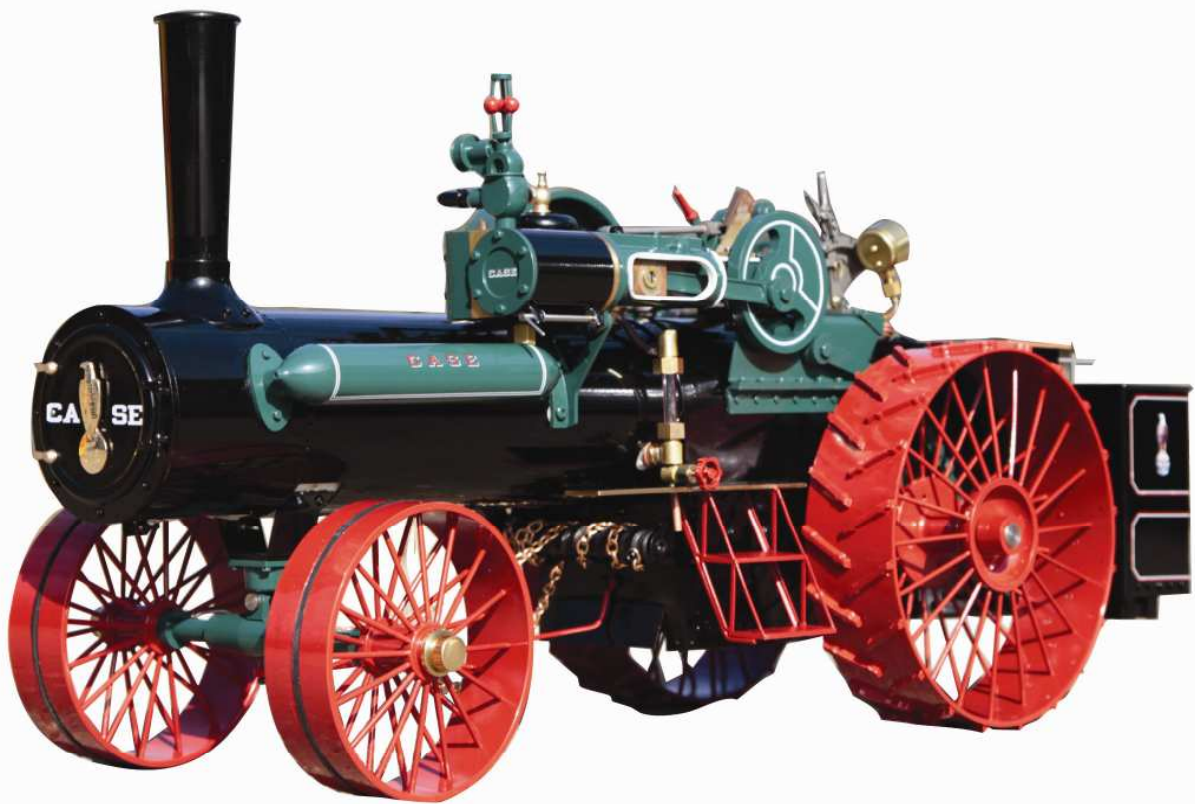


# **CASE 1" Scale 80hp Traction Engine**

**construction manual**



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# 1" CASE Driving and Maintenance.

## Some tips on driving and looking after your Maxitrak/Accucraft 1" Case traction engine.

Once you have taken your model from the packaging it will need a mechanical check over to make sure it is in good working condition. *(Some models can get a rough ride on their way to you so bolts can come loose!)*

Within the box you will find:

1 x traction engine mounted on wooden base.

Tool set including:

1 x large syringe (boiler water filler)

1 x small syringe (lubricator filler)

