SAN DIEGO FIRE-RESCUE DEPARTMENT

TRIPLE COMBINATION TASK BOOK

January 2022

TRAINEE NAME: _____

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TRIPLE COMBINATION CERTIFICATION

MUST BE COMPLETED IN ITS ENTIRETY BEFORE AN APPARATUS CERTIFICATION WILL BE ISSUED.

Apparatus No: _____ @ Station: _____ Return certification to Station #: _____

Name (Print):_____Employee ID #: _____

Rank:_____ Station:_____Division: _____Battalion: _____

CDL#: _____ Exp: ____ / _____ / ____ Physical: ____ / ____ / ____ Exp: ____ / ____ / _____

Class: _____ Endorsement(s): _____ Restriction(s):_____

This trainee has, within six (**6**) months from the start date, satisfactorily completed a Twenty-Five (**25**) hour (minimum) training course in the operation of this vehicle, demonstrating the requisite knowledge and skills to effectively and safely operate this classification of apparatus.

NOTE: Total training hours required for certification will depend upon the trainee's skill level and **NOT** the minimum hourly requirement. However, Training time may **NOT** be reduced even if trainee is previously certified on other apparatus.

Dates of Training: From: _____ / _____ / _____ To: _____ / _____ / _____
Month Day Year Month Day Year

Trainee has documented the following training on the Driver Training Record (FD-902):

- ☐ A minimum of ten (**10**) hours of Driving (improved surfaces), successfully completing all areas outlined in Chapter 4.1 thru 4.8 of this task book.
- ☐ A minimum of ten (**10**) hours of pump Operations, hose lays, and hydraulics demonstrating the requisite knowledge and skills to successfully and effectively perform all pumping tasks. successfully completing all areas outlined in Chapter 5.1 thru 5.9 of this task book.
- ☐ A minimum of five (**5**) hours using all apparatus forms and performing apparatus and auxiliary equipment maintenance, including Apparatus Specifications, Pre-Trip Inspection, Response Preparation, Post-Trip Inspection.

Trainee Signature: _____

* Trainer: _____ _____
Print Name and Rank Signature

* Captain: _____ _____
Print Name and Rank Signature

* Battalion Chief:_____ _____
Print Name and Rank Signature

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* Your signature certifies that the above person has completed the certification program detailed in this booklet. This individual has completed the minimum number of training hours and demonstrated a driving and operating ability that is consistent with all department standards and procedures.

TRAINING DIVISION USE ONLY

Driver Training Officer Signature: _____

Training Chief Signature: _____

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TRAINING RECORD – TRIPLE COMBINATION

Trainee Name:____Page____of____

MO/DY/YR	TIME	HRS	APP #	TASK	STA#	CAPTAIN NAME
(Example) 8/27/19	FROM: 0800	4	2641	**(Example)** Driving	10	PRINT: Captain James Roberto
	TO: 1200			(Document only one task at a time, i.e. Off Road Driving, On Road Driving)		SIGN: *James Roberto*
MO/DY/YR	**TIME**	**HRS**	**APP #**	**TASK**	**STA#**	**CAPTAIN NAME**
	FROM:					PRINT:
	TO:					SIGN:
MO/DY/YR	**TIME**	**HRS**	**APP #**	**TASK**	**STA#**	**CAPTAIN NAME**
	FROM:					PRINT:
	TO:					SIGN:
MO/DY/YR	**TIME**	**HRS**	**APP #**	**TASK**	**STA#**	**CAPTAIN NAME**
	FROM:					PRINT:
	TO:					SIGN:
MO/DY/YR	**TIME**	**HRS**	**APP #**	**TASK**	**STA#**	**CAPTAIN NAME**
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	TO:					SIGN:
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	TO:					SIGN:
TOTAL HOURS THIS PAGE:						

*NOTE: Training hours shall be documented in Target Solutions daily and be limited to a **maximum** of six (**6**) hours per shift.

TRAINING RECORD – TRIPLE COMBINATION

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	TO:					SIGN:
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01
Overview

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1.1 INTRODUCTION

Task Book:

The San Diego Fire-Rescue Department Training Division has developed this Task Book to provide a training format and certification of the minimum skill level needed to successfully operate this apparatus as the driver and equipment operator. Each Task Book lists the job performance requirements for the specific certification in a format that allows a candidate to be trained and evaluated during the training sessions. To achieve certification, the applicant must successfully complete ALL task and job performance requirements listed in this Task Book.

Note: Before a certification can be issued, successful job performance of all sections must be observed and recorded by a qualified and approved trainer.

These job performance requirements serve as general guidelines. As such, they are not intended to replace specific sequences of apparatus or equipment operation that may be outlined by manufacturer specifications. Training shall follow department standard operating procedures. **IF** you are unsure about the safe operating principles and limitations of the specific make of your apparatus, refer to the manufacturer operation manual. When a conflict with department procedures and manufacturer specifications occur, manufacturer procedures will govern the task. **Err on the side of safety**. Trainers should have manufacturer specifications and department standard operational guidelines available. Should additional assistance be required, contact the Driver Training Officer at the Training and Education Division for assistance. **DO NOT** contact the manufacturer directly.

There is a six-month time restriction from beginning a certification to the time of completion. If a trainee does not complete the certification in the six-month time limit, they must start the entire process over. The Training Division must receive the completed Task Book no later than thirty (30) days after completion of training.

Trainer:

1. Must be an Engineer or higher, certified on the apparatus and possess a current license with appropriate endorsement(s), before conducting any training.
2. Ensure that all information, dates, and hours are recorded accurately in this Task Book.

Trainee:

1. Must have a current applicable license or permit, with appropriate endorsement(s), in their possession and show it to the trainer at **each** training session.
   Note: Drivers must follow all restrictions on their license. Example: a 64 restriction (automatic transmission only) cannot drive a manual transmission apparatus.
2. Check to see that the trainer is certified for the apparatus you will be utilizing.
3. Complete driver's license information on the certification page(s).
4. When all Task Book information has been documented, obtain required signatures and forward the completed Task Book to the Driver Training Officer, at the Training and Education Division.

The Driver Training Officer will review this Task Book to determine that all the information is complete and correct. The certification form will be removed and filed at Training, and the Task Book will be returned to the trainee for future reference.

A CLASS "B" LICENSE WITH A TANK (N OR X) ENDORSEMENT IS REQUIRED TO DRIVE THIS APPARATUS

1.2 INSTRUCTIONS

A. The trainer will check (☑) off each box after successful completion of the performance requirements by the trainee.

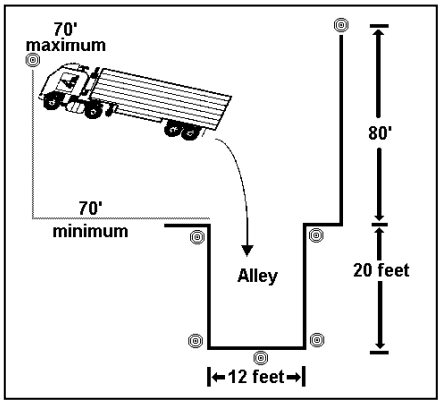
B. Sections with three boxes are to be initialed after each evolution is successfully completed.

