

WELCOME

Single Operator Grinding Truck Training



Section 1

Introduction



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Training Requirements

- Time: course is designed for 2 hours of instruction
- An SMC Qualified Trainer is required to train operators on these trucks BEFORE operation is permitted
- SMC Qualified Trainer =
 1. Minimum of 120 Operator hours logged on specific truck
 2. Completed Instructor Led Training (ILT) and passed written test with 85%
 3. Passed the Job Performance Measure (JPM) with Qualified JPM Administrator*
 4. Completed Level 1 Train-the-Trainer (T3) Program Courses:
 - 1) Train-the-Trainer
 - 2) Giving Feedback
 - 3) Advanced Skills for the Practical Trainer
 5. *SMC Qualified Trainer in good standing administers the JPM

Key Points

- G-10, 11, 12 are single-operator, dust-free, grinding trucks at 25,950 GVW non-CDL
- G-16 (dual carriages) and G-17 are 33,000 GVW and CDL is required
- Controls and adjustments for Single-Operator Grinding Trucks are located in the cab *and* outside on the chassis
- Operators **MUST** be fully trained and qualified

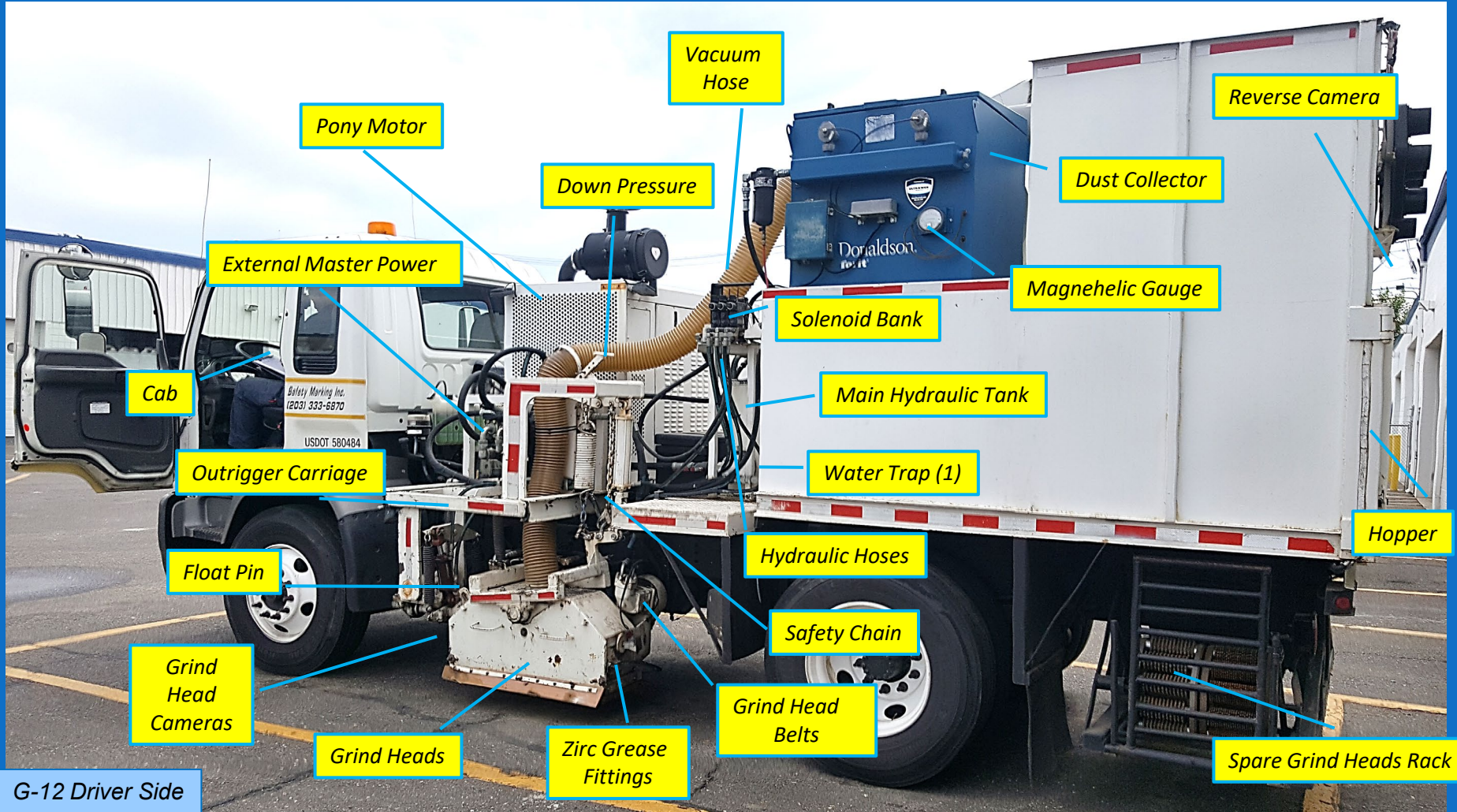


Section 2

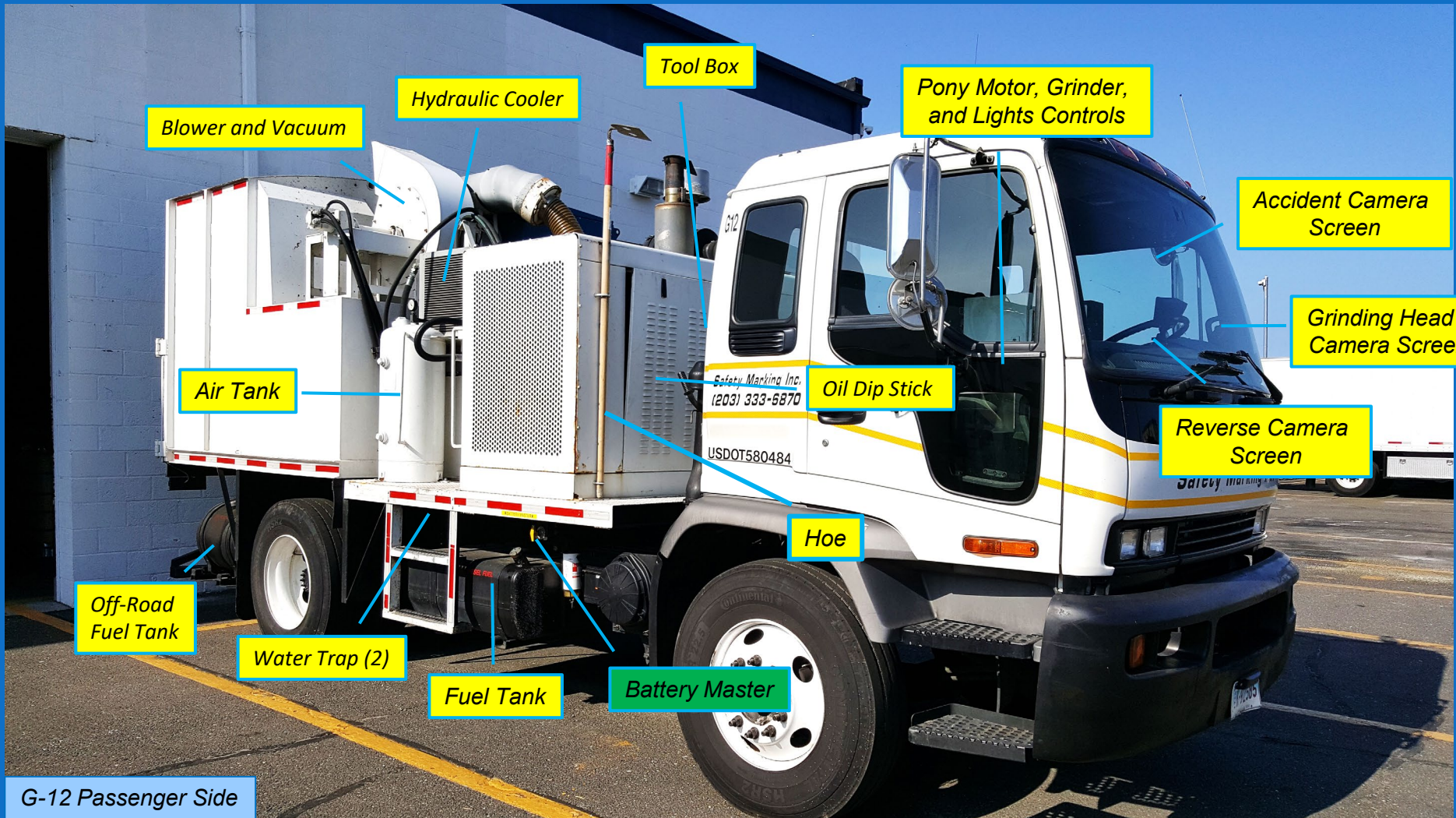
A Look Around The Truck



Where To Look (1)



Where To Look (2)



Maintenance Checklist

GRINDING TRUCK G-10/11/12

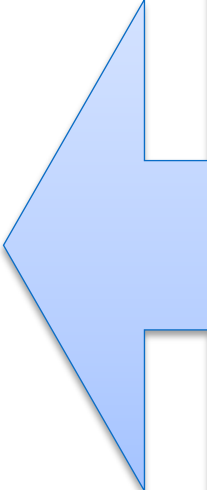
MAINTENANCE CHECK LIST

Daily

- Pre-& Post Trip Truck
- Check heads always replace with spare heads on truck when returning truck if worn.
- Drain Water All Water Traps
- Dump when finished with job and clean off any debris on bumper before travel
- Fill out clipboard in cab completely!!
- Clean and wipe down cab
- Grease Heads, document on clipboard.

Weekly

- Wash Truck, document on clipboard



At left is the Maintenance Checklist. A **simple list that makes a BIG difference**. This checklist, along with the VIR, are essential responsibilities of your role as Operator. Each time the truck is used by an Operator, these tasks must be completed to **ensure the vehicle remains in optimum working condition** for the next Operator to use. Note there are Daily and Weekly tasks to be completed.

Vehicle Inspection Report

DRIVER'S INSPECTION REPORT

3782599

White - Maintenance
Canary - Driver Review

COMPLETION OF THIS REPORT REQUIRED BY FEDERAL LAW, 49 CFR 396.11 & 396.13.
Mileage (No Tenths)

Truck or Tractor No. **Truck Number** Starting Mileage **Starting Mileage** Trailer No. **Shop Location**
Dolly No. _____ Trailer No. _____ Location _____
ATA/VMRS System Code Numbers for Shop Use Only CHECK DEFECTS ONLY. Explain under REMARKS.

POWER UNIT

| GENERAL CONDITION | IN-CAB | EXTERIOR |
|-----------------------------------------------|-------------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> 02 Cab/Doors/Windows | <input type="checkbox"/> 03 Gauges/Warning Indicators | <input type="checkbox"/> 34 Lights |