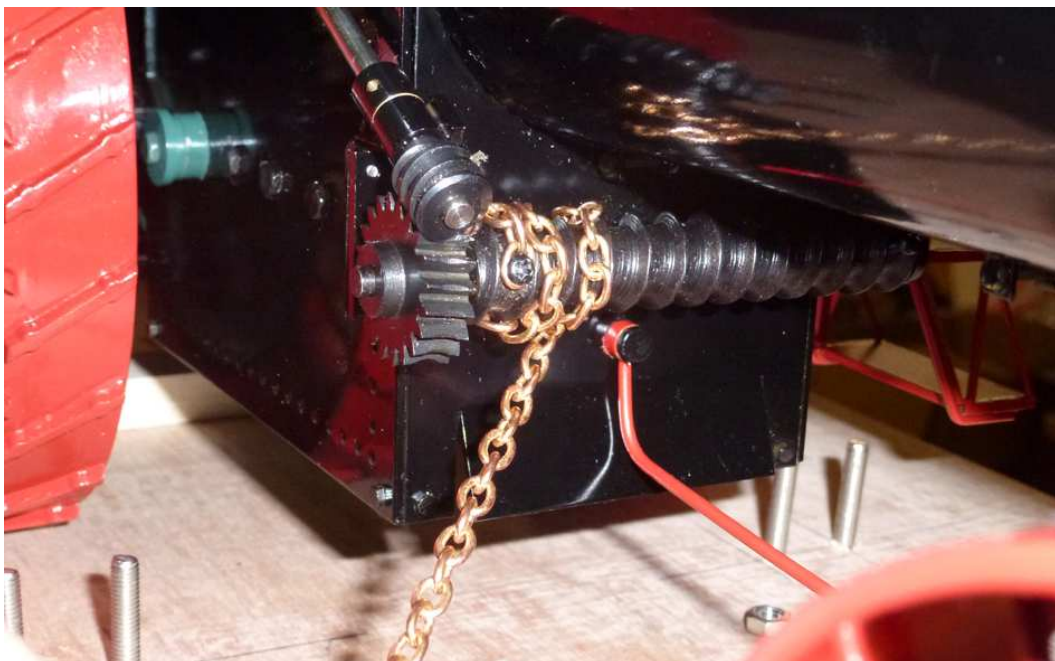
2 x Syringe extension pipes (clear silicone)

Small Allen key

Spare grub screws

Boiler & gas tank test certificates

Give your model a good look over and tighten all loose bolts, pay particular attention to the front "Perch Bracket" holding the axel to the smoke box, there are 6 bolts that can come loose. Using the Allen keys provided pay attention to the flywheel, rear wheels & gearing to make sure nothing has come loose, once you are satisfied all parts are tight it is a good idea to turn over the motion freely by turning the flywheel, to roll the model back and forth freely (with clutch disengaged), check steering worm & gear and fit the steering chain.



Start by putting the bolts through the last link in the steering chain, use M2 by 14 steel screws, one in each chain. Lay the engine on its side and push the

bolt through the hole in the end of the steering cross shaft, secure with an M2 steel nut. The chains wrap opposite ways round the steering cross shaft, the left hand one (steering worm side) goes half a turn over the top of the shaft while the right side one goes half a turn under the shaft. The chains then cross under the boiler, going left chain to right side of the front axle and right chain to left side of the front axle. They are held on to the axle with a steel wire clip, going through the hole in the axle near the wheel. Fit the clip to allow a little looseness in the chain moving it along from link to link as required.

Try the steering checking that the front axle goes easily from left to right and is not so tight as to strain the chain.

*Your model should now be ready for its first steam up!*

### **Some tips on driving and looking after your Maxitrak/Accucraft Case traction engine.**

Before starting you will need, water, propane/ butane gas, steam oil, lighter, cloths or tissues.

**Water**, your engine will run on almost any fresh water, but in hard water areas we recommend, rain water or water from a condenser tumble drier.

**Gas**, The best gas to use is propane, butane mix though the engine will run on just butane. Gas lighter refills can be used direct but the cans sold for hand held blowlamps or camping stoves are more economical. For these you will need an adaptor that screws on to the top of the can to match up to the filler valve on the engine.

**Oil**, Use only steam oil in the lubricator, do not use gear oil as the additives in these oils will come out in the steam and attack the seals etc. Ordinary car engine oil, chain oil or gear oil can be used on all moving parts & bearings, pay particular attention to the crank, valve gear, axles and wheels. *Note: in use the whole engine gets hot so it is a good idea to use steam oil for everything, it is sticky and messy but as a working model lubrication is essential!*

**Lighting**, A lighter of the type used for gas cookers is a very good idea and will save burnt fingers! Matches can be used with care but are a poor substitute when it comes to relighting a hot burner.

**Diagram**, Study the diagram so you are familiar with the controls and working parts of the engine before firing up at the end of this manual.

Use cloths or kitchen roll for wiping down spilt oil or water and for a final clean up after a run.

