

TITANIC

THE SHIP • THE LEGEND

Pack 7



PIPES FOR THE SECOND ENGINE



PARTS IN THIS ISSUE

33A Turbine steam pipeline

33B Hand wheel

33C Hand-wheel support

33D Reversing gear

33E Low pressure pipelines

33F Gangway A (x 4)

33G Gangway B (x 4)

33H Pipe A

33I Pipe B

33J Pipe C

33K Vapour separator

33L Auxiliary motor part B

33M Auxiliary motor part A

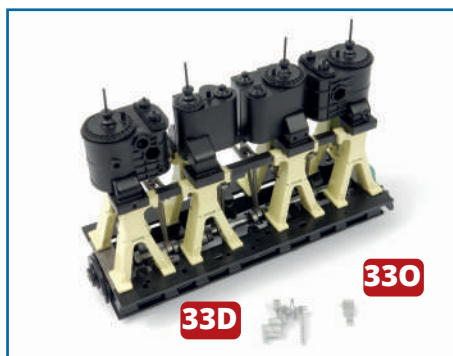
33N Auxiliary motor part C

33O Detail

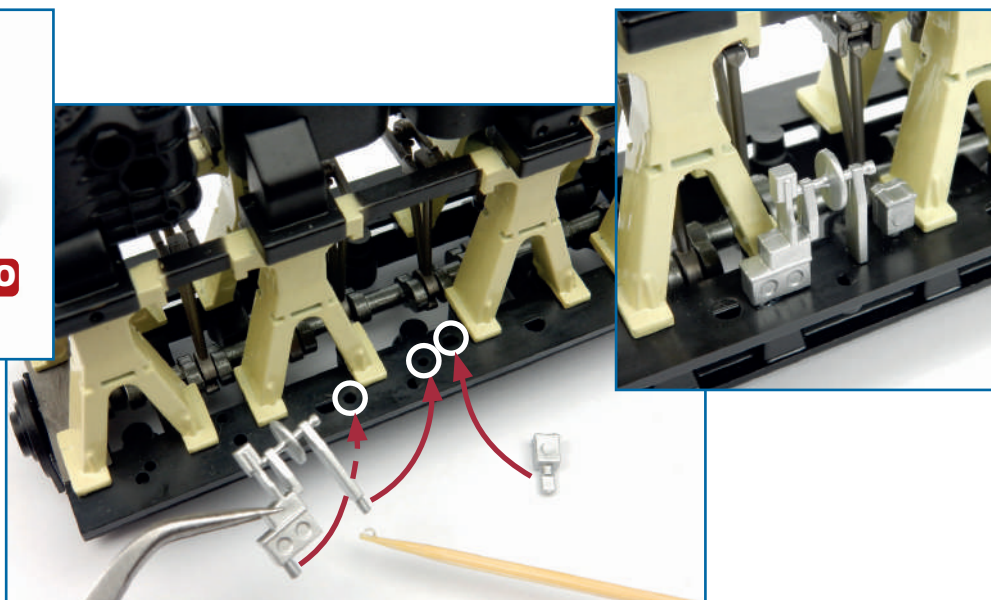
33P Pipe D

33Q Valve pipe E

33R Pipe F



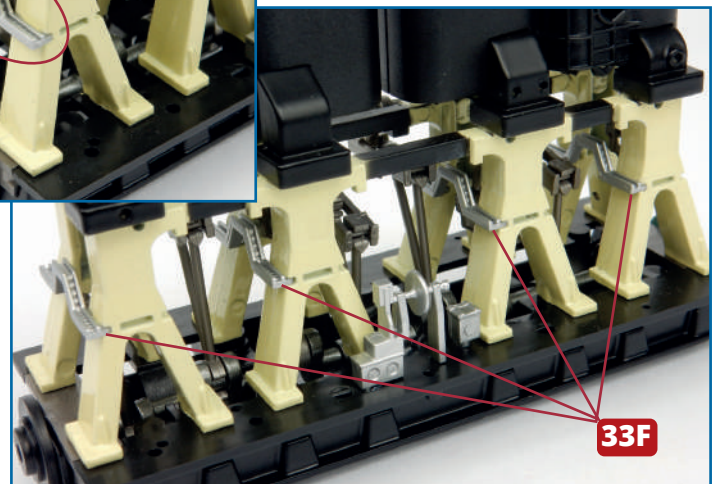
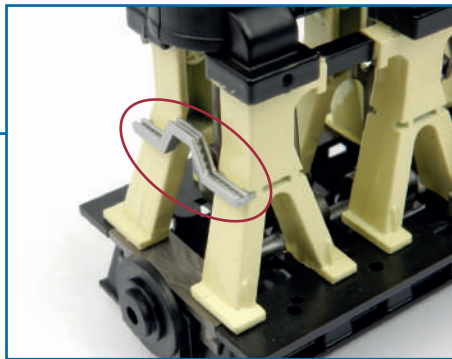
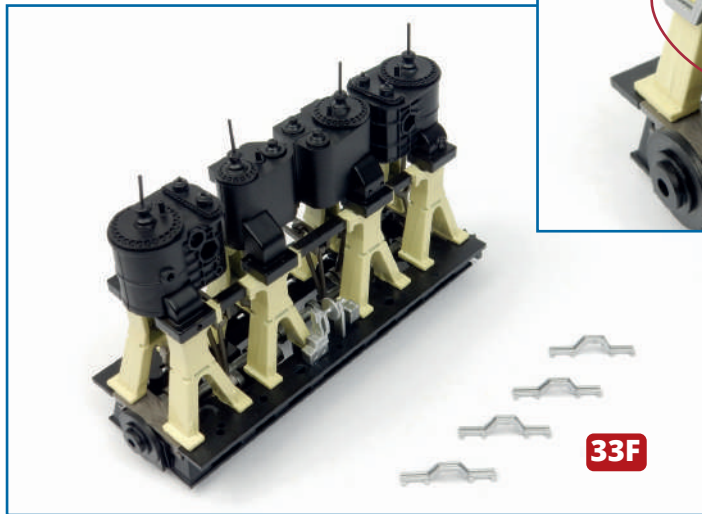
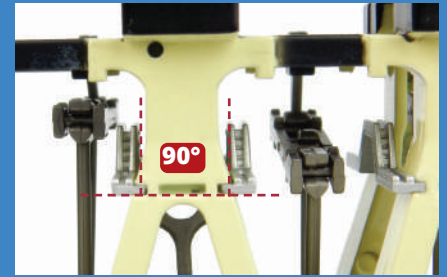
1 In this issue, pipes and other details are fitted to the starboard reciprocating engine from issue 30. Take the reversing gear **33D** and the detail **33O**. Check the fit on the port side of the base of the reciprocating engine and glue them in place.



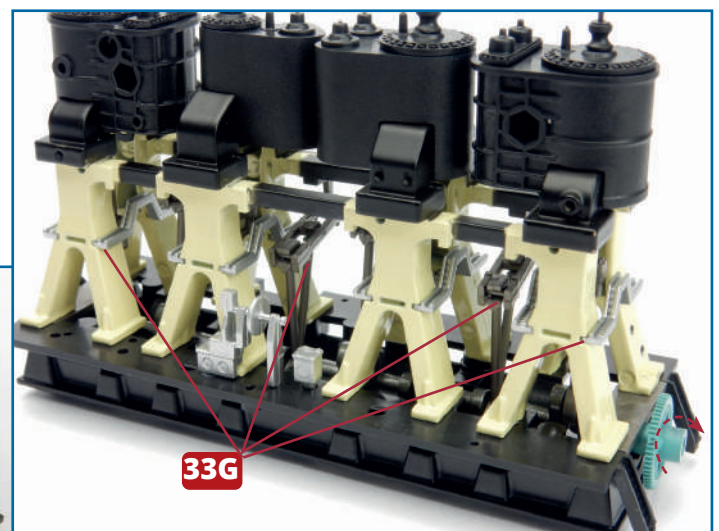
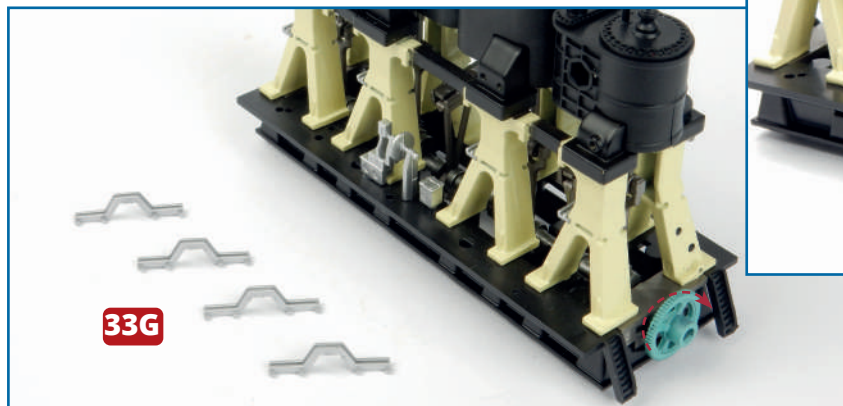


2 Take the four gangways A, **33F**. Check how they fit on the forward sides of the four columns. Ensure the gangways are completely upright and do not lean in towards the columns (see box, right) so they do not block the vertical movement of connecting rods. You can test they are in the correct position by turning the shaft. Fix the gangways in place one at a time by applying a little superglue in the holes and holding the parts upright until the glue has set.

