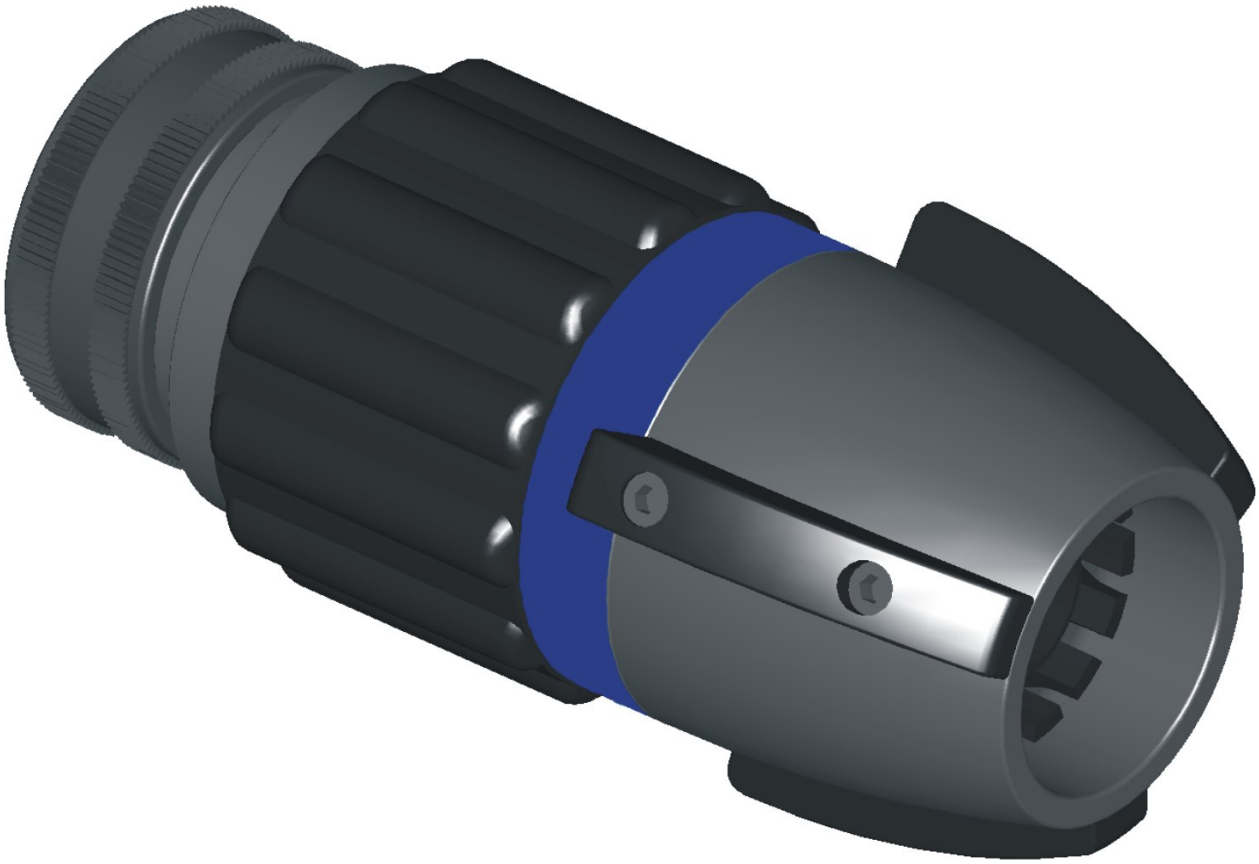
ELKHART BRASS MFG. CO., INC.
1302 WEST BEARDSLEY AVENUE • P.O. BOX 1127 • ELKHART IN 46515 • (574) 295-8330 • FAX (574) 293-9914

# Operating and Maintenance Instructions



## Flex Attack® Tip
## Compressed Air Foam Selectable Smooth Bore Nozzle

Catalog Number: TFLX-20
Part Number: 00338200

98321000 – REV. REL

# Table Of Contents

# I. PRODUCT SAFETY INFORMATION

**Important:**
Before installing and operating this equipment, read & study this manual thoroughly. Proper installation is essential to safe operation. In addition, the following points should be adhered to in order to ensure the safety of equipment and personnel:

- All personnel who may be expected to use this equipment must be thoroughly trained in its safe and proper use.
- Before flowing fluid from this device, check that all personnel (fire service and civilian) are out of the stream path. Also, check to make sure stream direction will not cause avoidable property damage.
- Become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. To produce effective fire streams operating personnel must be properly trained.
- Open water valve supplying this equipment slowly, so that piping and hose lines fill slowly, thus preventing possible water hammer occurrence.
- After each use, and on a scheduled basis, inspect equipment per instructions in section IV.
- This nozzle is not designed to be used as a battering ram, sledge hammer, or forcible entry tool.