### **Starting the run**

- Remove the boiler filler plug and fill the boiler with water. Watch the level of water in the water gauge, fill to about three quarters up the glass, replace the filler plug.
- Make sure the gas valve is closed before filling the gas tank. Do this in a well-ventilated area well away from any flame. *NOTE: NO SMOKING.* If using the larger gas canisters start by screwing on the adaptor and then invert the canister and press the end of the adaptor on the gas filler valve. Liquid gas is transferred from the canister to the locos own gas tank, as this happens gas is vented from the tank to make room for the liquid. Venting gas is quite normal, make sure there is no flame near by. After thirty seconds or so the tank will be full, stop when liquid starts to vent

with the gas. Stop if any ice or frosting appears round the filler valve.  
*Note: Several short bursts of filling may be better than one long one.*  
When the tank is full and the gas disbursed the burner may be lit,

- Light the burners by opening the smoke box door and turning on the gas valve. You will hear the gas hissing out of the burner. Put the lighter in the smoke box and light the gas, it will pop back down the boiler tubes to the burners. Check that both the burners are lit and close the smoke box door. The noise of the burner is quite different between when the gas is on and when the burner is alight, if you get used to listening to the difference you will know if all is well (burner on) or if you are about to run out of steam (burner out). Both burners need to be on, one will not necessarily re light the other and a change in the burner noise may mean a quick look in the smoke box is required to check both are performing correctly. There is an air intake adjustment on each burner, move this to cut the air intake if the burners tend to cut out on full gas. The burners are most temperamental when starting the engine so they may need further adjustment once you have the engine running.
- It takes about five to ten minutes to get steam up so oil round all the moving parts while steam is raised. This should include all the following items, valve gear, crosshead, crankshaft bearings, connecting rod, gears, back axle bearings, front wheels etc.
- Unscrew the filler cap from the lubricator and open the lubricator drain tap under the tender. Fill the lubricator with steam oil, closing the drain when oil rather than water comes out. Re fit the filler cap when the lubricator is full.

### **Running the engine**

- When the pressure gauge begins to register the engine can be run. *Note: Check the clutch is not engaged.*
- Put the reversing lever in to full forward and open the cylinder drain taps. *Note: remember the case valve gear is opposite to UK tractors pull lever towards you to go forward!*
- Open the regulator gently and turn the flywheel. Open cylinder drains, Once the condensation is cleared the engine will start to run, it may take a couple of turns by hand to clear water from the cylinder. Control the speed with the regulator to give a steady speed. The engine can be run with the reversing lever moved back to the second notch, this will save a little steam when running light. It is not necessary to stop before putting the engine in reverse though it might need a turn on the flywheel to get it running in the opposite direction.
- If the engine is to be run light the burner can be turned down to give a longer run. If the burner is left on full pressure will increase. When a little more pressure has built up the engine can be driven.
- Lift the engine speed and engage the clutch.
- Close the regulator to stop the engine.

Set the steering so the engine drives in a circle, *Note: avoid hitting any obstacles!* The drive to the back wheels can be disconnected when the drive bolt in the hub are unscrewed. If the engine is running light on a hard concrete or tar surface one of the rear wheels should have the drive disconnected to ease steering. If the engine is run on a lose surface, earth or grass, both wheels should be driven. If you are hauling a scale load or a

person then both wheels will need to be driven even on a hard surface.  
*NOTE: If the engine steers erratically or appears to be struggling check the drive pins are correctly set.*

- If the engine is started at high pressure or run at high speed the burner will show a tendency to blow out (listen for a change in burner sound) When passenger hauling you are working the engine hard and it might be difficult to avoid this situation. It is down to the drivers technique, burner air adjustment and keeping a good ear out for the state of the burners. Starting is the most difficult thing to do, set the engine and riding car going light and then jump aboard if all else fails! Do not attempt hills either up or down.

*NOTE: It is most important that riding cars have ball race bearings and are of a light construction. You are asking the little engine to do a well over scale job when pulling a full size person.*

- Keep an eye on the water level in the boiler, after about thirty minutes or so the water level will be low in the gauge glass and the run must be stopped. Turn off the burner and allow the steam pressure to drop.
- To repeat the run wait for the boiler to lose all pressure, remove the water filler valve carefully and re fill with water. Top up the gas tank, drain and refill the lubricator, light the burner and start again. As the engine is warm pressure will be up much quicker second time. We can supply an adaptor to allow boiler filling under steam, this will reduce the down time but the burner must be off when refilling the gas tank in any case.
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***You will need 5 to 20 PSI to run the engine  
20 to 40 to drive with light load  
40 to 75 to do passenger hauling***

### **After the run**

Oil water and gas can be left in the engine after the run but the boiler should be drained for long-term storage or if there is any chance of the water in the boiler freezing.