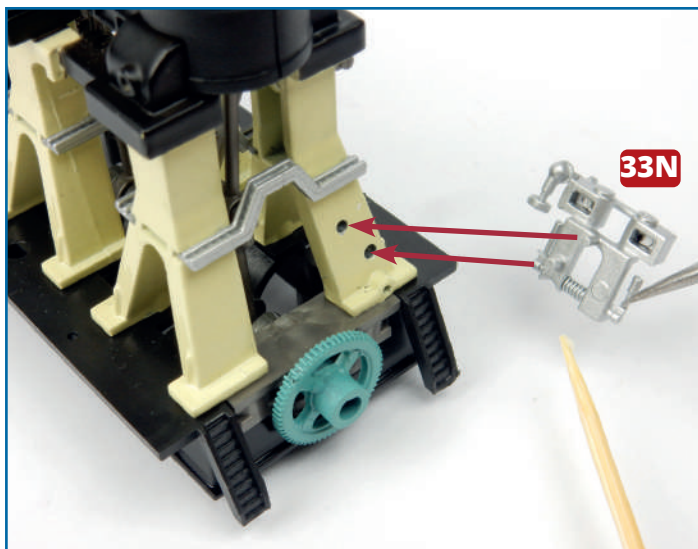
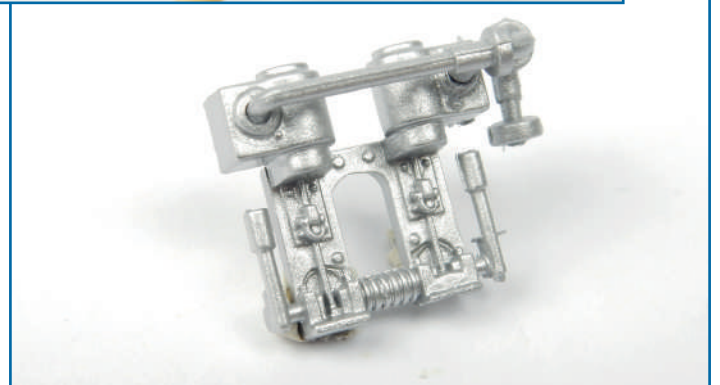
Important advice
Gangways 33F and 33G must be positioned upright, at 90° to the horizontal, as shown, right. Check that they do not lean inwards, as this will block the connecting rods and the rotation of the drive shaft.



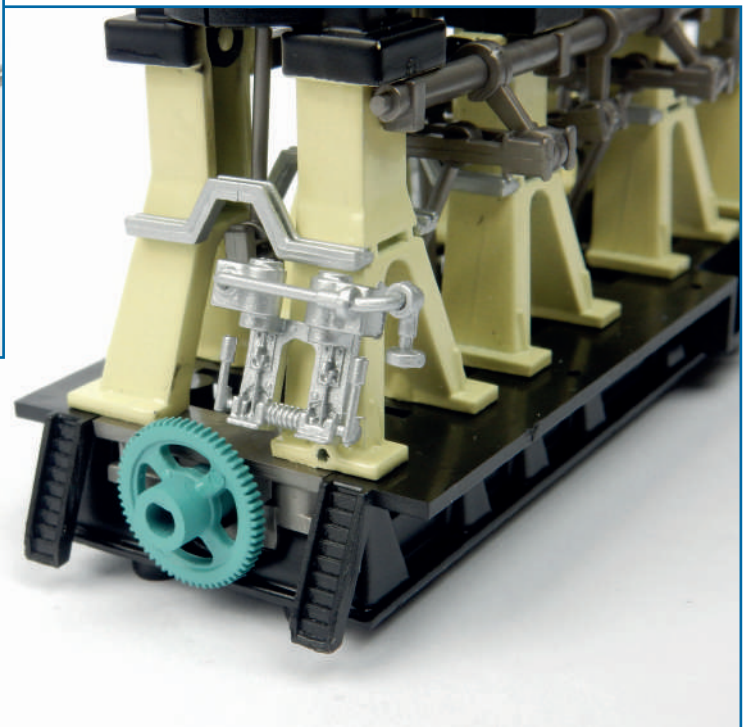
3 Check the fit of the four gangways B, **33G**, on the other sides of the columns, as shown. Again, they must be upright and not leaning in towards the columns, so that the drive shaft can rotate freely. Fix the parts in place one at a time by applying a little glue to the holes and holding the gangways upright until the glue has set.

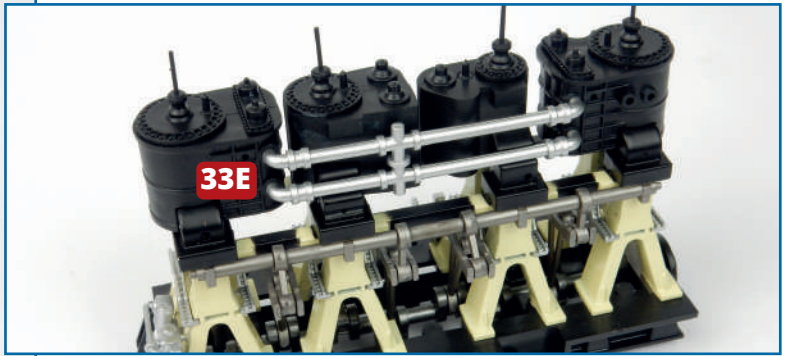
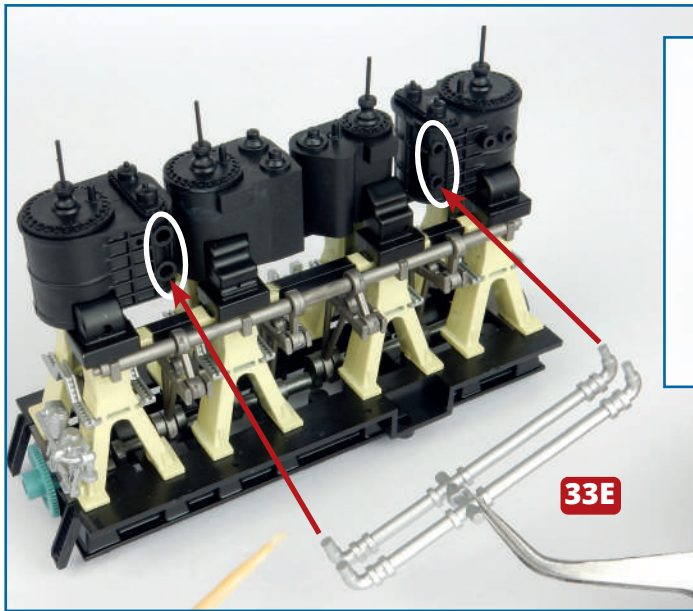


4 The next step is assembly of the auxiliary motor for the starboard motor. Join motor part A, **33M**, and motor part B, **33L** as indicated below, then fit the two pegs on pipe **33M** into the holes in the motor **33N** (shown below right). Note that the pegs on parts **33L** and **33M** are D-shaped, to ensure they are fitted the right way round. Glue together.

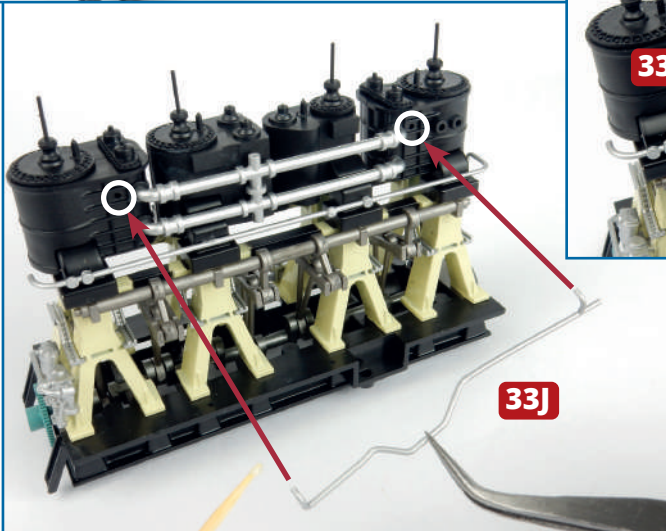
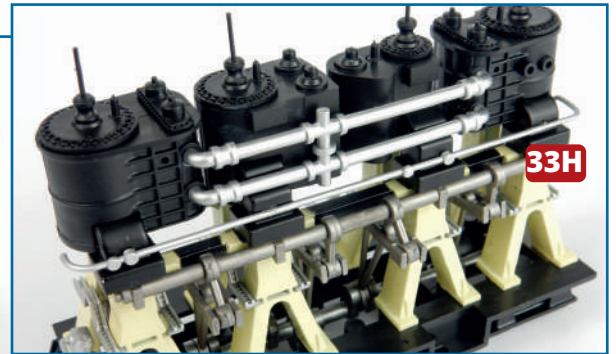
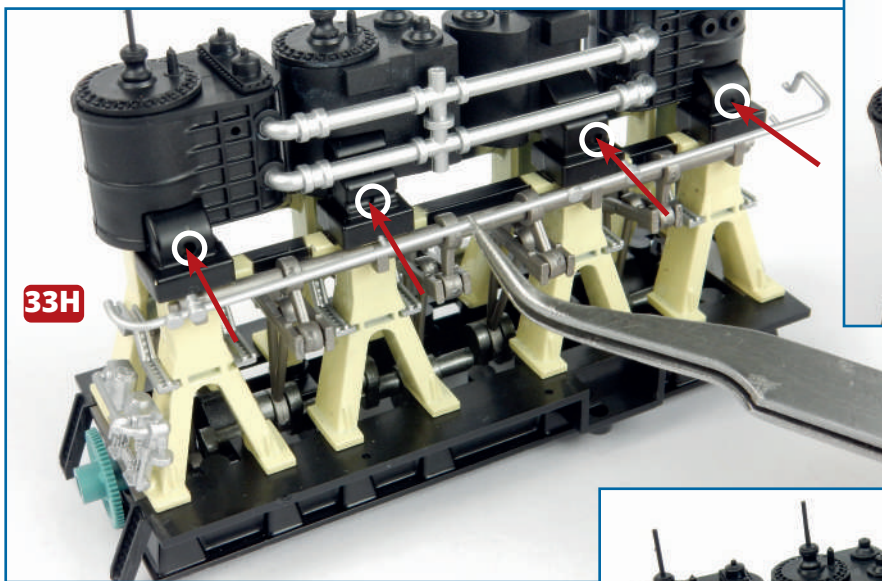


5 Fit the motor **33N** on to the column at the rear of the engine: two pegs at the back of the motor fit into holes in the column (above). Use a little glue to fix the pegs in place (right).