**Important:**
Open and close the valve slowly to avoid creating a water hammer. Severe water hammer may cause the compressible bore to become inverted in the nozzle. If this occurs, simply crack the shut-off until the compressible bore returns to proper position. Continually creating a water hammer may compromise the integrity of the nozzle. Never intentionally cause water hammer.

# II. PRODUCT DESCRIPTION

The Flex Attack® Nozzle Tip has been designed primarily to give a fire-fighter a distinct advantage in the application of Compressed Air Foam (CAF) and in any applications where a selectable orifice smooth bore tip is desirable. The patented variable orifice waterway allows the fire-fighter to adjust discharge sizes without shutting down, depending on the requirements of the specific situation. The nozzle has been designed to flow water, wet CAF, dry CAF, and anything in between.

## A. Rigid Base Connection

The rigid base connector is designed to attach to any standard threaded ø1.5 inch connection including threaded shutoffs, playpipes and hose ends. Multiple special thread configurations can be addressed upon request. The markings on the base include the specific thread configuration as well as a triangular indicator mark intended to show the waterway size setting.

## B. Pressure Balancing Mechanism

This patent pending mechanism allows the nozzle to adjust between discharge orifice settings under normal working pressures within the 40 in-lbs as required by NFPA 1964. This feature also allows the nozzle to be fully adjusted from largest discharge orifice to the smallest in only 120 degrees of rotation. This portion of the nozzle is protected by a heavy-duty Santoprene bumper to increase the fire-fighter's ability to grip the nozzle.

## C. Nozzle Tip

The Flex Attack® nozzle tip is constructed from Teflon® impregnated, hard anodized aluminum. The tip includes indicator lugs to give the fire-fighter tactile feedback on the discharge positioning. The tip includes a set of colored labels for convenient discharge line identification. See instructions sheet in label packet for details on label installation.

## D. Variable Orifice Waterway

The patented variable orifice waterway enables the user to vary the discharge size of the nozzle depending on the technique required to fight a fire. The variable orifice waterway creates a fully open, unobstructed waterway in all three positions. This consists of a Zytel® ST801 adjustable center barrel and a 70A durometer compressible bore. The waterway can be adjusted to three convenient discharge sizes. 3 Separate labels are provided so that the department can choose the labeling that best fits their operating procedures.

| Discharge Orifice Size | | | |
|---|---|---|---|
| Setting | Size (inches) | Size (mm) | Water flow at 50 psi (3.5 Bar) |
| Water | 15/16 | 24 | 184 GPM (700 LPM) |
| Wet CAF | 1 1/8 | 29 | 265 GPM (1000 LPM) |
| Dry CAF | 1 3/8 | 35 | 396 GPM (1500 LPM) |

# III. FLEX ATTACK® OPERATION

## A. Discharge Adjustment

The discharge size of the nozzle can be adjusted by simply rotating the tip of the nozzle. The adjustment of the discharge size can be accomplished without shutting the nozzle down. Rotating the tip to the right (clockwise) will achieve the smallest discharge diameter. Rotating the tip to the left (counterclockwise) will achieve the largest discharge diameter. A detent has been utilized to indicate each discharge position.

## B. Discharge Settings

The discharge sizes of the nozzle have been chosen to provide convenient settings for flowing water, wet CAF, and dry CAF. The different nozzle settings only control the discharge sizes of the nozzle. Any changes to the proportioning rates of the CAF (foam solution to air ratio) must be adjusted at the pump panel as it would with any other nozzle. It should be noted that the discharge setting labels are merely a recommendation. One of the diameter labels may be preferred for departments with different CAF operations or if the nozzle will be used as a selectable orifice smooth bore always flowing water. CAF or water can be flowed through the nozzle in any of the three discharge settings. Care should be taken to consider nozzle reaction when flowing water at the higher settings. The flow rates of CAF through each setting will depend on several different variables such as the water, foam, and air proportioning rates. Each department should test the nozzle to determine which setting is suitable for each particular application.

**Important:**
Each end user should become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. Personnel must be properly trained in all aspects of the nozzle in order to produce effective fire fighting streams.

## C. Water – 15/16 Inch – 24 mm Setting

The 15/16 inch/Water setting represents the smallest discharge setting of the nozzle. The discharge diameter in this setting is 15/16". The size of this setting was primarily chosen such that it is possible for the user to switch from CAF to a water only stream and still maintain a usable water stream. The size provides the user a very effective means for switching to water without shutting down the nozzle and switching tips. The flow and reaction force characteristics of the nozzle in this setting are comparable to a typical 15/16" smooth bore tip. The water flow rate of the Flex Attack® in this setting is 184 GPM at 50 psi and yields 66 pounds of reaction force. As previously stated the CAF flow rates will depend upon pump panel settings, but will exhibit the similar characteristics of a 15/16" smooth bore tip. Each department should thoroughly test the nozzle to determine the characteristics based on their foam system.

