** 5 VOL% (maximum)

AUTOIGNITION TEMPERATURE: 410°F (210°C) (minimum)

HAZARDOUS COMBUSTION PRODUCTS: Decomposition and combustion materials may be toxic. Burning may produce carbon monoxide and unidentified organic compounds.

CONDITIONS OF FLAMMABILITY: Heat, sparks, or flame.

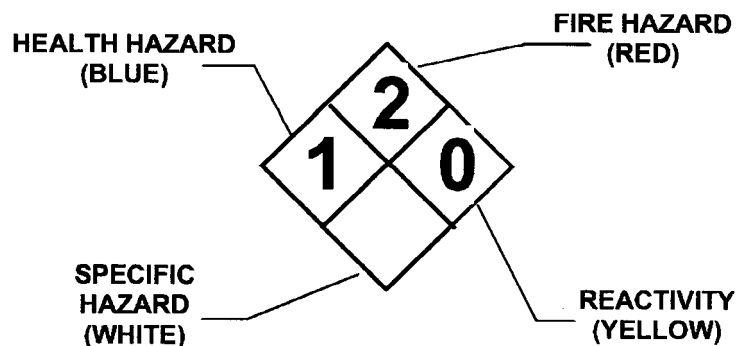
EXTINGUISHING MEDIA: Carbon dioxide, regular foam, dry chemical, water spray, or water fog.

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NFPA 704

HAZARD IDENTIFICATION:

This information is intended solely for the use by individuals trained in this system.



FIRE FIGHTING

INSTRUCTIONS:

Keep storage containers cool with water spray. A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

FIRE AND EXPLOSION HAZARDS:

Vapor explosion hazard indoors, outdoors, or in sewers. Vapors may travel to ignition source and flashback. Vapors will spread along the ground and collect in low or confined areas. Run-off to sewer may create a fire hazard. Heated containers may rupture or be thrown into the air. "Empty" containers may retain residue and can be dangerous. Products are not sensitive to mechanical impact. Products may be sensitive to static discharge, which could result in fire or explosion.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface water and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

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SECTION 7: HANDLING AND STORAGE

HANDLING: Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion-proof equipment. When transferring product, metal containers, including trucks and tank cars, should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke while using this product.

SHIPPING AND STORING: Keep container tightly closed when not in use and during transport. Store containers in a cool, dry place. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14: TRANSPORTATION INFORMATION** for Packing Group information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits. Where explosive mixtures may be present, equipment safe for such locations should be used.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Use NIOSH-certified P- or R- series particulate filter and organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Do not use N-rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with GSA Standard Z94.4.

EYE PROTECTION: Where eye contact is likely, wear chemical goggles; contact lens use is not recommended.

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SKIN PROTECTION: Where skin contact is likely, wear neoprene, nitrile, or equivalent protective gloves; use of natural rubber or equivalent gloves is not recommended.

To avoid prolonged or repeated contact with products where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, coveralls, long sleeve shirts, or other protective clothing.

PERSONAL HYGIENE: Use good personal hygiene. Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard affected clothing, shoes, and/or protective equipment if they cannot be thoroughly cleaned. Discard leather articles, such as shoes, saturated with this product.

OTHER PROTECTIVE EQUIPMENT: Where spills and splashes are likely, facilities storing or using these products should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES
--

PHYSICAL STATE, APPEARANCE, AND ODOR: Liquid, clear, colorless to pale yellow, mild hydrocarbon odor.

ODOR THRESHOLD: 30 ppm (based on Stoddard Solvent)

MOLECULAR WEIGHT: Not available.

SPECIFIC GRAVITY: 0.77 to 0.82 at 60°F (15.6°C) (water = 1)

DENSITY: 6.4 to 6.8 LB/US gal (780 to 820 g/l)

VAPOR DENSITY: 5 (air = 1) (approximately)

VAPOR PRESSURE: 0.2 mm Hg at 68°F (20°C) (approximately)
0.6 mm Hg at 100°F (37°C) (approximately)

BOILING POINT: 350°F (177°C) (initial)

FREEZING/MELTING POINT: -45°F (-43°C) (maximum)

pH: Not applicable.

EVAPORATION RATE: 0.1 (butyl acetate = 1) (based on Stoddard Solvent)

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SOLUBILITY IN WATER: Insoluble.

FLASH POINT: 148°F (64°C) (approximately) Tag Closed Cup

FLAMMABLE LIMITS IN AIR: **LOWER:** 0.7 VOL% (minimum) **UPPER:** 5 VOL% (maximum)

AUTOIGNITION TEMPERATURE: 410°F (210°C) (minimum)

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal temperatures and pressures. Avoid heat, sparks, or flame.

INCOMPATIBILITY: Avoid acids, alkalis, oxidizing agents, reducing agents, or reactive halogens.

REACTIVITY: Polymerization is not known to occur under normal temperature and pressures. Not reactive with water.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal temperatures and pressures. See also **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS.**

SECTION 11: TOXICOLOGICAL INFORMATION

SENSITIZATION: Based on best current information, there is no known human sensitization associated with this product.

MUTAGENICITY: Based on best current information, there is no known mutagenicity associated with this product.

CARCINOGENICITY: Based on best current information, there is no known carcinogenicity as categorized by ACGIH A1 or A2 substances; as categorized by IARC Group 1, Group 2A, or Group 2B agents; or as listed by NTP as either known carcinogens or substances for which there is limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

Also see **SECTION 15: CALIFORNIA.**

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REPRODUCTIVE TOXICITY: Based on best current information, there is no known reproductive toxicity associated with this product.

Also see **SECTION 15; CALIFORNIA.**

TERATOGENICITY: Based on best current information, there is no known teratogenicity associated with this product.

TOXICOLOGICALLY SYNERGISTIC PRODUCT(S): Based on best current information, there are no known toxicologically synergistic products associated with this product.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: A Static Acute Bioassay as per California Department of Fish and Game WPCL was done using fathead minnows and up to 750 ppm of the products in water. The material passed the bioassay.

OCTANOLIWATER PARTITION COEFFICIENT: Not available.

VOLATILE ORGANIC COMPOUNDS: 100 WT%; 6.4 to 6.8 LB/US gal; 780 to 820 g/l
As per 40 CFR Part 51.100(s).

SECTION 13: DISPOSAL CONSIDERATIONS
--

DISPOSAL: Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

USEPA WASTE CODE(S): Not regulated.
Based on available data, this information applies to the product as supplied to the user. Processing, use, or contamination by the user may change the waste code applicable to the disposal of this product.

