



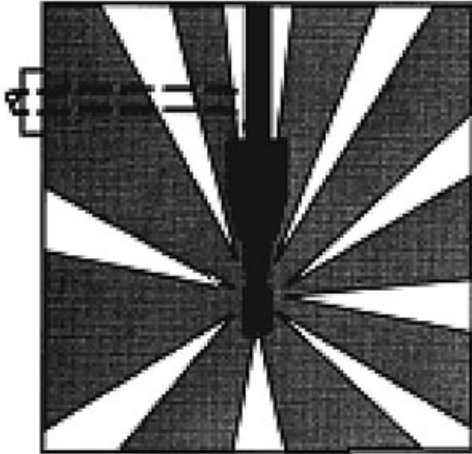
OPERATION & MAINTENANCE INSTRUCTIONS



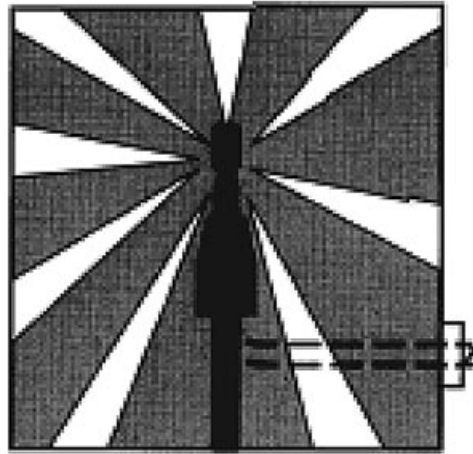
DRUM MAJOR® SERIES TANKCLEANERS

IMPORTANT! *Read all instructions in this manual before operating pump.*

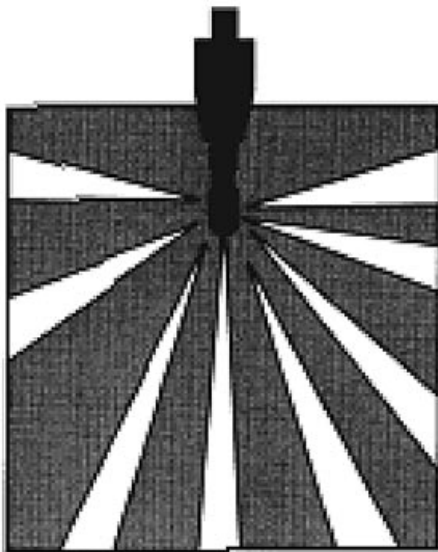
Standard High Impact Patterns for Troll Ball and Drum Major



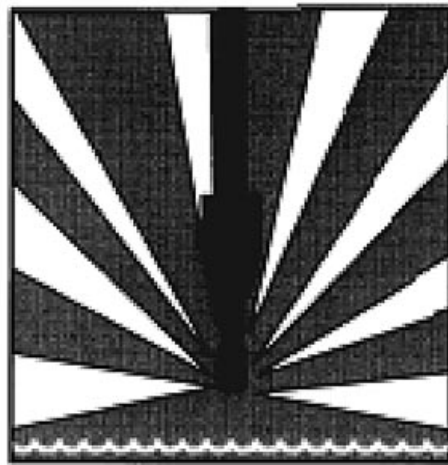
Pattern C



Pattern D



Pattern G



Pattern H

GENERAL

The **SELLERS DRUM MAJOR**[®] is a hydraulically driven rotating head with hole patterns ejecting streams of liquid for spanning internal tank surfaces to be cleaned, sanitized, treated, or rinsed. Specially designed for small apertures, the complete unit will fit through an opening as small as a 2.0" (51mm). The unit may be installed on a permanent basis (C.I.P.) or be fitted for use in a portable manner. Many types of fluids, sanitizers, detergents, solvents, and caustics may be used through this unit to assist its cleaning effectiveness. (Please note caution below) The cleaning effectiveness of any unit is proportional to all the applicable variables, such as volume, pressure, chemicals, impingement, drainage, soils, etc. The unit will operate in any angle and with the choice of impact patterns it can clean almost any type of contained area within its range.

Caution: If chemicals, hazardous materials, operations, and equipment are used in conjunction with this cleaning equipment, it is the responsibility of the user to establish appropriate associated safety and health practices. Prior to application, the user must consult and determine the applicability of regulatory (federal, state, local and facility) safety and environmental agency limitations.