| <input type="checkbox"/> 02 Body/Doors | <input type="checkbox"/> 02 Windshield Wipers/Washers | <input type="checkbox"/> 34 Reflectors |
| <input type="checkbox"/> Oil Leak | <input type="checkbox"/> 54 Horns | <input type="checkbox"/> 16 Suspension |
| <input type="checkbox"/> Grease Leak | <input type="checkbox"/> 01 Heater/Defroster | <input type="checkbox"/> 17 Tires |
| <input type="checkbox"/> 42 Coolant Leak | <input type="checkbox"/> 02 Mirrors | <input type="checkbox"/> 18 Wheels/Rims/Lugs |
| <input type="checkbox"/> 44 Fuel Leak | <input type="checkbox"/> 15 Steering | <input type="checkbox"/> 32 Battery |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> 23 Clutch | <input type="checkbox"/> 43 Exhaust |
| (IDENTIFY) | <input type="checkbox"/> 13 Service Brakes | <input type="checkbox"/> 13 Brakes |
| | <input type="checkbox"/> 13 Parking Brake | <input type="checkbox"/> 13 Air Lines |
| | <input type="checkbox"/> 13 Emergency Brakes | <input type="checkbox"/> 34 Light Line |
| | <input type="checkbox"/> 53 Triangles | <input type="checkbox"/> 49 Fifth-Wheel |
| | <input type="checkbox"/> 53 Fire Extinguisher | <input type="checkbox"/> 49 Other Coupling |
| | <input type="checkbox"/> 53 Other Safety Equipment | <input type="checkbox"/> 71 Tie-Downs |
| | <input type="checkbox"/> 34 Spare Fuses | <input type="checkbox"/> 14 Rear-End Protection |
| | <input type="checkbox"/> 02 Seat Belts | <input type="checkbox"/> Other _____ |
| | <input type="checkbox"/> Other _____ | (IDENTIFY) |
| | (IDENTIFY) | <input type="checkbox"/> NO DEFECTS |

TOWED UNIT(S)

| | | | |
|----------------------------------------|----------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> 71 Body/Doors | <input type="checkbox"/> 16 Suspension | <input type="checkbox"/> 77 Landing Gear | <input type="checkbox"/> 79 Rear-End Protection |
| <input type="checkbox"/> 71 Tie-Downs | <input type="checkbox"/> 17 Tires | <input type="checkbox"/> 59 King Pin/Upper Plate | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> 34 Lights | <input type="checkbox"/> 18 Wheels/Rims/Lugs | <input type="checkbox"/> 59 Fifth-Wheel (Dolly) | (IDENTIFY) |
| <input type="checkbox"/> 34 Reflectors | <input type="checkbox"/> 13 Brakes | <input type="checkbox"/> 59 Other Coupling Devices | <input type="checkbox"/> NO DEFECTS |

REMARKS: **Ending Mileage** • Document Any Issues. •

Pre-Trip: _____

Post-Trip: _____

On-Road Fuel: _____

Off-Road Fuel: _____

REPORTING DRIVER: Date **Today's Date** MAINTENANCE ACTION: Date _____
Name **Print Name** Emp. No. _____ Repairs Made No Repairs Needed

REVIEWING DRIVER: Date _____ R.O.#'S: _____
Name _____ Emp. No. _____ Certified By: _____
Location: _____

SHOP REMARKS: _____

Grinding Trucks:
Pre & Post trip
magnehelic guage
readings are
written here.