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SECTION 14: TRANSPORT INFORMATION

DOT: **Shipping Name:** Combustible liquid, n.o.s. (petroleum naphtha)
UN/NA #: NA1993 **Hazard Class:** Combustible liquid **Packing Group:** III

TDG: **Shipping Name:** Non-regulated goods.

EMERGENCY RESPONSE 128
GUIDE NUMBER: Reference *North American Emergency Response Guidebook*

SECTION 15: REGULATORY INFORMATION

USA REGULATIONS

SARA SECTIONS 302 AND 304: Based on the ingredients listed in **SECTION 2**, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

SARA SECTIONS 311 AND 312: This product poses the following health hazards as defined in 40 CFR Part 370 and are subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA):
Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

SARA SECTION 313: This product does not contain "toxic" chemicals subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

CERCLA: Based on the ingredient listed in SECTION 2, this product does not contain any "hazardous substances" listed pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4.

TSCA: The component of this product is listed on, or is automatically included as "naturally occurring chemical substances" on, or is exempted from the requirement to be listed on, the TSCA Inventory.

CALIFORNIA: This product may contain a detectable amount of benzene CAS 71-43-2

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(at or below 0.4 mg/L) and p-dichlorobenzene CAS 106-46-7 (at or below 5 mg/L). WARNING: These chemicals are known to the State of California to cause cancer.

This product may contain a detectable amount of benzene CAS 71-43-2 (at or below 0.4 mg/L) and toluene CAS 108-88-3 (at or below 30 mg/L). WARNING: These chemicals are known to the State of California to cause birth defects or other reproductive harm.

CANADIAN REGULATIONS

This product have been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

WHMIS: Class B3 - Combustible Liquid
Class D2B - Irritating to eyes and skin.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): The component of this product is listed on, or is automatically included as "substance occurring in nature" on, or is exempted from the requirements to be listed on, the Canadian Domestic Substances List (DSL).

SECTION 16. OTHER INFORMATION

REVISION INFORMATION: This MSDS has been revised in the following sections:
Section 14: Change in transportation

LABEL/OTHER INFORMATION: These products are United States Department of Agriculture (USDA) approved and ETL classified.

User assumes all risks incident to the use of this (these) product(s). To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. ^{-NQ}
representations or warranties, either express or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the product(s) as supplied to the user.



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M A T E R I A L S A F E T Y D A T A S H E E T

ALV-AEROSOL

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PRODUCT NAME: ██████████
FORMULA KEY: ██████████

HMS CODES: H F R P
2 3 0 1

===== **SECTION I - MANUFACTURER IDENTIFICATION** =====

MANUFACTURER'S NAME: Fasse Paint Company, Inc.
ADDRESS : 215 Pine Street
 Sheboygan Falls, WI 53085

EMERGENCY PHONE : 1-800-535-5053 **DATE PRINTED :** 4/28/2003
INFORMATION PHONE : 1-920-467-7850 **NAME OF PREPARER :** Jim Fasse

===== **SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION** =====

REPORTABLE COMPONENTS	CAS NUMBER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
ACETONE OSHA PEL: 750 PPM ACGIH TLV: 500 PPM	67-64-1	181.7	20 C	60.65
ISOBUTANE OSHA PEL: 800 PPM	75-28-5	95	25 DEG C	24.55
PROPANE OSHA PEL: 1000 PPM ACGIH TLV: 1000 PPM	74-98-6	110	70 F	11.5
1,2-DIBETHYLENE GLYCOL BUTYL ETHER OSHA PEL: 50 PPM	111-76-2	88	25 DEG C	2.25
GLYCOL ETHER PM OSHA PEL: 50 PPM	107-98-2	88	25 DEG C	1.1

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.
 # This product has been reported to cause cancer in laboratory animals. The relevance of these findings to humans is uncertain, but appropriate safeguards should be employed to reduce or eliminate exposure.

===== **SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS** =====

BOILING RANGE: -43 F - 340 DEG F **WEIGHT PER GALLON:** 5.69 lb/gl
VAPOR DENSITY: HEAVIER THAN AIR **EVAPORATION RATE:** SLOWER THAN ETHER
COATING V.O.C.: 4.648 lb/gl **MATERIAL V.O.C.:** 2.24 lb/gl
APPEARANCE AND ODOR: Viscous liquid with an odor characteristic of the solvents listed in Section II.

===== **SECTION IV - FIRE AND EXPLOSION HAZARD DATA** =====

FLASH POINT: -156 F **METHOD USED:**
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 2.2 **UPPER:** 12.8

EXTINGUISHING MEDIA: Use National Fire Protection Association (NFPA) Class B ext chemical, or universal aqueous film forming foam) designed to extinguish NFPA Flammable liquid fires.

SPECIAL FIREFIGHTING PROCEDURES

Water spray may be ineffective. Water spray may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable. Firefighters should wear self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep container tightly closed. Isolate from heat, electrical equipment, sparks, and open flames. Closed containers may explode when exposed to extreme heat. Do not apply on hot surfaces. Do not weld on or near container. Toxic gases may form when product is contacted by flame or hot surfaces.

===== **SECTION V - REACTIVITY DATA** =====

STABILITY: Stable

CONDITIONS TO AVOID

Avoid contact with strong alkalis, strong mineral acids, or strong oxidizing agents. Avoid high temperatures, direct heating.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

May produce hazardous decomposition products when heated. Welding, brazing, or flame-cutting on surfaces coated with this product may produce fumes including: Carbon Monoxide or Carbon Dioxide.

HAZARDOUS POLYMERIZATION: Not expected to occur.

===== **SECTION VI - HEALTH HAZARD DATA** =====

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Vapor and spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Intentional misuse by deliberately inhaling the contents can be harmful or fatal.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Eye contact: causes eye irritation. May experience itching, burning sensation and visual disturbances.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

May cause moderate skin irritation. May be harmful if absorbed through the skin. Dryness, itching, cracking, burning, redness, and swelling are conditions associated with excessive skin contact.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Harmful or fatal if swallowed.

HEALTH HAZARDS (ACUTE AND CHRONIC)

Avoid long term and repeated contact.

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MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

None applicable.

