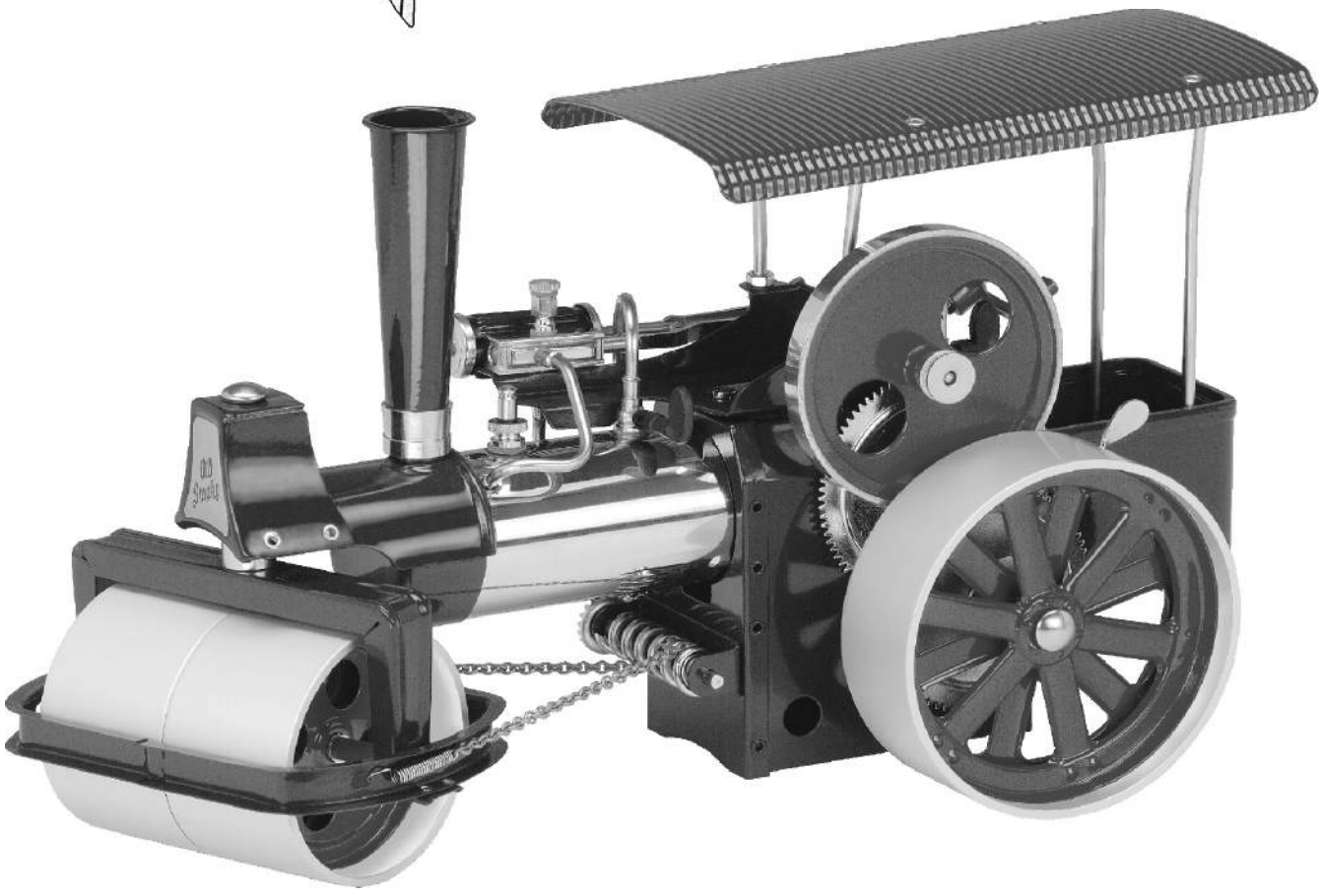
Assembly Instructions
Steam Roller

D 375
D 376



Index to Assembly Instructions

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Special Notes on the Assembly

1. The assembly takes approx. 3 - 4 hours. Please allow sufficient time in order to avoid too many interruptions.

2. This is a valuable, demanding model. The assembly requiers quiet, concentration and manual dexterity.

3. These instructions are applicable to both the steam engine as well as the traction engine. Please refer to the relevant text/picture.

4. The assembly should be carried out on a clean even table, so that no parts are lost.

5. All parts have been checked several times and fit into each other. If something does not fit, do not use force but study the assembly instructions / illustrations again.

6. Before operatung the steam engine, please read and observe the operating instructions carefully.

7. After longer periods of operation, individual screws might need tightening.

8. Your WILESCO Steam Engine Company wishes you a lot of enjoyment. We trust that soon it will be: „Full Steam Ahead“.

Stage 1,
Steam Roller

Front Part:

1 2 x front roller
2 1 x saddle cam
3 1 x saddle
4 4 x slot bolt M 3 x 4 mm
5 4 x hexagonal nut M 3
6 1 x roller bracket
7 6 x washer 8/4.5 mm
8 1 x front axle Ø 4 x 116 mm
9 1 x scraper harness
10 2 x spacer, red Ø 6 x 24 mm
11 4 x slot bolt M 2 x 6 mm
12 4 x hexagonal nut M 2

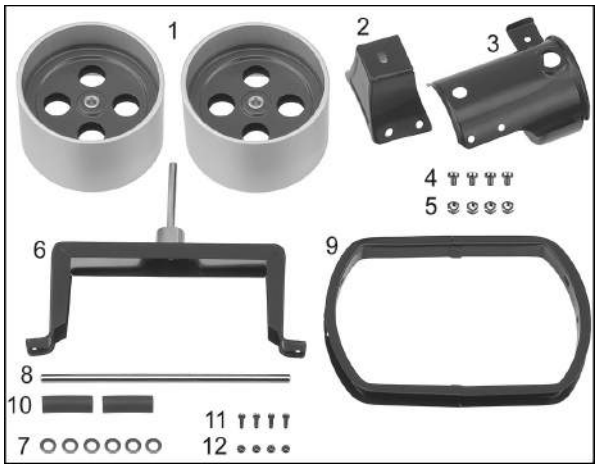


Illustration 1

Illustration 2

Push the two front rollers (1) onto the front axle (8). The pressing nearer the roller-edge faces outwards. Push on both sides of the front axle (8) washers (7) then a red spacer (10). Assembly of front axle with rollers in the wheel bracket (6). The play between wheel bracket and the front rollers is adjusted by means of washers (7) so that the front rollers move easily.

Illustration 3

Fit the scraper harness (9) with 2 slot bolts (11) M 2 x 4 mm and nuts (12), each side. Insert screws from either top or bottom and tighten well.

The saddle cam (2) is fitted with 4 slot bolts (4) M 3 x 4 mm and nuts (5) onto the saddle (3).

This front part is put to one side an connected with the boiler in stage 8.

Illustration 4

Stage 1, Traction Engine

Front Part

16 1 x wheel assembly traction engine
17 1 x front axle Ø 4 x 104 mm
7 4 x washer 8/4.5 mm
18 2 x front wheels
19 2 x wheel locking cap Ø 4 mm

The front axle (17) is pushed through the wheel assembly (16). Washers (7) are fitted to both sides.

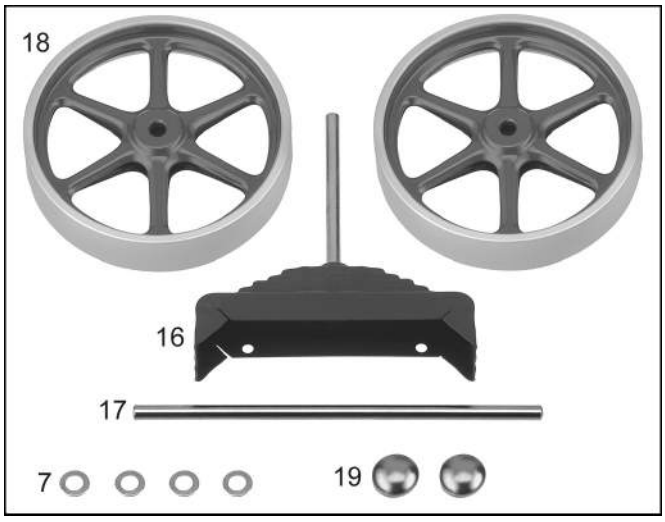


Illustration 1a

One front wheel (18) is fitted to the axle/wheel assembly and is then placed onto the table in such a manner that the front axle is in the vertical position and the wheel is on the table. The other wheel (18) is then fitted. The locking cap (19) is pushed onto the free end of the front axle. Invert the front assembly part and fit the second locking cap. This front part is put to one side and fitted to the boiler in stage 8.

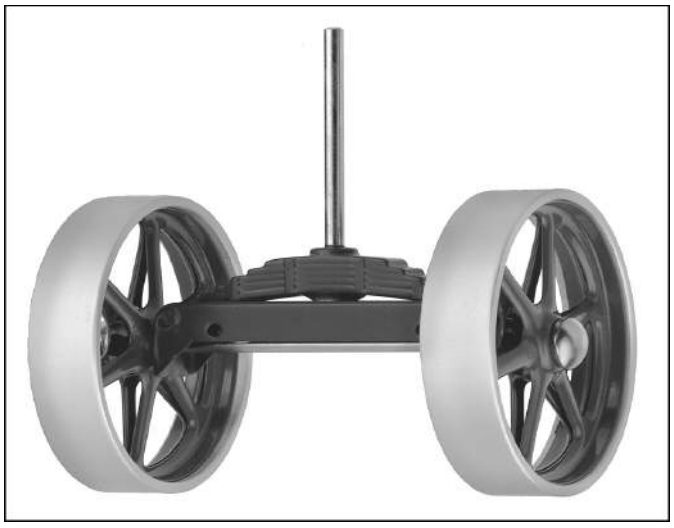


Illustration 2a

Stage 2

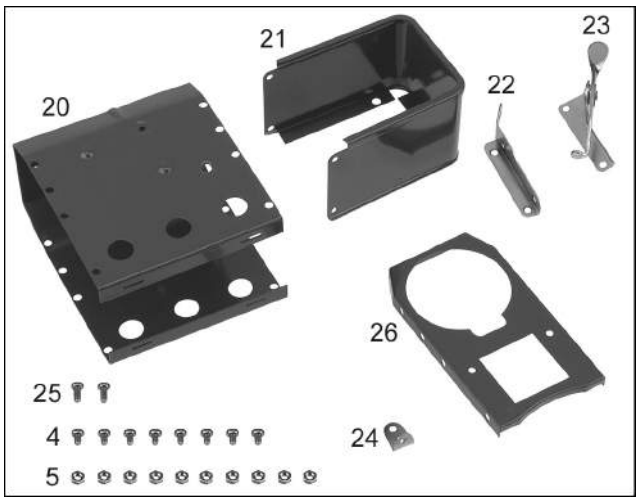


Illustration 5

Burner chamber, rear

20 1 x burner chamber cover
21 1 x control cabin
22 1 x steering shaft bracket
23 1 x clutch lever
24 1 x tow bar
5 10 x hexagonal nut M 3
4 8 x slot bolt M 3 x 4 mm
25 2 x slot bolt M 3 x 6 mm
26 1 x burner chamber rear wall

