



Spraying Systems Co.[®]

Experts in Spray Technology

TJ19 Tank Cleaning Machine



TJ19

Operation & Maintenance Instructions

MI-TJ19

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GENERAL SAFETY INSTRUCTIONS



READ AND FOLLOWING INSTRUCTIONS:

WARNING: All safety related and operating instructions should be read before the nozzle is operated. Follow all operating instructions. Failure to do so could result in serious injury.

- **WARNING:** It is important to recognize proper safety precautions when using a pressurized spray system. Fluids under pressure can penetrate skin and cause severe injury.
- **WARNING:** When dealing with pressure applications, the system pressure should never exceed the lowest rated component. Always know your system and all component capabilities, maximum pressures and flow rates.
- **WARNING:** Before performing any maintenance, make sure all liquid supply lines to the machine are shut off and /or disconnected and chemical/ fluid are drained.
- **WARNING:** The use of any chemicals requires careful control of all worker hygiene.
- **WARNING:** Spraying Systems Co. does not manufacture or supply any of the chemical components used in this equipment and is not responsible for their effects. Because of the large number of chemicals that could be used and their different chemical reactions, the buyer and user of this equipment should determine compatibility of the materials used and any of the potential hazards involved.
- **WARNING:** Spraying Systems Co. strongly recommends the use of appropriate safety equipment when working with potentially hazardous chemicals.
- **WARNING:** Before use be sure appropriate connections are secure and made to withstand weight and reaction forces of the operating unit.

This equipment includes but is not limited to:

- Protective hat
- Safety glasses or face shield
- Chemical-resistant gloves and apron
- Long sleeve shirt and long pants

NOTE: Always remember to carefully read the chemical manufacturer's label and follow all directions.

- **WARNING:** It is important to operate equipment within the temperature range of all components. Also insure that appropriate time lapses or proper safety equipment is used when handling components after they're exposed to high temperatures.
- **WARNING:** Never operate tank cleaning equipment in the open due to the potential of bodily injury.
- **WARNING:** Removed equipment from the tank before attempting any repairs.

- **WARNING:** Proper hoisting procedures should be used when installing and removing all equipment.
- **WARNING:** If walking on top of a tank is deemed safe and is necessary, use proper safety precautions to protect individuals as well as the equipment.
- **WARNING:** Do not put any part of your body in the tank during operation of the tank cleaner. This is NOT a safe procedure for verification of operation.
- **WARNING:** To insure the safety of the equipment as well the individuals using them, only use Spraying Systems Co. components.
- **WARNING:** When packaging and transporting use structurally sound boxes or crates that can handle the weight of the equipment.
- **WARNING:** Tank cleaners should be flushed out with clean water before they're stored or shipped to minimize health hazards or cross contamination.
- **WARNING:** Do not use any equipment outside the intended purposes of the product. Misuse can result in personal injury or product damage.

The container being cleaned should be sealed as best as possible while the TankJet 19 models is running its cycle. The combination of temperature, cleaning solution, spray impact and the potential toxic materials being cleaned can cause a hazard to anyone in the path of the spray.

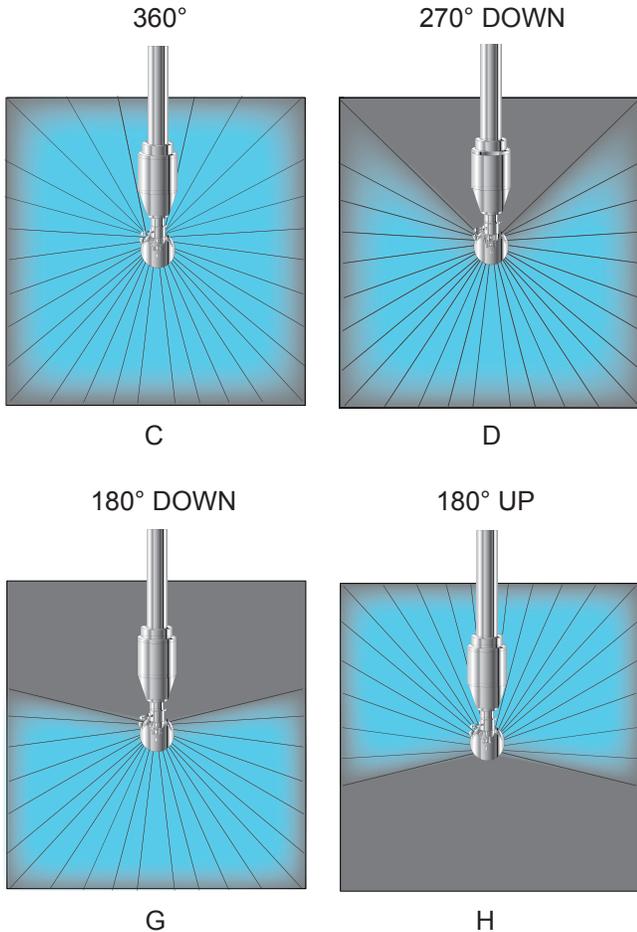
NOTE: Due to the possible build up of electrical charge caused by the nature of the machine it's vital to avoid applications involving combustible fluids and materials.

