

# MERCEDES TEXTILES LIMITED

## *FLOWING WITH TECHNOLOGY™*

### **Tandem fire pump setup**

#### **The purpose**

The purpose of a tandem pump setup is to increase pressure, in order to overcome the pressure loss due to distance and/or elevation in the hose lay. A tandem pump setup will nearly double the output pressure of a single pump setup.

#### **Setup procedures** (see related drawing)

- ▶ The pump with the highest pressure output (if known) should be positioned at the water source (Pump #1).
- ▶ The distance between pump #1 and pump #2 is dependent on each specific situation. The critical factor is that the 2nd pump must not draw more water than the 1st pump can produce, otherwise the hose line between the two pumps will collapse.
- ▶ Note that the distance between the two pumps can vary anywhere from a few feet to over 1000 feet (300M), depending on the hose friction loss and pressure loss due to elevation (nearly ½ PSI / 3 kPa pressure loss for every foot / 30 cm in elevation).
- ▶ This distance will also vary depending on the pump model, for instance a Wickman 100™ versus the Wick 375™.
- ▶ Note that there is a considerable variance in friction loss if using our Mercedes Textiles Ltd hose products versus other manufacturers hose products. See comments in “Other considerations” below.

#### **The startup**

1. Follow the starting procedures for the specific pump (refer to the pump operating manual and / or our website pump instructional videos).
2. Pump #1 must be started 1st and allowed to warm up (2 to 3 minutes).
3. After the warm up period, gradually increase the speed to full throttle and ensure the hose line becomes pressurized.
4. Pump #2 can be started once the line is pressurized between the two pumps, ensuring water flow.
5. Allow for the 2-3 minute warm up period, then gradually increase the speed to full throttle while keeping a close watch that the hose line does not collapse.
  - o If the hose line does collapse reduce pump #2 throttle. If the hose line still remains collapsed, immediately shut off the pump.
  - o It is possible that pump #2 will have to be moved closer to pump #1.

#### **The shutdown**

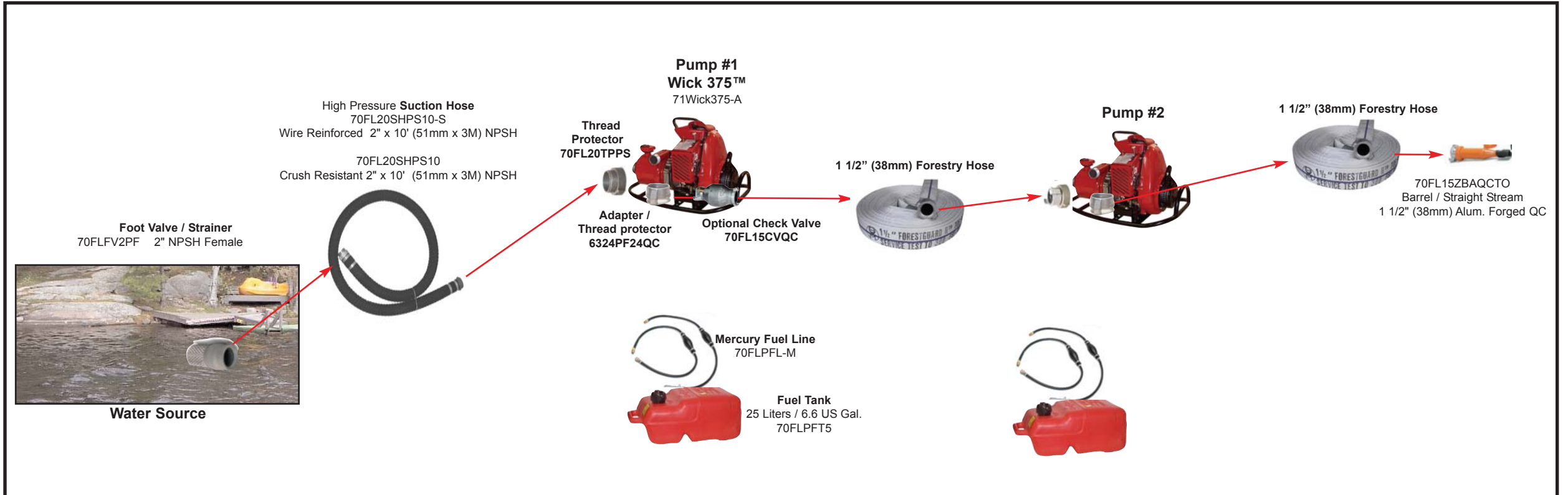
- ▶ This is basically a reverse procedure with pump #2 being shut down first and allow a 2-3 minute cool down period for each pump.
- ▶ Once again refer to the pump operating manual and / or our website pump instructional videos.
- ▶ Hose stranglers are required in steep terrain or long hose lays, to contain the back pressure while disconnecting the hose line.

#### **Other considerations**

- ▶ Hose operators must exercise extra caution because of the additional high pressure produced by the tandem pump arrangement.
- ▶ In steep terrain a check valve should be installed at the pump(s) outlet, to contain back pressure in the hose lay in the event of a pump shut down, etc. Otherwise the back pressure may render it impossible to pull the starter cord.
- ▶ The fuel supply must be monitored to ensure continual operation, particularly critical for pump #1.
- ▶ Pumps must be equipped with an automatic cut-out switch if left unattended. Otherwise should a pump loose prime, the engine will over rev and may damage both the pump end and engine.
- ▶ The hose diameter along with the hose manufacturer is a significant consideration in regards to friction loss over long hose lays. For instance our Mercedes Textiles Ltd hose friction loss for 100 feet (30M) of 1 1/2” (38mm) diameter is only 9 psi at 70 gpm (62 kpa at 265 lpm) flow. Refer to USDA Forest Service Technology & Development Program, 5100 Fire Management report >> [www.fs.fed.us/t-d/pubs/pdf/02511205.pdf](http://www.fs.fed.us/t-d/pubs/pdf/02511205.pdf) .. scroll to appendix D.

# Tandem Fire Pump typical layout

Demonstrated using our Wick 375™ and related products



## Wick 375 Optional Items

Wick 375 Transportation  
Back Board with  
Carrying Straps  
71W37-HPACK



Wick 375 Muffler  
Heat Shield  
71W37-1327



Wick 375 Spark Arrestor  
71W37-SPKARR



4 Stage Pump  
Repair Kit  
79T-KIT



## Basic Tools Required

2 x Coupling  
Wrenches  
70FL15CPWR



Hand Primer  
70FLHPPQC



Hose Strangler  
70FLHSCLP-Q



## Conceptual

Level Ground



Steep Terrain



Refer to comments in "Set up procedures" and  
in "Other Considerations"