



Fire Protection Training

Procedures Handbook 4300

PUMPING

TOPIC: Transmitting Power to the Pump

TIME FRAME: 30 Minutes

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: A written examination

Behavior: The student will describe the theory, principles, and operations necessary to provide power to the fire engine pumps.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Appropriate visual aids
- Audio visual equipment

REFERENCES:

- IFSTA, Fire Department Pumping Apparatus, 7th Edition, Chapter 5

PREPARATION: There are a variety of methods for providing power to a pump. Each of these methods has advantages and disadvantages. Whether developing specifications for new pumps or operating existing pumps, the operator must be familiar with the power transfer method utilized.



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PRESENTATION	APPLICATION
<ul style="list-style-type: none"> 4. Size of pump is limited 5. While moving, pump discharge depends on engine speed 	<p>What are the disadvantages of a front mount pump?</p>
<p>III. POWER TAKE OFF (PTO)</p> <ul style="list-style-type: none"> A. Gear Assembly Mounted on Side of Transmission Provides Power <ul style="list-style-type: none"> 1. Pump and roll capabilities 2. Provides versatility <ul style="list-style-type: none"> a. Different pumps for different applications <ul style="list-style-type: none"> (1) Midship pump for stationary operations (2) Booster pump for pump and roll operations 3. Pump size limited 	<p>What are the disadvantages of the PTO pump?</p>
<p>IV. DRIVE SHAFT OPERATION (MID-SHIP)</p> <ul style="list-style-type: none"> A. Most Common Application in Fire Service <ul style="list-style-type: none"> 1. Power source is engine in vehicle 2. Power is transmitted from engine through vehicle transmission to the pump and by separate shaft to pump 	



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<p>3. When pump is engaged power is redirected</p> <ul style="list-style-type: none">a. Apparatus can not be driven <p>B. Pump Engagement Is Accomplished Electrically, Manually, Pneumatically or by Vacuum Operations</p> <p>1. Most common method utilizes a sliding collar in pump transmission</p> <ul style="list-style-type: none">a. Advantages<ul style="list-style-type: none">(1) Full engine power is available for pumping(2) Pump size is relatively unrestricted depending on horsepower available from engineb. Disadvantages<ul style="list-style-type: none">(1) Power to rear wheels disconnected(2) More complex mechanical operation(3) Need back-up system to engage pump	<p>How is power transmitted to pump?</p> <p>What are some advantages of drive shaft operation?</p> <p>What are some disadvantages of drive shaft operations?</p>



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PRESENTATION	APPLICATION
<p>V. AUXILIARY (SEPARATE ENGINE)</p> <p>A. Independent Engine Is Mounted to the Pump</p> <ol style="list-style-type: none">1. Portable2. Skid-mount3. Permanent mounting <p>B. Advantages</p> <ol style="list-style-type: none">1. Pump speed independent of vehicle speed2. Pump and roll capability3. Pump may be detached from apparatus and carried to a source of water <p>C. Disadvantages</p> <ol style="list-style-type: none">1. May be limited pressure and volume2. Additional engine to maintain3. Extra supply of fuel, or two types of fuel	<p>What are some advantages of independent engine driven pumps?</p> <p>What are some disadvantages of independent engine driven pumps?</p>



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SUMMARY:

There are four common methods of powering fire pumps. Each method has unique advantages and disadvantages. As an engine operator, you should be familiar with each type of power transmission.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).