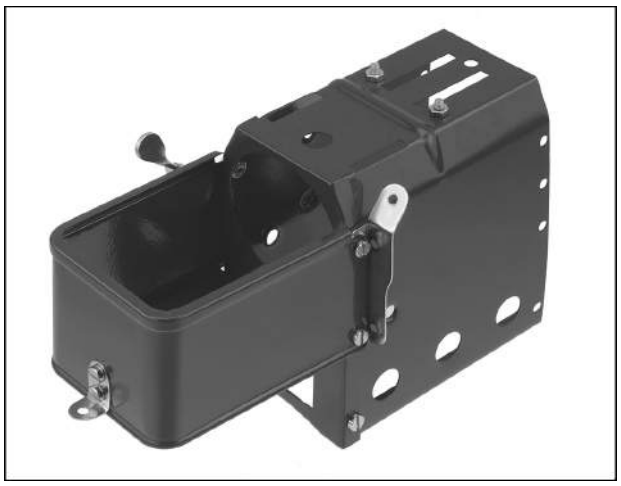


Illustration 6

Fit the tow bar (24) to the control cabin (21) with 2 slot bolts (4) M 3 x 4 mm and nuts (5). The two slot bolts (25) M 3 x 6 mm are inserted at the top of the burner chamber cover (20) and secured with 2 nuts (5). At a later stage the piston cylinder plate is fitted to these screws.
The rear wall of the burner chamber (26) is fitted to the end of the cover, which has the hole on top for the steam whistle. Then the steering shaft bracket (22) is fitted to the right hand side of the cover and driver's cabin, with 2 slot bolts (4) M 3 x 4 mm and nuts (5), using the second and fourth hole from the bottom. The steering shaft bracket **has to be mounted between** the rear wall of the burner chamber and the control cabin (see illustration 6). Secure the burner chamber rear wall at the bottom.

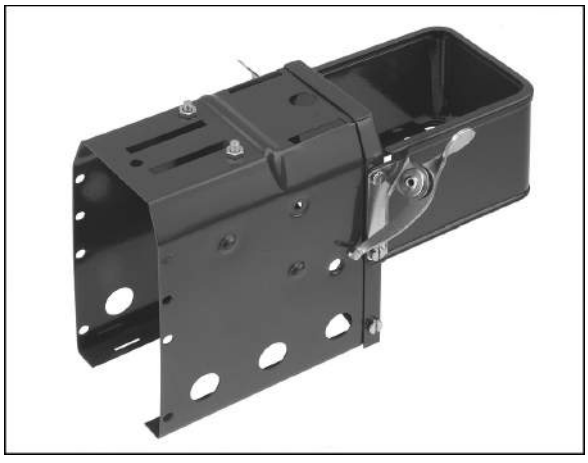


Illustration 7

Insert on the left hand side the clutch lever (23) into the second and fourth hole from the bottom with 2 slot bolts (4) M 3 x 4 mm and secure with 2 nuts (5). On completion, all screws should be checked for tightness.

Stage 3

Burner chamber front

30 1 x gangway bracket
31 1 x gear wheel, large
32 1 x burner chamber front wall
33 1 x collar screw M 3
34 2 x washer Ø 6.7/3 mm
5 11 x hexagonal nut M 3
4 10 x slot bolt M 3 x 4 mm
35 1 x worm bracket

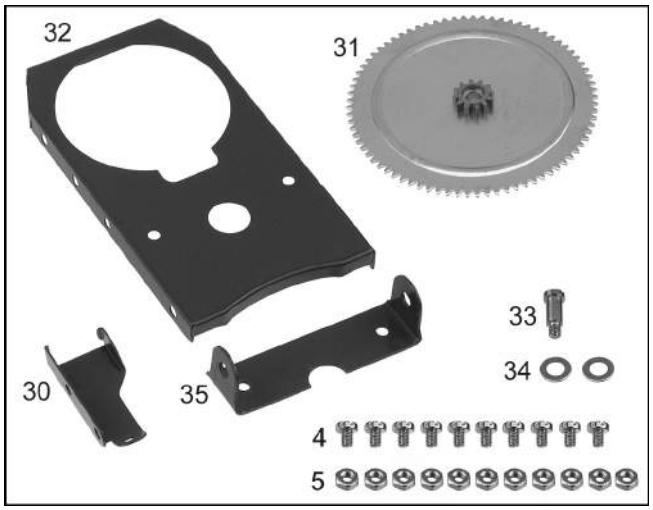


Illustration 8

Fit large gear wheel (31) with collar screw (33), 2 washers (34) and nut M 3 (5) to the burner cover (20). Tighten carefully with the combination spanner. The gear wheel must move freely.

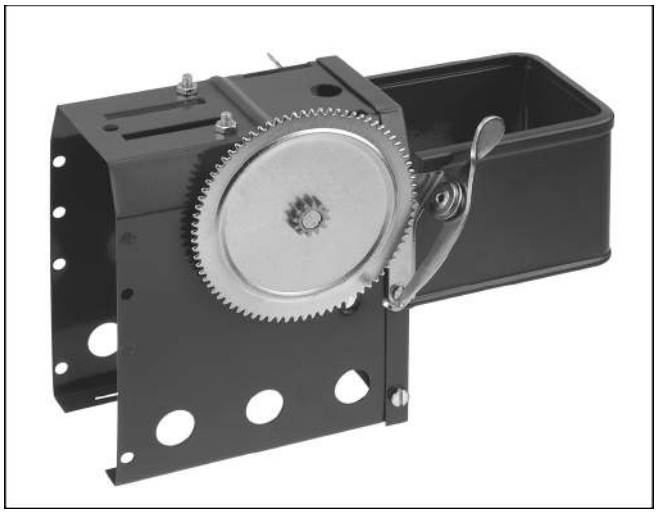


Illustration 9

Fit the worm bracket (35) with the opening facing downwards (because of air circulation) to the chamber front wall (32) with sides facing outwards, tighten well. Place front wall of chamber into position with 2 slot bolts (4) and nuts (5) and using the second and third hole from the bottom fix gangway bracket (30) through front cover onto burner chamber.

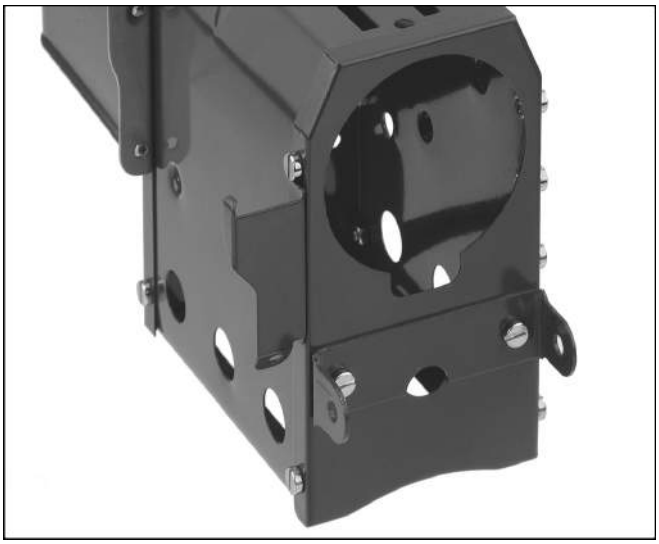


Illustration 10

Stage 4

Flywheel shaft

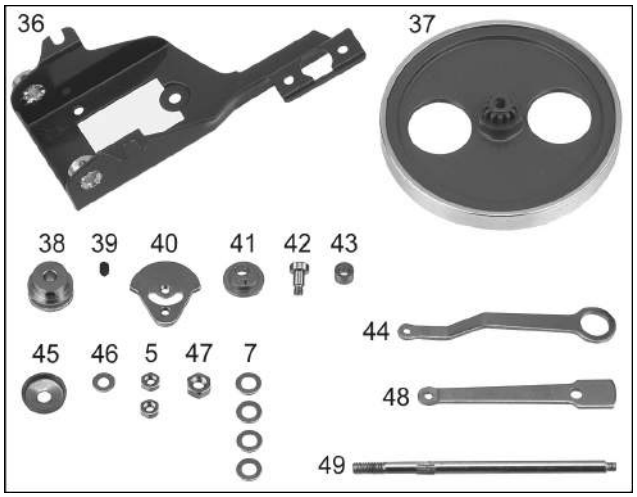


Illustration 11

36 1 x machine plate
37 1 x flywheel
38 1 x pulley
39 1 x grub screw
40 1 x crank disk
41 1 x excentric, small
42 1 x collar screw M 3 short
43 1 x spacer Ø 6 x 3 mm
44 1 x slide rod
45 1 x brass cap
46 1 x washer 5.6/3 mm
5 2 x hexagonal nut M 3
47 1 x hexagonal nut M 4
7 4 x washer 8/4.5 mm
48 1 x piston rod
49 1 x flywheel shaft

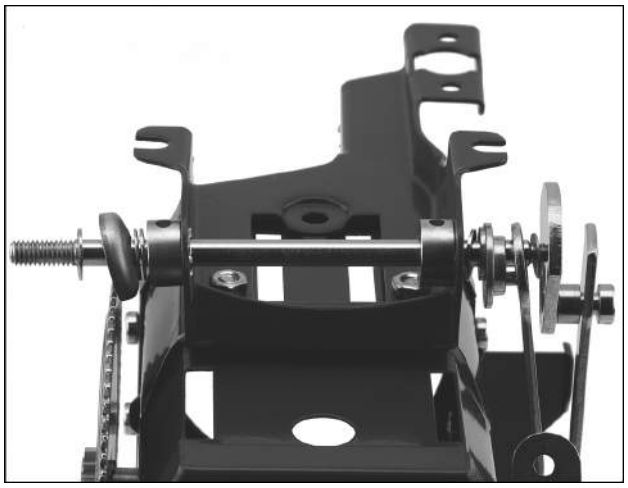


Illustration 12

This section must be assembled very carefully, as the functioning of the steam engine is dependent on it. The machine plate (36) is secured loosely with the 2 nuts (5) onto the protruding screws of the burner chamber cover. The fly wheel shaft (49) is pushed through the bearings of the machine plate, with the short thread on the right hand side. Fit 2 washers (7), the brass cap (45), then a further washer (7) to the left hand side of the shaft. Fit a washer (7), excentric (41), slide rod (44) with bend towards the chamber and one washer (46) to the right hand side of the shaft. Then screw the crank disc (40) onto the right hand side of the shaft, using the middle threaded hole. The piston rod (48) is attached to the crank disk by means of the collar screw (42), with spacer (43) fitted between piston rod (48) and crank disk (40).