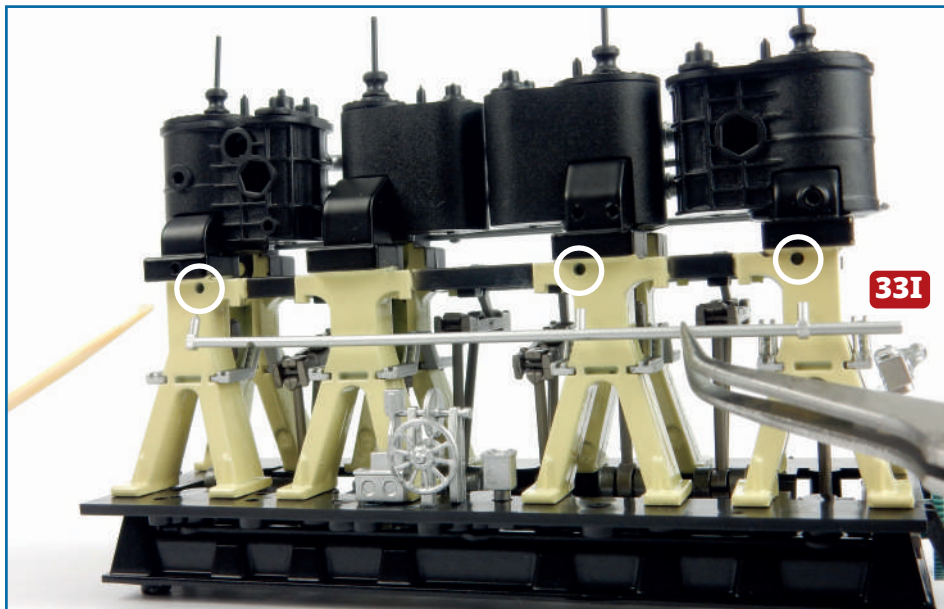
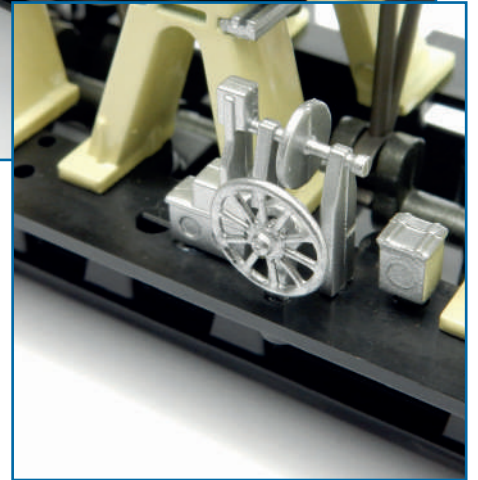
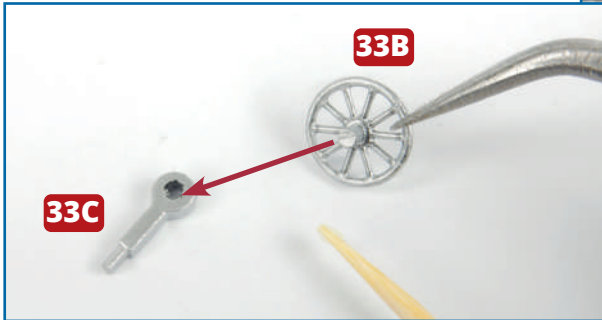
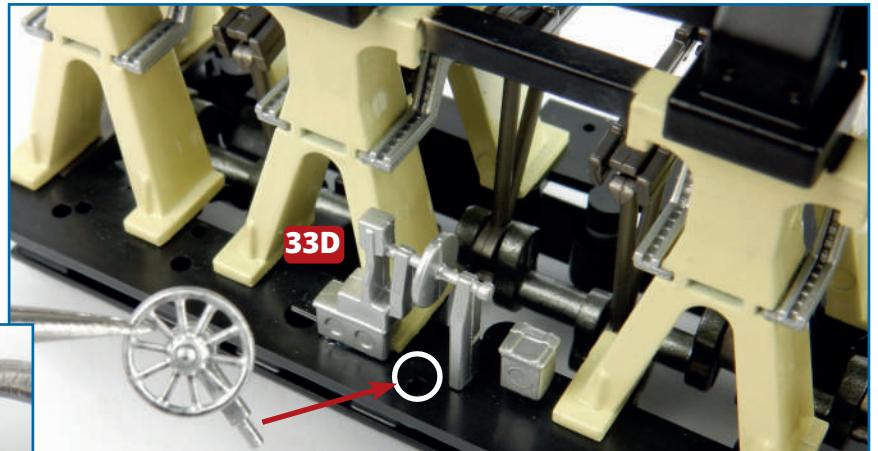


6 Position the starboard engine so that you can access the starboard side. Take the low pressure pipelines **33E** and position them as shown, connecting the two end cylinders. Use a small amount of glue to fix the pipes in place.

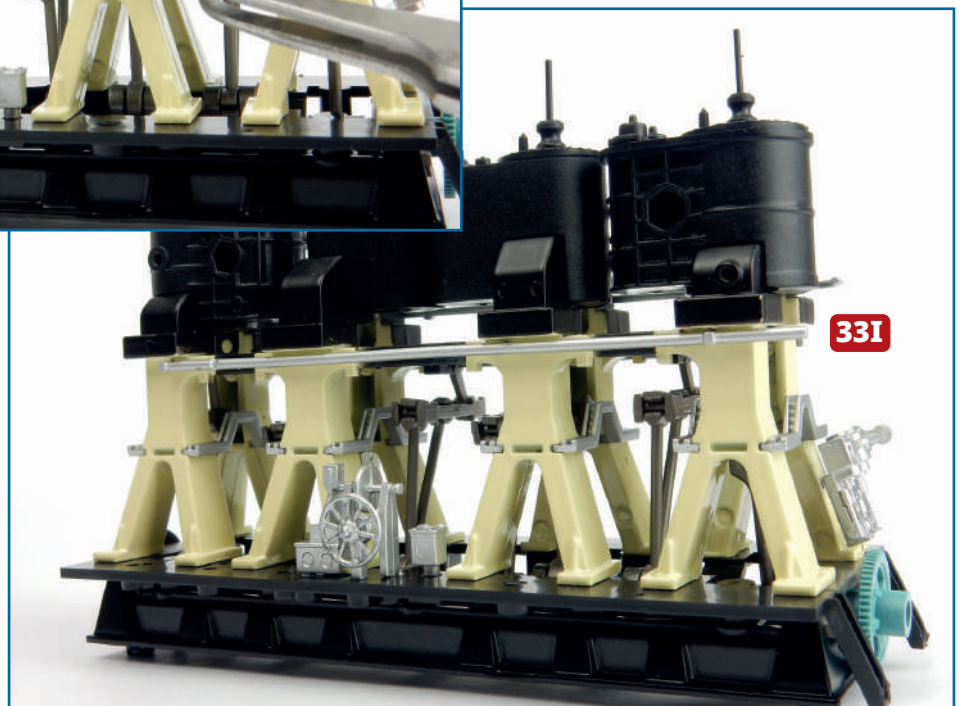


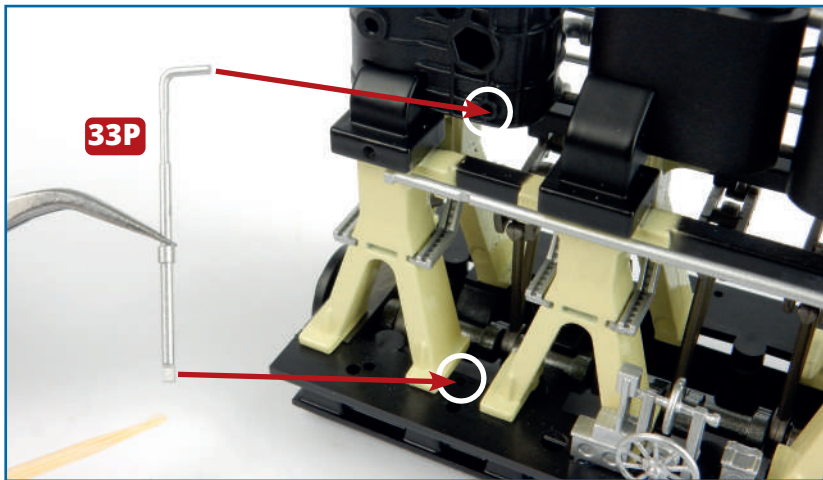
7 Take the two pipes A, **33H**, and C, **33J**. Both pipes must be positioned on the starboard side of the engine. Attach part **33H** to the base of the cylinders below the twin pipes **33E** (top, left and right). Part **33J** is fitted between the twin pipes **33E** (left and above).