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: If swallowed, do not induce vomiting. **EYES:** In case of eye contact, flush eyes immediately with plenty of water for at least 15 minutes. **SKIN:** In case of skin contact, remove promptly by wiping, followed by waterless hand cleaner and soap and water. **INHALATION:** If affected by inhalation of vapor or spray mist, remove to fresh air. Apply artificial respiration and other supportive measures as required. Get medical attention.

===== **SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE** =====

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Provide maximum ventilation. Only personnel equipped with proper respiratory and skin and eye protection should be permitted in the area. Remove all sources of ignition. Take up spilled material with sawdust, vermiculite, or other absorbent material and place into containers for disposal.

WASTE DISPOSAL METHOD

Waste material must be disposed of in accordance with Federal, State, and Local environmental control regulations. Empty containers should be recycled or disposed of through an approved Waste Management Facility.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not store above 120 deg. F. Store large quantities in buildings designed and protected for storage of NFPA Flammable liquids.

OTHER PRECAUTIONS

If this material is part of a multiple component coating system, read the MSDS for the other component or components before blending as the resulting mixture may have the hazards of all of its parts. Containers should be grounded when pouring. Avoid free fall of liquids in excess of a few inches. Containers of this material may be hazardous when emptied since they retain residues. Do not cut, puncture, or weld on or near container.

===== **SECTION VIII - CONTROL MEASURES** =====

RESPIRATORY PROTECTION

Overexposure to vapors may be prevented by ensuring ventilation controls, vapor exhaust or fresh air entry. If TLV of any component is exceeded, use an appropriate NIOSH/MSHA approved respirator. Follow respirator manufacturers directions for respirator use.

VENTILATION

Provide sufficient mechanical and/or local exhaust ventilation to keep the concentration of ingredients listed in section II below the lowest exposure limits.

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PROTECTIVE GLOVES

Impermeable chemical handling gloves for skin protection.

EYE PROTECTION

Use chemical safety glasses, goggles, and faceshields for eye protection.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

Use impermeable aprons and protective clothing whenever possible to prevent skin contact. The use of head caps whenever possible is strongly recommended. Clean or discard contaminated clothing and shoes.

WORK/HYGIENIC PRACTICES

Eye washes and safety showers in the workplace are recommended.

SECTION IX - DISCLAIMER

The information and recommendations contained herein are believed to be accurate at the time of preparation or obtained from sources believed to be generally reliable. Fasse Paint Co. will not be held liable for claims relating to any party's use of or reliance on information contained herein, regardless of whether it is claimed the information is accurate.

PRODUCT SPECIFICATIONS

SHEBOYGAN PAINT COMPANY
19 NORTH 25th STREET
P.O. BOX 417
SHEBOYGAN, WI 53082-0417

DATE OF PREPARATION 06/14/05
PRINTED DATE 06/20/05
EMERGENCY TELEPHONE (920) 458-2157
CUSTOMER SERVICE custserv@shebpaint.com

TRADE NAME
[REDACTED] M 4104 AS MFG. PRODUCT NO.
TOUCH UP ENAMEL 43-81531A

CUSTOMER : Pro Paint, Inc.
PART NUMBER : M 4104-1
WEIGHT PER GALLON : 8.57 POUNDS
(density)

	BY WEIGHT	BY VOLUME
PERCENT SOLIDS	: 57.64	48.20
PERCENT WATER	:	
PERCENT SOLVENT	: 33.86	40.75
% EXEMPT SOLVENT	: 8.50	11.05
VOC (WITH WATER AND EXEMPT SOLV):	2.90 LBS/GAL	347.53 GMS/LITER
VOC (LESS WATER AND EXEMPT SOLV):	3.26 LBS/GAL	390.68 GMS/LITER
PERCENT HAPS BY WEIGHT	: 4.24	
VOC LBS PER GALLON SOLIDS	: 6.02	
VOC KILOGRMS PER KILOGRMS SOLIDS:	.59	
VOC HAPS LBS PER GALLON SOLIDS	: .75	
VOC HAPS LBS PER LBS SOLIDS	: .07	

FLASHPOINT (FAHRENHEIT) : 1 F
APPLICATION : SPRAY/AEROSOL
REDUCTION : ACETONE IF NECESSARY
CURE : AIR DRY
SUBSTRATE : STEEL
COVERAGE : 773.128 SQUARE FEET @ 1 MIL NO LOSS
VISC @ 80 F : 13-16/3 ZAHN CUP
CRYPTOMETER : 10-13#7 WEDGE

COMMENTS

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS

HAZARD RATING 0 - MINIMAL 3 - SERIOUS
 1 - SLIGHT 4 - SEVERE
 2 - MODERATE * - CHRONIC

HMIS RATING HEALTH - * 2 FLAMMABILITY - 3 REACTIVITY - 0

SECTION I

SHEBOYGAN PAINT COMPANY
1439 NORTH 25th STREET / P.O. BOX 417
SHEBOYGAN, WI 53082-0417

DATE OF PREPARATION 06/14/05
EMERGENCY TELEPHONE (920) 458-2157
EMAIL: custserv@shebpaint.com

PRODUCT CLASS
SURFACE COATING

TRADE NAME
M4104 HYDRANT RED ACRYLIC
TOUCH UP ENAMEL

MFG PRODUCT NO.
43-81531A

SECTION II - HAZARDOUS INGREDIENTS

NET INGREDIENT	CAS#	ACGIH TLV		ACGIH STEL		OSHA PEL		OSHA CEILING		LEL %	VAPOR PRESS	% BY
		PPM	mg/m3	PPM	mg/m3	PPM	mg/m3	PPM	mg/m3			
WI n-Butyl Acetate	123-86-4	150.0	713.0	200.0	950.0	150.0	710.0	-----	-----	1.700	8.400 @ 68.	12.8
WI Methyl n-amyl Ketone	110-43-0	50.00	233.0	-----	-----	100.0	465.0	-----	-----	1.100	2.200 @ 68.	0.97
C Xylene (mixed isomers)	VHAP 1330-20-7	100.0	434.0	150.0	651.0	100.0	435.0	-----	-----	1.000	5.100 @ 68.	1.96
-ium Compound (Insoluble)	7727-43-7	-----	10.00	-----	-----	-----	5.000	-----	-----	-----	@ ---	\$ 1.19
WI 2,5-Dimethyl-4-Heptanone	108-83-8	25.00	145.0	-----	-----	50.00	290.0	-----	-----	0.800	1.700 @ 68.	6.83
4,6-Dimethyl-2-Heptanone	19549-80-5	-----	-----	-----	-----	-----	-----	-----	-----	0.800	1.700 @ 68.	
Aromatic Petroleum Distillate	64742-94-5	-----	-----	-----	-----	100.0	-----	-----	-----	1.000	5.000 @ 100	
A Glycol Ether Compound	VHAP 112-07-2	-----	-----	-----	-----	-----	-----	-----	-----	0.900	0.200 @ 68.	1.65
EX Acetone	67-64-1	500.0	1186.	750.0	1782.	1000.	2400.	-----	-----	2.150	160.0 @ 68.	8.50

WI-This chemical is subject to reporting procedures outlined in the Wisconsin Department of Natural Resources Administrative Code Chapters NR438 and/or NR445.