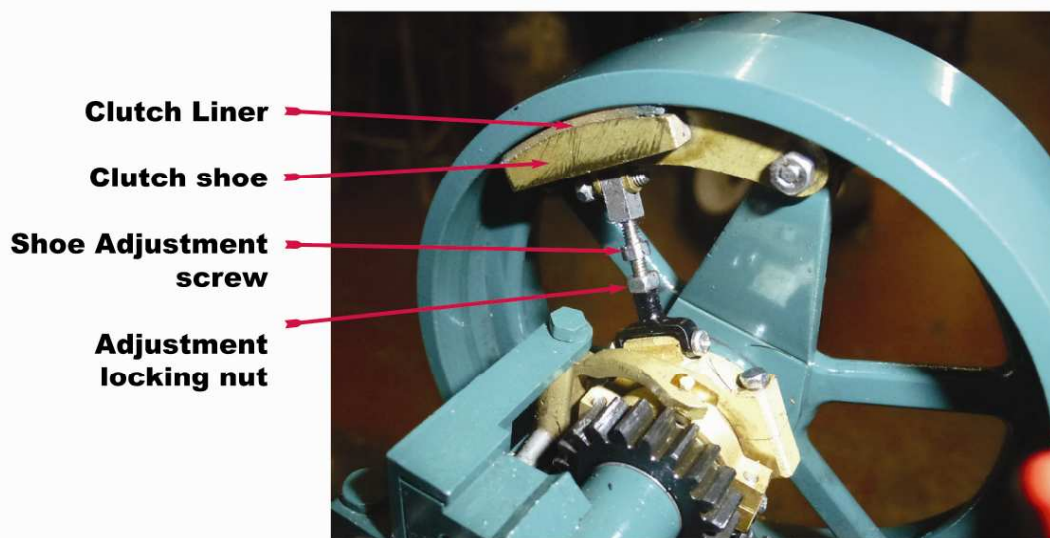
Wipe down all oily or dirty parts and polish the brass as desired. The engine will soon assume the patina of use so typical of a working steam engine though some owners like to keep their engines in as new condition.

### **Long-term maintenance**

Clutch adjustment. The clutch is factory set, this will wear and will need adjustment, the centre screw thread will adjust the shoe clearance, if the clutch is slipping on the flywheel first clean the flywheel and shoes of all dirt, oil and any contamination.

Disengage the clutch and undo adjustment locking nut, turn the shoe adjustment screw ¼ turn at a time, do this on both sides together, you can check the clutch with the model cold, remove both drive bolts and engage clutch and spin the flywheel, if the clutch slips adjust the shoe clearance until it locks in place and grips the flywheel.

Do not over adjust the shoe clearances as this will make the clutch disengage by itself and you will loose drive. The tolerance is critical so a little trial and error will be need here. Replacement shoe liners are available from us if needed.



Burner Adjustment, if one or both of the burners are not burning correctly first clean the gas jet as any debris or dirt will upset them, they are a press fit on to the back of the gas burner, if the jets are clear you can adjust the air flow on the burner by undoing the retaining bolt on the adjustment ring and sliding it back and forth, this is best done in situation so the burner receives the right amount of air, small movements is recommended, you are looking for a clean blue flame that runs along the full length of the burner, You can see this if you look through the some box door down the boiler tubes, tighten the retaining bolt once the burners are adjusted to keep the settings.

Use tap water in a new boiler to build a thin layer of fur which will help settle the boiler. To prevent further build up use rainwater or distilled water, or de fur the boiler occasionally using ordinary kettle or steam iron de-scaler.

Do not allow the boiler to run dry or it may be damaged. A hydraulic test to 150 lbs pressure should be done every four years, you will need special equipment to do this or join a club who will do this for you.

### **Health and Safety**

Please be aware this is a working live steam model, many safety issues are the same as on a full size engine.