The **Driver's/ Vehicle Inspection Report (VIR)** is a comprehensive form that is completed at the beginning and end of each work shift and submitted to administration by the Operator who drives the vehicle. This form should be detailed and include the name of the person performing the inspection. It is used by the Mechanics in the shop to perform needed repairs to **ensure the vehicle remains in optimum working condition** for the next Operator to use. The Foreman / Crew Leader ensures the VIR is completed each shift. The VIR is essential responsibility of your role as Operator.

Pre-Trip Inspection Overview

!!! If truck is new to you, or you haven't operated it for more than one month, familiarize yourself with control console in cab !!!

Standard Truck Pre-Trip Inspection is performed before operating. [See Inspection Video](#)
Inspection includes:

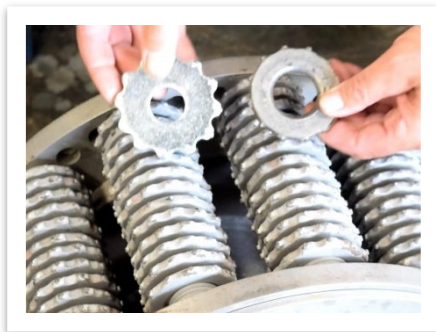
1. Grinding heads > carriage and spare rack
 - 1) (G-16: both driver and passenger sides)
2. Cutters – verify workable condition > change if loose, worn, damaged
 - 1) [See Grind Head Change video](#)



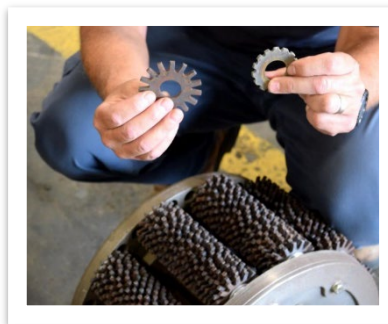
Worn cutters must be changed. Paint (L) and Aggressive (R)

Pre-Trip Inspection (2): Grind Heads

1. Must have two heads on carriage, and two new spares on rack
2. Must have one paint head and one aggressive head
3. Must have one spare paint head and one spare aggressive head
4. Worn heads are to be changed when truck is returned to shop
5. Ensure:
 - wrenches to change heads - [See Grind Head Change video](#)
 - WD-40 oil,
 - metal bar in space heads
 - Hoe
 - **MUST** carry **foil tabs** and put down after removal



Aggressive Grind Head – new cutter (L) and worn cutter (R)



Paint Grind Head – new cutter (L) and worn cutter (R)



Foil Tabs – can be used as temporary line before permanent marking is applied

Section 4

Operator Warnings



Danger

**Moving machinery
Risk of trapped fingers or hand**

Operator Cautions (1)

WARNINGS

VERY IMPORTANT: the goal in grinding is to remove the existing markings 100% without damaging the road.

1. DAMAGE TO THE ROAD IS UNACCEPTABLE
2. Professional grinding requires constant adjustment by the operator
3. Use EXTREME CAUTION:
 - 1) When maneuvering the truck, carriage, and grinding heads > heads weight more than 150 Lbs. each and rotate at 800-900 RPM
 - 2) With tools, clothing, hair, loose or hanging objects around cutting heads and drive belts **they can be lethal if you make contact when they are moving**
4. When grinding:
 - 1) Use your cameras, mirrors and windshield view to frequently look for debris that could result in damage to the truck or cause injury to people and property
5. Disconnect Vacuum Hose **BEFORE** Dumping

Operator Cautions (2)

WARNINGS

- CHECK OVERHEAD BEFORE dumping hopper – WATCH FOR POWER LINES
- ALWAYS empty hopper before leaving job site or empty at alternate site before returning
- **NEVER TAKE THE TRUCK OFF-ROAD**
- SLOW to under 10 MPH when entering and exiting driveways with inclines
- ALWAYS Check head-to-ground clearance as this may cause damage to heads
- ALWAYS Check Back-Up Camera BEFORE Backing > 3 Blasts of the Horn!
- IF POSSIBLE a spotter should be used, or the work zone should be identified by safety cones along the perimeter



Section 5

Standard Operating Procedures (SOP)

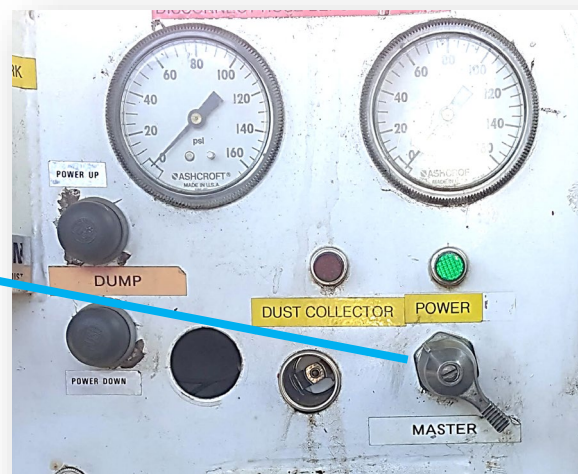


Master Power – Chassis and Cab

1. Start Pony Motor:
Turn ON Exterior (Chassis)
Master Power Switch on
Pony Motor, above
grinding head.



2. Turn ON Interior (Cab)
Master Power Switch on
center console control
panel in truck cab.



Starting Pony Motor: Ignition Types

Previous Model

1. Start motor with ignition toggle switch ON (previous slide) and oil pressure bypass button depressed
2. Let idle* and warm up
3. Turn on hydraulics



Pony Motor ignition on G-16 & G-17

Newer Model

1. Turn ignition key 2 clicks to the right.
2. Wait until RED AND GREEN lights go ON, and OFF.
A. This will take about 5 seconds
3. Turn ignition key another click right to start motor
There is no Oil Pressure By-Pass button on this unit
4. Let Pony Motor idle and warm up
5. *Under 40°F, idle motor 15 minutes prior to operating



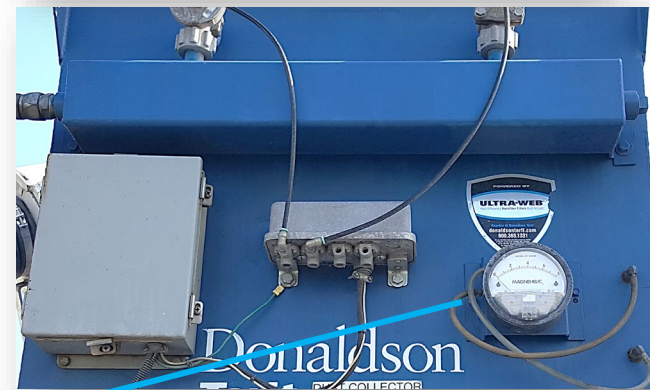
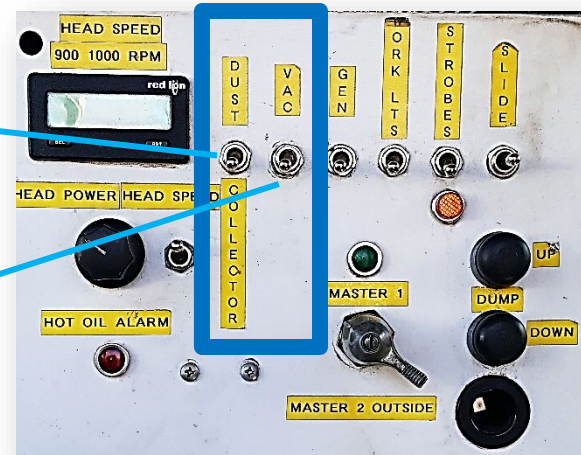
Pony Motor ignition on G-10, 11 & 12

Dust Collector

1. Turn Dust Collector ON, this enables us to run dust free.

2. Turn Blower/Vacuum ON. This also cools the hydraulic system and must be ON at all times when the truck is running. If grinding in the rain, disconnect the vacuum hose from the grinding head.