Now the flywheel (37) is pushed onto the left hand side of the shaft with the pinion inwards. Screw onto the thread a washer (7) and an nut (47) M 4 so that the shaft is slightly pulled inwards.

Tighten carefully all parts so that the crank disk is firmly held in place.

IMPORTANT: The small pin of the excentric (41) must move freely in the oval hole of the crank disk (40).

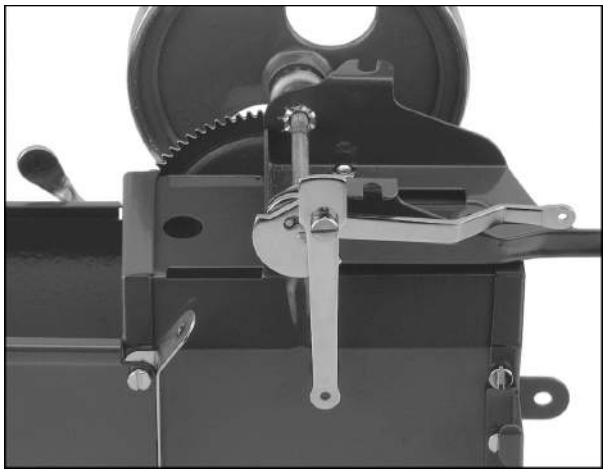


Illustration 13

Tighten the M 4 nut with the combination spanner and move the flywheel along the shaft until the pinion engages with the large gear wheel. Ensure that the shaft is moving freely without the excentric pin slipping from the oval hole in the crank disk. Remove the nut M 4 and the washer holding tight the flywheel.

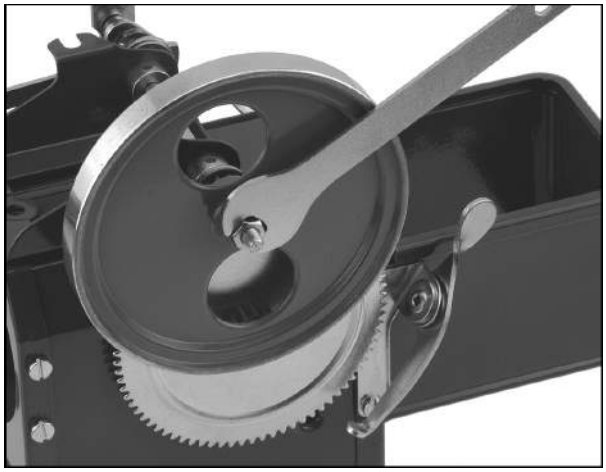


Illustration 14

Fit pulley (38) and tighten by means of the grub screw (39).

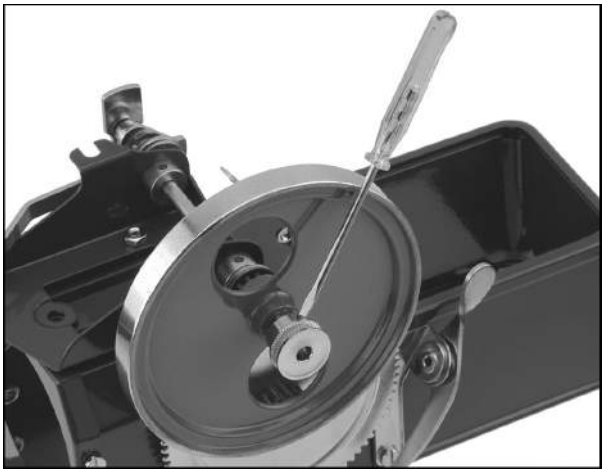


Illustration 15

Stage 5

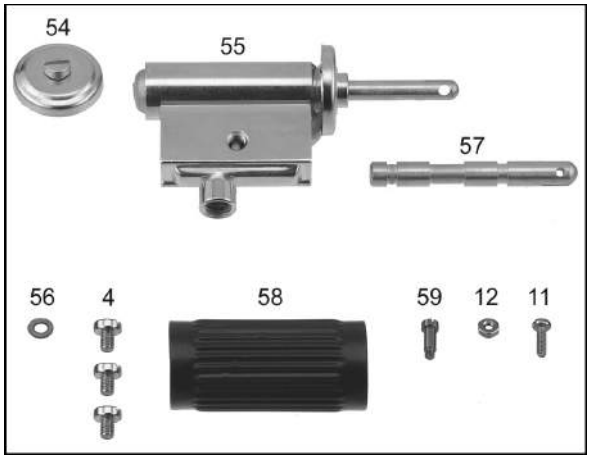


Illustration 16

Cylinder

54 1 x cylinder cap
55 1 x cylinder complete
56 1 x seal Ø 5.5/2.5 mm
57 1 x slide valve
4 3 x slot bolt M 3 x 4 mm
58 1 x cylinder cover
59 1 x collar screw M 2
12 1 x hexagonal nut M 2
11 1 x slot bolt M 2 x 6 mm

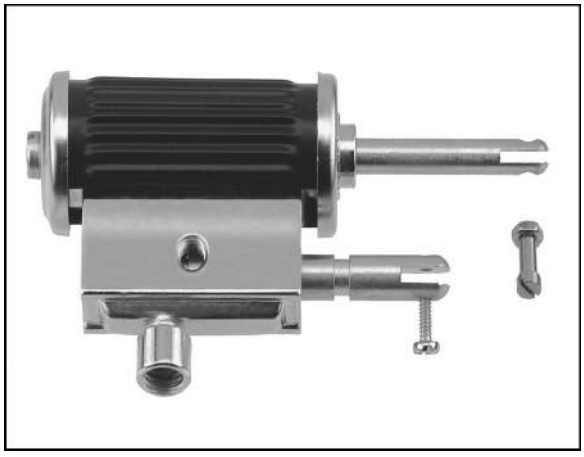


Illustration 17

Push the slide valve (57) into the cylinder (55). Push on black cylinder casing (55) (nose downwards). Place the slot bolt (4) through the casing cap (54) fit seal (56) to inside of cap. Screw on cap.

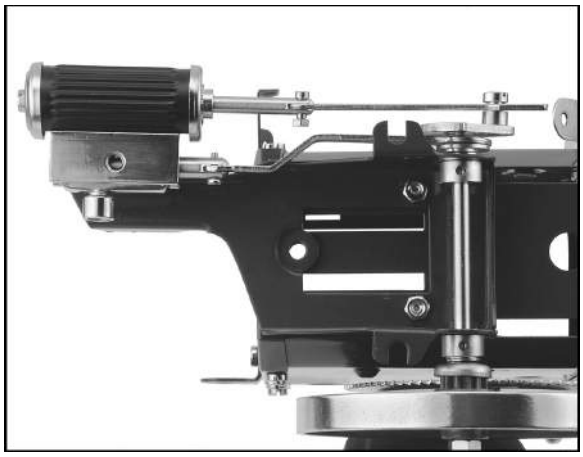


Illustration 18

Screw on cylinder with 2 screws (4) onto the machine plate. **Do not** tighten as the steam pipe must be inserted. Connect piston rod and piston with the collar screw (59) and nut (12). Then connect the slide rod to the slide valve with the slot bolt (11).

Stage 6

Boiler Assembly

60 1 x steam supply pipe
61 1 x boiler
62 1 x steam exhaust pipe
63 1 x steam whistle
64 1 x steam valve
65 1 x spring-loaded safety valve
66 1 x oiler body
67 1 x oiler screw
68 1 x slot bolt M 4 x 6 mm
69 1 x seal Ø 10/6
70 4 x seal Ø 8/5
71 2 x seal Ø 7/4
56 3 x seal Ø 5.5/2.5

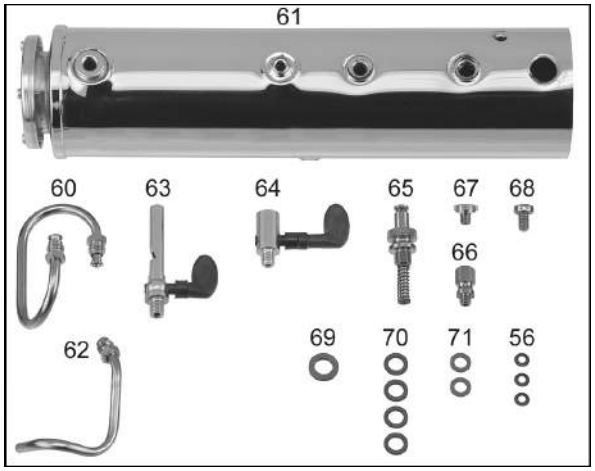


Illustration 19

The large seal (69) is placed onto the spring-loaded safety valve (65). This is screwed into the boiler. The steam valve (64) is screwed into the boiler (61) with 1 or 2 seals (70) so that the lever is pointing to the left (as seen from the sight glass).

For safety reasons the boiler and the spring-loaded safety valve are already assembled. The boiler has been pressure tested in the factory to 4.5 bar.