C -This toxic chemical is subject to the reporting requirements of both Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40CFR372) and the Wisconsin Dept. of Natural Resources Administrative Code Chapter NR445.
VHAP - VOLATILE HAZARDOUS AIR POLLUTANT
(skin) - OSHA Skin Absorption Hazard

A -This toxic chemical is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40CFR372).
VHAP - VOLATILE HAZARDOUS AIR POLLUTANT

EX-This solvent is exempt from EPA VOC reporting requirements.

SECTION III - PHYSICAL DATA

BOILING RANGE 133-401 F VOC KG/KG SOLIDS=.59 VOC (WITH WATER AND EXEMPT SOLV) = 2.9 LBS/GAL 348 GMS/LITER
% HAPS BY WEIGHT= 4.24 VOC (LESS WATER AND EXEMPT SOLV) = 3.26 LBS/GAL 391 GMS/LITER

VAPOR DENSITY	EVAPORATION RATE	%VOLATILE BY WEIGHT	%VOLATILE BY VOLUME	WEIGHT PER GALLON	SPECIFIC GRAVITY	AVG SOLV DENSITY
HEAVIER THAN AIR	SLOWER THAN ETHER	42.36	51.8	8.5744	1.029	7.01

SECTION IV - FIRE & EXPLOSION HAZARDS

OPER SHIPPING NAME - PAINT, 3, UN1263, 11
SHIPPING LABEL - FLAMMABLE LIQUID (3) LABEL

FLASHPOINT 1 F

EXTINGUISHING MEDIA: Use carbon dioxide or dry chemical for small fires. For large fires, use an alcohol-type or multi-purpose foam extinguishing agent. Water may be ineffective to extinguish fires involving this type of product.

UNUSUAL FIRE & EXPLOSION HAZARDS: This material is HIGHLY VOLATILE and readily gives off vapors which may travel along the ground or be moved by ventilation. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flames. Sealed containers may explode if exposed to extreme heat. Do not apply to hot surfaces. This product may become electrostatically charged during mixing, filtering or pouring. Bond and ground metal containers.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray may be ineffective. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition when exposed to extreme heat. Water fog nozzle settings are preferable. A self-contained positive pressure breathing apparatus with full-face piece should be worn in addition to full firefighting safety equipment. Keep unnecessary people away, isolate hazards, stay upwind, keep out of low areas.

SECTION V - HEALTH HAZARD

EFFECTS OF OVEREXPOSURE: Irritation of the respiratory tract or acute nervous system depression characterized by headache, dizziness, staggered gait, confusion, unconsciousness, coma. There is no applicable information available regarding the carcinogen potential for this product as a whole, however any relevant information regarding any ingredient's status as a potential, suspect, or confirmed carcinogen is listed in SECTION V of the MSDS.

Repeated and prolonged exposure to some solvents has been associated with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating & inhaling vapors from this product may be harmful or fatal. Chronic overexposure may damage the liver and/or kidneys, blood cells, cause cardiac sensations, hearing effects, and/or cause birth or fertility defects in lab animals.

Ingestion of alcohol can increase the effects of overexposure from some solvents in this product.

Exposure to XYLENE can affect the cardiovascular, pulmonary, CNS, and gastrointestinal systems. Liver enzymes, serum electrolytes, EKG and chest X-ray should be done in cases of massive exposure to xylene.

ETHYLBENZENE (CAS#100-41-4) is present in this product. Ethylbenzene has been classified by IARC as a possible human carcinogen group 2B.

This product contains Xylenes, Mixed Isomers which are on the Pennsylvania Right-to-Know List. Chemical Names:

benzene, dimethyl- CAS# 1330-20-7; benzene, ethyl- CAS# 100-41-4; benzene, methyl- CAS# 108-88-3.

EXPOSURE LIMITS FOR INERT AND NUISANCE DUST PARTICULATES NOT OTHERWISE CLASSIFIED: OSHA (PEL): TWA =15 mg/m³ (total dust) 5 mg/m³ (respirable fraction). ACGIH(TLV): TWA = 10 mg/m³ (total dust).

Prolonged and continuous exposure to excessive concentration of dust of any kind without using a dust mask may have an adverse pulmonary effect on some people. This overexposure may result in coughing, sputum, and reduced lung capacity. Pre-existing asthmatic conditions may worsen. Persons with lung diseases should not work in dusty areas unless a physician certifies their fitness to wear a respirator. (OSHA 1910.134). Liquid paint does not readily release dust.

This product contains Barium Sulfate which is listed by OSHA and ACGIH as a nuisance dust. Long term overexposure to barium sulfate dust may produce benign pneumoconiosis termed "baritosis" and may reduce lung functions.

EXPOSURE LIMITS FOR BARIUM SULFATE: (CAS# 7727-43-7) OSHA (PEL): TWA =10 mg/m³ (total dust). 5 mg/m³ (respirable) ACGIH(TLV): TWA =10 mg/m³ (total dust).

This product contains 2,6-Dimethyl-4-Heptanone which is also known as Diisobutyl Ketone (DIBK) CAS# 108-83-8.

EXPOSURE LIMITS FOR GLYCOL ETHER COMPOUND: (CAS# 112-07-2) This chemical has no PEL/TLV established. NIOSH recommends a limit of 5 PPM TWA for a 10 hour workday and 40 hour workweek.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: Preexisting eye, skin, central nervous system, digestive tract, and respiratory tract. May adversely affect persons with liver, kidney & blood forming organ disorders.

ROUTE(S) OF ENTRY: Inhalation, skin contact absorption, eye contact. Products that are free-flowing liquids or pastes are not expected to have routes of exposure for dust. Dried product residue may exhibit dust inhalation hazards.