* Driving skills can be demonstrated during normal driving after completion of practice training and basic skill demonstration in an approved practice area(s).

EXAMPLE:

1. *Alley Dock (backing into station) (DMV)
   Dock the vehicle from a 90-degree angle, in one movement, without touching any cones or stanchions, staying within all boundary lines, and stopping within three (3) feet of the dock or stop line. Pulling forward will result in a penalty.

JL	JL	JL



C. Trainee must complete a of minimum ten (**10**) hours of driving on improved surface to include:

1. Normal street / traffic conditions
2. Multiple turns and lane changes
3. Highways/Freeways
4. Up / down hills requiring shifting
5. Railroad crossing
6. Underpass / low clearance areas
7. Maneuvers listed in the Driving Skills section

D. Trainee must complete a minimum of ten (**10**) hours of pump operations, hose lays, and hydraulics demonstrating the requisite knowledge and skills to successfully and effectively perform all pumping tasks.

E. Trainee must complete a minimum of five (**5**) hours using all apparatus forms and performing apparatus and auxiliary equipment maintenance, including Apparatus Specifications, Pre-Trip Inspection, Response Preparation, Post-Trip Inspection.

NOTE: Driving requirement(s) may be adjusted or eliminated if not in the available operation area

F. Resources:

1. Manufacturer's Maintenance and Operating Manuals
2. San Diego Fire-Rescue Department Policies and Procedures
3. California Vehicle Code and Department of Motor Vehicle Commercial Driver Handbook
4. City of San Diego Driver / Operator Manual
5. IFSTA Aircraft Rescue and Firefighting
6. Ervin Fire Fighting Apparatus and Procedures (3rd edition)
7. SDFD apparatus specification sheet

02
Apparatus

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2.1 PREPARATION

A. Read the apparatus operation manual and ancillary equipment manuals completely
B. Articulate an understanding of all danger, warning, and caution notices stated in the apparatus operation manual

2.2 DESCRIPTION

A. Manufacturer _____
B. Apparatus Type _____
C. GVWR _____
D. Engine Manufacturer _____
E. Engine Cycles / Type _____
F. # of cylinders / CID _____ / _____
G. Max Horsepower _____ @ RPM _____
H. Max Torque _____ @ RPM _____
I. Transmission Type_____
J. Water Tank Capacity_____

2.3 SPECIFICATIONS

A. Height (clearance) _____ Width _____ Turning Diameter _____
B. Width (Body) _____ Width (Body, Equipment, & Mirrors) _____
C. Length _____ Chassis overhang – Front _____ Rear _____
D. Equipment overhang – Front _____ Rear _____
E. Angle of approach _____ Departure _____ Ground Clearance _____
F. Tire pressure – Front _____ Rear _____
G. Fuel Tank:_____gallons Fuel Type:_____
H. Def Tank: _____gallonsB

2.4 VERIFICATION OF OPERATIONAL STATUS

A. Checks that parking brake is set
B. Performs Pre-trip inspection (PSTrax)
C. Perform daily, weekly, and monthly assigned checks as assigned on PSTrax
D. Knowledge of all forms that apply to this apparatus
E. Performs “Walk Around” prior to entering cab to drive
    1. Secure equipment
    2. Compartment doors closed
    3. Disconnect electrical cords
    4. Wheel blocks up and stowed
    5. Clear to proceed
F. Adjusts seat and mirrors
G. Checks that intercom and radios are operational and volume is correctly set

2.5 STARTING

A. Fastens seatbelt
B. Battery switch on "**BOTH**" and / or master ignition switch "**ON**"
C. Transmission in Park
D. Ignition to "**ON**" position, Let gauges cycle
E. Locates and checks gauges, switches, and controls
F. Observes dash indicator light system test for indicator light problems
G. Starts engine- **DO NOT** pump accelerator
H. If it doesn't start
    1. Repeat steps B thru G
    2. Maximum crank time 15-seconds, then rest 15-seconds. Repeat 3 times
    3. If it still does not start
        a. Utilize PS Trax, "Urgent Request"
I. Runs engine at **Low Idle (600-800 RPM)** for two-minutes to lubricate engine
J. Check gauges (at 1000 RPM)

WARNING - DO NOT operate vehicle if gauge readings are outside of normal range, high or low

1.	Oil pressure reading _____ PSI	Normal reading should be _____ PSI
2.	Air pressure reading _____ PSI max	Driving pressure range is _____ to _____ PSI
3.	Voltmeter reading _____ Volts	Normal reading should be _____ Volts
4.	Ammeter reading _____ Amps	Normal reading should be _____ Amps
5.	Engine temperature _____ F	Normal operating temperature should be _____ F
6.	Transmission temperature _____ F	Normal operating temperature should be _____ F

K. Check Jacobs Engine Brake control switch "**ON**"

2.6 AIR BRAKE SYSTEMS

A. Describe operation of apparatus compressed air system
    1. Is air compressor belt or gear driven?
    2. "**C**ut In" pressure must occur before minimum of _____PSI
    3. "Cut **O**ut" pressure must occur by the maximum _____ PSI
    4. "**A**pplied" leakage test must not drop more than _____ PSI per min for a straight truck
    5. "**L**ow Pressure" must occur between _____ PSI and _____PSI
    6. "**S**pring Brake Test must occur between _____PSI and _____PSI
    7. **Parking Brake Test** -With the parking brake engaged, and the engine on, place the tractor in drive, testing the vehicle's forward movement.
    8. **Service Brake Test**- With the parking brake put the vehicle in drive, accelerate to 5 mph and apply the service brake to see if the vehicle(s) stops and/or pulls to one side or the other. If the vehicle does not stop or pulls to one side or the other, turn the vehicle in for repair.
    9. **Anti-lock Brake System (ABS) Check** - On all ABS equip vehicles, when starting the vehicle, check to ensure the ABS lighting indicator illuminates and promptly turns off. If the ABS light remains illuminated, turn the vehicle in for repairs.

2.6 AIR BRAKE SYSTEMS(continued)

10. **Air Pressure Build Up Test-**Engine must be running at normal operating idle. With air pressure below 80 psi, watch the gauge when the gauge reads 85 psi time the compressor build up to 100 psi. The compressor must build the air from 85 psi to 100 psi within 45 seconds. Inform the examiner how many seconds it took for the air pressure to build from 85 psi to 100 psi If the buildup doesn't happen within 45 seconds, turn the vehicle in for repair

B. Parking-Brake (Spring-Brake)
   1. Describe the operation and function of the spring brake system
   2. Describe and demonstrate how to apply and release both front and rear parking brakes correctly
      a. Apply front brake only after applying rear brake system and **must keep engine running if front brake is set.**
      b. Releasing rear brake system automatically releases front brake system

2.7 SECONDARY BRAKING DEVICES

A. Jacobs Engine Brake
   1. Describe theory of operation and normal switch positions
   2. Demonstrates proper use during driving operations
   3. Procedure for wet or slippery conditions (Dry grass and loose soil are slippery surfaces)
      a. Switch positions
      b. Use / non-use of Jacobs Engine Brake

B. Telma
   1. Describe theory of operation and normal switch position
   2. Demonstrates proper use during driving operations
   3. Telma will not work at speeds of less than_____ MPH
   4. Procedure for wet or slippery conditions
      a. Switch position Use / non-use of Jacobs Exhaust Retarder
      b. Use/non-use of retarder.