MATERIALS

The DRUM MAJOR is made of 316 stainless steel (UNS S31603) bar material; cast alloy material (UNSN92800 CF3M / ASTM A743); threaded hardware 316 stainless steel with the exceptions of the governor or rotor, bushing, and washer, which are made of virgin Teflon. No lubricants are required.

CONSTRUCTION

Referring to drawing 75-19-*, the unit consists of two basic components; the drive, comprising of the motor, rotor or shaft, and washer; and the housing, comprising of the inlet cap, bushing, and body.

ROTATION

The liquid enters the inlet cap (1) and then flows through the oblique and bypass holes in the motor (2) causing the rotor (3) to rotate at high speed. The unique construction of the governor allows the side opposite the holes to strike the driving arm of the shaft (7) rotating it ahead about 3° to 4° per revolution of the rotor. Thus, for every 100 revolutions of the rotor there is 1 revolution of the driving arm, which is part of the shaft, creating 1 revolution of the shaft. The liquid streams that pass through the drive holes and down the bypass in the motor combine at the bottom of the shaft and are distributed out the shaft holes. The rotational speed of these units can be regulated through the use of various motor bypass plugs, which influences the fluid diversion to provide additional speed. Reference the trouble shooting section and the drawing parts list for additional information and location.

THROUGHPUT

The amount of liquid going through a DRUM-MAJOR is proportional to the pressure applied and the shaft hole pattern. Increasing the pressure will increase the throughput. For specific information refer to the flow curve. Please note the operating pressure range.

CLEANING/WETTING RADII

The cleaning and wetting distances are a function of rotational speed and liquid pressure applied. The slower the shaft rotates and the higher the pressure applied, the greater the distances. The maximum wetting radius is about 12 ft (3.7 m). The EFFECTIVE CLEANING RADIUS is 6 ft (1.8 m), but the actual results will also depend on the type and condition of soils to be removed.

SUPPLY SOLUTION PRESSURE

The minimum amount of liquid that will satisfactorily run the DRUM-MAJOR is about 12 GPM (2.7 M³/Hr) at 50 PSI (3.4 BAR) and the maximum is about 30 GPM (6.8 M³/Hr) at 180 PSI (12.4 BAR). The Sellers B1000 or B1250 Jets will supply the mid-range of these parameters for a single unit.

INSTALLATION

The DRUM-MAJOR is very easy to install as it has a single female pipe thread connection. It may be installed in any angle or position, used as a swing away unit, or even placed at the end of a lance for a manual probe type operation. The factory will preset the approximate speed (RPM) and spray pattern for the particular field application. In all installations a suitable strainer should be used (such as a 20 Mesh, .03 openings, "Y" strainer) to prevent dirt or scale from clogging the waterways or openings.

Warning: In closed tanks, provisions should be made for adequate venting during operation to allow the escape of any gases or volatile vapors which may be produced during operation. This will also prevent the tank from collapsing due to vacuum formation, which can be caused by a cold rinse cycle in a warm tank.

OPERATION

To start the unit, turn on the fluid. An in-line valve is advised for a slow build-up of liquid pressure in the unit to prevent "water hammer". To stop the unit, turn off the liquid. The unit should always be handled carefully. If the unit is dropped or maltreated it may cause internal damage to the drive assembly, which in turn can affect the performance of the unit. If handled properly the unit will perform well and provide dependable service.

OPERATION & SPECIFICATION SHEET

Refer to drawing 75-19-* for assembly and parts list.

Pipe Connection	3/4" Female NPT
Operating Pressure Range	50-180 PSI (3.4-12.4 BAR)
Maximum Operating Temperature	250° F (121° C)
Flow Capacity	12-30 GPM (2.7 – 6.8 M ³ /Hr)
Head Rotation Speed (Factory Set)	3-15 RPM
* Effective Cleaning Radius	To 6 ft maximum (1.8 m)
Effective Wetting Radius	To 12 ft maximum (3.7 m)
Overall Head Length x Body Diameter	7" x Ø2" (178mm x Ø51mm)
Shaft Diameter	Ø7/8" (Ø22.2 mm)
Approximate Weight	2 lbs (.9 kgs)
Materials of Construction	316 Stainless Steel & Teflon
** Recommended Solution Strainer (supplied by user - not included) 20 Mesh (1/32" openings)	

* Depends on type and conditions of soils to be removed

** Required for most applications to prevent fouling or plugging of the unit from foreign material, i.e., scale, grit, and soils in solution. Additional strainers and/or finer mesh screens may be required depending upon the amount, nature, and size of foreign materials in solution.