Illustration 20

Then the boiler is pushed into the burner chamber (with the sight glass towards the control cabin) with the valves pointing downwards. When the boiler has been inserted into the chamber, it should be turned, so that the valves point upwards.
The boiler is now fastened by the slot bolt (68).

The steam whistle (63) requires one or two seals (70) so that the lever points to the rear and can be moved to the left or right. Do not overtighten.

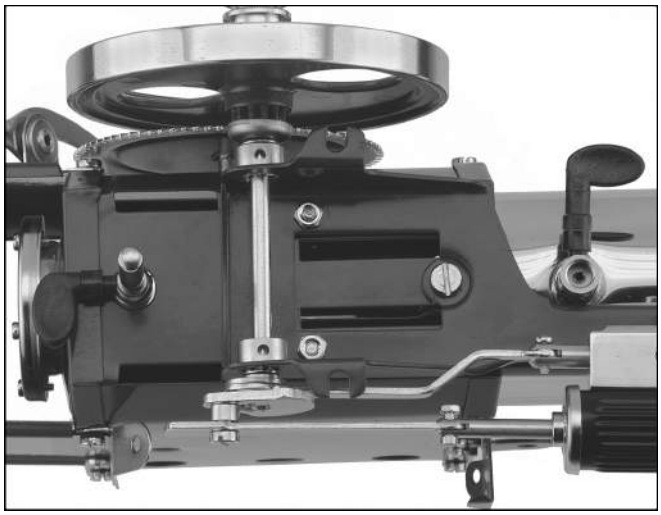


Illustration 21

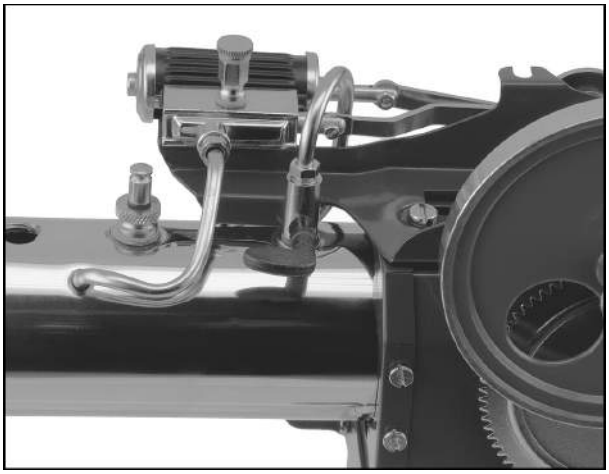


Illustration 22

The small seals (56) are placed into the opening of the steam valve and lower cylinder. Then the steam supply pipe (60) is screwed in. First of all tighten slightly under the cylinder then at the steam valve. Be carefully to screw-in correctly. Now tighten. Fit the steam exhaust pipe (62) with seal (56) into the cylinder and boiler, and tighten. Finally tighten the cylinder with both slot bolts.

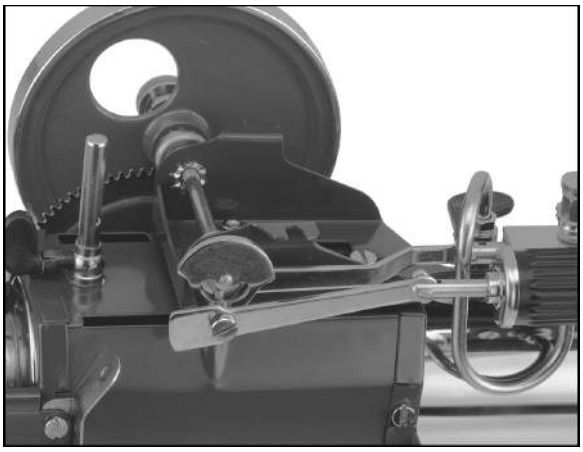


Illustration 23

Tighten the machine plate with the two nuts M 3 and the slot bolt (68). Boiler, cylinder, machine plate and steam pipes are now fixed in position. The oiler body (66) requires one seal (71) and is screwed into the top of cylinder. Then the oiler cap (67) is screwed in with a further seal (71).

Stage 7

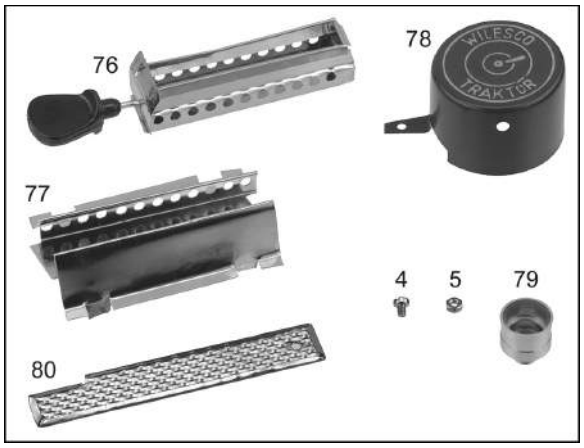


Illustration 24

Burner and Connection with Cap or Front Part

76 1 x burner slide
77 1 x burner guide
78 1 x cap (only for traction engine)
79 1 x chimney shoulder screw
80 1 x gangway
5 1 x hexagonal nut M 3
4 1 x slot bolt M 3 x 4 mm

The burner guide (77) is placed into the burner chamber so that the four tabs point downwards. Apply pressure from the inside with the index finger. Then bend the tabs over with a solid object (hammer handle etc.). The burner (76) can now be pushed in.

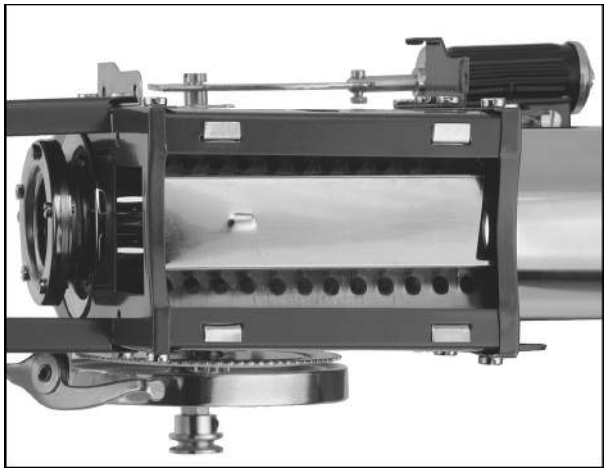


Illustration 25

Only for Steam Rollers

The saddle from Stage 1 is now pushed onto the boiler and secured with the chimney shoulder screw (79). The gangway (80) is pushed into the gangway bracket, and is secured on the right hand side by means of a slot bolt (4) and nut (5).

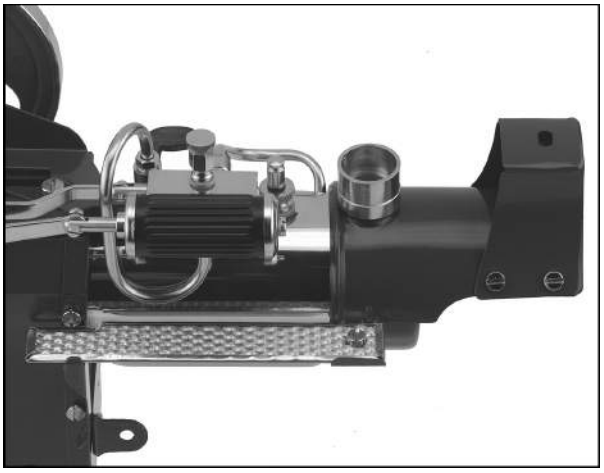


Illustration 26

Only for Traction Engines

Cap (78) is pushed onto the boiler and secured with the chimney shoulder screw (79). The gangway (80) is placed into the gangway bracket and is secured on the right hand side by means of the slot bolt (4) and nut (5).

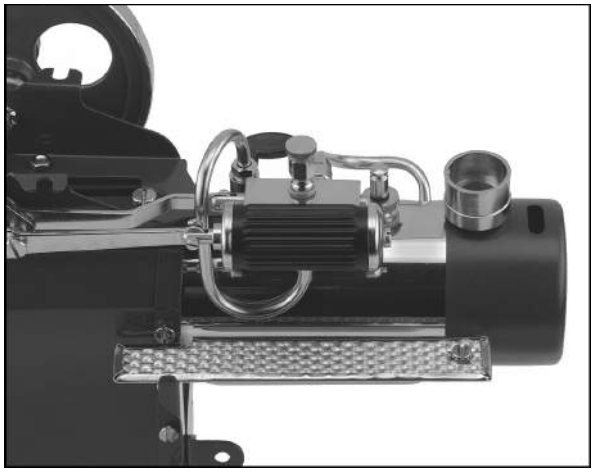


Illustration 26a

Stage 8

Steering

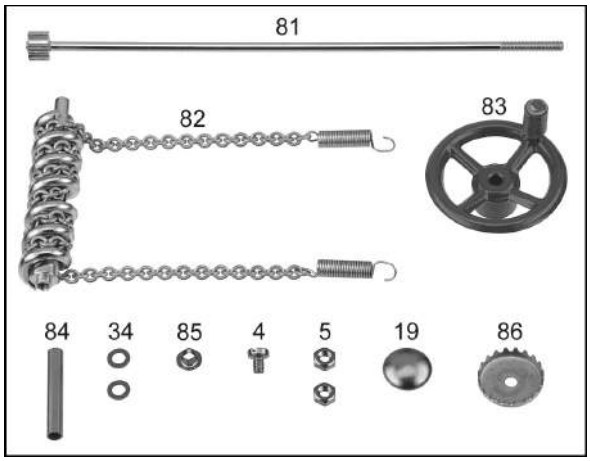


Illustration 27

81 1 x steering column with pinion
82 1 x worm with chain and springs
19 1 x safety cap Ø 4 mm
83 1 x steering wheel
84 1 x spacer, chrome long
34 2 x washer Ø 6.7/3 mm
4 1 x slot bolt M 3 x 4 mm
5 2 x hexagonal nut M 3
85 1 x spacer, chrome short
86 1 x crown wheel

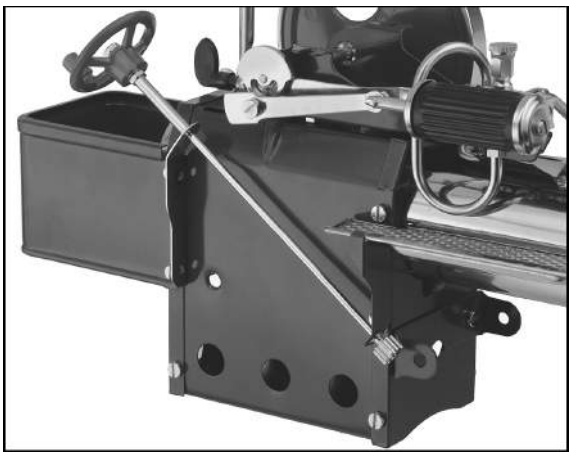


Illustration 28

The steering column (81) is fitted with the short spacer (85) with the collar pointing upwards. Then it is pushed from underneath through the gangway bracket and the steering bracket. The long spacer (84) is pushed onto the top of steering column. Fit a nut (5) and a washer (34). The steering wheel (83) is pushed over the column and secured by means of a washer (34) and a hexagonal nut (5). Tighten firmly!