2.8 REGEN PROCEEDURES

REGEN PROCEDURE for CAT and DETROIT DIESEL Series 60

HOW TO PERFORM A "PARKED REGEN"

1. **Must** have the DPF light on or flashing to REGEN. Engine should be at 140 or above. 
2. Ensure tailpipe and surrounding area is clear. **Must be done outside.**
3. Set wheel blocks, start apparatus with parking brake set and in neutral.
4. Release parking brake.
5. Place transmission in "D", watch transmission "Monitor" to show "1".
6. Return to neutral.
7. Set Parking and Front Brakes.
8. Request a "PARKED REGEN"

2.8 REGEN PROCEEDURES (continued)

9. **CAT and Pierce Arrow XT with Detroit Diesel Series 60**
    - Under dash, far left side, behind grab handle, far left bottom switch marked "REGEN"
    - Push and hold for 5 seconds, release.
10. **International Chassis (water tenders, etc…)**
    - To right of steering column, switch on left marked "PARKED REGEN"
    - Push and hold for 5 seconds, release.
11. Idle should increase on its own, REGEN will start.
12. DPF light will go out shortly after starting, REGEN is continuing until a return to idle. (20-60) minutes.
13. When Apparatus returns to idle with a successfully completed REGEN, complete **ENGINE REGENERATION RECORD in** Engineer Manual**.**

    To interrupt "PARKED REGEN", release parking brake and wait to return to idle.
    To interrupt "AUTOMATIC REGEN", use "REGEN INHIBIT" switch.

REGEN TYPES

14. **PASSIVE-** Will occur when driving. No DPF burn, just higher exhaust temps. No action required by operator.
15. **AUTOMATIC-** Active burn off of soot occurs while driving. Must be sustained "Freeway" driving or pumping of 45-60 minutes. No action required by operator.
16. **PARKED-** Operator uses on board "REGEN" switch to initiate a REGEN. Works for all levels. 45-60 minutes.
17. **LAPTOP-** Used by the shop to perform a REGEN when all other attempts have failed. Only true way to check and analyze system performance.

OTHER TIPS

- **CAT ARD HEAD CLEAN-** On Cat-equipped engines, if the "ARD Clean" Green LED is on (next to park brake control), attempt to continue driving or park &idle whenever possible. This will extend regen intervals & reduce out of service events.
- **INHIBIT REGEN-** If using vehicle vocationally (PTO engaged-pumping, aerial ops, etc.) and regen starts but must be interrupted, depress "Regen inhibit" switch for 5 sec. & release. It's adjacent to the "Request Regen" switches on Pierce and internationals.
- **Strike Team Response-** If freeway driving and the DPF light comes on, you can keep driving to allow an "automatic" regen. Stop and perform a "manual" regen if DPF light starts to flash, "Check Engine "light comes on or you're at the incident.

2.8 REGEN PROCEEDURES (continued)

	The amber **Check Engine Lamp (CEL)** warning light indicates a fault with the engine controls or after treatment controls and/or components has occurred. The operator can drive the vehicle to the end of their shift and call service to remedy the problem.
	The red **Stop Engine** warning light indicates a major engine fault that may result in engine damage. The operator should move the vehicle to a safe location and shutdown the engine.
	The **Malfunction Indicator (MIL)** light provides an indication to the vehicle operator that a fault has occurred on an emission related component. This light may illuminate at the same time as the Check Engine light. The operator can drive the vehicle to the end of their shift and call service to remedy the problem.
	**High Exhaust System Temperature (HEST) Automatic** (passive) regen occurring. Continue to drive or park with the high idle on when possible. This will extend regen intervals. No other action required. No need to log this event. Note difference between this & the DPF light.
	The **Diesel Particulate Filter (DPF)** light will illuminate when a regeneration is necessary. There are progressive stages of need for regeneration indicated by this.

LEVEL 1  *(SOLID)*	1. DPF on solid (low to medium levels of particulate build-up). The vehicle requires regeneration but should be able to complete the current mission. Perform a regeneration in a reasonable amount of time. • **In Service.** • **Ensure the Regen Inhibit Switch is not activated.** • **Initiate a DPF regeneration by switching to a more challenging duty cycle (such as highway driving for at least 20 minutes or pumping) OR perform a parked regeneration.**
LEVEL 2  *(Flashing)*	2. DPF flashing (medium to high levels of particulate build-up). DPF reaching system limits and regeneration required as soon as possible. • **Out of Service.** • **Perform a Mandatory Parked Regeneration as soon as possible.** • **Complete Regeneration Record**
LEVEL 3  *(Flashing)*	3. DPF flashing, CEL lit. System has REACHED limitations. • **Out of Service.** • **Return to quarters** • **Contact Repair Facility- Requires mechanic to do Laptop regen. Engine Damage will occur with continued operation.**
LEVEL 4  *(Flashing)*	4. DPF flashing, CEL lit, and Stop Engine light lit. System has EXCEEDED limitations. ENGINE SHUTDOWN. • **Out of Service. Stop when safe.** • **Shut down engine** • **Contact Repair Facility- Requires mechanic to do Laptop regen. Engine Damage will occur with continued operation.**

2.8 REGEN PROCEEDURES (continued)

REGEN PROCEDURE DETROIT DIESEL (DD13 ENGINES).

1. Must have the DPF light on or flashing  to REGEN. Engine should be at 140 or above.
2. Ensure tailpipe and surrounding area is clear. Must be done outside.
3. Set wheel blocks, start apparatus with parking brake set and in neutral.
4. Release parking brake.
5. Place transmission in "D", watch transmission "Monitor" to show "1".
6. Return to neutral.
7. Set Parking and Front Brakes.
8. Request a "PARKED REGEN"
9. Push and hold REGEN button (far left bottom switch) for 5 seconds and release.

10. Idle should increase on its own, REGEN will start.
11. DPF light will go out shortly after starting, REGEN is continuing until a return to idle. (45-60) minutes.
12. **If REGEN is unsuccessful the first time, initiate a second REGEN. After two failed attempts, contact the shop.**
13. When Apparatus returns to idle with a successfully completed REGEN, complete ENGINE REGENERATION RECORD.

14. To interrupt "PARKED REGEN", release parking brake and wait to return to idle.
15. To interrupt "AUTOMATIC REGEN", use "REGEN INHIBIT" switch.