3. Exit truck and record Magnehelic Gauge reading on VIR – pre and post grinding.



CAUTION: to turn hydraulic systems ON, engine must be at LOW IDLE. Hydraulic Systems MUST ALWAYS be Engaged and Disengaged at LOW RPM!

Correcting Poor Vacuum

Dust Collector Unit:

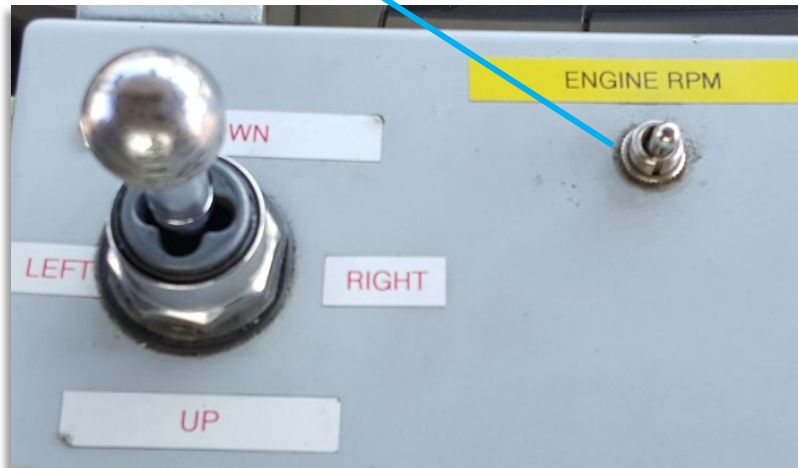
If poor suction occurs and Magnihelic gauge reads '2' or more:

1. Let the dust collector run without vacuuming more dust, this will purge the Filters
 - this cleans them out resulting in a lower reading on the Magnihelic Gauge and better suction
2. If you have a high reading at the end of a shift, continue to run the dust collector on the way back to the shop,
 - this should help to clean out the filters

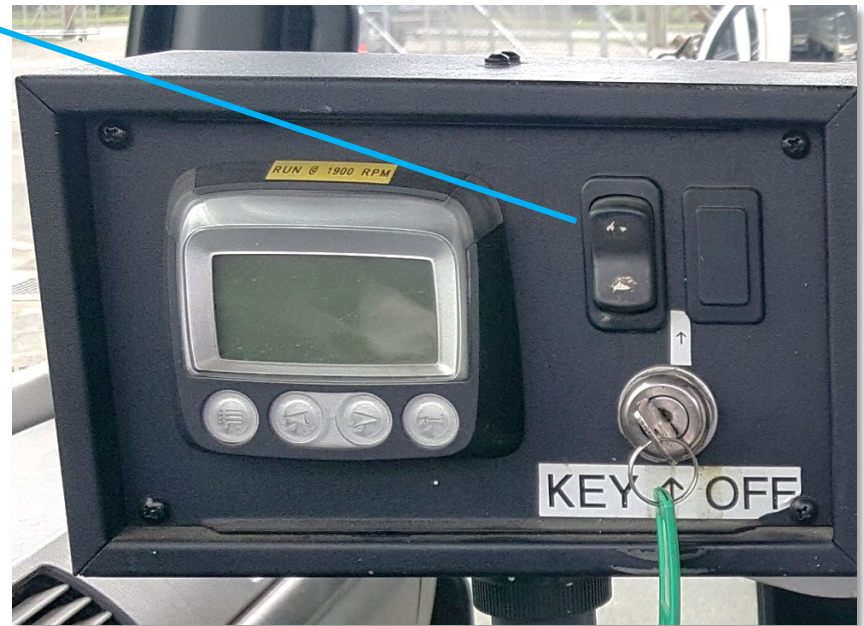


Pony Motor Throttle

Increase pony motor throttle to 1900 rpm using throttle toggle, type varies by truck.



Pony Motor (engine rpm) toggle on G-16 & G-17



Pony Motor ignition with toggle on G-10, 11 & 12

Preparing Carriage for Operation

Unchain carriage (A)

A



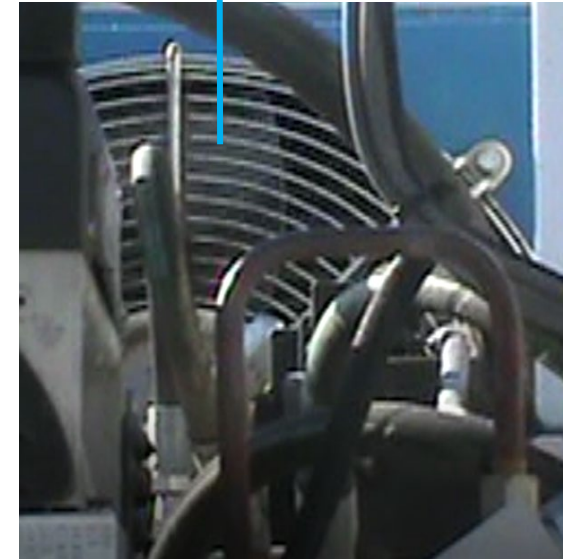
Remove float pin (B) to allow proper operation of carriage.

B



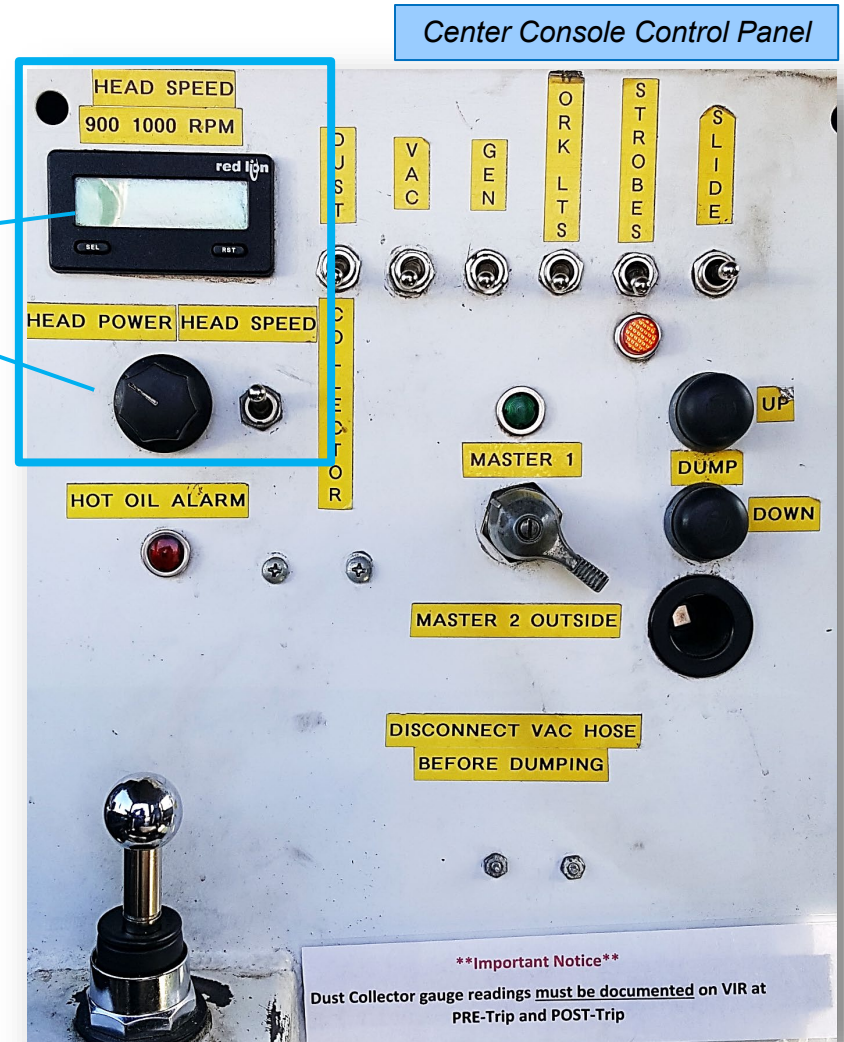
Also, look up at hydraulic cooling fans to make sure they are spinning (C)