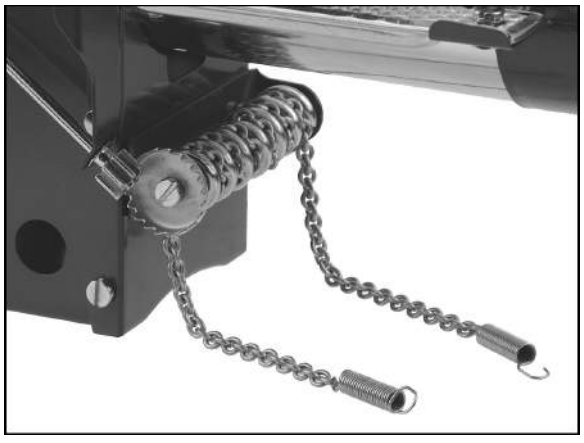


Illustration 29

Now the steering worm is fitted. The chain is wound on both sides around the worm, one side to the left, the other side to the right. The worm (82) is placed into the bracket and secured on the right hand side with crown wheel (86) and slot bolt (4). Tighten securely!

Only for Steam Rollers

The vertikal shaft on the front wheel bracket from Stage 1 is placed through the saddle cam and is secured with the locking cap (19) in such a way that the holes of the scraper harness (9) point **forwards.**

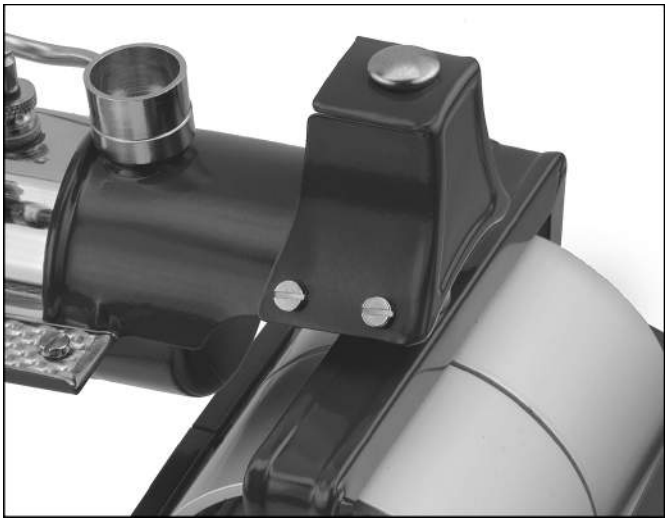


Illustration 30

Place the spring of the steering chain into the scraper harness on the left hand side. Using a strong piece of string for tensioning purposes. Pull the right hand spring and locate into scraper harness.

Illustration 31

Only for Traction Engines

The vertical shaft on the front wheel bracket from Stage 1 is placed from underneath through the hole in the cap (similar to illustration 30). The two small holes in the wheel bracket must point **rearwards.** The safety cap (19) is placed onto the taper und pushed home.

The photo (illustration 31 a) shows the underneath of the traction engine . Place the springs of the steering chain from underneath into the small holes of the wheel bracket. The steering is now complete.

Illustration 31a

Stage 9

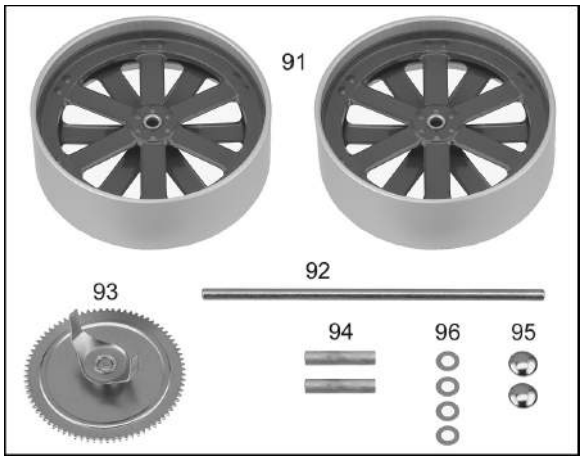


Illustration 32

Rear Wheels

91 2 x rear wheel
92 1 x rear axle Ø 5/142 mm
93 1 x gear wheel with drive
94 2 x brass spacer Ø 7 x 29 mm
95 2 x safety caps Ø 5 mm
96 4 x washer Ø 10/5.5 mm

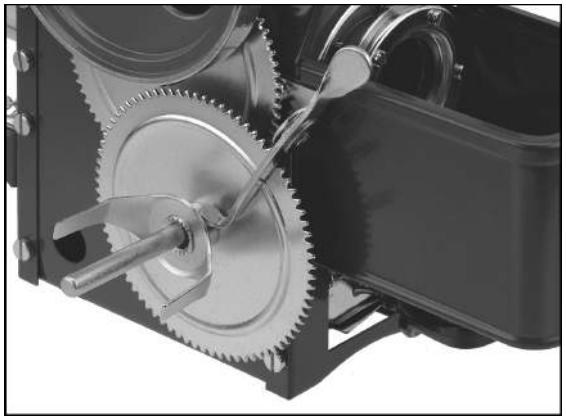


Illustration 33

The rear axle (92) is pushed through the burner chamber housing. One washer (96) is placed on right the hand side and two on the left hand side. On the left hand side the rear axle must not protrude more than approx. 3 mm. A spacer (94) is pushed into the cog wheel (93) and both are pushed onto the rear axle. Now the axle is pushed through, so that it protrudes an equal distance on both sides. The clutch lever must be located between the cog wheel and the drive prongs. If necessary the axle clearance can be adjusted by adding or removing washers.

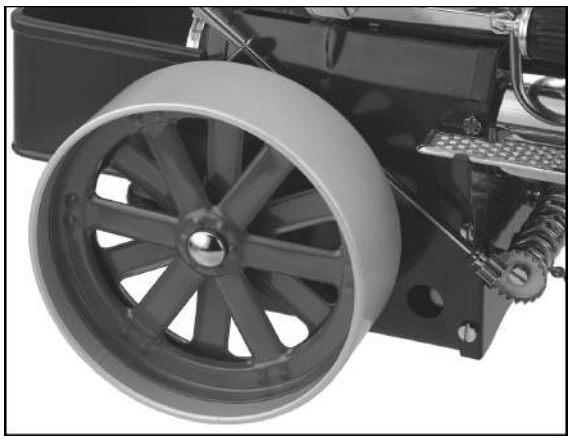


Illustration 34

One rear wheel (91) is pushed on, the prongs must grip between the spokes of the wheel. Push on wheel locking cap. On the other side, the spacer (94) and wheel (91) are pushed on and secured with the wheel locking cap.

Stage 10

Roof and Chimney for Steam Roller

97 1 x roof
98 1 x chimney
99 1 x sticker „Old Smoky“
100 2 x roof support, long
101 2 x roof support, short
47 12 x hexagonal nut M 4
102 4 x cap screw
103 1 x base plate

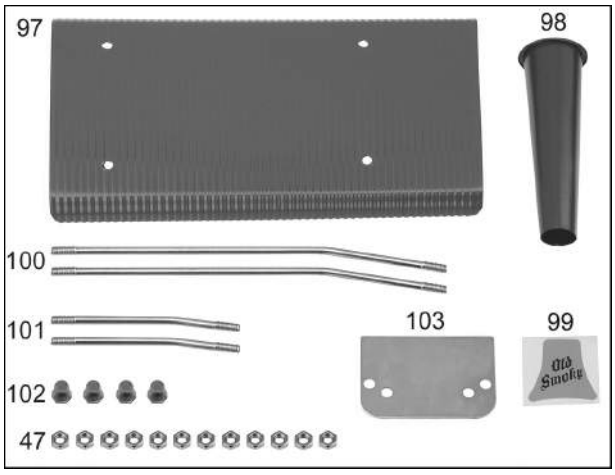


Illustration 35

Stage 10

Roof and Chimney for Traction Engine

104 1 x roof
105 1 x chimney
100 2 x roof support, long
101 2 x roof support, short
103 1 x base plate
47 12 x hexagonal nut M 4
102 4 x cap screw

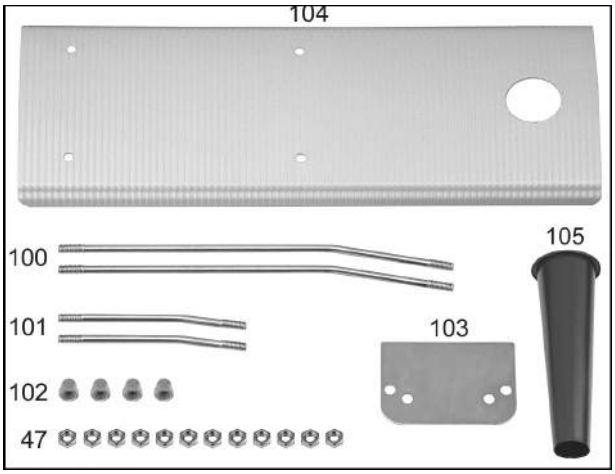


Illustration 35 a

The short roof supports (101) are loosely fitted to the machine plate on the left and right hand sides. The shorter straight piece is at the bottom.