REGEN TYPES

16. PASSIVE- Will occur when driving. No DPF burn, just higher exhaust temps. No action required by operator.
17. AUTOMATIC- Active burn off of soot occurs while driving. Must be sustained "Freeway" driving or pumping of 45-60 minutes. No action required by operator.
18. PARKED- Operator uses on board "REGEN" switch to initiate a REGEN. Works for all levels. 45-60 minutes.
19. LAPTOP- Used by the shop to perform a REGEN when all other attempts have failed. Only true way to check and analyze system performance.

2.8 REGEN PROCEEDURES (continued)

	The amber **Check Engine Lamp (CEL)** warning light indicates a fault with the engine controls or after treatment controls and/or components has occurred. The operator can drive the vehicle to the end of their shift and call service to remedy the problem.
	The red **Stop Engine** warning light indicates a major engine fault that may result in engine damage. The operator should move the vehicle to a safe location and shutdown the engine.
	The **Malfunction Indicator (MIL)** light provides an indication to the vehicle operator that a fault has occurred on an emission related component. This light may illuminate at the same time as the Check Engine light. The operator can drive the vehicle to the end of their shift and call service to remedy the problem.
	**High Exhaust System Temperature (HEST) Automatic** (passive) regen occurring. Continue to drive or park with the high idle on when possible. This will extend regen intervals. No other action required. No need to log this event. Note difference between this & the DPF light.
	The **Diesel Particulate Filter (DPF)** light will illuminate when a regeneration is necessary. There are progressive stages of need for regeneration indicated by this.

LEVEL 1  *(SOLID)*	1. DPF on solid (low to medium levels of particulate build-up). The vehicle requires regeneration but should be able to complete the current mission. Perform a regeneration in a reasonable amount of time. • **In Service.** • **Ensure the Regen Inhibit Switch is not activated.** • **Initiate a DPF regeneration by switching to a more challenging duty cycle (such as highway driving for at least 20 minutes or pumping) OR perform a parked regeneration.**
LEVEL 2  *(Flashing)*	2. DPF flashing (medium to high levels of particulate build-up). DPF reaching system limits and regeneration required as soon as possible. • **Out of Service.** • **Perform a parked regeneration as soon as possible.** • **<u>If lamps remain on after parked regeneration, repeat the parked regeneration.</u>** • **<u>If second attempt fails, notify the shop.</u>**
LEVEL 3  *(Flashing)*	3. DPF flashing, CEL lit. System has REACHED limitations. • **Out of Service.** • **Parked regeneration must be performed in a safe location.** • **<u>If lamps remain on after parked regeneration, repeat the parked regeneration.</u>** • **<u>If second attempt fails, notify the shop.</u>**
LEVEL 4  *(Flashing)*	4. DPF flashing, CEL lit, and Stop Engine light lit. System has EXCEEDED limitations. ENGINE SHUTDOWN. • **Out of Service.** • **Parked regeneration must be performed in a safe location IMMEDIATELY. <u>If lamps remain on after parked regeneration, repeat the parked regeneration.</u>** • **<u>If second attempt fails, notify the shop.</u>** • **Engine can be restarted, but a parked regeneration must be initiated within 30 seconds or engine will shut down.**

2.9 AUXILIARY AND SAFETY SYSTEMS

A. Load Manager
   1. Purpose and function of Load Manager
   2. Explains significance of each indicator light (colors) _____, _____
   3. Normal operating position of the Load Manager switch along with the Master Light switch is that both switches are _____ (up / down)
   4. Which systems are controlled by the Load Manager?
   5. Order in which the Load Manager sheds systems
   6. How and when the Load Manager can be bypassed
   7. Possible consequences of bypassing the Load Manager
   8. Proper way to reset the Load Manager

B. Antilock Braking System (ABS)
   1. Describes ABS operation
   2. Describe location of ABS indicator light _____
   3. ABS prevents wheel _____
   4. Wheels effected _____
   5. Utilizes normal brake pedal pressure during stops (DO NOT PUMP BRAKE PEDAL)
   6. ABS warning light remains lit until _____ MPH (color) _____
   7. Reports malfunction if warning light stays on (color) _____
   8. Emergency Braking with Antilock Braking System (ABS)
      a. **USE IN EMERGENCY SITUATIONS ONLY**
      b. **STOMP** - the brake pedal to the floorboard
      c. **STAY** - on the brake pedal, do not let up
         i. Releasing the pedal resets the ABS computer, **INCREASING** the stopping distance
      d. **STEER** - around the hazard(s)
         i. The vehicle will handle well with ABS system working

C. Automatic Traction Control (ATC)
   1. Theory of operation
   2. What ATC does when wheel spin develops
   3. Locate the control switch
      a. The switch label indicates_____
   4. Normal control switch position _____ (up / down)
   5. Explains why the green indicator light might illuminate
   6. Explains what to do if the green indicator light remains illuminated

2.10 MAINTENANCE PROCEDURES

A. Describes frequency and procedure to replace
   1. Coolant capacity _____ gallons % Mix _____
   2. Power steering fluid type _____
   3. Engine oil type _____ Engine oil capacity _____ gallons
   4. Transmission oil type _____ Transmission Oil capacity _____ gallons

B. Describes benefits of proper maintenance

C. Performs Monthly and Quarterly Apparatus Maintenance checks as assigned on PSTrax

2.10 MAINTENANCE PROCEDURES (continued)

1. Reviews maintenance manual for appropriate lubricants and chart of lubrication points
2. Cleans and degreases apparatus
3. Inspects apparatus for leaks, defects, rust, cracked or chafing hoses, and repaint needs
4. Lubricates all grease points (zerk fittings) and other moving joints
5. Cleans excessive grease from all fittings and surfaces
6. Cleans and inspects all pump intake screens
7. Performs intake relief valve(s) test(s) and maintenance
8. Performs auxiliary equipment tests and maintenance

D. Cab Tilt Procedure
   1. SAFETY considerations for Cab tilt operation
      a. Secure all loose materials in cab and close doors
      b. Check for apparatus equipment that may interfere with cab tilt and reposition
      c. Check for over-head obstructions
   2. Engine Ignition is _____ when cab is raised.
   3. Demonstrates proper procedure for raising cab
   4. After raising cab, secures in the up position with safety support
   5. Lowering cab
      a. Raises off safety support lock
      b. Lowers cab
      c. Ensure side latches are properly secured (hold lowering toggle switch down until latches set and indicator light is “OFF”)

E. Explains VOGEL Lubrication System and the Engineer duties relative to the system
   1. Daily, visually checks (observes) “AUTO LUBE” self-check indicator on apparatus startup
      a. Light should blink three (3) times indicating system “OK”
      b. If light remains “ON”, there is a system fault
      c. Checks system grease level to see if system needs refill
      d. Reports all faults to the Repair Facility immediately
      e. System refill is only performed by the Repair Facility
   2. Visually checks auto lube operation at the system lube points looking for excess grease on the apparatus or the ground indicating possible broken lube lines or loose connections
   3. Monthly lubricates all grease points (zerk fittings) and other moving joints that are not part of the auto lubrication system
   4. During pre-trip brake and undercarriage inspection, checks the system hose lines and connections for looseness, kinks, or other damage
   5. **DOES NOT** store any equipment in the top well (where the auto lube unit is located) that in any way touches, or can possibly touch, the system wiring or lube hoses
   6. Reviews maintenance manual for appropriate lubricants and chart of lubrication points