NOTE: Consult Sellers where operating conditions are not covered in the above specifications.

TROUBLE SHOOTING

Due to the simplicity of the unit, very few problems should occur. If any trouble should arise, the following steps may be taken: Refer to the drawing 75-19-X.

- A. Check units for external damage, look for evidence of mishandling that may have damaged the shafts, bearings, or alignment.

- B. If the shaft fails to rotate and no liquid passes:
 - 1. Check for liquid pressure and volume at the unit.
 - 2. Check strainer for filter blockage.
 - 3. Remove unit and check for clogged jet holes.
 - 4. Recheck for flow through the shaft.

- C. If the shaft fails to rotate and sufficient liquid passes:
 - 1. Check for shaft freedom, by hand, in the vertical and rotational axis
 - 2. If the shaft is free, insert a motor bypass plug. If the unit now rotates, the problem is minor friction. If the unit still does not rotate, check for:
 - a. Contamination and obstructions in the unit.
 - b. Wear of the Teflon parts: the bushing, washer, and the rotor.
 - c. Galling and straightness of the shaft.

Note: Replace all defective parts. No lubrication required !

SERVICING-DISASSEMBLY

- A. Refer to drawing 75-19-X.
 - 1. Unscrew inlet cap (1) from body (4).
 - 2. Gently push shaft (7) up into the body (4) and remove the motor (2) and the rotor (3).
 - 3. Continue to push the shaft until the head locates bushing (6) and firmly press bushing out of body (4) using the shaft head as a guide.
 - 4. The shaft (7), bushing (6), and washer (5) may now be removed from the body (4) through inlet cap end.
 - 5. Hold item (9) Vertical shaft in vise and unscrew center shaft (7)
 - 6. Remove bushing (6) and washer (5) from item (9) vertical shaft

SERVICING-ASSEMBLY

- A. Refer to drawing 75-19-X.
 - 1. Locate bushing (6) and washer (5) around vertical shaft (9).
 - 2. Lower vertical (9) shaft and bushing assembly (6 & 5) head first into body (4) until bushing locates in hole at tapered end of body.
 - 3. Hold vertical shaft (9) in place in body and screw center shaft (7) onto vertical shaft (9)
 - 4. Place rotor (3) on the stricker arm end of vertical shaft (9) and locate motor (2) hole in rotor and install
 - 5. Install inlet cap (1) to the body.