INHALATION: May cause slight to moderate respiratory tract irritation accompanied by congestion, headache, weakness, dizziness, drowsiness, and/or nausea. **FIRST AID:** Move person to fresh air. If breathing is

difficult, give oxygen. If not breathing, give artificial respiration and get immediate emergency medical assistance.

EYE CONTACT: Liquid, vapor or dust may cause moderate to severe irritation, redness, tearing, blurred vision & pain. Prolonged or chronic overexposure may cause eye damage. **FIRST AID:** Flush eyes with large amounts of water for at least 15 minutes. Hold eyelids apart to flush the entire contaminated area. Get medical help if irritation persists.

SKIN CONTACT: May cause moderate to severe skin irritation. May cause burning sensations, defatting and/or dermatitis. Chronic overexposure may cause skin cracking and/or eczema. **FIRST AID:** Remove contaminated clothing and shoes. Wash

areas with soap and water. Get medical attention as needed.

SKIN ABSORPTION: May be absorbed through skin tissues. Chronic overexposure to the skin without using protective

barriers (gloves, aprons, etc.) may cause toxic effects.

INGESTION: Single dose oral toxicity is low. May cause irritation to the gastrointestinal tract. Ingestion may

cause nausea, discomfort, diarrhea, dizziness and vomiting. **FIRST AID:** DO NOT INDUCE VOMITING! Contents of this product

are an inhalation hazard. If aspirated into the lungs, may cause chemical pneumonitis and/or pulmonary edema which can be fatal. Never leave individual unattended, keep head low to prevent aspiration. **SEEK IMMEDIATE MEDICAL ATTENTION!**

SECTION VI - REACTIVITY DATA

STABILITY: _____ UNSTABLE ___XX STABLE

INCOMPATIBILITY (Materials to avoid): Keep away from all oxidizing materials, avoid strong acids & alkalis (caustics) and never distill solvents to dryness. Material can react violently under such conditions.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, incompletely burned hydrocarbons, and other irritating or toxic vapors.

HAZARDOUS POLYMERIZATION: _____ May Occur ___XX Will Not Occur

CONDITIONS TO AVOID: Container is not a pressure vessel. Never use pressure to empty. Do not drag, puncture or drop container (prevent sparking). Dust particles from this product may pose a flammable or explosion hazard. Avoid dust accumulations. Containers should be grounded.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition (flames), electrical static or frictional sparks. Provide good ventilation to spill area. Dike spill area and add inert absorbent. Remove spilled material with non-sparking tools. Avoid breathing vapors and use respirator protective devices (SEE SECTION VIII). Only properly trained personnel should clean spilled hazards. Follow local, state and federal spill notification rules.

WASTE DISPOSAL: Waste must be disposed in accordance with federal, state and local regulations. Empty containers must be handled with care as they contain product residue. Before disposing any container, remove as much residue as possible. Waste liquid or dried product should be incinerated or fuel blended at an approved treatment storage disposal facility. Do not reuse containers unless they are properly recycled.

SECTION VIII - SAFE HANDLING & USE INFO

RESPIRATORY PROTECTION: In outdoor or open areas with unrestricted ventilation, use NIOSH approved dust mask to protect from overspray or solid airborne particulates. In restricted areas, use a NIOSH approved combination organic vapor and particulate respirator. In confined areas, use an airline type respirator hood or self contained breathing apparatus. Consult the OSHA confined space regulations.

VENTILATION: Provide sufficient ventilation to keep hazards at levels below current ACGIH TLV and OSHA PEL of the most hazardous ingredient in SECTION II. Solvent vapors must be removed from the lower levels of work areas and all ignition sources eliminated. Remove decomposition products formed by welding or flame cutting coated surfaces. Dust and particle hazards are elevated during sanding, grinding, or surface preparation of previously coated surfaces.

SKIN PROTECTION REQUIREMENTS: Chemical resistant gloves are recommended. Use neoprene, nitrile, or butyl rubber. Cover as much of the exposed skin as possible with appropriate impervious clothing. If skin creams are used, keep the area protected by the cream to a minimum. Do not use skin creams to protect skin when working with acids or acid catalysts.

EYE PROTECTION: Eye protection should be worn in any type of industrial operation. The use of chemical goggles and a full face shield to prevent splash from liquids is recommended. Contact lenses should not be worn.

OTHER PROTECTIVE EQUIPMENT: Using a suit or apron to prevent contamination of clothing is recommended. Prevent prolonged skin contact with contaminated clothing. Remove and wash all contaminated clothing before re-use. Never wear contaminated clothes or shoes away from the workplace. Use an industrial type professional cleaning service, do not wash at home.

HYGIENIC PRACTICES: Emergency eye wash stations and safety showers are recommended. Wash hands prior to eating, using the washroom or smoking. Precautions must be taken so that persons handling this product do not breathe the vapors or have it contact the skin or eyes. In spray operations, protection must be afforded against exposure to both vapor and spray mist.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store large quantities in buildings designed and protected for storage of flammable liquids. Reference storage conditions in OSHA 1910.106. Avoid high temperature areas and open flames. Do not store above 120 F. Keep closures tight and container upright to avoid leakage.

OTHER PRECAUTIONS: Maintain a clean work area. Use only in a well ventilated area. VHAPE=Volatile Hazardous Air Pollutant CAUTION! DO NOT TAKE INTERNALLY. Avoid breathing vapor/dust.

NOTICE: The HMIS rating for this material involves data and interpretations compiled from the various material suppliers of the component ingredients. This information will vary from supplier to supplier. The rating is intended for rapid initial identification of this product's hazards. To adequately deal with the safe handling of this material, all information contained in the MSDS must be reviewed as part of an ongoing Hazard Communication Program.

This product complies with the Toxic Substances Control Act (TSCA) 40 CFR 700-799. The Material Safety Data Sheet (MSDS) complies with 29 CFR 1910.1200, Hazardous Communication Std. In the event of a TRANSPORTATION RELATED INCIDENT involving this product, CALL 1-800-688-4005.

43-81531A

PAGE: 4

G: Sudden release of hot organic chemical vapors from equipment operating at elevated temperatures or sudden introduction to vacuum conditions may result in vapor ignition.

ARA Title III: This product is regulated under Section 311- 312 (40CFR370): Immediate (Acute) Health Hazard, Delayed Chronic) Health Hazard, Fire Hazard.

WARNING: This product contains chemicals known to the State of California to cause cancer or reproductive harm.