8 The peg on the hand wheel **33B** fits into the hole in the support **33C**. Check how part **33C** fits into the base (right): the peg on the base of part **33C** is D-shaped, so it will only fit one way. Use a little glue to fit part **33B** to the front of part **33C** then glue the peg on part **33C** in place.

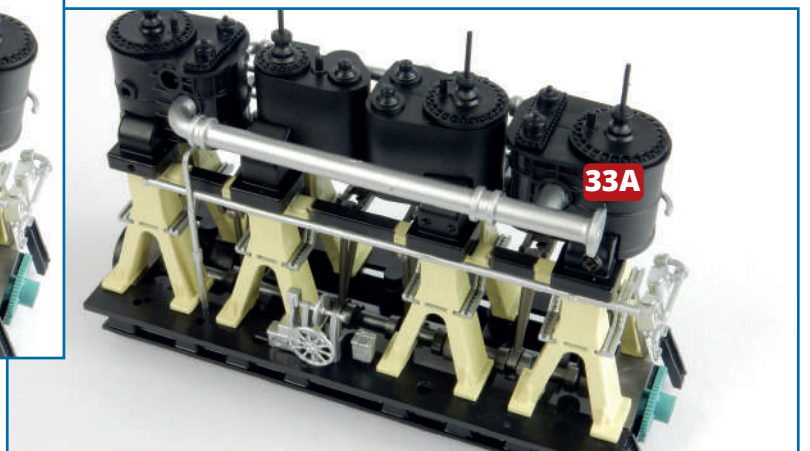
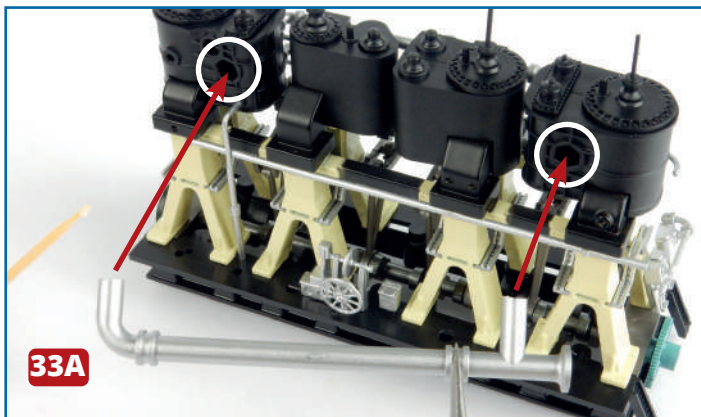
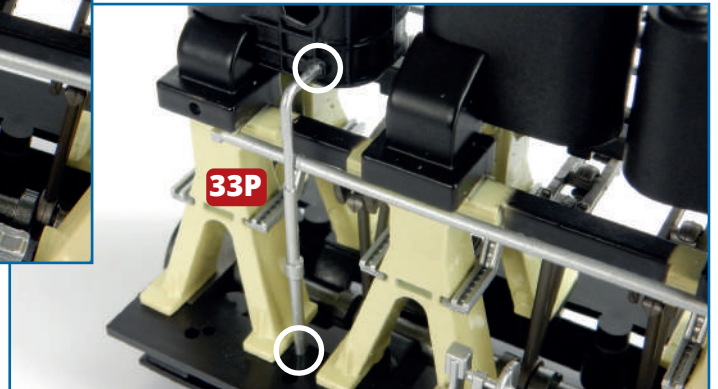


9 Take pipe B, **33I**, and attach it to the port side of the engine, fitting the pegs into the holes (circled). If necessary, use a small amount of glue, to make the fixing more secure.

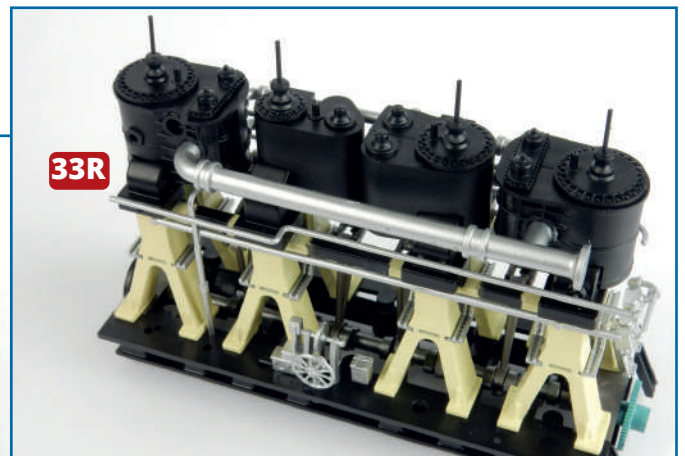
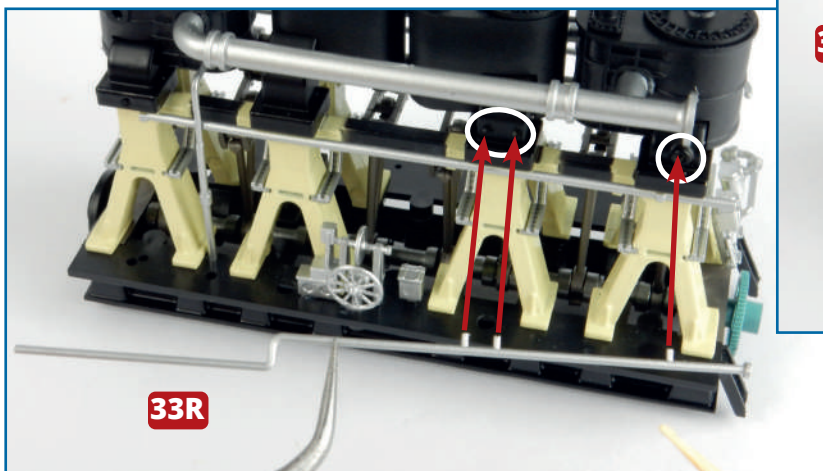




10 Take pipe D, **33P**, and identify the fixing points: it is positioned vertically from the end cylinder to the base. Fix in place with a little glue if necessary.

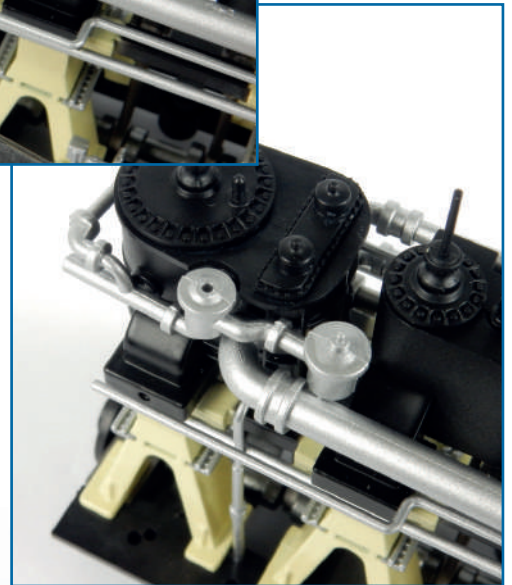
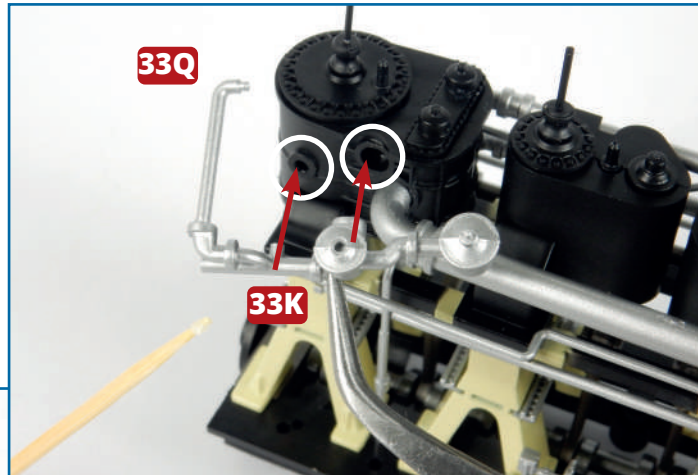
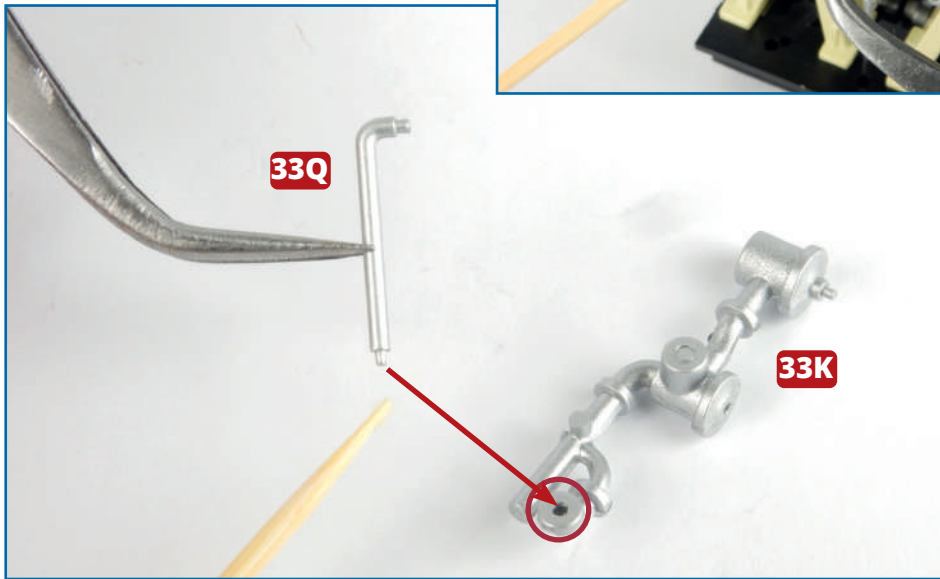