PRINCIPLES OF OPERATION

The TankJet 19 is a hydraulically driven rotating head with solid stream ejecting jets 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" (51 mm). 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. 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.

STANDARD IMPACT PATTERNS FOR TJ19:



TECHNICAL SPECIFICATIONS

TANKJET 19 MODEL - FOR ASSEMBLY DRAWING:

SSCo. Part #	Description
TJ19-C	360° coverage with solid stream spray inserts 3/4" NPT
TJ19-D	270° coverage with solid stream spray inserts 3/4" NPT
TJ19-G	180° down coverage with solid stream spray inserts 3/4" NPT
TJ19-H	180° up coverage with solid stream spray inserts 3/4" NPT
TJ19B-C	360° coverage with solid stream spray inserts 3/4" BSPT
TJ19B-D	270° coverage with solid stream spray inserts 3/4" BSPT
TJ19B-G	180° down coverage with solid stream spray inserts 3/4" BSPT
TJ19B-H	180° up coverage with solid stream spray inserts 3/4" BSPT

MATERIALS:

The TankJet 19 is made of 316 stainless steel (UNS S31603) bar material; cast alloy material (UNSSJ92800 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 part list, 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.

PRINCIPLE OF 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.

CLEANING DIAMETER:

The cleaning distance is 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 effective cleaning diameter is 12 ft (3.7 m), but the actual results will also depend on the type and condition of soils to be removed.

INSTALLATION

The TankJet 19 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). In all installations a suitable strainer should be used (such as a 20 Mesh, 0.03 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 pod assembly, which in turn can affect the performance of the unit. If handled properly the unit will perform well and provide dependable service.

TANKJET® 19:

Pipe Connection: 3/4" Female NPT or BSPT

Operating Pressure Range: 50-200 PSI (3.4-13.4 BAR)

Max. Operating Temp: 250° F (121° C)

Flow Capacity: 10-30 GPM
(38-113.6 LPM)

Head Rotation Speed: 3-15 RPM
(Factory Set)

***Effective Cleaning Dia.:** To 12 ft maximum (3.7 m)

**Overall Head Length
x Body Diameter:** 7" x Ø2"
(178 mm x Ø51 mm)

Shaft Diameter: Ø7/8" (Ø22.2 mm)

Approximate Weight: 2 lbs (0.9 kgs)

Materials of Construction: 316 SS & Teflon

†Recommended Strainer: 20 Mesh (1/32" opening)
(not included)

* 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.

TROUBLE SHOOTING

Due to the simplicity of the unit, few problems should occur. If any trouble should arise, the following steps may be taken: Refer to the Parts List.

A. Check units for external damage, look for evidence of mishandling that may have damaged 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 ball 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 in the unit.
 - b. Wear of any one of the Teflon parts: the bushings, washers, and the rotor.
 - c. Galling and straightness of the shafts.

Replace all defective parts. No lubrication required!

SERVICING

DISASSEMBLY:

Refer to the Parts List.

1. Unscrew inlet cap (1) from body (4).
2. Gently push shaft (7) up into body (4) and remove the motor (2) and rotor disk (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.

ASSEMBLY:

Refer to the Parts List.

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.