**HEAT**, all parts of the boiler, cylinder and smoke box are very hot and should not be touched.

**MOVING PARTS**, the cylinder, valve gear and drive gears should not be touched when moving.

**EXHAUST**, steam, hot oil and hot water may be shot out of the chimney, especially when starting.

**FUEL**, the propane/butane gas fuel needs to be treated with respect, especially when filling. **NO SMOKING**.

**CHILDREN**, because it is small there is a strong temptation for youngsters to touch, it is part of the drivers job to stop them before they come to any harm. Only allow the most competent youngsters to drive after careful training.

Contact Maxitrak on [www.maxitrak.co.uk](http://www.maxitrak.co.uk)

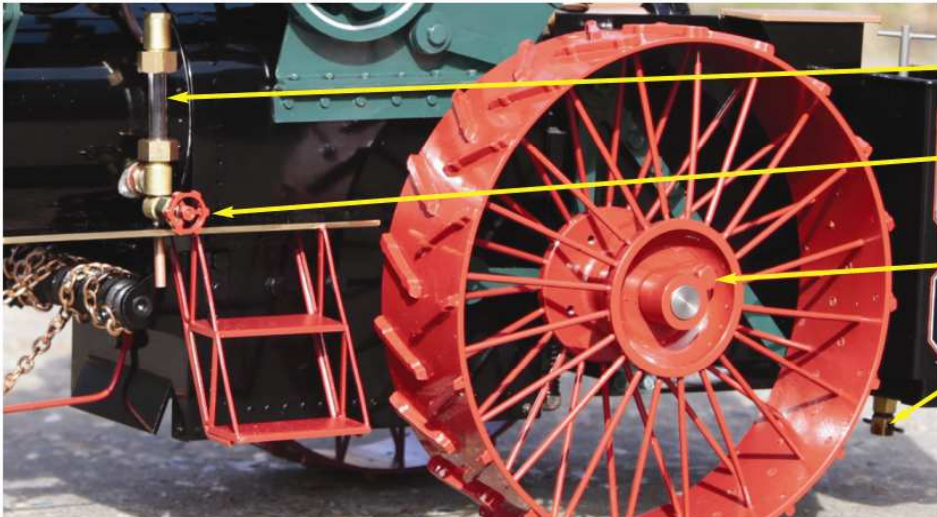
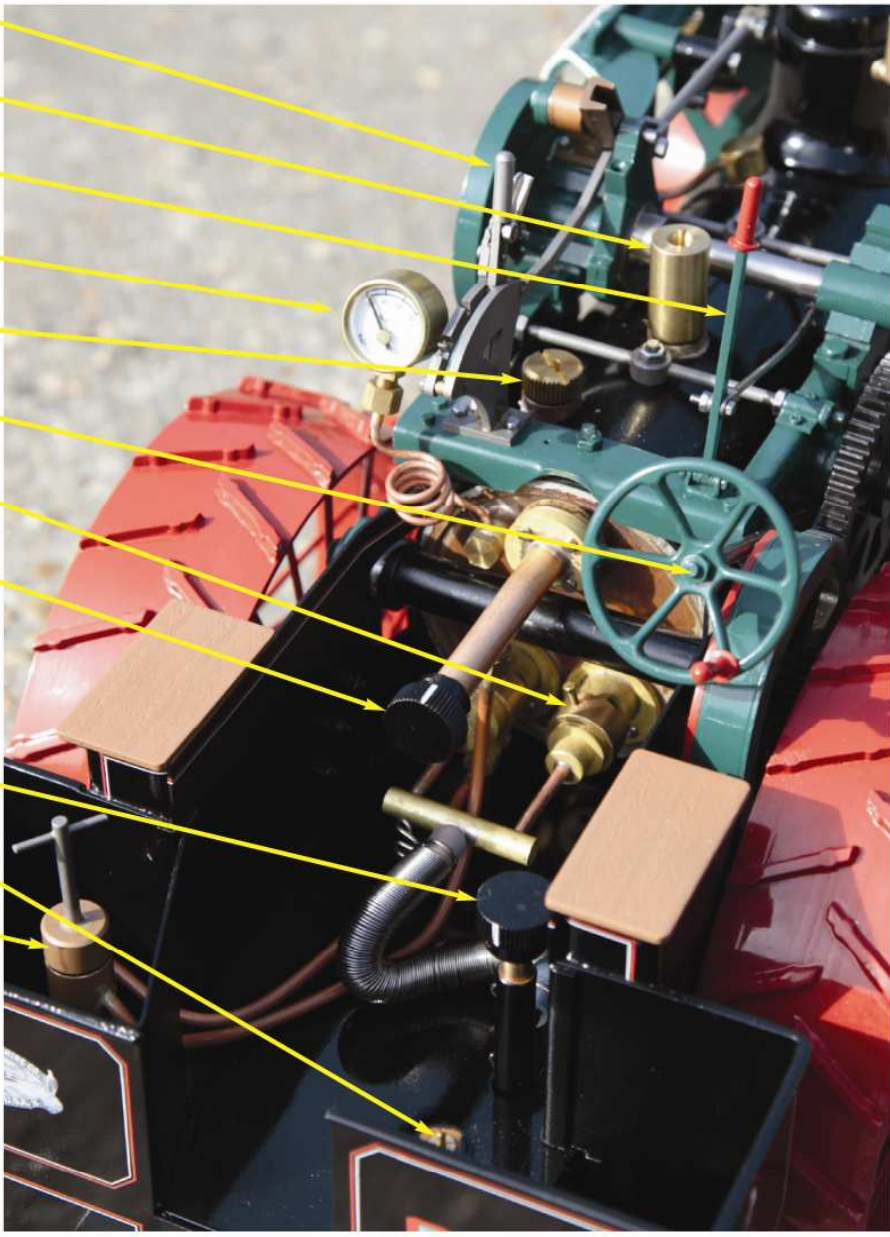
Tel: 01580 893030