**Warning:**

The reaction force of this nozzle is dependent on the pressure and flow that is supplied to the nozzle as well the selected nozzle diameter. Using this nozzle for water only will result in significantly higher reaction forces than with CAF. Nozzle reaction must be considered when using the larger settings in water only. Elevated nozzle pressure may create an unsafe reaction force for the user. The nozzle reaction formula for water is as follows:

$$NR = 1.5*d^2*NP$$

NR = Nozzle Reaction (Pounds)

D = Nozzle Diameter (Inches)

NP = Nozzle Pressure (psi)

***Formula only valid for water application.**

## D. Wet CAF – 1 1/8 Inch – 29 mm Setting

The Wet CAF/ 1 1/8 inch setting on the Flex Attack® tip has been designed to enable the user to apply a wet solution of CAF. The discharge size of the nozzle in this setting is 1-1/8". The CAF flow characteristics of the nozzle in this setting will depend upon pump panel settings, but will exhibit the similar characteristics to a 1-1/8" smooth bore tip. Each department should thoroughly test the nozzle to determine the characteristics based on their foam system. If using water only the flow rate at 50 psi is 265 gpm and the nozzle reaction is 95 pounds.

## E. Dry CAF – 1 3/8 Inch – 35 mm Setting

The Dry CAF setting on the Flex Attack® has been designed to enable the user to apply a dry solution of CAF. This application is generally used for exposure protection. It should be noted that a wet solution of CAF can be flowed through the nozzle in this setting. The discharge size of the nozzle in this setting is 1-3/8". The CAF flow characteristics of the nozzle in this setting will depend on pump panel setting, but will exhibit similar characteristics to a 1-3/8" smooth bore tip. Each department should thoroughly test the nozzle to determine the characteristics based on their foam system. If flowing water only the flow rate at 50 psi is 396 gpm and nozzle reaction is 142 pounds.

# IV. FLEX ATTACK® MAINTENANCE

The following maintenance procedures should be followed in order to reduce to possibility of field difficulty or failure.

## A. Inspections

Weekly visual inspections and monthly operational checks will promote proper nozzle function. These inspections may be done daily in busy companies. All nozzles should be flow tested before entering any hazardous environment to ensure equipment is operating properly.

## B. Maintenance After Use

The nozzle should be flushed thoroughly after every use. This can be done by flowing a clean water source through the nozzle. The internal passageway of the nozzle should also be visually inspected for possible damage caused by foreign objects carried by the water through the nozzle.