C



Grinding Head Speed (RPM's)

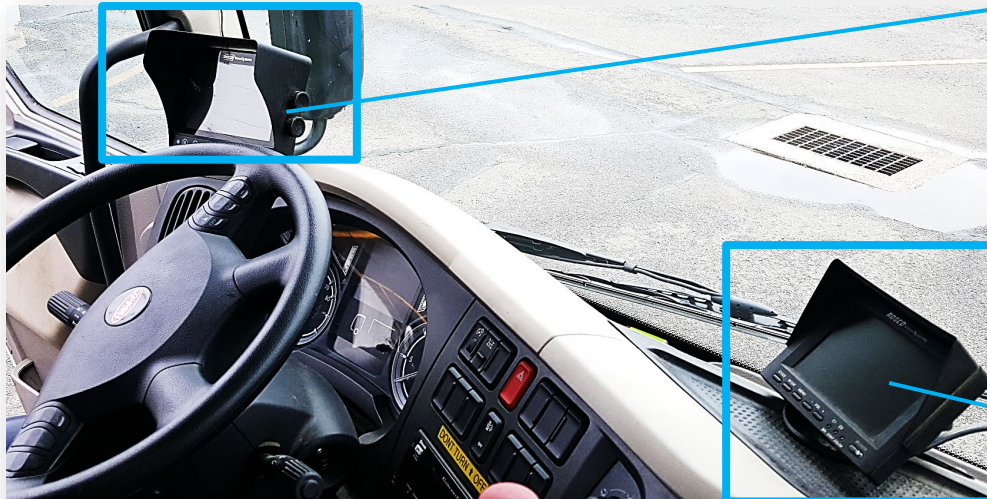
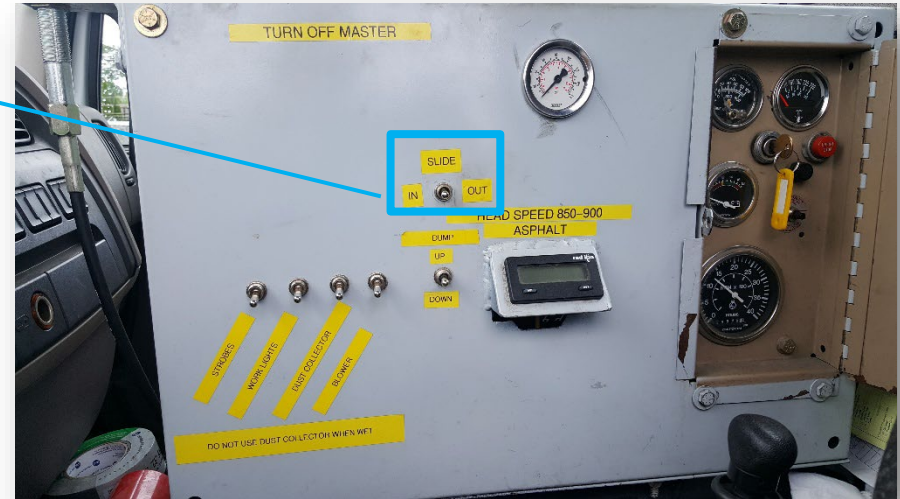
Adjust head speed:
Slowly turn HEAD RPM knob
clockwise:
800 rpm on concrete
850-900 rpm on asphalt



Carriage Control

Extend grinding head away from truck using outrigger carriage for optimum view from cab.

This is done with the toggle switch control, labeled on the center console control panel.

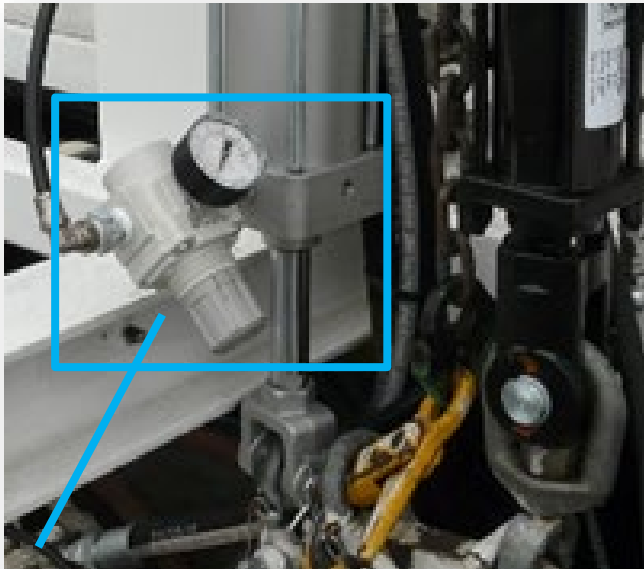


Check carriage camera view, adjust if necessary. Carriage cameras are magnetically mounted, adjust accordingly. Cab camera location will vary by truck.

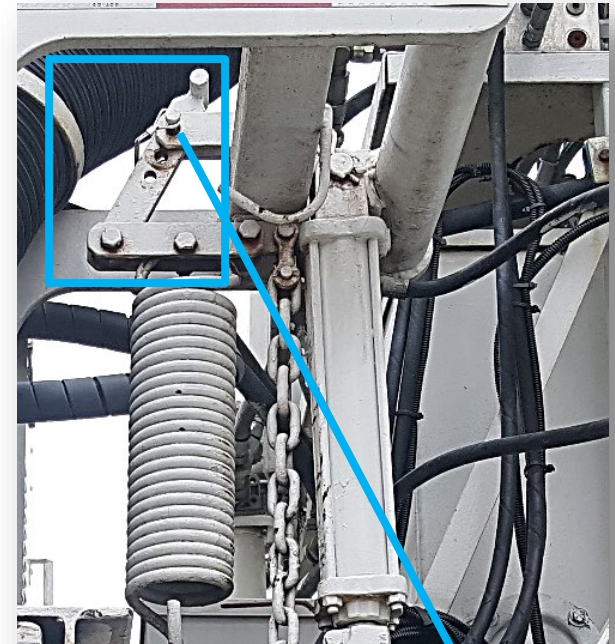
Reverse Camera screen location may vary by truck.