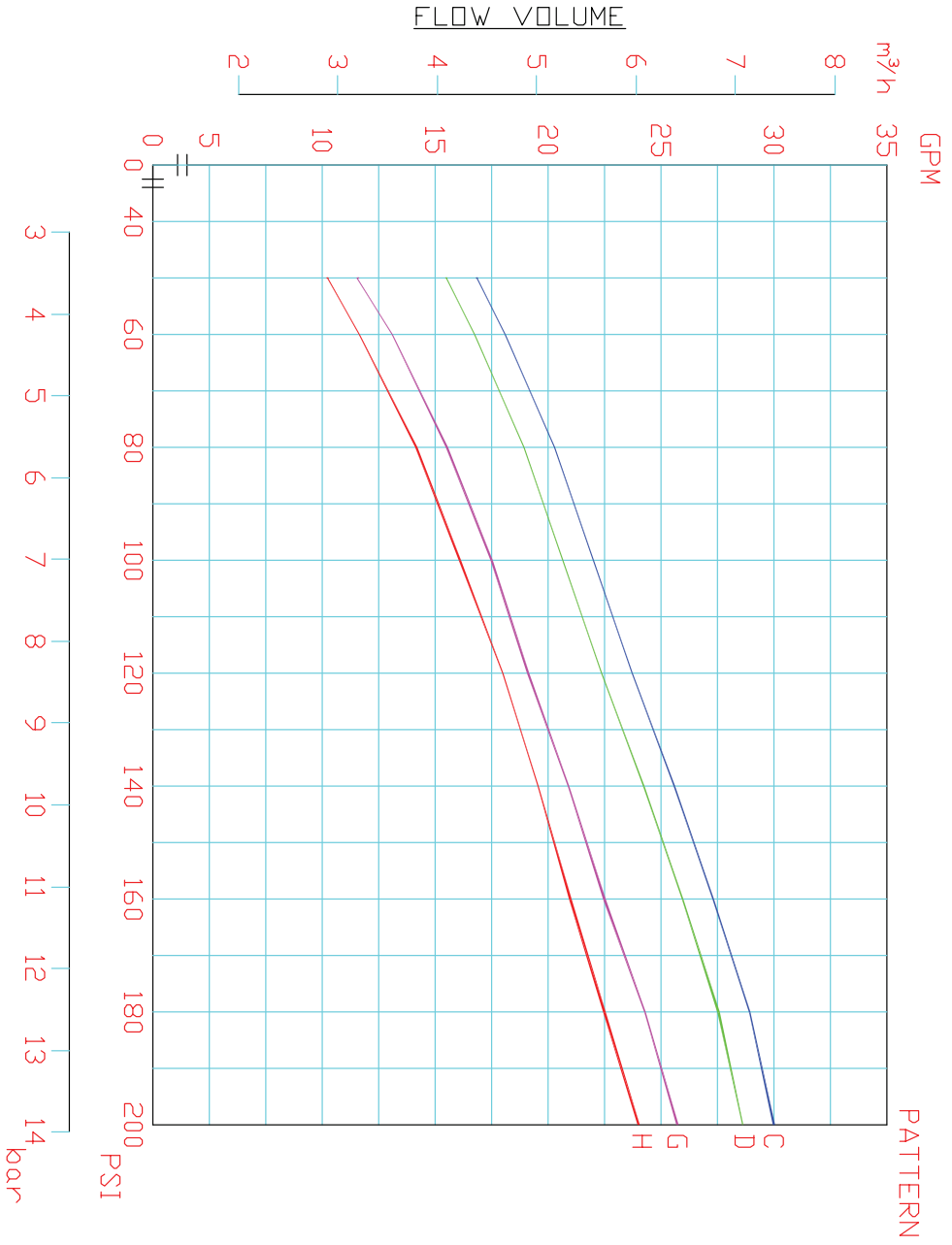
PARTS FOR DRUM MAJOR® (75-19-X)

<u>PART NO.</u>	<u>REFERENCE NO.</u>	<u>DESCRIPTION</u>
1	75-1403	Cap, Inlet
*2	75-1453	Motor
*3	**75-1445	Standard rotor-TFE
	75-1450	Optional Rotor, 4T-TFE
4	75-1467	Body
*5	**75-1416	STD Washer-TFE
*6	**75-1408	STD Bushing-TFE
7	75-1942 ("C" Pat)	Shaft,Center,Tail Shaft
	75-1943 ("D" Pat)	
	75-1944 ("G" Pat)	
8	***7-33-1	Plugs, Motor Bypass
	75-1455-A	Solid
	***75-1455-B	Orifice Ø. 06
	75-1455-C	Orifice Ø. 09
		Orifice Ø. 12
9	75-1940	Shaft, Vertical, Top End