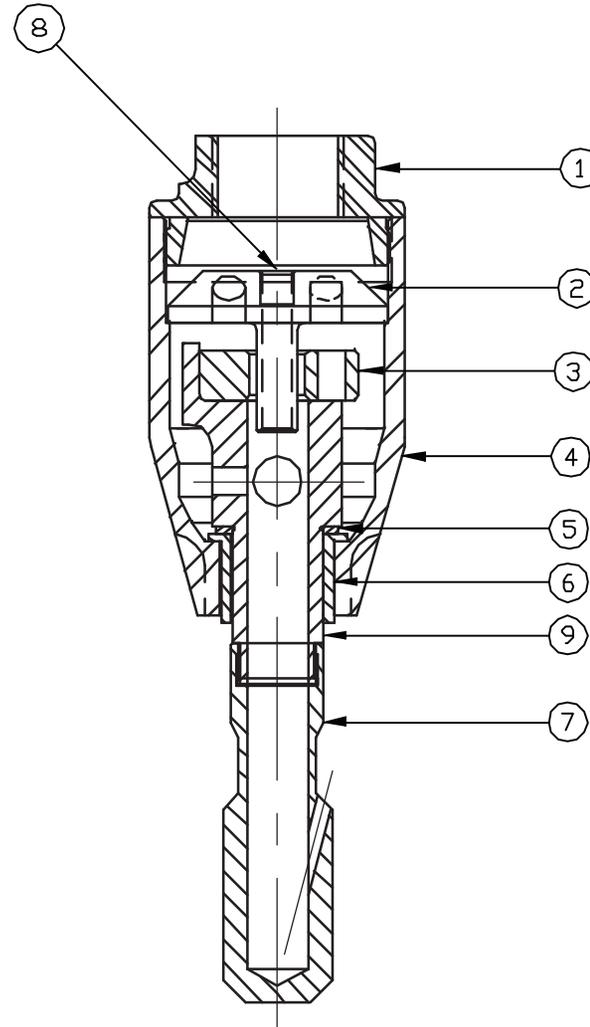
WARRANTY

For newly purchased units the warranty is 18 months from the date of shipment or 12 months from the date of installation, whichever occurs first. This warranty includes manufacturing defects but does not cover the wear parts that include the bushings. This warranty will be void if parts other than those supplied by Spraying System Co. are used.

TJ19_-- TANKJET

ITEM NO.	DESCRIPTION	TJ19_-- TANKJET QTY.	REPL.
1A	INLET CAP	1	
1B			
2	MOTOR	1	●
3	DISK ROTOR	1	●
4	BODY	1	
5	WASHER	1	●
6	BUSHING	1	●
7	SHAFT	1	
8A	BYPASS PLUG	1	
8B	SOLID PLUG (NOT INSTALLED)	1	
12	VERTICAL TOP END SHAFT	1	