Carriage Down Pressure

- Don't start grinding and put a groove in the road!
- Begin with minimal pressure.
- Make sure DOWN PRESSURE adjustment (spring or air) is set for **Minimum Down pressure.**
- Down Pressure can be increased if needed.
- Operator is responsible for the end result of grinding.



*Air pressure gauge and adjustment knob –
G-16 ONLY*



Spring pressure adjustment pin

Adjusting Carriage Down Pressure: Air

To adjust **Down Pressure – Air** :

1. Pull out Regulator Adjustment knob
2. Turn right and left to adjust down pressure
3. When done, push in to lock
4. 80 PSI is baseline
5. Less air pressure is more down pressure
6. More air pressure is less down pressure



*Air pressure gauge and adjustment knob –
G-16 ONLY*

4-Way Head Tilt



G-12 Driver Side Carriage Level



G-16 Passenger Side Carriage Level

1. Adjust the 4-way head tilt with UP/DOWN/LEFT/RIGHT joystick for either Driver or Passenger side of truck.
2. Always start grinding with head at level.
3. **UNLEVEL HEADS WILL DIG INTO ROAD**

****Important Notice****
Dust Collector gauge readings **must** be documented on VIR at PRE-Trip and POST-Trip

Grinding

Ready to grind

1. Turn on strobes (red) and arrow board (green)
2. Line truck up for removal
3. Slowly start moving and lower grinding head
4. Adjust truck speed, down pressure, and head tilt for desired removal
5. Grind for 20 ft., raise the heads, stop, set the brake,
6. Get out and check the quality or your removal
7. Adjust as needed
8. **NEVER STOP TRUCK WITH HEADS ON GROUND**



G-10 and G-16 white arrow board controller



G-12 black arrow board controller

When Grinding



Damage to the road surface
is unacceptable

Remember:

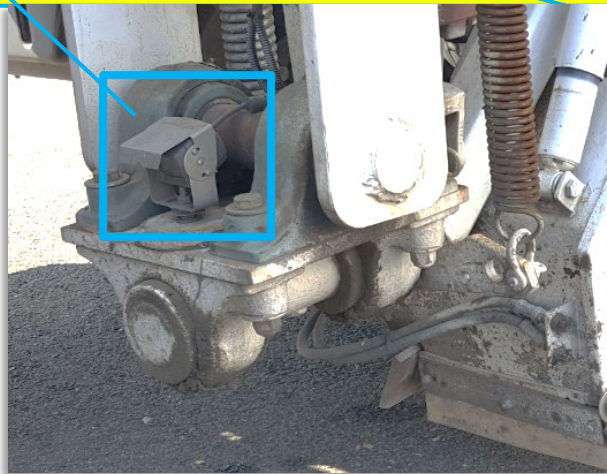
- Constantly adjust head position and speed for correct removal
- Incorrect adjustment will result in more maintenance, inefficient operation and **damage to road surface**
- Grinding should sound **smooth and consistent**. If you hear any strange sounds **STOP** and investigate
- Always listen for **air purging** to make sure the dust collector system is working
- **GRINDING AT EXCESSIVE SPEEDS WILL SNAP SHAFTS ON HEADS**

Cameras

The one man grinding trucks are equipped with three cameras:

One on the rear of the truck - used by the operator to safely drive in reverse

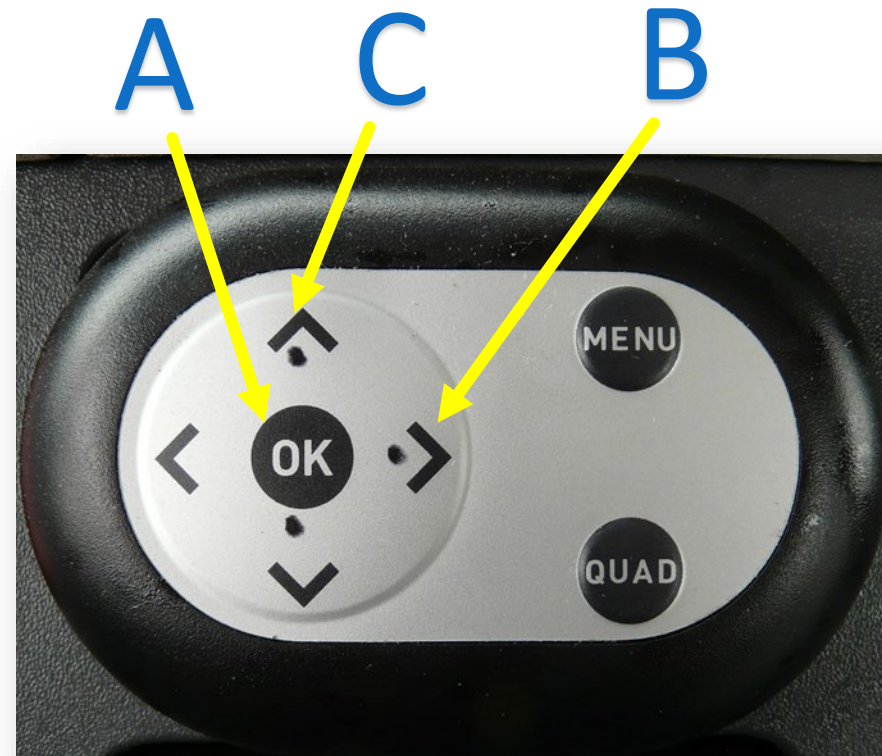
Two on the grinding head(s) - used by the operator to ensure grinder alignment (front) and high-quality removal (rear)



Changing the Camera Display

If you need to change the camera display:

- A. Press 'OK', hold until camera number (#) flashes on screen
- B. To change the camera displayed on the left (Front of Head), push right arrow (>).
- C. After proper camera displayed on left, push up arrow (^)
- D. To change display of camera on right Rear of Head) Press 'OK'
- E. Done
- F. Laminated instructions in cab for reference



Camera: Mirror Switch

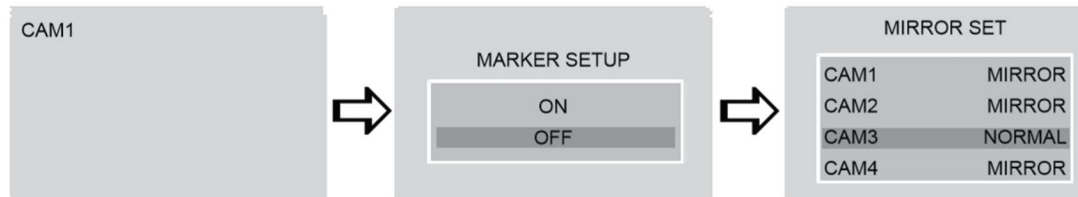
NOTE: newer cameras are equipped with a mirror image switch on the monitor in the cab. To change Normal/Mirror view see the instructions below from the Users Manual.