For technical help, spares, accessories and owners club information.



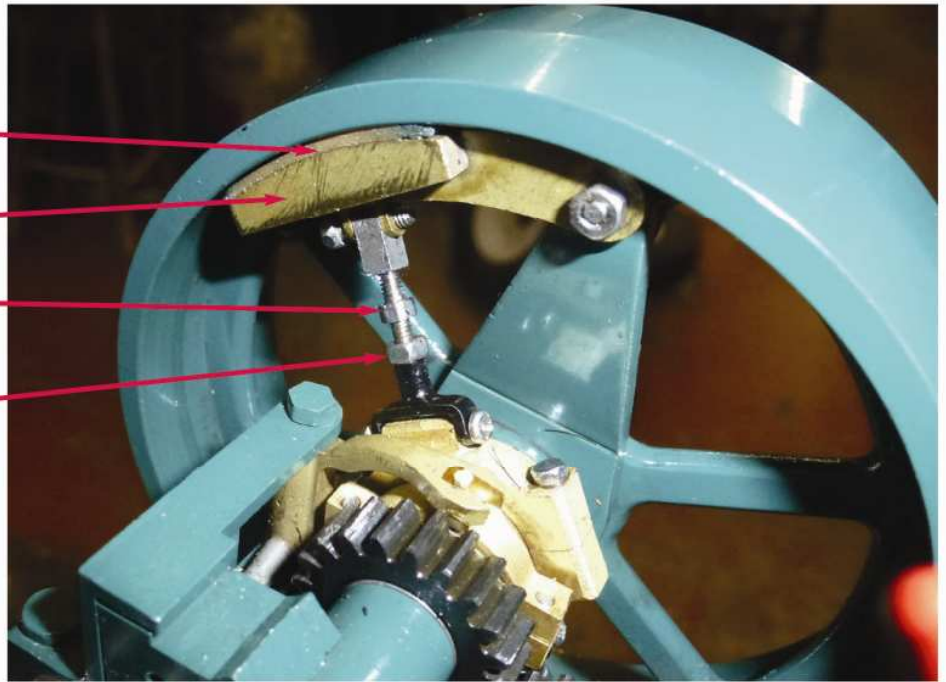
# KEY

- Reversing lever**
- Safety valve**
- Clutch lever**
- Pressure Gauge**
- Water filler**
- Steering wheel**
- Gas burners x 2**
- Regulator**
- Gas valve**
- Gas Filler**
- Lubricator**



- Water Gauge**
- Water gauge blowdown**
- Drive Bolt**
- Lubricator Drain**

**Clutch Liner**  
**Clutch shoe**  
**Shoe Adjustment screw**  
**Adjustment locking nut**



**Smoke box door**  
**Boiler Tubes**



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