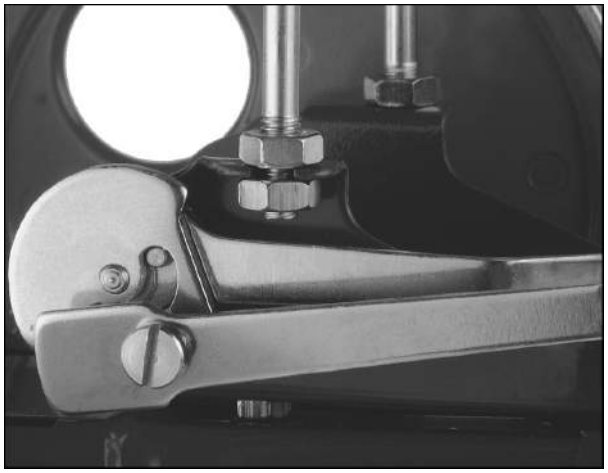


Illustration 36

Illustration 37

Fit the base plate (103). Screw nut (47) onto the long roof supports (100) with the long straight part pointing downwards. Now push through the base plate and secure with second nut (47) loosely.

Illustration 38

Screw a nut (47) on top of the roof support and place the roof (97/104) on top, so that the front protrudes forwards (traction engine only). Fit cap screw (102) and tighten. Not too tight otherwise the thread is damaged. Straighten out roof and tighten all nuts.

Insert chimney (98/105) with fold pointing backwards. Stick the sticker „Old Smoky“ (99) to the saddle cam of the steam roller.

Congratulations, you have finished!

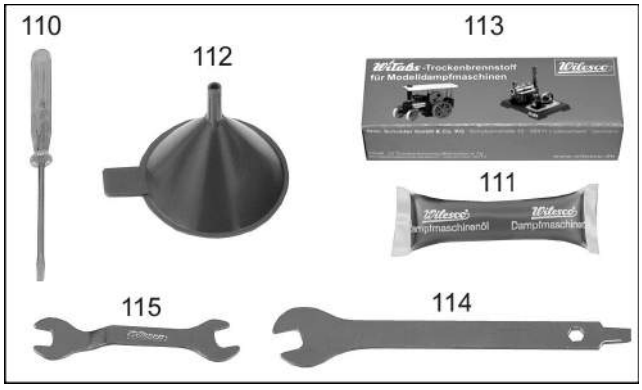


Illustration 39

Accessories

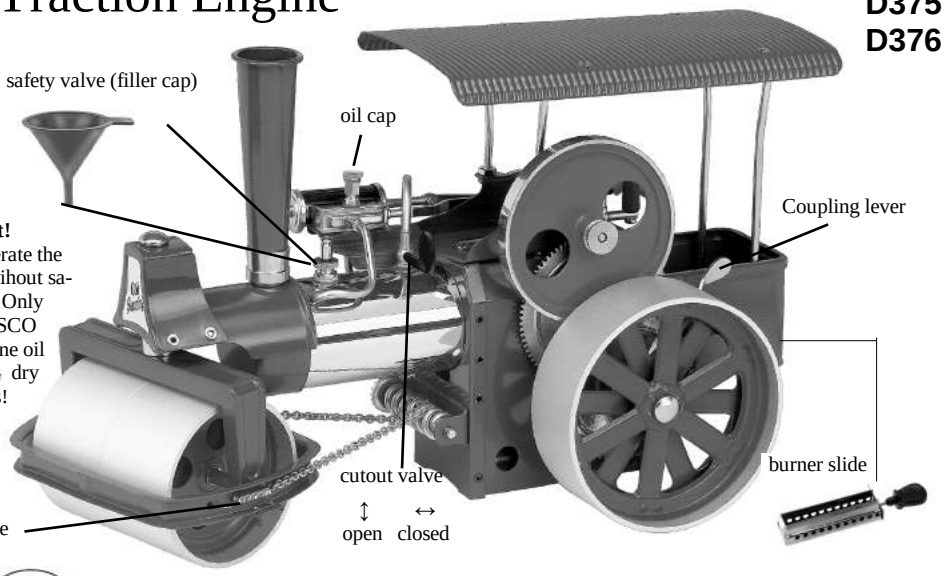
110 1 x screwdriver
111 1 x cylinder oil
112 1 x funnel
113 1 x Witabs dry fuel tablets
114 1 x combination spanner
115 1 x small spanner

Brass and black/brass models. The brass parts are treated with a clear laquer to prevent tarnishing. After usage and to prevent tarnishing, apply a further coat of clear laquer.

Please read first the operating instructions

Operating Instructions for the Steam Roller and Traction Engine

D375 D415
D376 D416



Important!
Never operate the machine wihout safety valve. Only use WILESCO steam engine oil and WiTabs dry fuel tablets!

230 ml

GB USA

Important information and safety precautions!

1. **For safety reasons, children (recommended age: From 8 years on) should run the Steam Engine only under supervision of adults**. While the engine is running and until its complete cooling, the Steam Engine must be under constant observation.
2. Each irregularity in the course of the running of the Steam Engine can be repaired by a competent and authorized person or by WILESCO themselves. Otherwise any warranty expires.
3. Any unauthorized alteration, repair or manipulation regarding the standard specification will also invalidate the warranty unless the damage is due to a production fault.
4. The parts which are under steam pressure as boiler, spring loaded safety valve etc. leave our premises only after a 100% control. The spring loaded safety valve must not be manipulated. **The running of the Steam Engine without any spring loaded safety valve is not allowed.** The spring loaded safety valve must be checked before each running with a pression on the spring or a small pull on the upper valve rod. If lime residues caused by hard water are on the spring loaded safety valve, the valve has to be changed immediately.
5. **High temperatures:** Due to the principles on which your Steam Engine works, the boiler, the boiler house, the spring loaded safety valve, the steam pipes etc. become very hot. Do not touch in order to avoid the risk of burns.
6. **Safety precautions:** In the course of the running, take care that children do not touch any of the moving parts.
7. **Danger if the boiler is heated without enough water!** Always ensure that the Steam Engine has enough water in the boiler before starting it. It is recommended to refill water when adding new WiTabs dry fuel tablets. **The water must <u>always</u> be visible at least at the lower end of the sight glass**, otherwise the joints become leaking and the boiler will be destroyed. Any claim, damage or consequential damage resulting from faulty operating cannot be accepted. If the boiler or any other part where water or steam escape, leak, stop the Steam Engine immediately (remove the burner slide and operate the steam whistle). Any necessary repair should be carried out by authorized trained staff or at the WILESCO company.
8. The Steam Engine meets all safety standards and actual regulations. Each boiler has been exposed to a bursting pressure and water test of 5 bar. The operating pressure is 1,5 bar max.
9. **Keep the operating instructions with your Steam Engine.**

Operating instructions

10. Unscrew the spring loaded safety valve and fill the boiler with the funnel approx. 3/4 full (upper edge of the water gauge glass), if possible with warm water. Lift the funnel slightly so that the air can escape from the boiler. Use only deficient in lime water or, better, water without any lime (e.g. distilled water).
11. **Note:** The steam whistle allows to regulate easily any overpressure in the boiler. Check before oiling whether the boiler is still under pressure.
12. **To oil the cylinder, close the cutout valve** between the boiler and the cylinder according to the picture (open = vertical position, closed = horizontal position). **The cutout valve must be closed in the course of the oiling procedure.** Let off the steam before you oil. For this, activate the steam whistle. Then turn off the oil filler screw and fill in with WILESCO Steam Oil (item n° Z 83) while turning the flywheel several times so that the oil is drawn in. Oil again when you refill WiTabs dry fuel tablets so that the piston does not seize (2-3 drops oil are enough for approx. 10 minutes running time). Oil slightly all of the bearings and linkages. Before refilling the boiler with water, check by operating the steam whistle that no steam pressure is in the boiler.
13. Place two WiTabs dry fuel tablets in the burner slide and light them. Use only the original WILESCO burner slide. **Caution: Because of the risk of danger from an open flame, always take the necessary safety precautions.**
The burner slide is adjustable. The oxygen supply and the flame height can be adjusted by moving the burner slide in relation to the air holes of the burner slide guide in the boiler house. Before adding new fuel tablets, always check the water level and refill the boiler with water to ensure that the boiler does not run dry. The ratio of fuel tablets to the quantity of water in the boiler is designed so that the boiler cannot run dry without any added fuel tablets. **The burner slide must be completely pushed in. Important: After the heating process, remove the burner slide from the guide whilst it is still hot,** otherwise unburnt fuel may cause the slide to stick. If the burner slide becomes stuck, it can be removed by tilting it slightly to the left or right.

Caution: Dry fuel tablets require a lot of oxygen to burn properly. **That is the reason why, for an indoors use, the room should be well ventilated.** To prevent unpleasant smells, the fuel tablets should burn out - they should not be blown out. If there is not enough water in the boiler, place the burner slide on a fireproof plate until the tablets have burned out completely.

14. Disengage the gears next to the driver's cab by moving the clutch lever **sideways**. When the water starts to "bubble", open the steam valve (vertical lever). Turn the flywheel by hand to let the condensate in the pipes and the cylinder escape. Engage the clutch and let the Steam Engine run by gently spinning the flywheel. The flywheel can be started up in both directions, which allows forward and backward movement. The speed can be adjusted by the cutout valve. Without chaindrive, the Steam Engine can be used as a stationary Steam Engine. Models can be run with a flexible belt placed beside the flywheel. If your engine should run without steam, the gears should also be disengaged.
15. The exhaust steam (condensed water) goes from the cylinder through a pipe into the front part of the boiler under the smoke stack. That is the reason why the steam pipe is not soldered because no pressure comes in the condensed water container (separated from the boiler). Before removing the condensed water, close the cutout valve, stop your engine, remove the burner slide and place it on a fireproof plate until the tablets have completely burnt out. In order to remove the condensed water, tip over your Steam Engine at the same time forward and on the side.

Be careful: Risks of burning because fo the hot condensed water.

16. After the use of the Steam Engine and its cooling, the engine should be serviced. Pour out any water which is left in the boiler. For this purpose take the spring loaded safety valve from the boiler and open the steam whistle. **Be very careful if the water is still hot!** Any water left in the boiler cannot do any damage, but might leave residues on the sight glass. Any lime building on the sight glass or in the boiler need not to be **removed. In no case usie vinegar or corrosive agent** (advice: Use a lime dissolving agent which does not attack the brass and the solder). The building of soot on the lower side of the boiler does not influence the function and can be removed with a brush. Finally, dry the model using a clean cloth.