* Recommended spare parts

** For special applications where Teflon cannot be tolerated, UHMW-PE may be substituted at additional cost.

*** Plugs supplied with unit



INLET PRESSURE

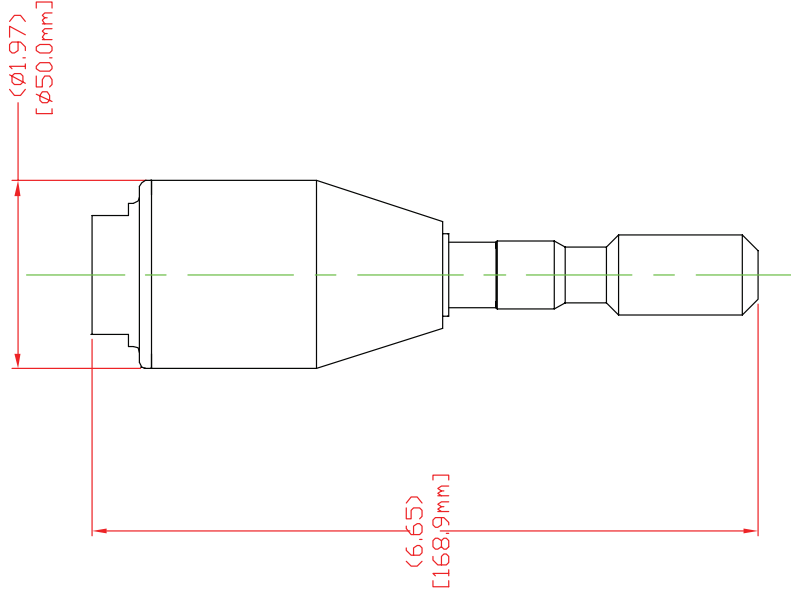
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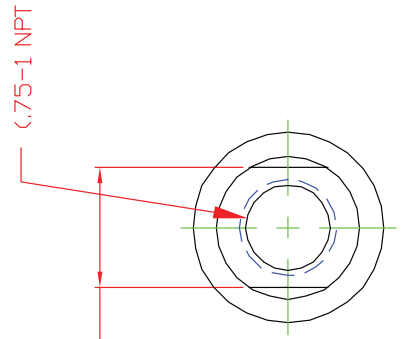
TITLE: DRUM MAJOR
 DRAWING NO: CD75-19-X
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 SHEET: 1 OF 3
 CAGE NO: 96046



OVERALL DIMENSIONS



FRONT VIEW



TOP VIEW

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NOTES:

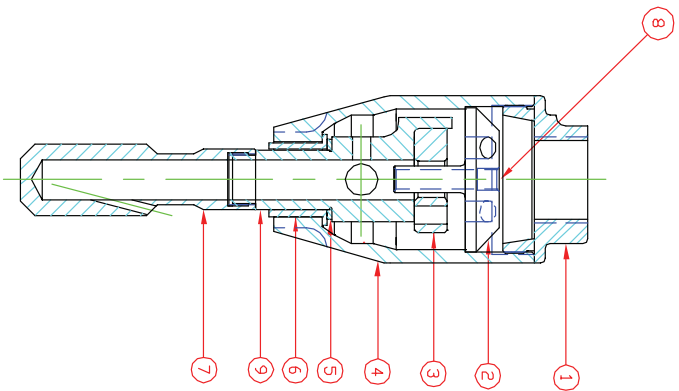
1) SHAFT INFORMATION:

SHAFT	SHAFT PATTERN	SHAFT REF. NO.
75-19-C	'C'	75-1942
75-19-D	'D'	75-1943
75-19-G	'G'	75-1944
75-19-H	'H'	75-1945
75-19-B	'B'	75-1948
75-19-F	'F'	75-1947
75-19-E	'E'	75-1946

- 2) USE THE FOLLOWING TORQUES FOR ASSEMBLY:
ITEM #1 WHILE HOLDING ITEM #4 TO 60 FT/LBS
ITEM #7 WHILE HOLDING ITEM #9 TO 20 FT/LBS
- 3) PLUGS USED IN BYPASS TO SPEED UP UNIT.
* = SUPPLIED WITH UNIT.

PLUG NO.	HOLE Ø
75-1445-B	.093 *
7-33-1	SOLID *

- 4) APPLY A SMALL AMOUNT OF NEVER-SEEZ LUBRICANT (625-03561) TO ALL THREADS AT ASSEMBLY TO PREVENT GALLING.
- 5) SPARE PARTS KIT NUMBER 75-19-NSPK PARTS FOR THE KIT ARE IDENTIFIED WITH AN 



ITEM NO.	QTY	RECD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION
9	1		75-1940	SHAFT, VERT. TOP END	316 SS
8	1		SEE NOTE #3	PLUG	316 SS
7	1		SEE NOTE #1	SHAFT, CENTER	316 SS
6	1		75-1408	BUSHING	TEFLON
5	1		75-1416	WASHER	TEFLON
4	1		75-1467	BODY	316 SS
3	1		75-1445	DISK, ROTOR	TEFLON
2	1		75-1453	MOTOR	316 SS
1	1		75-1403	CAP, INLET	316 SS

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SHEET 3 OF 3

TITLE
DRUM MAJOR

CAGE NO
96046

DWG NO
CD75-19-X

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