SHEBOYGAN PAINT COMPANY
1439 NORTH 25th STREET
P.O. BOX 417
SHEBOYGAN, WI 53082-0417

DATE OF PREPARATION 01/02/07
PRINTED DATE 01/12/07
EMERGENCY TELEPHONE (920) 458-2157
TRANSPORTATION EMERGENCY (800) 688-4005
CUSTOMER SERVICE custserv@shebpaint.com

TRADE NAME
M 4143 RED OXIDE ACRYLIC
ENAMEL

MFG. PRODUCT NO.
43-81545

CUSTOMER : Waterous Company
PART NUMBER : M 4143
WEIGHT PER GALLON : 10.34 POUNDS
(density)

	BY WEIGHT	BY VOLUME
PERCENT SOLIDS	: 67.09	51.49
PERCENT WATER	:	
PERCENT SOLVENT	: 30.72	45.08
% EXEMPT SOLVENT	: 2.19	3.43
VOC (WITH WATER AND EXEMPT SOLV):	3.18 LBS/GAL	381.09 GMS/LITER
VOC (LESS WATER AND EXEMPT SOLV):	3.29 LBS/GAL	394.27 GMS/LITER
PERCENT HAPS BY WEIGHT	: 3.01	
VOC LBS PER GALLON SOLIDS	: 6.18	
VOC KILOGRMS PER KILOGRMS SOLIDS:	.46	
VOC HAPS LBS PER GALLON SOLIDS	: .60	
VOC HAPS LBS PER LBS SOLIDS	: .04	

FLASHPOINT (FAHRENHEIT) : 1 F
APPLICATION : SPRAY/AEROSOL
REDUCTION : ACETONE IF NECESSARY
CURE : AIR DRY
SUBSTRATE : STEEL
COVERAGE : 825.9 SQUARE FEET @ 1 MIL NO LOSS
VISC @ 80 F : 13-16/3 ZAHN CUP
CRYPTOMETER : 18-20#2 WEDGE

COMMENTS



Clarion® Food Machinery #2 Grease

Material Safety Data Sheet

CITGO Petroleum Corporation
P.O. Box 4689
Houston, TX 77210

MSDS No. 655699009
Revision Date 2/4/2008

IMPORTANT: This MSDS is prepared in accordance with 29 CFR 1910.1200. Read this MSDS before transporting, handling, storing or disposing of this product and forward this information to employees, customers and users of this product.

Hazard Rankings		
	HMIS	NFPA
Health Hazard	1	1
Fire Hazard	1	1
Reactivity	0	0

* = Chronic Health Hazard

Emergency Overview	
Physical State	Semi-solid to solid (Smooth texture)
Color	Light amber
Odor	Faint odor
WARNING:	
Injection under the skin can cause severe injury.	
Most damage occurs in the first few hours.	
Initial symptoms may be minimal.	
Hot grease will cause thermal burns upon contact.	
Spills may create a slipping hazard.	

Protective Equipment
Minimum Recommended See Section 8 for Details
  

SECTION 1. PRODUCT IDENTIFICATION

Trade Name	Clarion® Food Machinery #2 Grease	Technical Contact	(800) 248-4684
Product Number	655699009	Medical Emergency	(832) 486-4700
CAS Number	Mixture.	CHEMTREC Emergency (United States Only)	(800) 424-9300
Product Family	Lubricating grease		
Synonyms	Lubricating grease; CITGO® Material Code: 655699009		

SECTION 2. COMPOSITION

Component Name(s)	CAS Registry No.	Concentration (%)
White mineral oil	8042-47-5	70 - 90
Calcium, 12-hydroxy Stearate	3159-62-4	<15
Polyisobutylene	9003-27-4	<15

SECTION 3. HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

Major Route(s) of Entry Skin contact.

Signs and Symptoms of Acute Exposure

Inhalation No significant adverse health effects are expected to occur upon short-term exposure at ambient temperatures. At elevated temperatures, product vapor may cause respiratory tract irritation. Repeated or prolonged overexposure to product mists can result in respiratory tract inflammation and an increased risk of infection.

Clarion® Food Machinery #2 Grease

- Eye Contact** This product can cause transient mild eye irritation with short-term contact with liquid sprays or mists. Symptoms include stinging, watering, redness, and swelling.
- Skin Contact** This material can cause mild skin irritation from prolonged or repeated skin contact. Injection under the skin can cause inflammation and swelling. Injection of pressurized hydrocarbons can cause severe, permanent tissue damage. Initial symptoms may be minor. Injection of petroleum hydrocarbons requires immediate medical attention. Skin contact with hot material may result in severe burns.
- Ingestion** This material can cause a laxative effect. If swallowed in large quantities, this material can obstruct the intestine.
- Chronic Health Effects Summary** This product contains a petroleum-based mineral oil. Prolonged or repeated skin contact can cause mild irritation and inflammation characterized by drying, cracking, (dermatitis) or oil acne. Repeated or prolonged inhalation of petroleum-based mineral oil mists at concentrations above applicable workplace exposure levels can cause respiratory irritation or other pulmonary effects.
- Conditions Aggravated by Exposure** Disorders of the following organs or organ systems that may be aggravated by significant exposure to this material or its components include: Skin
- Target Organs** May cause damage to the following organs: skin.
- Carcinogenic Potential** This product is not known to contain any components at concentrations above 0.1% which are considered carcinogenic by OSHA, IARC or NTP.

OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA Health Hazard Classification				OSHA Physical Hazard Classification			
Irritant	<input type="checkbox"/>	Sensitizer	<input type="checkbox"/>	Combustible	<input type="checkbox"/>	Explosive	<input type="checkbox"/>
Toxic	<input type="checkbox"/>	Highly Toxic	<input type="checkbox"/>	Flammable	<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>
Corrosive	<input type="checkbox"/>	Carcinogenic	<input type="checkbox"/>	Compressed Gas	<input type="checkbox"/>	Organic Peroxide	<input type="checkbox"/>
						Pyrophoric	<input type="checkbox"/>
						Water-reactive	<input type="checkbox"/>
						Unstable	<input type="checkbox"/>

SECTION 4. FIRST AID MEASURES

Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

- Inhalation** Vaporization is not expected at ambient temperatures. This material is not expected to cause inhalation-related disorders under anticipated conditions of use. In case of overexposure, move the person to fresh air.
- Eye Contact** Check for and remove contact lenses. Flush eyes with cool, clean, low-pressure water while occasionally lifting and lowering eyelids. Seek medical attention if excessive tearing, redness, or pain persists.
- Skin Contact** If burned by hot material, cool skin by quenching with large amounts of cool water. For contact with product at ambient temperatures, remove contaminated shoes and clothing. Wipe off excess material. Wash exposed skin with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists. Thoroughly clean contaminated clothing before reuse. Clean or discard contaminated leather goods. If material is injected under the skin, seek medical attention immediately.
- Ingestion** Do not induce vomiting unless directed to by a physician. Rinse out mouth with water. Never give anything by mouth to a person who is not fully conscious. Allow small quantities to pass through the digestive system. If large amounts are swallowed or irritation or discomfort occurs, seek medical attention immediately.