F. Performs daily, weekly, and monthly Husky Foam System tests and maintenance

G. Performs monthly FoamPro System tests
   1. Checks foam pump oil level, fill with _____ weight non detergent oil
   2. Cleans foam strainer in line from foam tank
   3. Inspects wiring, hoses, and flowmeter connections for tightness, corrosion, leaks, and damage

2.10 MAINTENANCE PROCEDURES (continued)

H. Determines that foam pump has received appropriate semi-annual and annual service at the Repair Facility
   a. Reviews FDM-9 entries to determine last semi-annual meter calibration, sensor paddle wheel cleaning, and annual foam pump oil change from the Repair Facility
   b. Notifies Repair Facility using PS-Trax, if the system needs this maintenance

I. Washing Instructions
   1. Pierce maintenance manual section #4
   2. Avoid using high water pressure, hot wash solutions, abrasive detergents, or rough cleaning materials or motions
   3. Never wash in direct sunlight as the apparatus surface temperature may be to hot and gold leaf or other lettering may be damaged.
      a. Wax these areas only do not wash!
   4. Use only vehicle washing soap such as 3M car wash soap PN_39000 or equivalent
   5. Pre-wet all surfaces before applying soap solution
   6. Use only soft materials and gentle cleaning motions to apply washing solution
   7. Rinse thoroughly before washing solution can dry
   8. Pressure wash ONLY the under-side of the apparatus
   9. Dry all surfaces with a clean, soft, non-abrasive cloth or chamois
   10. Avoid daily washing as it damages paint, wash only when dirty, wipe down with damp chamois or cloth to remove dust or dirt between washings

J. Apparatus Towing Instructions
   1. **NEVER** tow an automatic transmission equipped vehicle in neutral, remove the drive shaft to prevent transmission damage
   2. All towing operations and connections are the responsibility of the tow operator
   3. Chock vehicle tires while working on or around the vehicle
   4. Unload as much equipment as possible to reduce tow weight
   5. Drain apparatus water tank to reduce weight

K. Describes checks to be performed after any maintenance at any repair facility
   1. Clean and refuel apparatus as necessary
   2. Perform a complete inventory
   3. Perform a complete pre-trip inspection
   4. Check tire pressure before moving the apparatus and after driving 25 miles
   5. Perform a complete post trip inspection immediately upon return to the station and immediately report any problems noted

03
Incident Communications

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3.1 INCIDENT COMMUNICATIONS

A. Demonstrate Knowledge and ability to:
    1. Interpret dispatch information from a cell phone
    2. Explains and properly demonstrates Fire Department radio operating policies and procedures
        a. Uses correct radio terminology
    3. Understands there is no MDC, so know where you are going
    4. Read maps (SDFD, Thomas Brothers, & topographic) and find locations
    5. Has alternate communication plan (Cell #'s, etc…)
    6. Select appropriate Staging position
    7. Have the necessary supplies for a prolonged response (meals, water, etc…)
    8. Communicate with the Incident Commander as to:
        a. Staging location
        b. Judge safety of staged and operating positions
        c. Appropriate PPE for incident
    9. Ensure 800mhz and VHF Radio Fleet Maps is on apparatus and is the most current version. These are located at:
        - Fire-Rescue Department WebPortal-Operational- 800 Radio Fleetmap, VHF Mobile Radio Fleetmap, VHF Portable Radio Fleetmap.

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04
Driving

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4.1 DRIVING

A. Checks that crew is seated and seat belts are fastened
B. Foot on brake
C. Wears appropriate gear for road, weather, and operating conditions, Has FULL PPE available for response
D. Releases parking brake
E. Does not allow apparatus to roll back
F. Acceleration
    1. Applies light accelerator pressure to begin movement
    2. Eases off accelerator as desired speed is reached
    3. Avoids full throttle acceleration from a stop
    4. Consistent, smooth, and controlled
G. Braking
    1. Anticipates stops and roadway imperfections
    2. Slows down and brakes before roadway imperfections such as dips and drainage swales
    3. Brakes into turn - Accelerates out of turn
    4. Leaves room to go around other vehicles or obstacles when stopped
    5. Consistent, smooth, and controlled
H. Operates engine in proper power range
    1. Maintain engine RPM in the lower 1/3 of the engine's power range for current operating conditions, which include the designated roadway speed limit
I. Operates vehicle with awareness of chassis length and chassis and equipment overhang
    1. Considers vehicle length when changing lanes.
    2. Slows sufficiently at bumps and dips in roadway to prevent chassis from bottoming out
J. Chooses correct lane for driving conditions
K. Follows all Fire Department Policies, Procedures, and California Vehicle Code regulations-
    1. Headlights on at all times.
L. Turning
    1. Plans and adjusts for short turning radius of vehicle, and how to avoid roll-overs
    2. Uses mirrors consistently during driving and maneuvering for positioning in turns and to monitor for possible hazards
        a. Awareness of all vehicles and obstacles in possible turning areas
    3. Utilizes turn signals well in advance of maneuver(s) to alert others of intentions
    4. Preselects appropriate gear to slow and control apparatus before and during turns
    5. Starts and completes turn in proper lane
    6. Obeys speed signs on all roadway turns
    7. Proper hand position on steering wheel
    8. Does Not let steering wheel slip through hands
    9. Avoids turning steering wheel while stopped
M. **DO NOT** idle engine for long periods of time (**10 minutes or more**) as damage to turbo and injectors will occur from poor engine lubrication
        a. If idling for long periods is required by operations, increase RPM level to a minimum of **900 RPM (High Idle)** to cool and lubricate engine and turbocharger

4.2 DRIVING CAUTIONS

A. Understands and applies height and weight restrictions to operation of the apparatus
    1. High center of gravity
    2. Mass of water in motion (4,000+ lbs)
    3. Partially empty water / foam tanks increase vehicle instability due to sloshing of fluid
    4. Reduced braking ability due to heavy weight (_____ lbs GVWR)

B. **NO sharp turns at any speed above 10 mph**
    1. Preselects appropriate gear to slow apparatus for driving conditions and turns
    2. Does not brake hard while turning except at low speeds
    3. Checks the speedometer **BEFORE** making any turn
        a. **DO NOT** attempt to estimate the apparatus speed
    4. Remember, mass in motion will continue to move in the same direction
    5. When responding to emergencies, accelerate while driving straight, but downshift and brake before going into a turn or curve

C. **NEVER** allow vehicle to coast in neutral
    1. **TRANSMISSION DAMAGE WILL OCCUR**
    2. **ENGINE BRAKING** is not available
    3. **POWER** is not available when needed