11 Take the turbine steam pipeline **33A**. Identify the fixing points on the port side of the engine: pegs on the pipeline fit into holes in the two end cylinders. You may need to remove any 'flash' from the moulding process. Fix in place with a little glue if necessary.



12 Take pipe F, **33R**: pegs on the pipe fit into holes at the base of the cylinders. Glue in place.

13 Fit pipe E, **33Q**, to the vapour separator **33K**, as shown (below). Glue in place. Then fix the separator **33K** to the front low pressure cylinder on the port side of the engine, as indicated by the arrows and circles. Again, use a little glue to fix it in place.



Completed work

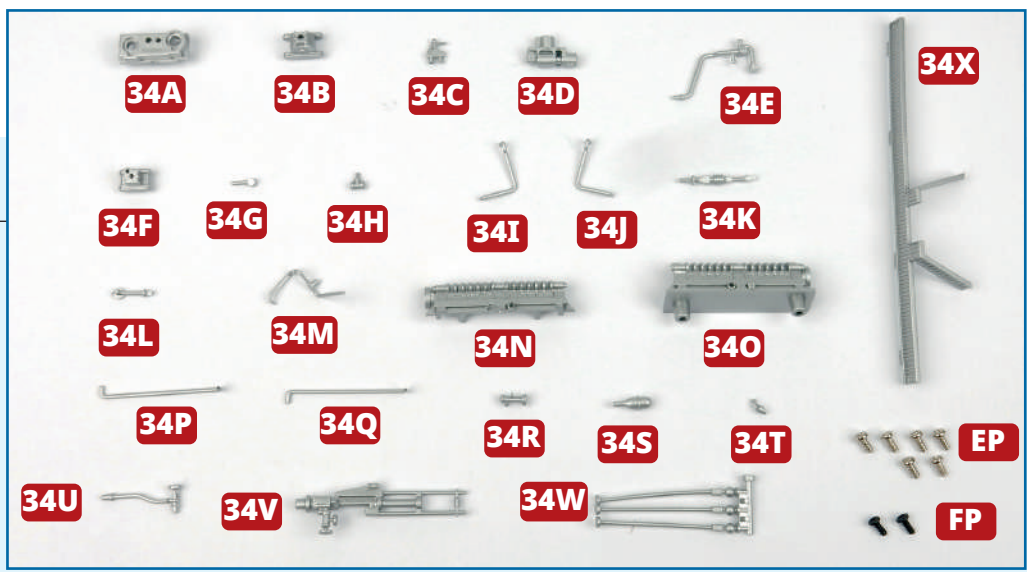
Steam pipes and an auxiliary motor have been fitted to the starboard reciprocating engine.



THRUST BLOCK AND PUMPS

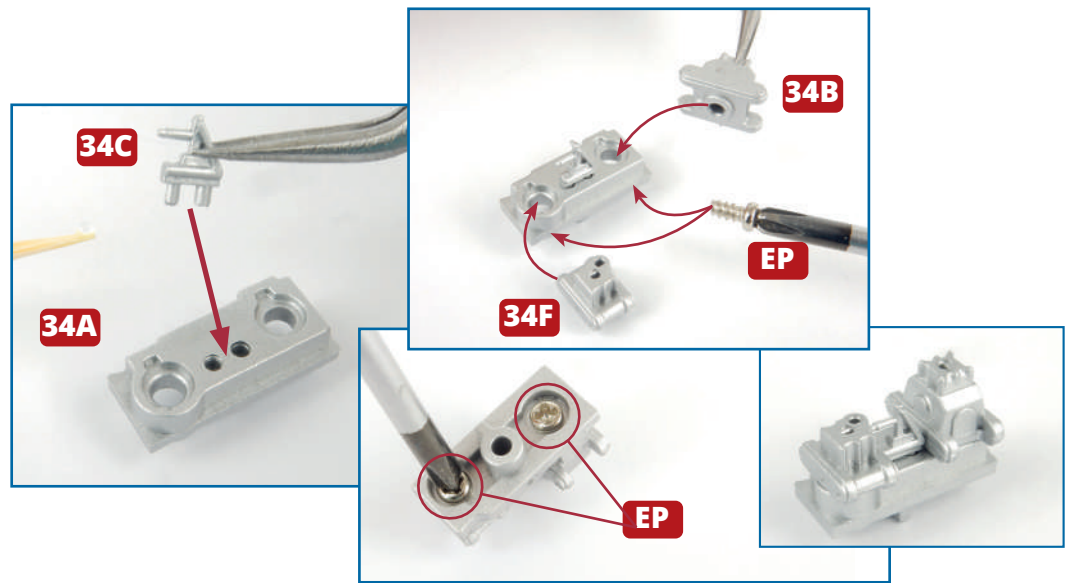
PARTS IN THIS ISSUE

- 34A** Base of large pump
- 34B** Detail A for large pump
- 34C** Detail B for large pump
- 34D** Base of lubrication pump
- 34E** Tube for lubrication pump
- 34F** Detail C for large pump
- 34G** Pressure gauge for large pump
- 34H** Detail A for lubrication pump
- 34I** Pipe A for thrust block (starboard side)
- 34J** Pipe A for thrust block (port side)
- 34K** Detail B for lubrication pump B



- 34L** Control for large pump
- 34M** Tube for large pump
- 34N** Thrust block B
- 34O** Thrust block A
- 34P** Pipe B for thrust block (port side)
- 34Q** Pipe B for thrust block (starboard side)
- 34R** Large pump connection
- 34S** Detail D for large pump
- 34T** Elbow pipe for thrust block
- 34U** Valve for large pump
- 34V** Reversing engine
- 34W** Valve control rods
- 34X** Gangway
- EP** Six 2 x 4mm PB screws (1 spare)
- FP** Two 1.7 x 4m PB screws (1 spare)

1 Take the large pump details **34A**, **34B**, **34C**, and **34F**. Use a little glue to fit part **34C** in place on top of the base. One peg is larger than the other to ensure you fit it the right way round. Fit parts **34B** and **34F** on top of the base **34A** and fix in place with two **EP** screws from the underside of the base. Make sure the parts do not revolve as you tighten the screws.