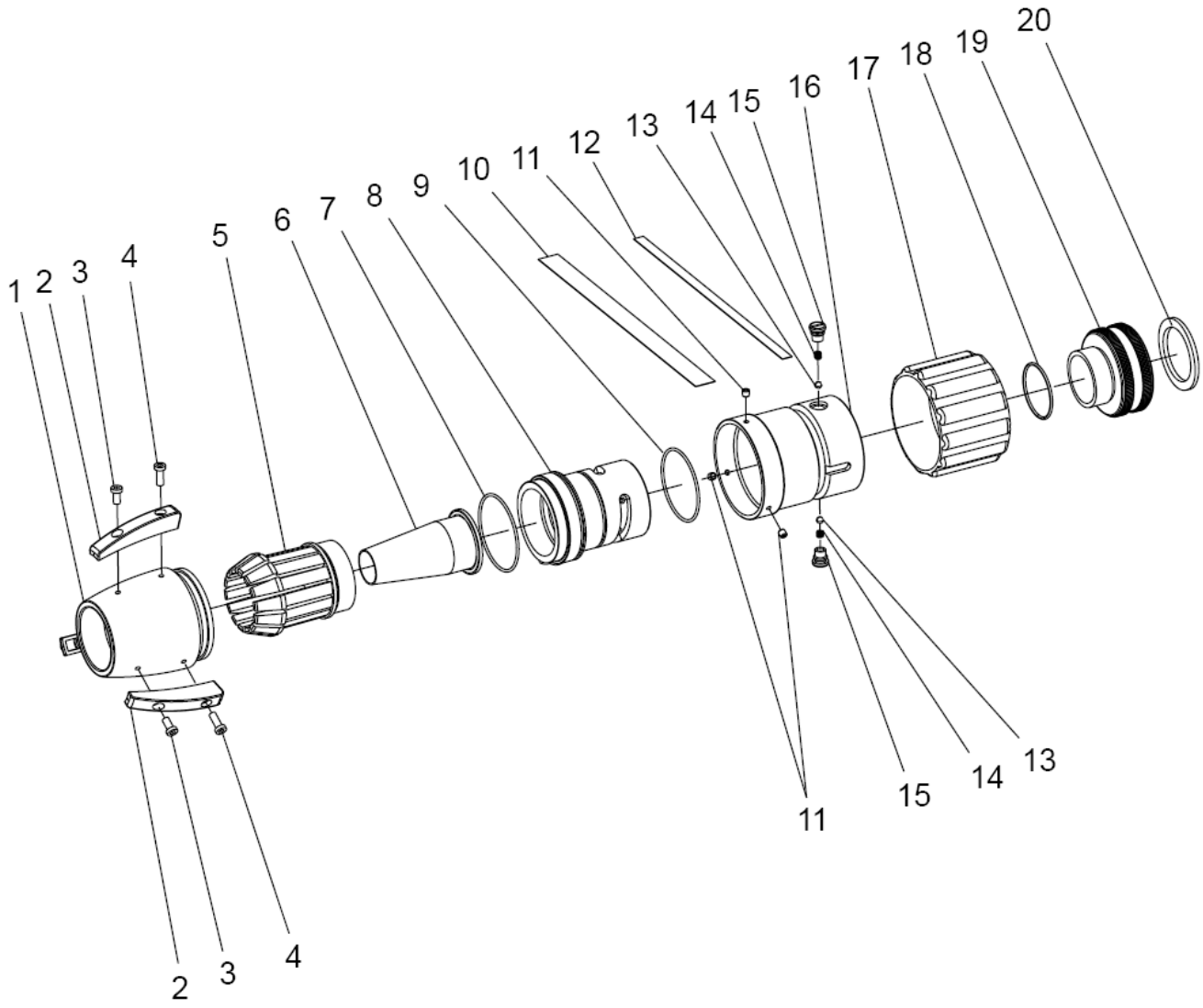
## C. Storage

The Flex Attack® nozzle should always be stored with the discharge selector in the Dry CAF/largest diameter setting. This will ensure that no water is trapped in the nozzle during storage.

**Important:**
If there is a question regarding any necessary repair or damage issue, contact Elkhart Brass for assistance.

Phone #: 800-346-0250
Email: info@elkhartbrass.com

# V. FLEX ATTACK® TIP EXPLODED PARTS DRAWING



# A. Flex Attack® Nozzle Tip (TFLX-20)

| INDEX # | PART # | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 66424301 | 1 | Tip - Nozzle |
| 2 | 39004000 | 3 | Indicator Lug |
| 3 | 64118000 | 3 | Cap Screw |
| 4 | 64117000 | 3 | Cap Screw |
| 5 | 18114000 | 1 | Adjustable Center Barrel |
| 6 | 18461000 | 1 | Compressible Bore |
| 7 | 57488000 | 1 | O-Ring |
| 8 | 17188001 | 1 | Body - Nozzle |
| 9 | 57422000 | 1 | O-Ring |
| 10 | 44637000 | 1 | Label - Reflective Pk |
| 11 | 63699000 | 3 | Screw - Set |
| 12 | 44581000 | 1 | Label - Discharge Identification |
| 12 | 44581010 | 1 | Label – Discharge Size - Inch |
| 12 | 44581020 | 1 | Label – Discharge Size - Metric |
| 13 | 15018000 | 2 | Ball - .187 Dia S/S |
| 14 | 65706000 | 2 | Spring - Coil |
| 15 | 65067001 | 2 | Screw - Detent |
| 16 | 66425001 | 1 | Tip - Base |
| 17 | 16592000 | 1 | Bumper Sleeve - Black |
| 18 | 57482000 | 1 | O-Ring |
| 19 | 15449001 | 1 | Base (1.5” NHT Rigid) |
| 19 | 15449101 | 1 | Base (1.5” NSPH Rigid) |
| 19 | 15449R01 | 1 | Base (1.5” BSP Rigid) |
| 19 | 15449L01 | 1 | Base (Miscellaneous Customer Thread – Rigid) ** |
| 20 | 33074000 | 1 | Gasket – Rubber ** |
| 20 | 33079000 | 1 | Gasket – Rubber (NPSH) |

** Specify thread type, Elkhart Brass Customer Service will determine the correct Part Number.

# ELKHART BRASS MFG. CO., INC.

P.O. Box 1127 · 1302 West Beardsley Ave.
Elkhart, Indiana 46515
E-mail: info@elkhartbrass.com
Website: www.elkhartbrass.com

**(800) 346-0250**