Warranty:

17. All WILESCO Steam Engines are carefully checked before leaving the factory. However, if a problem arises, you can return the Steam Engine to a specialized distributor or directly to WILESCO. **We are sure you will understand that already fired or used models cannot be replaced by new ones.** The most frequent claim is a leaking boiler. The solder will be destroyed if there is not enough water in the boiler. In such cases, the solder liquefies drop-shaped and the boiler becomes leaky. This is an obvious proof that the boiler was fired without enough water. **Please watch always carefully the water level, because heating without enough water excludes warranty claim.**

There is a cable remote control (part n° Z361) available, which has to be fixed on the steering wheel of the Steam Roller and the Steam Traction Engine. Also available: Radio remote control Z360, both can be ordered through your WILESCO retailer.

Only for Black / Brass Steam Roller and Steam Traction Engine

18. Some of the parts are made of solid brass and protected against tarnishing by a clear varnish. The brass parts may oxydate in the course of the running. We recommend you to clean your engine or to protect the boiler, the boiler house etc. through an air drying clear varnish.

This Steam Engine is only meant for the above described function.
Technical specifications can be changed without prior notice.

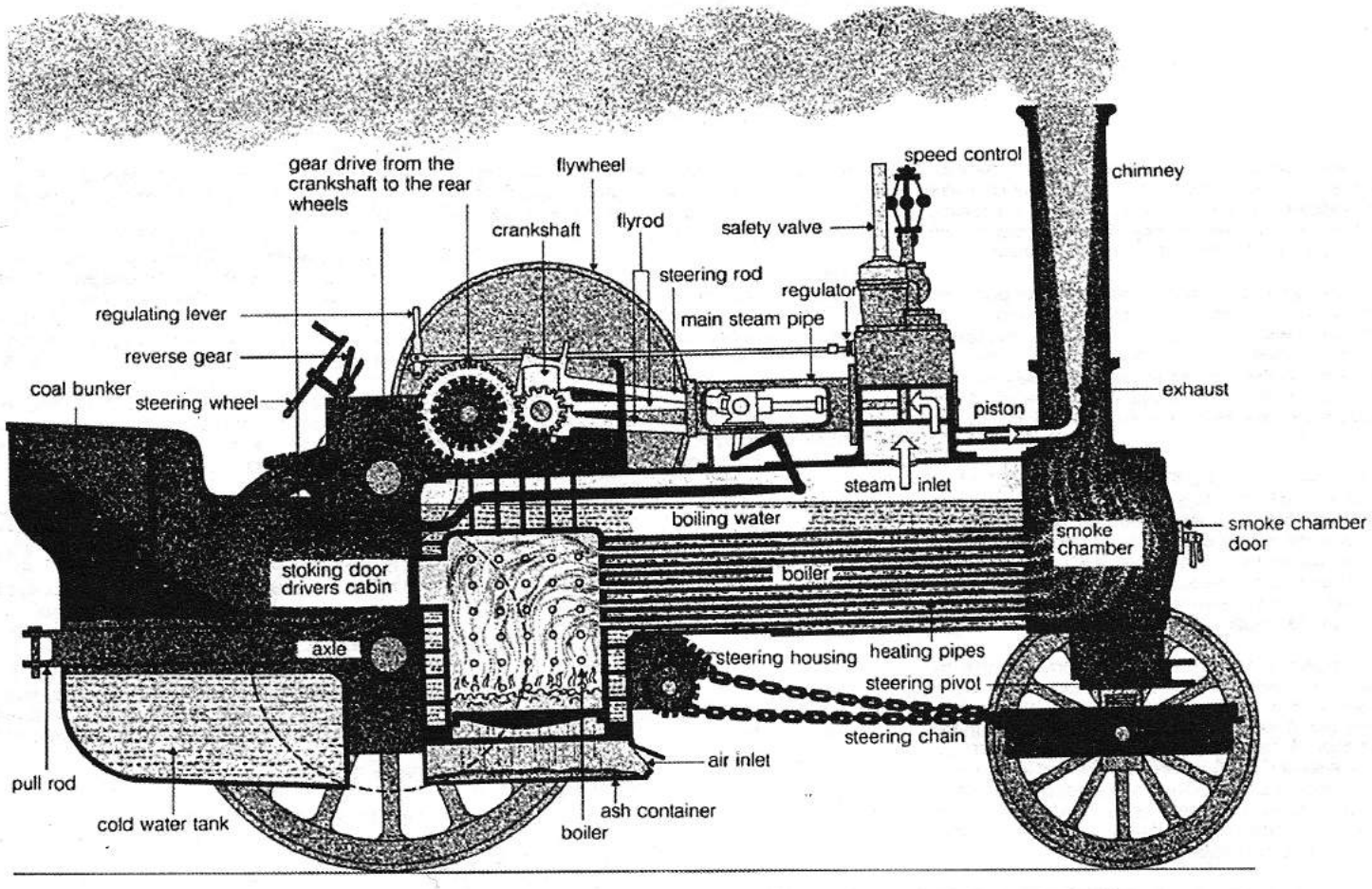
WILESCO wishes you lots of fun with your Steam Engine and „full steam ahead"!

The Functioning of the Original Steam Engine

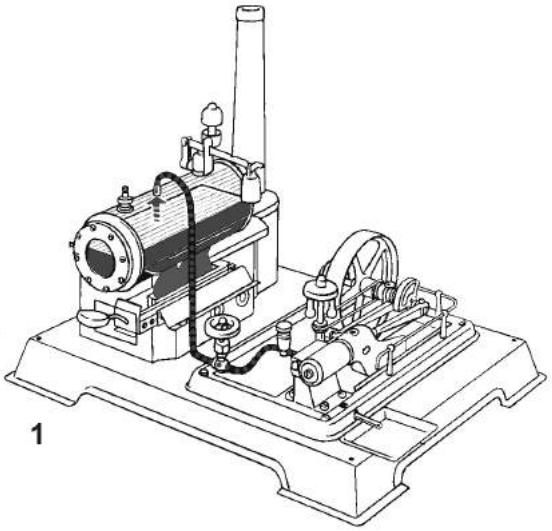
The driver of the steam engine or stoker shovels the coal through the stocking door into the boiler. The coal is burns.

The boiler/firing chamber is supplied with fresh air via the air supply from the bottom. The combustion air which is heated to high temperatures moves from the boiler through the steam tubes of the boiler (water tank) into the combustion chamber and from there to the chimney. This is how the steam pressure which accumulates in the enclosed boiler is transferred in the cylinder (see next page) into kinetic energy. The exhaust steam (condensation) is led via the exhaust into the chimney. The evaporated water is replaced by fresh water from the cold water tank. The motion of the piston rod is transferred by means of the crankshaft and the gear wheels onto the large rear wheels. Every steam engine has, as opposed to a steam locomotive, a large flywheel. The flywheel is needed in order to overcome the dead centre of the piston in the cylinder and serves also as energy storage to absorb load surges. In contrast to the steam engine the steam locomotive has two or more cylinders whereby the offset piston arrangement overcomes the dead centre and for that reason a flywheel is not required.

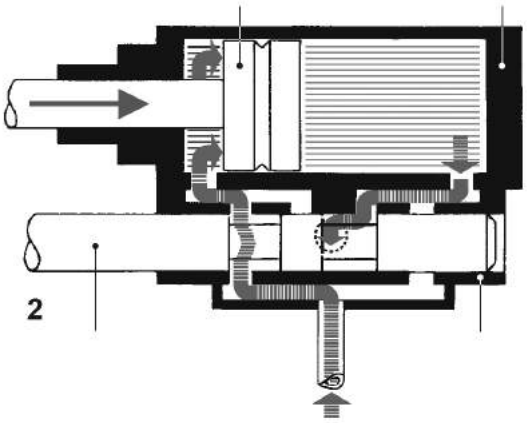
The WILESCO-steam engines/traction engines work on the same principal as the old originals. However, instead of burning coal or coke a dry fuel tablet is used to heat the boiler.



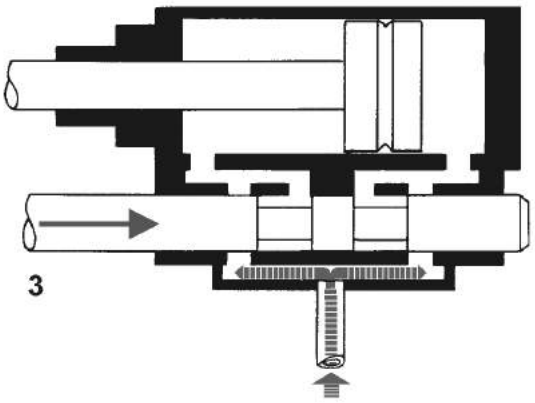
The Energy Transformation in the Cylinder



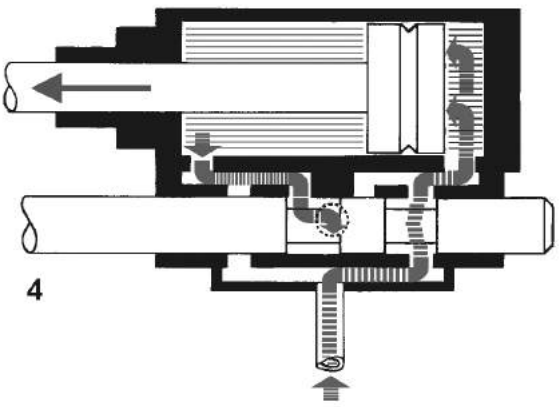
The diagrams on the right show what actually happens inside the power converting system (piston and cylinder) when „fire and water“ are brought together to produce mechanical energy, energy to drive a drilling machine, a saw, locomotive or steam roller.



In the second diagram the steam can be seen passing to the left side of the piston, pushing the piston to the right. At the same time the exhaust steam from the previous stroke is directed, by the other port on the slide valve, out into the atmosphere, having done its useful work.