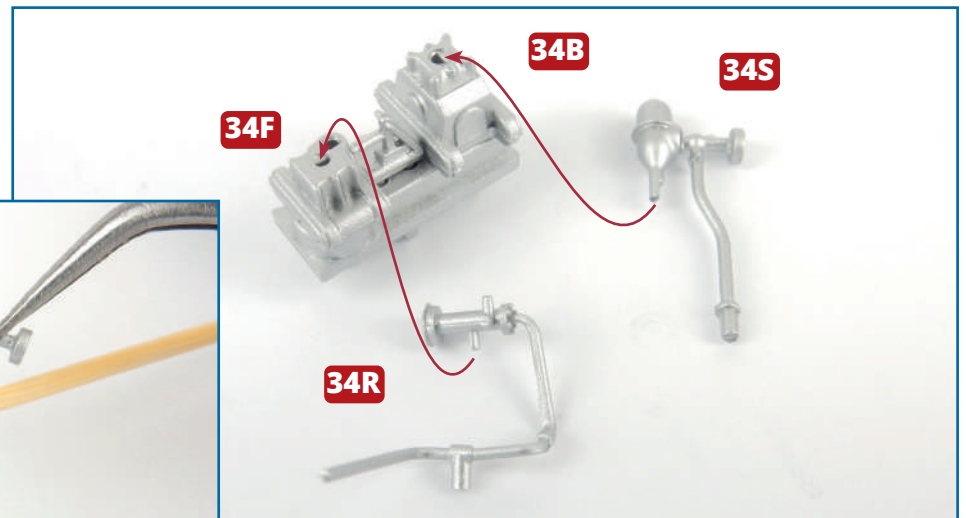
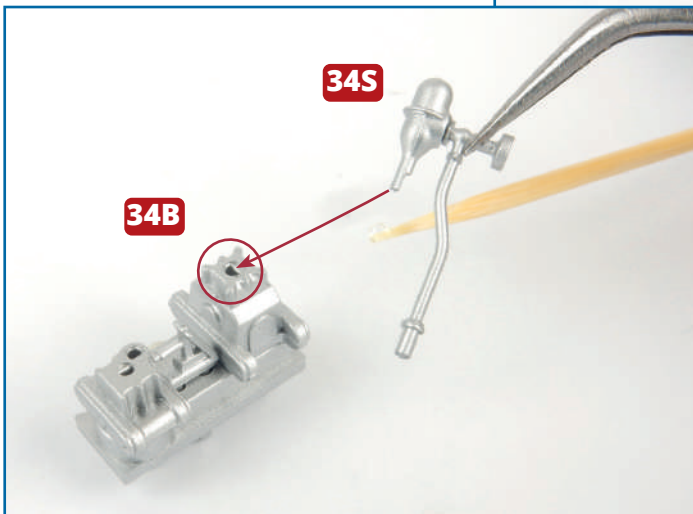
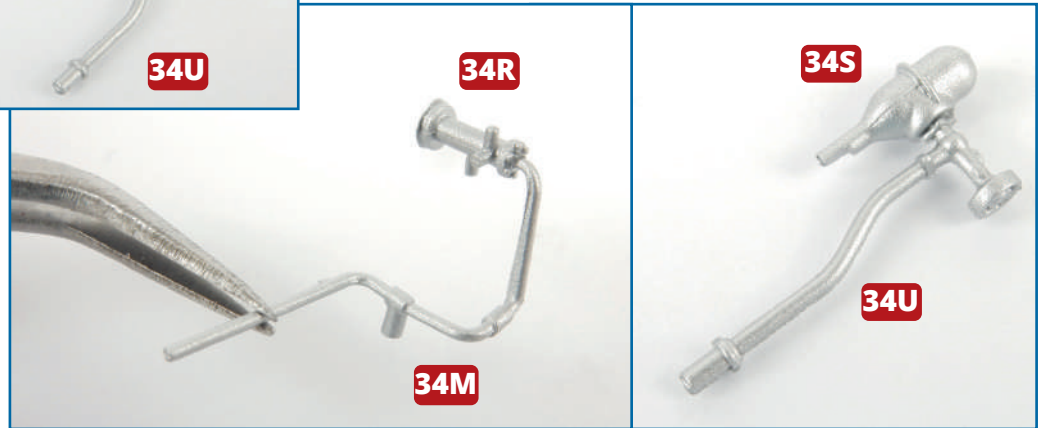


★ STEP-BY-STEP INSTRUCTIONS ★

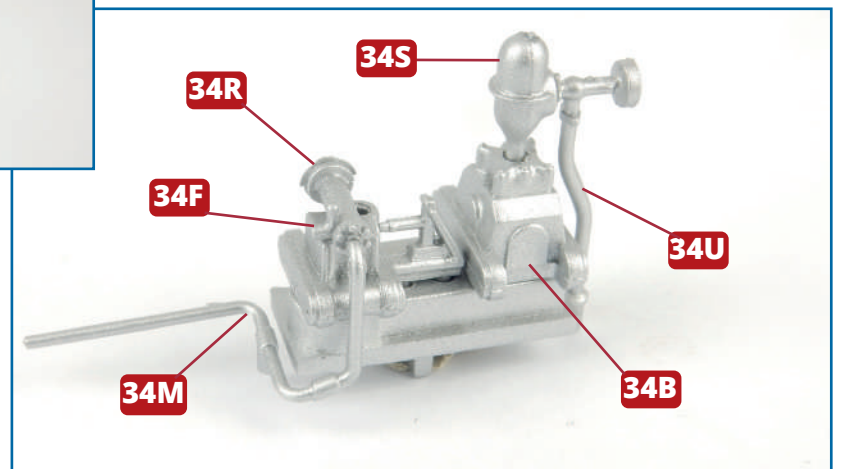


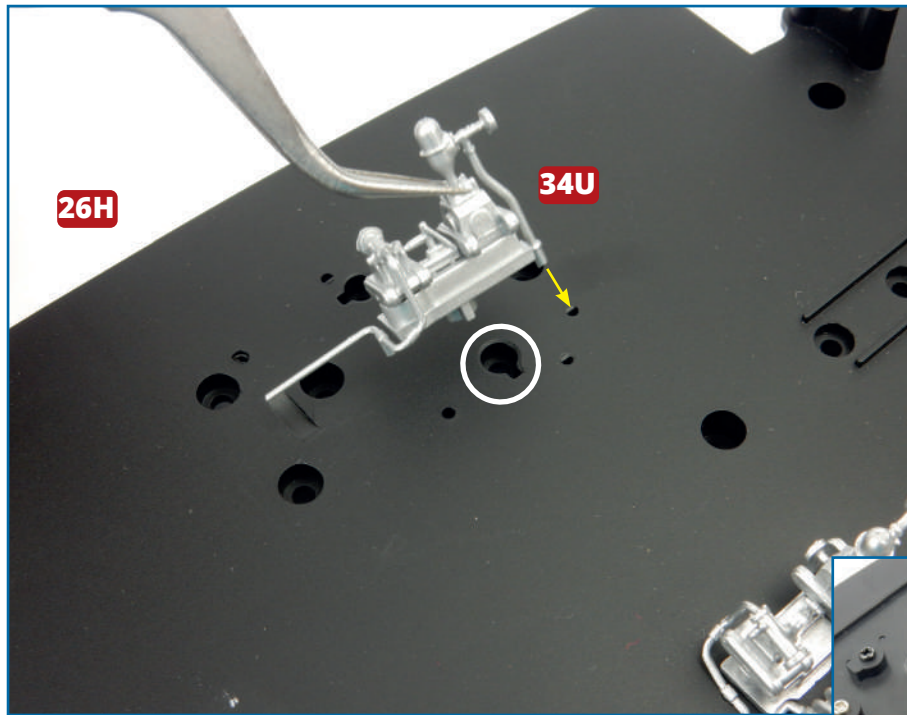
2 Fit the peg at the bent end of the pipe **34M** into the large pump connection **34R**. Fit the peg on part **34U** into the hole in part **34S**. The parts have to be glued in place (below) but we advise you to check the fit on the assembly from step 1 (see step 3).

NOTE: Many of the parts in this issue are very small. We suggest you keep them in the bags, as supplied, until you need them. You may need to sand down pegs or enlarge holes with a round-nosed file to ensure a good fit. Always check the fit carefully before applying glue.

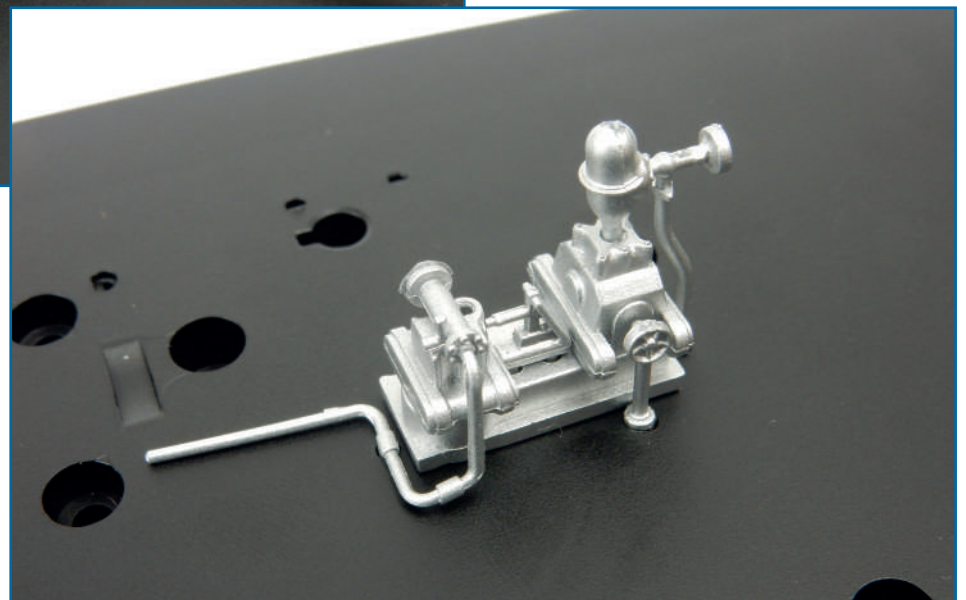
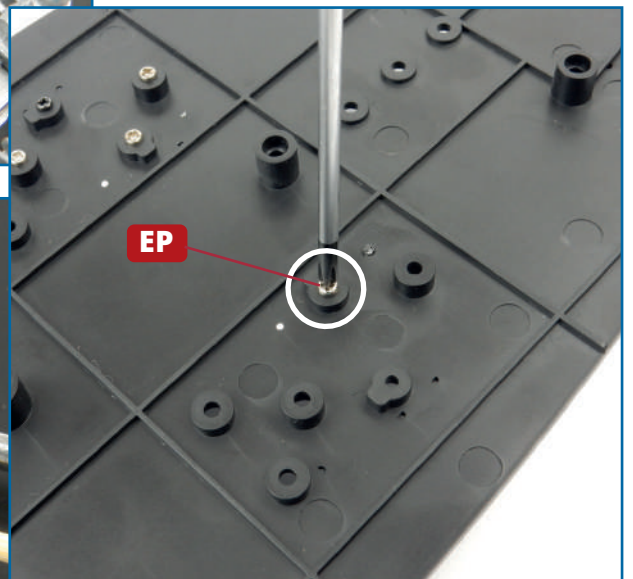
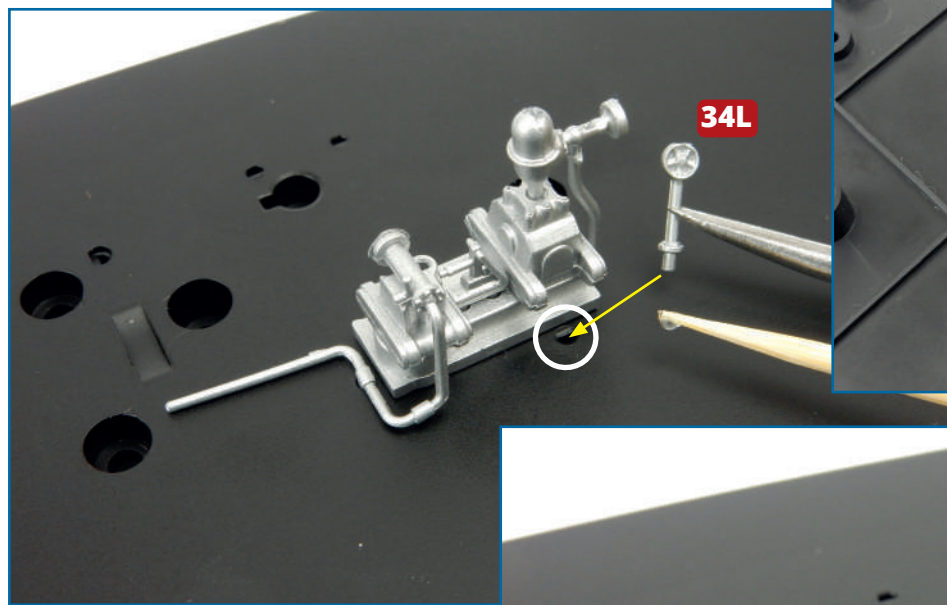