NORMAL/MIRROR VIEW

1. CAM1 FULL SCREEN

From the CAM1 full screen press the “Mode” button. From the “MARKER SETUP” screen press the “Mode” button again. Select the desired camera with the $\wedge \vee$ then press $\>$ button to change Normal/Mirror view.



Shut Down

Shut Down (Reverse Order)

1. Raise grinding head
2. Reduce the head speed
3. Turn OFF power to grinding head
4. Lower Pony Motor rpm's to idle
5. Turn OFF generator, blower and dust collector
6. Exit cab
7. Reinsert head 'float' pin
8. Re-chain carriage
9. Enter cab
10. Return grinding head to full 'IN' position.

!!! NEVER TRAVEL WITH HEAD EXTENDED IN OUT POSITION.

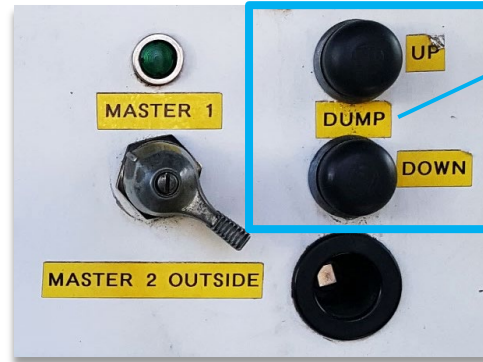
Empty Hopper (1)

Emptying hopper

- Emptying the grinding material has to be done at an approved area at the job site. Grindings are considered Non-Hazardous Industrial Waste
- Check overhead clearance, dump bed raises
- Open hopper doors and latch to side of truck
- **!!! ENSURE DOORS ARE LATCHED BEFORE RAISING HOPPER**
- Disconnect Vacuum Hose from Hopper before dumping
- Pony motor has to be running – may need to increase RPMs to dump if hopper is full

Empty Hopper (2)

- Dump control is on center console marked DUMP UP button. Raise hopper.



- Check hopper, scrape all material out of hopper box with shovel
- Make sure dust collector compartment door is open and that compartment is empty of debris as well.
- It is important that ALL debris is cleared from the hopper and it is completely empty.
- Before lowering hopper clean the seal where the hopper door closes and seals shut.
- Return to cab and lower hopper with DUMP DOWN button.

Empty Hopper (3)

- With hopper all the way down, close and secure all doors
- Sweep any debris off bumper before travel.
 - Debris on bumper could result in a traffic violation
- Reconnect Vacuum hose to hopper
- Bleed water traps of condensation (air system -- water trap valves under air tank on back deck, and on dust collector)
- Shut Pony Motor ignition key OFF
- Shut Master switches OFF (interior and exterior)

Section 6

Changing Grind Heads



PJ Clyne – Safety Director at SMC

Changing Grind Heads: Alignment

1. Line up replacement head with spindle and slide on
 - **CAUTION:** to prevent damage, the four pins on the spindle **MUST** line up with the four holes on the head for the head to be mounted correctly all the way on the spindle!
 - The best way to assure proper fit is to have someone hold the belts and spin the head until the pins line up, the head can then be pushed all the way onto the spindle.

2. With head secure, replace and tighten spindle bolt.
 1. Always check lock washers and replace if flattened.

NOTE: Failure to tighten this bolt will result in it loosening and welding itself to the cover plate while operating, a costly mistake!



3. Check the bearings by placing a pipe under the secured head and try to lift up and down. If the head moves on the shaft, then the bearing is going bad.

Grind Heads: Daily Greasing

- Locate two (2) sets of two (2) grease (zirc) fittings on front and back of Grinding Carriage
- Wipe fittings clean and apply 2-3 pumps of red grease to the bearings
- Log maintenance on truck clipboard
- Grease heads every four (4) hours when you are grinding for a full shift – grease when you stop to dump the hopper



Section 7

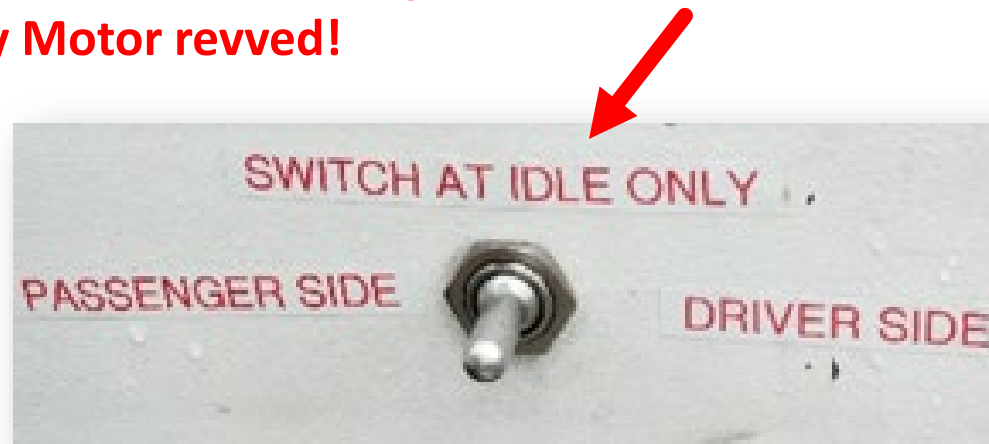
G-16: Dual Carriage Ops



Operating Procedure

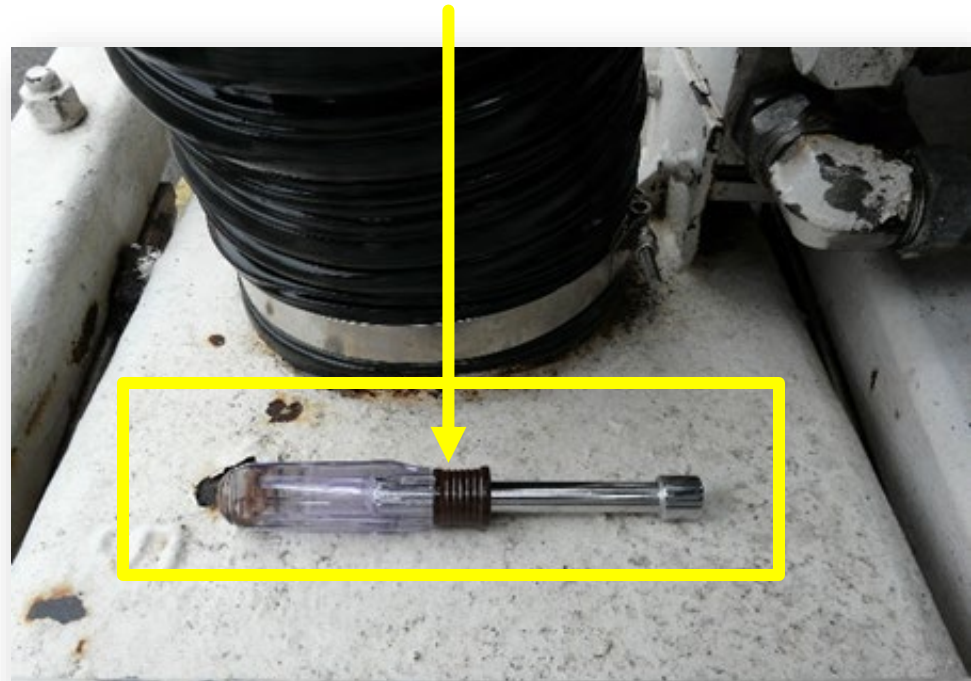
Operating Procedure:

1. Turn on Pony Motor Master
2. In cab, turn on Console Master
3. Start Pony Motor, allow time to warm up and make sure air is built-up, switch will not function without full air pressure
4. Set Operating Side using switch behind Driver side grinding head on deck (see image below)
 - **This must be done with Pony Motor at Idle, NEVER switch operating side with Pony Motor revved!**



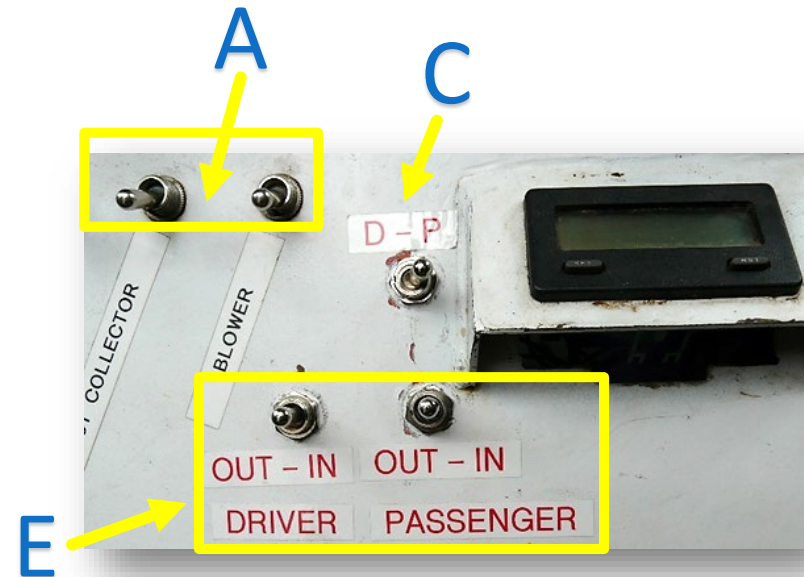
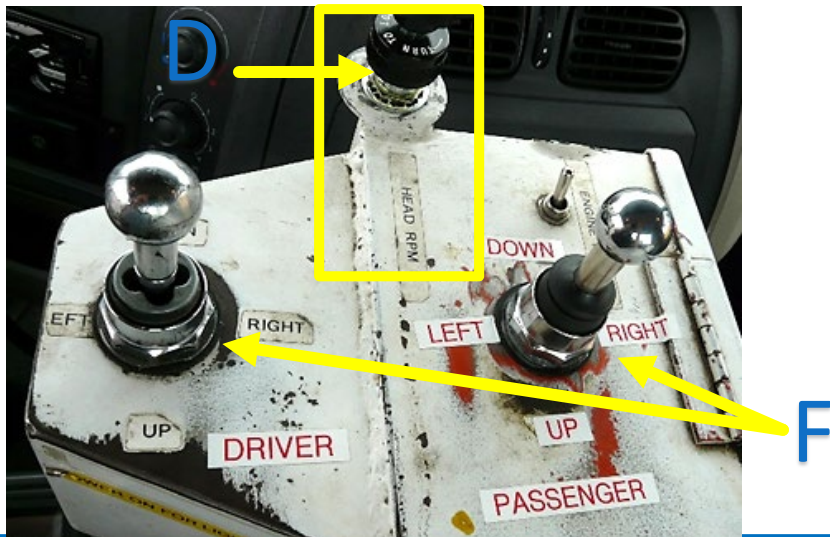
Connecting the Vacuum

1. Raise Head, Unchain and Remove float pin on head to be used.
2. Check that Vacuum hose is attached to correct head
 1. To loosen and tighten hose clamp, there is a nut-driver in the driver door pocket.



Controlling Grinding Head

- A. With Pony Motor at low idle, engage Vacuum and Dust Collector.
- B. Rev Pony Motor – IN TRUCK CAB
- C. Select 'P' or 'D' for Passenger or Driver side Head Speed to be displayed on Head Speed Tachometer
- D. Dial up Head Speed to appropriate RPMs
- E. Slide out carriage for Passenger or Driver grinder
- F. Use Joystick controls for the head being used



Section 8

G-17: Lift Crane and Grinder



G-17 Lift Crane and Grinders

- Read Operation manual on lift crane before operating
- Use web belt to lift for two (2) point lifting
- Hand grinders are to be loaded facing the rear of the truck
- There is an angle iron that mates into the front of the grinders,
- Secure with straps
- Both grinders are to be unloaded at the end of every shift
- Lift crane is to be stored completely retracted

Section 9

Troubleshooting



Troubleshooting

Pony motor won't start:

- Check the obvious
 - Master power switch
 - Ignition key turned all the way
 - Check for fuel (runs on same diesel tank as truck)
 - Check oil
 - Check battery
 - Check console wiring

Troubleshooting

Hydraulics not working:

- Check switch and solenoid
 - Check that Master is turned ON.
 - Hydraulics may not function without pony motor revved.
 - Check pressure gauges (if equipped) Charge pressure should be 300-400psi
 - Check hydraulic system for leaks

CAUTION:

Trucks carry about 40-60 gallons of hydraulic fluid. If you experience a leak, broken fitting or ruptured hose than immediately shut down the pony motor and contain the leak if it is serious.

Troubleshooting

Vacuum not picking up:

- Make sure air purge valves are closed
- Turn head rpm's down, stop heads, check that vacuum hose is attached to hopper, or check for clog in hose
- Check hopper, empty if full
- Check that blower is working, LOOK, LISTEN, and FEEL for airflow. No air, check that blower is on -- If on, trace system
- Listen for pulse from Dust Collector. If not pulsing, check that Dust Collector is ON -- Check Magnihelic Gauge, any reading above '2' indicates that the filters are clogged
- Rubber flaps on carriage are worn out and need to be replaced

Troubleshooting

Grinding heads not spinning:

- Check that Master is ON
- Check belts
- Shut down and check that spindle bolts securing heads to spindle are fully tightened

Troubleshooting

Inadequate removal:

- Check down pressure
- Slow truck speed
- Shut down, inspect heads and replace if worn
- If both heads are paint heads, mount an aggressive head in front

Troubleshooting

Removal too aggressive, digging up the road:

- Check down pressure
- Increase truck speed.
- If using aggressive head, remove and replace with paint head.
- Check heads for damage (i.e. – broken shaft, etc.) and change if damaged.
- Be aware of poor asphalt conditions/ changes in asphalt

Joystick

Joystick in cab stops working:

- Continue moving, and slowly bring the grinding heads to a stop.
- Once the heads have stopped you can stop the truck and set the brake.
- Climb up onto the rear of the truck behind the cab where you will find the solenoids for the tilt, up/down, and dump controls.
- Each solenoid has a lever that you can use to engage the function that is not responding in the cab.
- If the levers are all working properly, and the joystick is still not working, then you can check the fuses in the control panel in the cab.

Test

- Test to be taken at end of training
- Must pass with minimum score of 85%

Conclusion

This Concludes The Presentation

Thank you