Clarion® Food Machinery #2 Grease

Notes to Physician SKIN: In the event of injection in underlying tissue, immediate treatment should include extensive incision, debridement and saline irrigation. Inadequate treatment can result in ischemia and gangrene. Early symptoms may be minimal.

INGESTION: Check for possible bowel obstruction with ingestion of large quantities of material.

SECTION 5. FIRE FIGHTING MEASURES

NFPA Flammability Classification NFPA Class-IIIB combustible material.

Flash Point Open cup: >150°C (>302°F) (Estimated).

Lower Flammable Limit No data. **Upper Flammable Limit** No data.

Autoignition Temperature Not available.

Hazardous Combustion Products Carbon dioxide, carbon monoxide, smoke, fumes, unburned hydrocarbons and oxides of sulfur and/or nitrogen.

Special Properties Fight the fire from a safe distance in a protected location. Open any masses with a water stream to prevent reignition due to smoldering. Cool surface with water fog. Molten material can form flaming droplets if ignited. Water or foam can cause frothing. Use of water on product above 100° C (212° F) can cause product to expand with explosive force. Do not allow liquid runoff to enter sewers or public waters.

Extinguishing Media Use dry chemical, foam, carbon dioxide or water fog. Water or foam may cause frothing. Carbon dioxide and inert gas can displace oxygen. Use caution when applying carbon dioxide or inert gas in confined spaces.

Protection of Fire Fighters Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Do not touch damaged containers or spilled material unless wearing appropriate protective equipment. Slipping hazard; do not walk through spilled material. Stop leak if you can do so without risk. For small spills, absorb or cover with dry earth, sand, or other inert non-combustible absorbent material and place into waste containers for later disposal. Contain large spills to maximize product recovery or disposal. Prevent entry into waterways or sewers. In urban area, cleanup spill as soon as possible. In natural environments, seek cleanup advice from specialists to minimize physical habitat damage. This material will float on water. Absorbent pads and similar materials can be used. Comply with all laws and regulations.

SECTION 7. HANDLING AND STORAGE

Handling If this product is stored or applied in high-pressure systems such as grease guns or hydraulic lines, there is the potential for accidental injection into the skin and underlying tissues. Hydrocarbons injected into skin or underlying tissues are not readily removed by body fluids and can cause pain, swelling, chemical irritation, infection and tissue destruction. Early symptoms may be minimal. Workers must be aware of the significant hazards associated with a hydrocarbon injection injury. In the event of an injection injury, workers should seek medical treatment immediately. Avoid water contamination and elevated temperatures to minimize product degradation. Empty containers may contain product residues that can ignite

Clarion® Food Machinery #2 Grease

with explosive force. Do not pressurize, cut, weld, braze solder, drill, grind or expose containers to flames, sparks, heat or other potential ignition sources. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.

Storage Keep container closed. Store in a cool, dry, well-ventilated area. Do not store with strong oxidizing agents. Do not store at elevated temperatures. Avoid storing product in direct sunlight for extended periods of time. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers or waste residues of this product.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls Ventilation controls are not normally required under anticipated conditions of use. Provide exhaust ventilation or other engineering controls if airborne mists or vapors concentrations exceed recommended occupational exposure limits listed below. An eye wash station and safety shower should be located near the work-station.

Personal Protective Equipment Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.



Eye Protection Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Wear goggles if splashing or spraying is anticipated. Wear goggles and face shield if material is heated above 125°F (51°C). Have suitable eye wash water available.

Hand Protection None required for incidental contact. Use gloves constructed of chemical resistant materials such as heavy nitrile rubber if frequent or prolonged contact is expected. Use heat-protective gloves when handling product at elevated temperatures.

Body Protection Use clean protective clothing if splashing or spraying conditions are present. Protective clothing may include long-sleeve outer garment, apron, or lab coat. If significant contact occurs, remove oil-contaminated clothing as soon as possible and promptly shower. Launder contaminated clothing before reuse or discard. Wear heat protective boots and protective clothing when handling material at elevated temperatures.

Respiratory Protection The need for respiratory protection is not anticipated under normal use conditions and with adequate ventilation. If elevated airborne concentrations above applicable workplace exposure levels are anticipated, a NIOSH-approved organic vapor respirator equipped with a dust/mist prefilter should be used. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

General Comments Use good personal hygiene practices. Wash hands and other exposed skin areas with plenty of mild soap and water before eating, drinking, smoking, use of toilet facilities, or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasives as skin cleaners. Since specific exposure standards/control limits have not been established for this product, the "Oil Mist, Mineral" exposure limits shown below are suggested as minimum control guidelines.

Occupational Exposure Guidelines

Substance

Applicable Workplace Exposure Levels

Clarion® Food Machinery #2 Grease

Oil Mist, Mineral

ACGIH (United States).

TWA: 5 mg/m³

STEL: 10 mg/m³

OSHA (United States).

TWA: 5 mg/m³

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)

Physical State	Semi-solid to solid (Smooth texture)	Color	Light amber	Odor	Faint odor
Specific Gravity	0.87 (Water = 1)	pH	Not applicable.	Vapor Density	>10 (Air = 1)
Boiling Range	Not available.			Melting/Freezing Point	Not available.
Vapor Pressure	>0.01 kPa (>0.1 mm Hg) (at 20°C)			Volatility	Negligible volatility.
Solubility in Water	Negligible solubility in cold water.			Viscosity (cSt @ 40°C)	Not available.
Flash Point	Open cup: >150°C (>302°F) (Estimated).				
Additional Properties	NLGI Grade = 2 Thickener = Calcium Texture = Smooth				

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable.	Hazardous Polymerization	Not expected to occur.
Conditions to Avoid	Keep away from extreme heat, sparks, open flame, and strongly oxidizing conditions.		
Materials Incompatibility	Strong oxidizers.		
Hazardous Decomposition Products	No additional hazardous decomposition products were identified other than the combustion products identified in Section 5 of this MSDS.		