4.3 BACKING

A. When and how to back (Refer to SDFD Ops Manual SI 1 Sec. 9 F.3, and City of San Diego Administrative Regulation 75.05 Backing Policy)
B. Use of emergency lights, and horn if appropriate.
C. Utilization of crew
    1. Use personnel to back apparatus at all-times (includes other responders)
    2. Utilize back-up horn control cable and signal button to assist in proper backing
    3. Stop immediately if backing personnel are lost from sight
    4. Ensures crew utilizes all backup warning devices
D. Communications with crew
    1. Remove communication headset to hear crew outside apparatus
E. Sets up backing maneuver by proper positioning
F. Appropriate speed while backing
G. Demonstrates procedure when alone
H. Turning radius when backing is _____ feet
I. Avoids over steering while backing

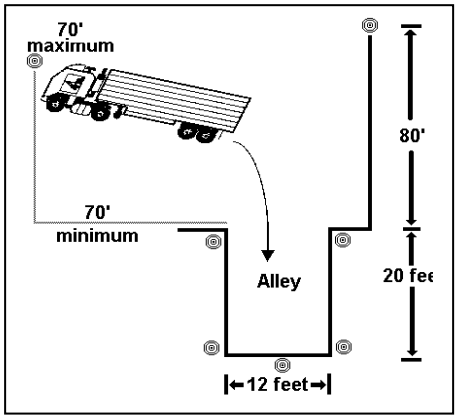
4.4 DRIVING SKILLS

A. Avoids over steering while backing. Demonstrates the following driving skills / maneuvers:

Driving skills can be demonstrated during normal driving after completion of required practice training and basic skill demonstration in an approved practice area(s). When practicing the DMV Skills, during the Off-Set Backing, Parallel Parking and Alley dock you are allowed two free pull-ups and may exit the vehicle a maximum of two times to check behind the vehicle. On the Straight Line Backing you are allowed one free pull-up and may exit the vehicle only once to check behind the vehicle.

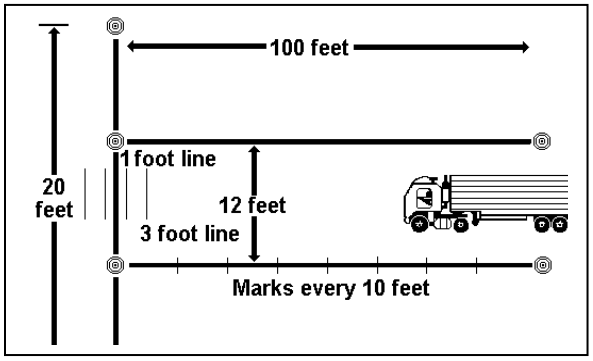
1. *<u>Alley Dock</u> <u>(Backing into the station)</u> **<u>(DMV)</u>**

Dock the vehicle from a 90-degree angle in one movement, without touching any cones or stanchions, staying within all boundary lines, and stopping within three (3) feet of the dock or stop line. Pulling forward will result in a penalty.



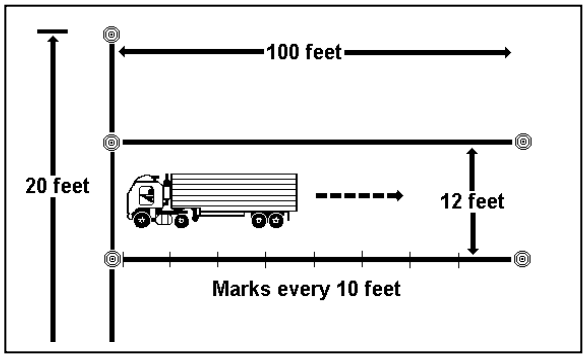
2. <u>Forward Stop</u> <u>(Limit-line)</u>

Drive down a 12-foot-wide lane and stop when the driver estimates that the bumper is even with the stop line. Driver is allowed to make **one** stop only, to be within one (1) foot of the stop line.



3. <u>Straight Line Backing (DMV)</u>

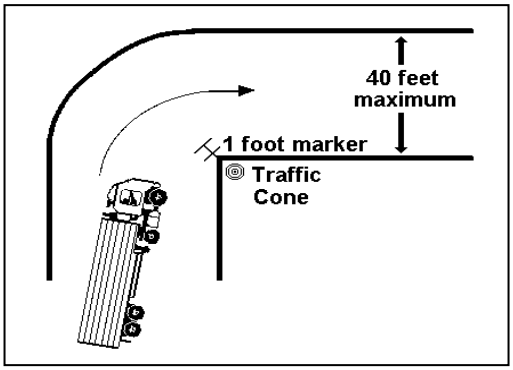
May be combined with forward stop (Limit Line). Drive in reverse in a 12-foot-wide lane without going outside the cones or boundary lines.



4.4 DRIVING SKILLS CONTINUED

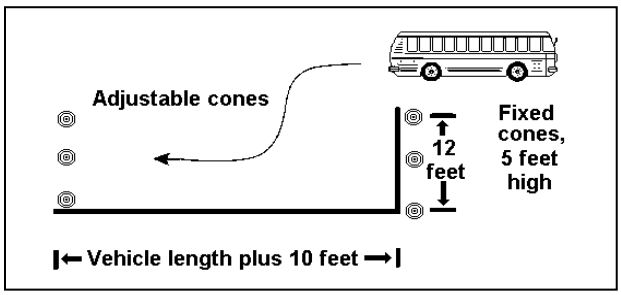
4. Measured Right Turn

Make a right turn around a corner with the back axles of the vehicle within one (1) foot of the designated cone, **without** striking it. All turns will be started from and completed into lanes that do not exceed twelve (12) feet in width.



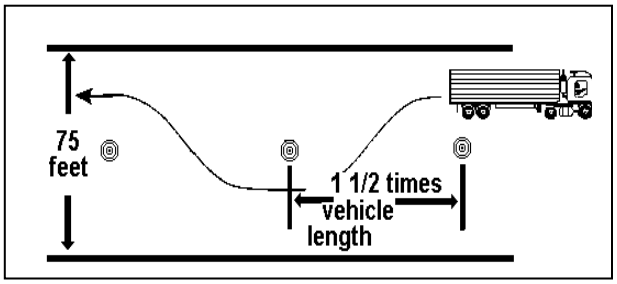
5. Parallel Parking (Conventional or Sight Side) (DMV)

Park in a designated area without striking any cones or boundary lines.



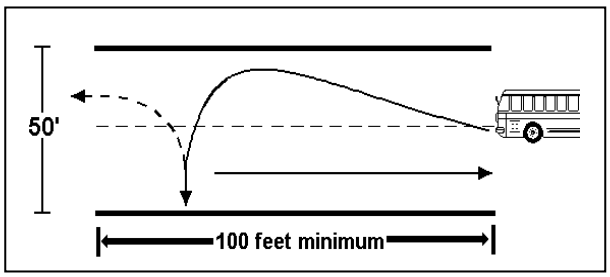
6. Serpentine

Maneuver vehicle both forward and in reverse around 3 cones in a serpentine manner without striking any cones and staying within the boundary lines.