3 Take the pump base assembly from step 1. The peg on part **34S** fits into the hole in part **34B**. Glue in place (above). Then fit the peg on connection **34R** into the outer hole of part **34F**. Glue in place. The photo on the right shows the completed large pump. (The control and valve will be fitted later.)

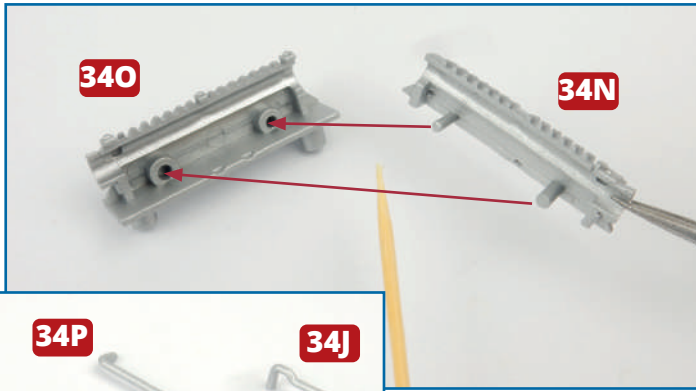




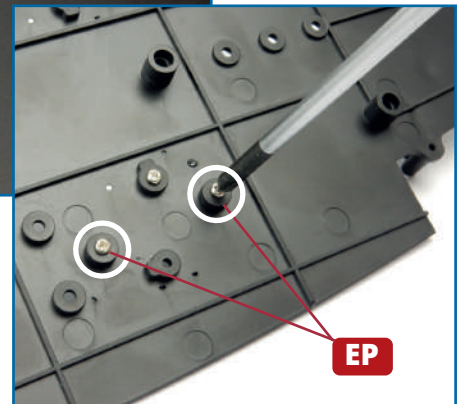
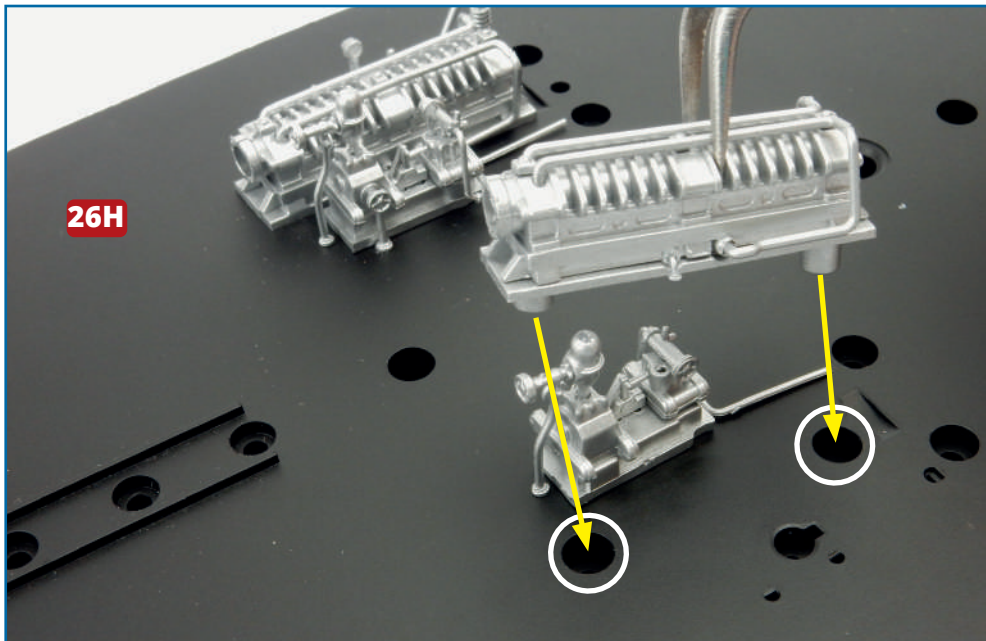
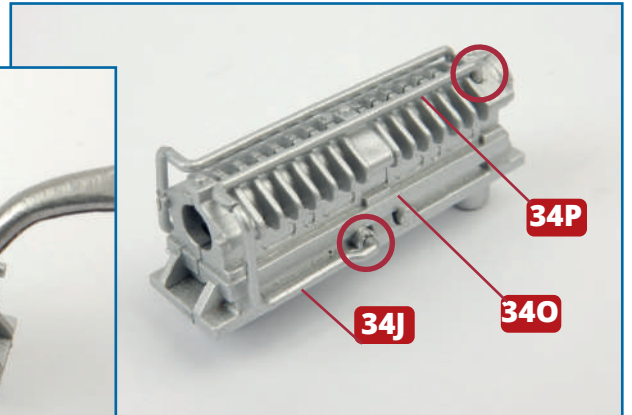
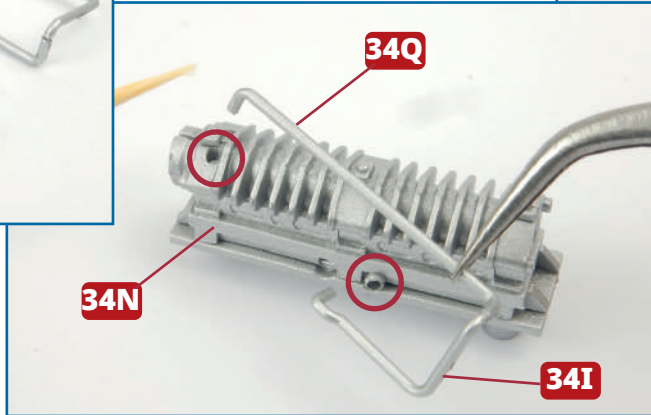
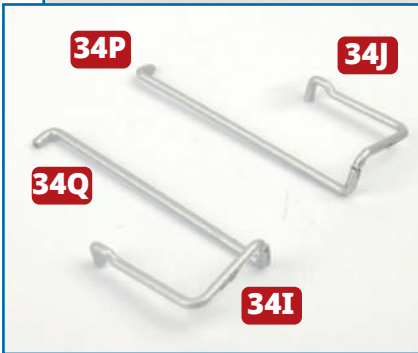
4 Take the engine room floor (**26H**) from issue 32. Identify the fixing point for the pump on the starboard side of the floor. Fit the shaped raised screw hole on the base of the pump in the corresponding hole in the floor (left). At the same time, the peg on the end of part **34U** fits into a hole in the floor (yellow arrow). Turn the assembly over and fix in place with an **EP** screw (below). Turn the assembly over again and glue the D-shaped peg on part **34L** in place in the hole beside the pump (below left and bottom).