SECTION 11. TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS.

Toxicity Data	White mineral oil
	ORAL (LD50): Acute: >5000 mg/kg [Rat].
	DERMAL (LD50): Acute: >2000 mg/kg [Rabbit].

Low-viscosity and High-viscosity White Mineral Oils:
DRAIZE EYE, Acute: Non-irritating [Rabbit].
DRAIZE DERMAL, Acute: Non-irritating [Rabbit].
BUEHLER, Acute: Non-sensitizing [Guinea Pig].
28-Day DERMAL, Sub-Chronic: Non-irritating [Rabbit].
104-Week DERMAL, Chronic: No skin tumors at site of application [Mouse].
MUTAGENICITY:
Modified Ames Assay: Negative [Salmonella typhimurium].
in-vitro Lymphoma Assay: Negative or no toxicity [Mouse].

Lifetime mouse skin painting studies indicated that white mineral oils are not mutagenic or carcinogenic. Mineral oil mists derived from highly refined oils are reported to have low acute

Clarion® Food Machinery #2 Grease

and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipid granuloma formation and lipid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects. In long term studies (up to two years) no carcinogenic effects have been reported in any animal species tested.

Grease:

Injection of pressurized hydrocarbons under the skin, in muscle or into the blood stream can cause irritation, inflammation, swelling, fever and mild central nervous system depression. Injection of pressurized hydrocarbons can cause severe, permanent tissue damage.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity	Ecotoxicity data are not available for this product.
Environmental Fate	An environmental fate analysis is not available for this specific product. Plants and animals may experience harmful or fatal effects when coated with petroleum products. Petroleum-based (mineral) lubricating oils normally will float on water. In stagnant or slow-flowing waterways, an oil layer can cover a large surface area. As a result, this oil layer might limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway may be sufficient to cause a fish kill or create an anaerobic environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

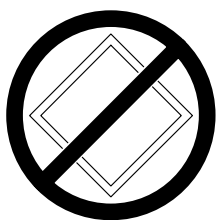
Conditions of use may cause this material to become a "hazardous waste", as defined by federal or state regulations. It is the responsibility of the user to determine if the material is a "hazardous waste" at the time of disposal. Transportation, treatment, storage, and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR 260 through 40 CFR 271). State and/or local regulations may be more restrictive. Contact your regional US EPA office for guidance concerning case specific disposal issues. Empty drums and pails retain residue. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose this product's empty container to heat, flame, or other ignition sources. DO NOT attempt to clean it. Empty drums and pails should be drained completely, properly bunged or sealed, and promptly sent to a reconditioner.

SECTION 14. TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.

US DOT Status	Not regulated by the U.S. Department of Transportation as a hazardous material.		
Proper Shipping Name	Not regulated.		
Hazard Class	Not regulated.	Packing Group	Not applicable.
		UN/NA Number	Not regulated.
Reportable Quantity	A Reportable Quantity (RQ) has not been established for this material.		
Placard(s)			

Clarion® Food Machinery #2 Grease



Emergency Response Guide No. Not applicable.

MARPOL III Status Not a DOT "Marine Pollutant" per 49 CFR 171.8.

Oil: The product(s) represented by this MSDS is (are) regulated as "oil" under 49 CFR Part 130. Shipments by rail or highway in packaging having a capacity of 3500 gallons or more or in a quantity greater 42,000 gallons are subject to these requirements. In addition, mixtures containing 10% or more of this product may be subject to these requirements.

SECTION 15. REGULATORY INFORMATION

TSCA Inventory	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) inventory.
SARA 302/304 Emergency Planning and Notification	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.
SARA 311/312 Hazard Identification	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories: No SARA 311/312 hazard categories identified.
SARA 313 Toxic Chemical Notification and Release Reporting	This product contains the following components in concentrations above <i>de minimis</i> levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA: No components were identified.
CERCLA	The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. This product or refinery stream is not known to contain chemical substances subject to this statute. However, it is recommended that you contact state and local authorities to determine if there are any other reporting requirements in the event of a spill.
Clean Water Act (CWA)	This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.
California Proposition 65	This product is not known to contain any components for which the State of California has found to cause cancer, birth defects or other reproductive harm.
New Jersey Right-to-Know Label	Petroleum Oil
Additional Remarks	No additional regulatory remarks.

Clarion® Food Machinery #2 Grease

SECTION 16. OTHER INFORMATION

Refer to the top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

REVISION INFORMATION

Version Number 3.1
Revision Date 2/4/2008

ABBREVIATIONS

AP: Approximately	EQ: Equal	>: Greater Than	<: Less Than	NA: Not Applicable	ND: No Data	NE: Not Establishe
ACGIH: American Conference of Governmental Industrial Hygienists				AIHA: American Industrial Hygiene Associator		
IARC: International Agency for Research on Cancer				NTP: National Toxicology Program		
NIOSH: National Institute of Occupational Safety and Health				OSHA: Occupational Safety and Health Administration		
NPCA: National Paint and Coating Manufacturers Association				HMIS: Hazardous Materials Information System		
NFPA: National Fire Protection Association				EPA: US Environmental Protection Agency		

DISCLAIMER OF LIABILITY

THE INFORMATION IN THIS MSDS WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED REGARDING ITS CORRECTNESS. SOME INFORMATION PRESENTED AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE SUBSTANCE ITSELF. THIS MSDS WAS PREPARED AND IS TO BE USED ONLY FOR THIS PRODUCT. IF THE PRODUCT IS USED AS A COMPONENT IN ANOTHER PRODUCT, THIS MSDS INFORMATION MAY NOT BE APPLICABLE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION OR PRODUCTS FOR THEIR PARTICULAR PURPOSE.

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***** END OF MSDS *****

Appendix E
Shipping Label

WATEROUS COMPANY	
FROM:	125 HARDMAN AVENUE SOUTH SOUTH ST. PAUL, MN 55075-2456
TO:	WATEROUS COMPANY 125 HARDMAN AVENUE SOUTH SOUTH ST. PAUL, MN 55075-2456
GRA #	_____
Quantity of Rods:	_____

Appendix F

Contact Information

Waterous Customer Service:

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