7. Three-point U-turn

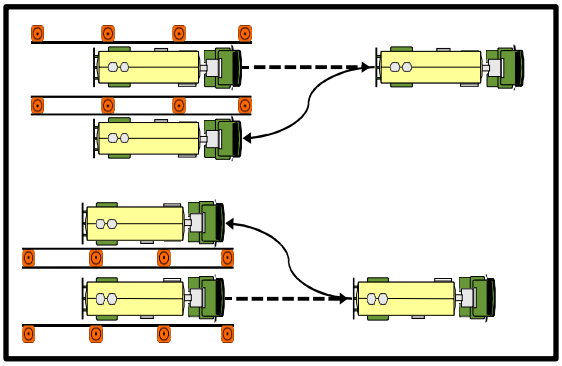
Driver turns the vehicle 180 degrees, staying inside the cones or boundary lines. There is no limitation on the number of maneuvers used to accomplish this task.



4.4 DRIVING SKILLS CONTINUED

8. Off-Set Backing (Left or Right) (DMV)

Pull to boundary line. Stop, then back vehicle to the opposite lane until the front of the vehicle has passed the first set of cones.



☐ 4.5 SHIFTING AUTOMATIC TRANSMISSIONS

A. Maintains and selects appropriate transmission gear for road, weather, and operating conditions to retain engine speed in power range
   1. The engine power range is the safest and most fuel-efficient rpm to operate the engine
   2. To reduce apparatus speeding incidents drive in the lowest possible gear that maintains the engine in the **lower 1/3 of the engine power range** at the posted speed limit

B. Manually selects lower gear when engine lugs or transmission cycles between gears

C. DOES NOT descend a hill in a gear higher than that required to ascend the hill

☐ 4.6 CODE 3 OPERATIONS

A. Explain Hazards associated driving this apparatus

B. Review SDFD Code 3 driving Policy, SDFD Operations Manual Standard Instruction 01, sec.09, pg. 2-7

☐ 4.7 UNIMPROVED/SEMI-IMPROVED SURFACES

A. Remember the GVWR of this apparatus is _____lbs

B. Operation on semi - improved surfaces (other than fully engineered surfaces) **MUST** be done with extreme care as structural stability of surface and underlying soil is unknown
   1. Soil or surfaces other than dedicated streets or highways have unknown load bearing capability
      a. Gravel roadways or parking areas
      b. Back country roads (private and fire), culverts, and bridges
      c. Paved surfaces other than dedicated streets
      d. Private drive ways
      e. Sidewalks
      f. Parking structures
      g. Adjacent to surfaces at the top of slopes
      h. Adjacent to surfaces or slopes above soil held in position by retaining walls
   2. Improved or engineered surfaces are load rated at **500 PSI**

C. Carefully inspects the apparatus, tires, and under carriage for damage after operation on an unimproved or semi-improved surface

4.8 SECURING APPARATUS FROM DRIVING

A. Refuels apparatus as necessary
B. Curbs wheels when on incline or decline
C. Set parking brake(s)
D. Transmission in park
E. Check engine temperature (normal temp _____)
    1. For high temperature idle at _____ to _____ RPM until normal temperature achieved
    2. Normal engine idle speed is _____ RPM
F. Wheel block down or in station parking cradle (manufacturers supplied wheel blocks only)
G. Post trip vehicle inspection
    1. Air and fluid leaks
    2. Apparatus damage
    3. Equipment missing or damaged
    4. Clean apparatus
    5. Plug in air and / or elect

05
Pumping

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5.1 SPECIFICATIONS

A. Water Tank _____ gallons
B. Pump type _____ Output _____ gpm
C. Intakes # and sizes_____
D. Outlets # and sizes_____
E. Cross lay lengths (1)_____ (2)_____ (3)_____
F. Reel line(s) sizes / length_____
G. Hose size_____Length_____
H. Hose size_____Length_____
I. Hose size_____Length_____
J. Hose size_____Length_____
K. Hose size_____Length_____
L. Hose size_____Length_____

5.2 PUMPING OFF TANK

A. Sets parking brake.
B. Emergency Lights "**ON**"
C. Transmission in **Neutral**
D. Engages pump
E. Shifts to pump gear
F. Turns up radio volume
G. Takes Portable radio when exiting cab
H. Sets wheel blocks on Front or Rear wheels as necessitated by operations
    1. Forward and aft of wheel any for normal parking operations
    2. Wheel blocks in complete alignment with tire and square to tread
    3. May be set to the front or rear side of any wheel
I. Ensures Tank to Pump valve is open
J. Remove all pre-connected hose
K. Checks number and type of lines deployed
L. Verbally and visually checks for Firefighter readiness and signal for water
    5. Returns signal properly
M. Opens discharge valve(s)
N. Throttles up to immediate pump pressure then applies calculated pressure
O. Visually checks that Firefighter has water flowing

5.3 PUMPING FROM A HYDRANT

A. Sets parking brake.
B. Emergency Lights "**ON**"
C. Transmission in **Neutral**
D. Engages pump
E. Shifts to pump gear
F. Turns up radio volume
G. Takes Portable radio when exiting cab
H. Sets wheel blocks on Front or Rear wheels as necessitated by operations

5.3 PUMPING FROM A HYDRANT (Continued)

1. Forward and aft of wheel any for normal parking operations
2. Wheel blocks in complete alignment with tire and square to tread

I. May be set to the front or rear side of any wheel
J. Ensures Tank to Pump valve is open
K. Secures supply line
L. Connects suction hose(s)
M. Opens intake valve(s)
N. Closes tank valve
O. Checks number and type of lines deployed
P. Checks hydrant pressure
Q. Verbally and visually checks for Firefighter readiness and signal for water
    1. Returns signal properly
R. Opens discharge valve(s)
S. Throttles up to immediate pump pressure then applies calculated pressure
T. Visually checks that Firefighter has water flowing

☐ 5.4 HOSELAYS

Trainee must produce effective firefighting streams utilizing correct procedures and hydraulics

A. Manifold Lay (Tested during Driver Operator)
B. Changeover lay (Tested during Driver Operator)
C. Priming (Tested during Driver Operator)
D. Reverse (Tested during Driver Operator)
E. Redline
F. Wildland Hose Lay
G. Relay
H. Aerial Device or stand-pipe
I. Drafting
J. Internal Foam System
K. External Foam Proportioner
L. Helicopter water supply
M. Tanker operations

☐ 5.5 CONSIDERATIONS WHEN PUMPING

A. Sets discharge relief valve
B. Sets intake relief valve
C. Monitors water tank level
D. Monitors all Engineer panel gauges
E. Proper engine cooling – Maximum Temperature _____
F. Avoids pump cavitation
G. Closes all compartment doors
H. Secures all loose equipment
I. Removes kinks in hose lines and tighten connections
J. Emergency cooling procedures