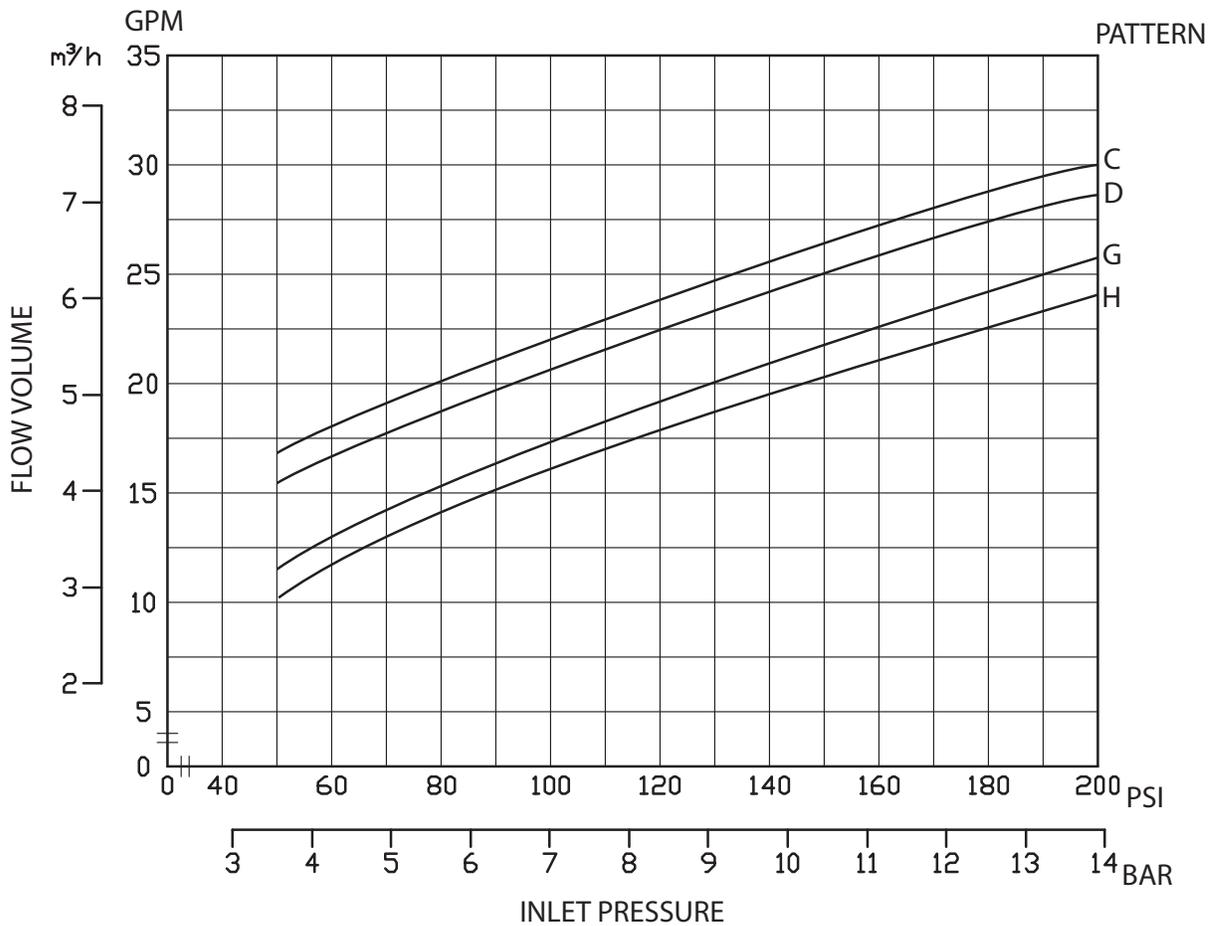
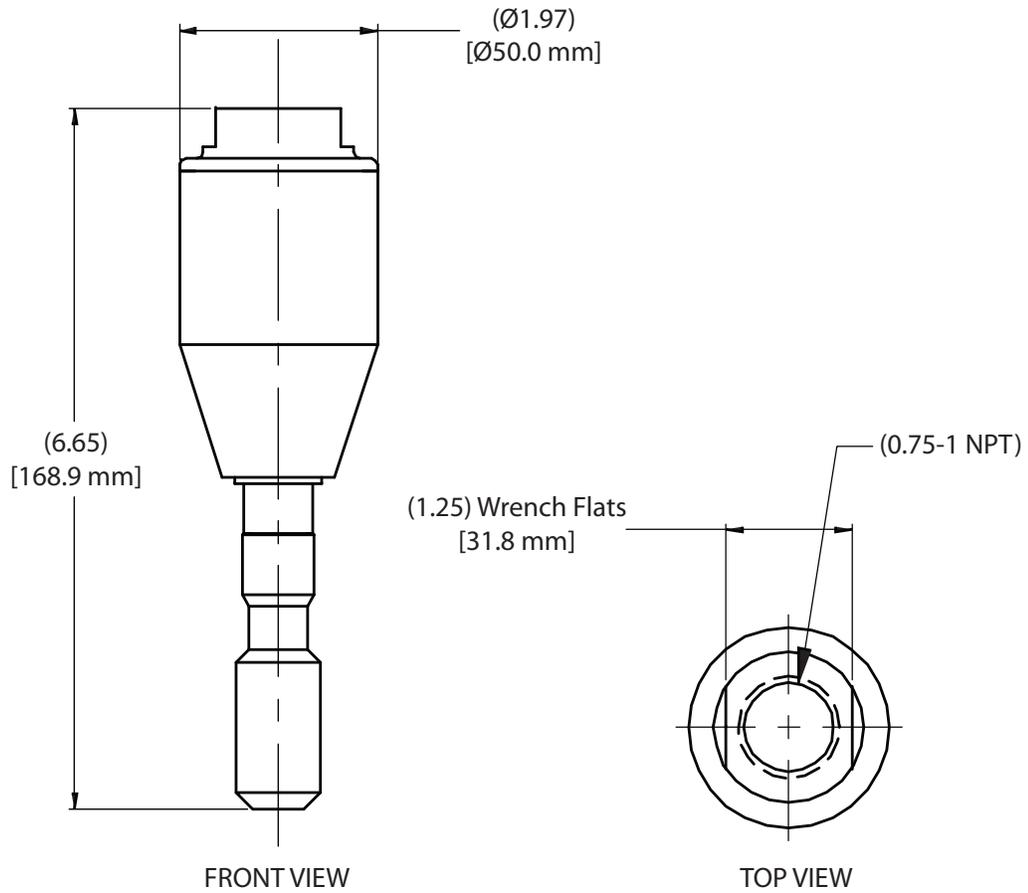
● FOR ABCKTJ19 REPAIR KIT (INCLUDES ALL ITEM MARKED WITH (●))



DESCRIPTION: No. TJ19_-- Tankjet		 Spraying Systems Co.® Spray Nozzles and Accessories P.O. Box 7900 - Wheaton, IL 60189-7900
Rev. No.	Parts List No.	
Ref.	PL TJ19	
	SHEET	OF

TANKJET® 19 PARTS LIST

TANKJET® 19 SPECIFICATIONS





Spraying Systems Co.[®]

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