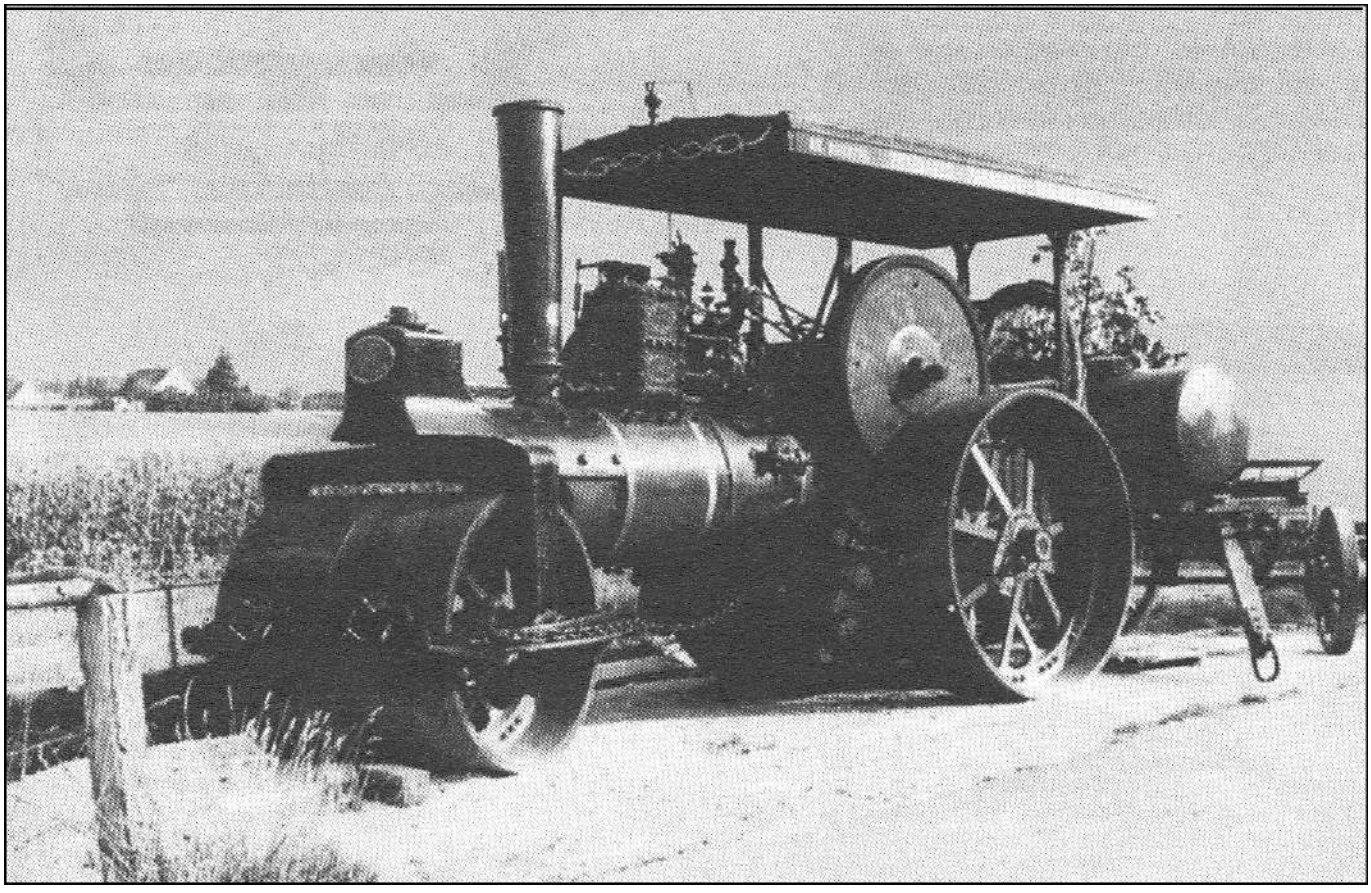
Just before the piston reaches the end of its travel, on the extreme right, the slide valve cuts off the steam from the boiler. This is the point, where the crank is at the limit of its movement and is known as „tod-dead-centre“ or „bottom-dead-centre“, reffering to the two possible geometric positions. The flywheel carries the crank over this critical position by the energy it has stored from previous power strokes.



The slide valve continues to move in the same direction this time opening the inlet port to admit steam to the right hand side of the piston, again pushing the piston but now to the left, exhausting the steam through the left hand port. The whole cycle being repeated when the „dead centre“ is reached once more.

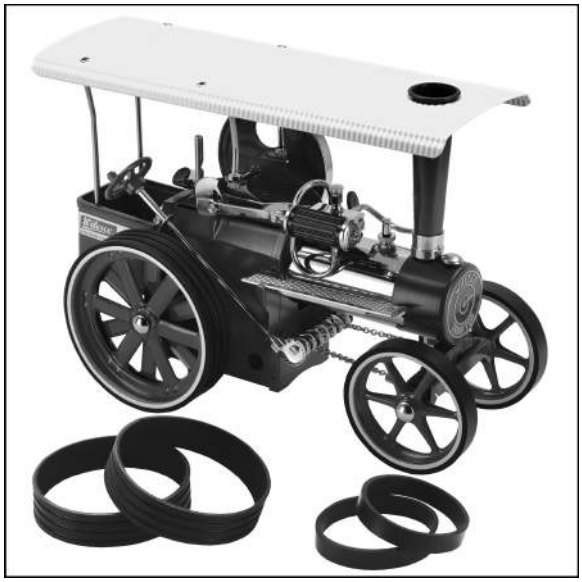
History of Steam Engines

Approx. 1705	Papin/Newcomes built the first machine operated by steam.
Approx. 1765	Watt built the first industrial steam engine.
Approx. 1800	Use of steamships, steam locomotives, heavy goods vehicles, road rollers, fire engines and widely used in factories to drive machines.
Up to Approx. 1960	Use of steam for road rollers in Europe.
	Nowadays steam engines have mainly been replaced by diesel or electro-motors (stationary).
	Nowadays we find steam engines in museums or with collectors.
	In the veterans display at Dissen in the Teutoburger Wald you will find this steam engine.



Accessories: Trailer and Rubber Tyre Sets

Rubber Tyre Set for Rollers, Rear Wheels, no profile
Item No. 01454



Rubber Tyre Set for Traction Engines, long profile
Item No. 01452

Rubber Tyre Set for Traction Engines, cross profile
Item No. 01453

A385/386 Water-Cart

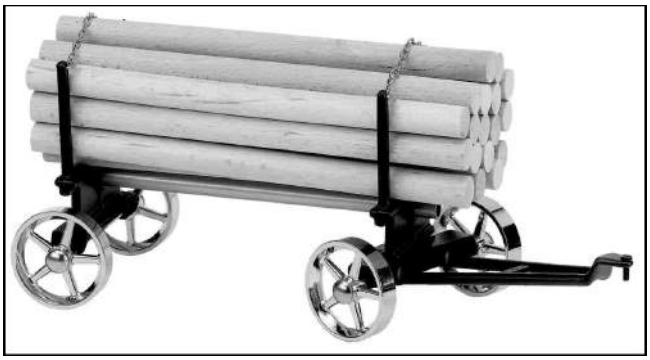
Silver-coated brass tank with water drain cock, cast iron spoked wheels, trailer coupling, finely painted, matching colours. A trailer for steamroller D 375/376 or traction engine D 415/416 which has a tremendous play value.
Item No. 00385 (coloured)
Item No. 00386 (black/brass)

Accessories: Trailer and Rubber Tyre Sets

Rubber Tyre Set for Water Cart
Item No. 01455

A425/A426 Lumber Wagon

Cast iron spoked wheels, nickel plated chains with clasps, 15 genuine wooden logs of 16 mm diameter, length 220 mm, trailer coupling, all metal parts finely painted, matching colours. Length 330 mm, width 110 mm, height 130 mm. The suitable trailer for steam traction engine D 415/416 or for steamroller D 375/376.
Item No. 00425 (coloured)
Item No. 00426 (black/brass)

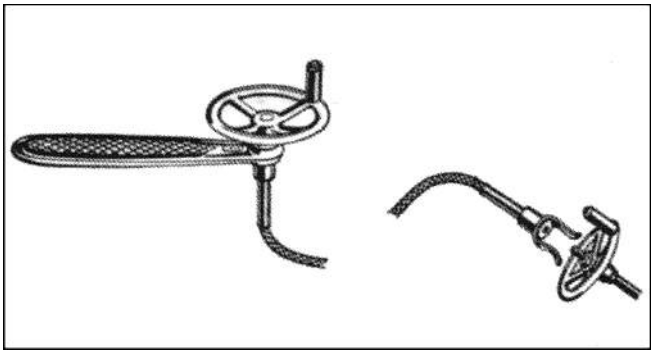


Rubber Tyre Set for Lumber Wagon
Item No. 01456

Accessories:
Remote Control

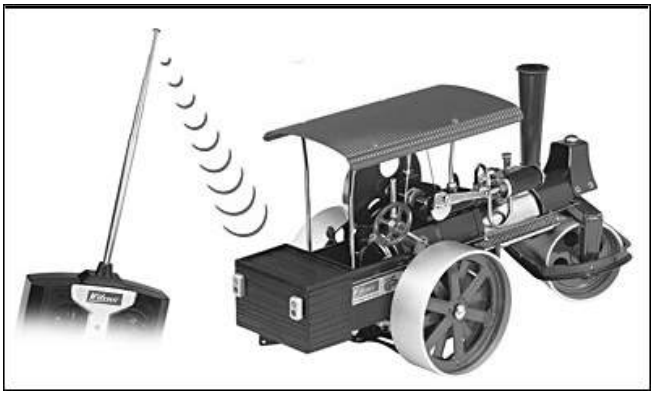
Cable Remote Control

Very suitable for all steam roller/tractors. An extension to the steering wheel by means of a strong Bowden cable which is fitted to the steering wheel by means of a spring. Colour red.
Length approx. 100 cm
Item No. 00361



Radio remote control Z 360

Suitable for the steering of all of the Wilesco steam rollers/ tractors. This kit contains the transmitter, the receiver and the gear rod joining the receiver to the front axle. This remote control is designed for the actual steam rollers/tractors and can be mounted very easily.
Item No. 00360



Assembly Instructions D 415
Traction Engine D 416