5.5 CONSIDERATIONS WHEN PUMPING(Continued)

K. Checks pump for over heating

L. Visually checks under apparatus for fluid leaks and other signs of potential failure

M. If pump is leaking water during pumping operations avoid over saturating dirt/soil around apparatus

N. **Ensures Fire Fighting Safety**

5.6 HYDRAULICS

A. Interior Attack 1 ¾" GPM _____ FLR _____

B. Exterior Attack 1 ¾" GPM _____ FLR _____

C. Interior Attack 200 ft 1 ¾" PP _____ PSI FLR _____

D. Exterior Attack 200 ft 1 ¾" PP _____ PSI FLR _____

E. Exterior Attack Bumper line 100 ft 1 ½"PP _____ PSI FLR _____

F. Hardline (Redline)

1. 35 GPM PP _____ PSI
2. 60 GPM PP _____ PSI

G. Initial Pump Pressure Handlines PP._____ PSI

H. Proportioners

1. External pp._____ PSI
2. Internal pp._____ PSI

I. Handheld Straight Tips:

1. ⅜" tip (1 ½" hose) NP _____ GPM _____ FLR _____
2. ½" tip (1 ½" hose) NP _____ GPM _____ FLR _____
3. ⅝" tip (1 ½" hose) NP _____ GPM _____ FLR _____
4. ½" tip (1 ¾" hose) NP _____ GPM _____ FLR _____
5. ⅝" tip (1 ¾" hose) NP _____ GPM _____ FLR _____
6. ⅞" tip (1 ¾" hose) NP _____ GPM _____ FLR _____

5.6 HYDRAULICS CONTINUED

J. Calculate the Pump Pressure and Gated Pressure for each line. Line 1 is 200 feet of 1 ¾" hose with a 175 gpm fog nozzle. Line 2 is 150 feet of 1 ¾" hose with a 150 gpm fog nozzle. **SHOW ALL YOUR WORK!**

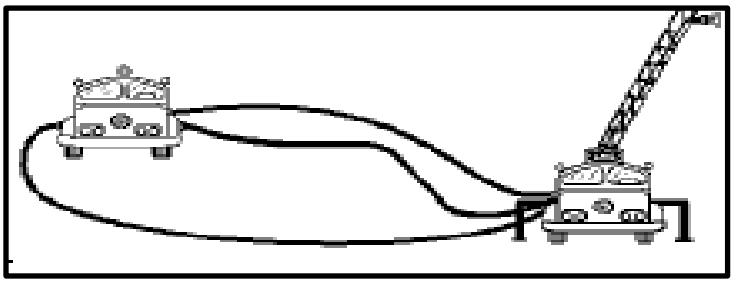
Pump Pressure = _____ PSI

Line 1 Gated Pressure = _____ PSI

Line 2 Gated Pressure = _____ PSI

5.6 HYDRAULICS CONTINUED

K. Calculate the Pump Pressure for a 1 ¾" straight tip at 100' elevation. The supply lines are three 200' lengths of 2 ½" hose. **SHOW ALL YOUR WORK**.



Pump Pressure = _____ PSI

☐ 5.7 PRESSURE RELIEF VALVE

A. Name / Type of relief valve _____
B. Normal setting _____ PSI
C. Properly sets relief valve
D. Relief valve maintenance

☐ 5.8 INTAKE RELIEF VALVE

A. Name / Type of relief valve _____
B. Location of valve _____

☐ 5.9 EMERGENCY COOLING

A. Manufacturer states begin use of engine cooler when the engine overheats only.
B. Engine cooling adds heat to the pump that must be dissipated by circulating water to a hose line, the water tank, or an outside water source
C. Checks for obstructions
D. Sheds load
E. Describes how the heat exchanger (engine cooler) operates
F. Explains how the pump overheat indicator and thermal relief valve work
G. Describe how the recirculating valve operates
H. Additional engine and pump cooling may be obtained by opening the tank fill valve to get additional water circulation, obtaining an outside water source, or flowing water through a line
I. **All cooling valves are to be in the off position until use is required**

☐ 5.10 CAVITATION

A. Describes and Recognizes cavitation
B. Describes causes of cavitation
C. Describes Corrections

☐ 5.11 PRIMING

A. Ensures engine is running, transmission is in proper drive gear, and pump is activated
B. Ensures a water supply is provided to the pump
C. Engages priming pump control (operate for 45 seconds maximum)
D. Observes fluid discharge from priming pump and listen for noise change indicating air removed from pump system
E. Throttles up slowly to priming operation speed (**1000 to 1300 RPM**).
F. Opens discharge to operating hose line
G. Secures priming control to "**OFF**" position when water flowing
H. Refills priming pump reservoir (if equipped) . Fluid type _____

☐ 5.12 DRAFTING

A. Equipment required for drafting operation
    1. Hard suctions and suction strainer
    2. Chaffing block to protect suction hose and bucket to protect strainer in debris ridden water
    3. Rope to secure strainer, bucket, and suctions together and into position for drafting operation
    4. Spanners to secure suctions and outlet caps
    5. Water basin for tanker to fill (construct or use portable water tank)
B. Position apparatus intake to allow best suction connection
    1. Face apparatus into wind, if possible, to assist cooling
C. Set parking brake
D. Place wheel blocks
E. Set up suctions to water source and apparatus
    1. All connections spanner tight and chaffing block in place
    2. Tie rope through strainer, tie to bucket if used, and around each section of drafting suction to allow for proper positioning of suction strainer in the water source
F. Shift into pump
G. Engage priming pump with engine at idle and advance rpm to priming operating speed
    1. When vacuum gauge reaches its highest level (usually 20-30seconds), releases primer control
H. Recognizes when vacuum has pulled water into pump
I. Opens discharge valve and advances engine rpm to proper pump pressure to fill tank or supply hose operations
    1. In case of failure, tighten all connections and ensure all valves are closed
J. Disengages priming pump
K. Perform draft from a water basin
    1. Sets up a portable apparatus water basin
    2. Set up water basin utilizing ladder, pike pole, and salvage covers
L. Properly secures from drafting operations and restores all equipment and systems

☐ 5.13 SECURING APPARATUS FROM PUMPING OPERATIONS

A. Checks with officer for permission to shut down pump operations
B. Verbally and visually checks for Firefighter readiness and signal for shutdown
    1. Returns signal properly
C. Throttles down completely
D. Closes hand line discharges and bleeds down line pressures
E. Ensures water tank is full
F. Resets relief valves to normal position
G. Normal engine temperature _____ F, idles engine if necessary, to cool down and / or continues with other engine cooling methods
H. Closes all open supply line intake and discharge valves and bleeds down line pressures
I. Transmission in neutral
J. Pump to road position
K. Shuts down engine and warning lights when operations safely allow

5.13 SECURING APPARATUS FROM PUMPING OPERATIONS (continued)

L. Relieves pressure on pump system
M. Ensures all equipment accounted for and secured
N. Corrects hose list after loading hose and tagging any damaged hose
O. Performs walk around
    1. All equipment accounted for
    2. All equipment secured
    3. Compartment doors closed
    4. Wheel blocks up and stowed
    5. Clear to proceed

06
Additional Equipment

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6.1 ADDITIONAL EQUIPMENT

A. Operates and maintains all fixed systems and equipment on the apparatus not specifically
B. Operates and maintains all portable auxiliary equipment assigned to this class apparatus
   2. PERFORMS Monthly Electrical Equipment Maintenance Checks.