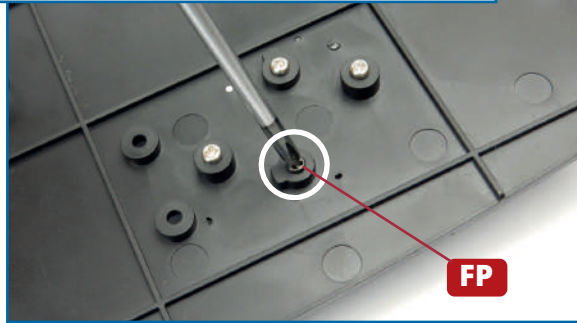
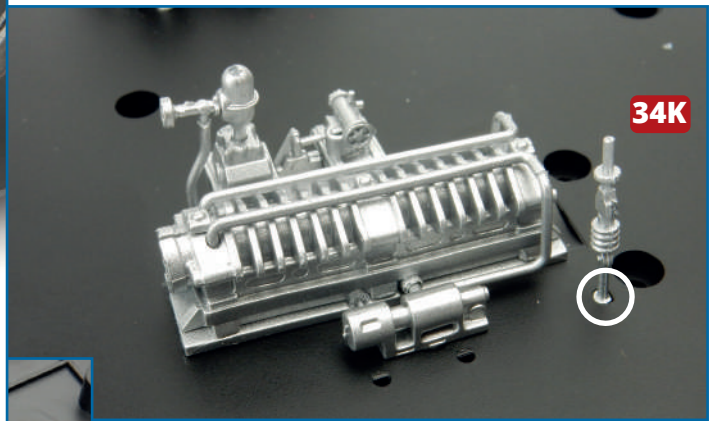
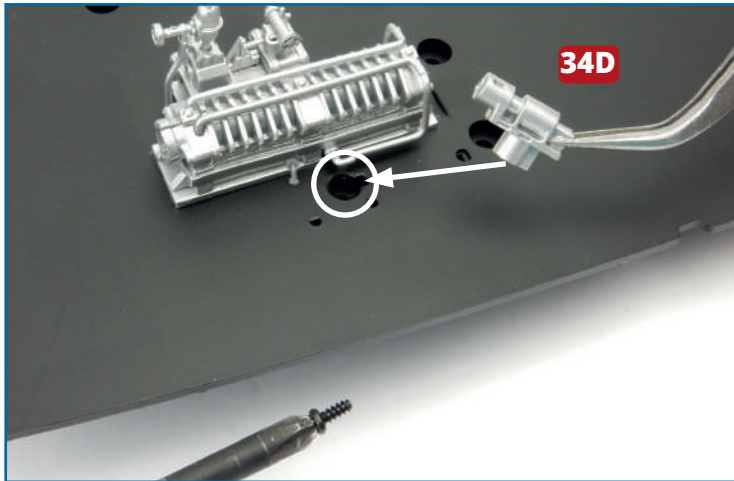
★ STEP-BY-STEP INSTRUCTIONS ★



5 Take the two parts of the thrust block **34N** and **340** and glue them together (left). Take four pipes **34I**, **34J**, **34P** and **34Q**. Join the two starboard pipes **34I** and **34Q** and then join the port side pipes **34J** and **34P** (below, far left). Fit the pipes on either side of the thrust block, as shown (below left). When you are happy with the fit, glue the pipes in place in the holes (circled, below).

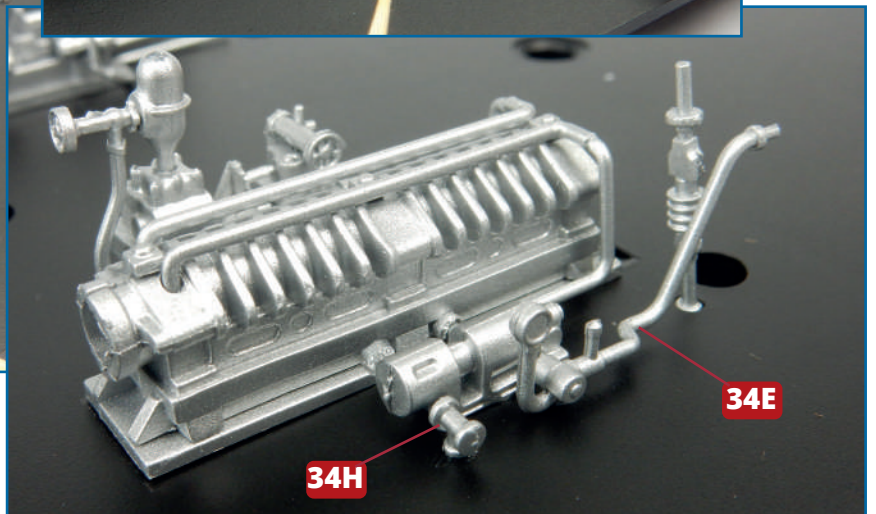
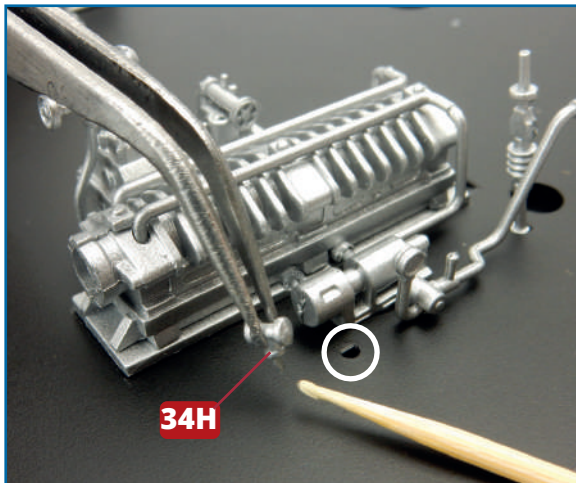
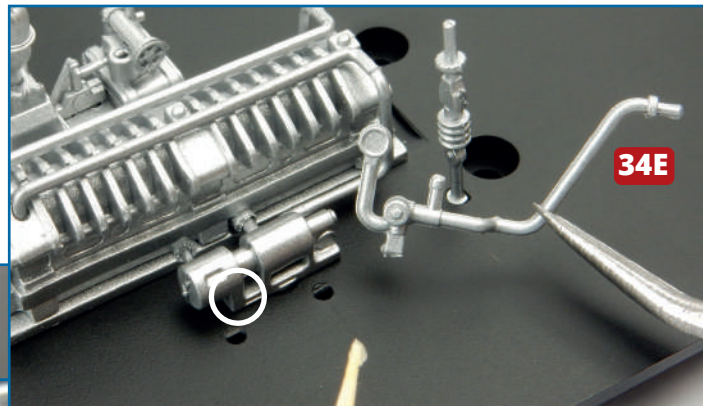


6 Fit the elbow pipe **34T** in the hole in the side of the thrust block (above right). Glue in place. Fit the raised screw holes on the base of the thrust block into the the floor **26H**, beside the pump (above). Then turn the floor over so that you can fix the thrust block in place with two **EP** screws (right).



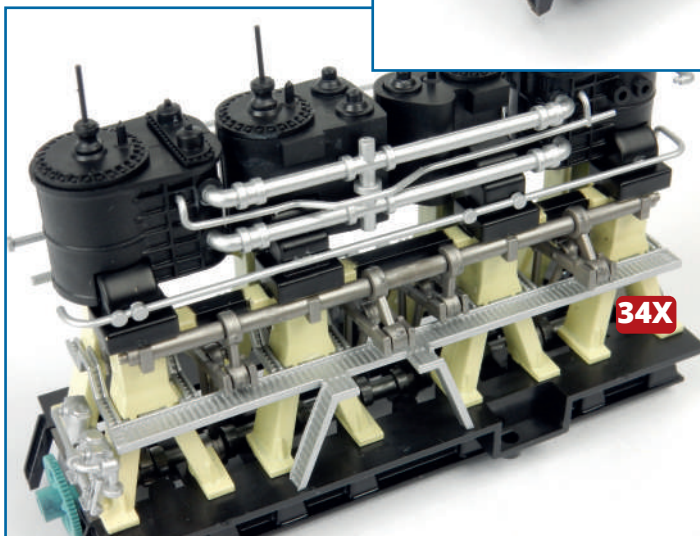
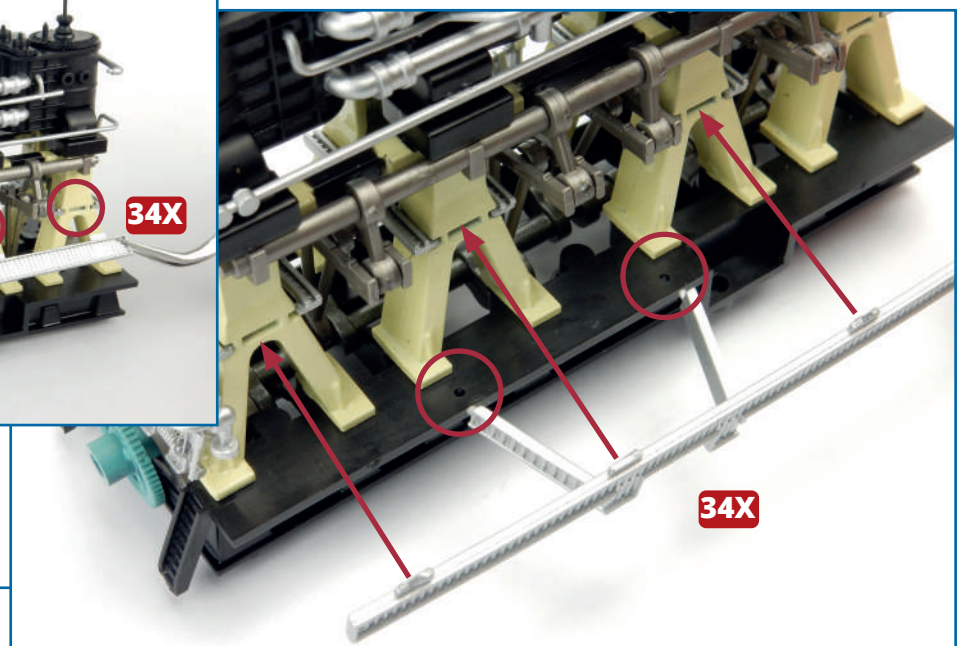
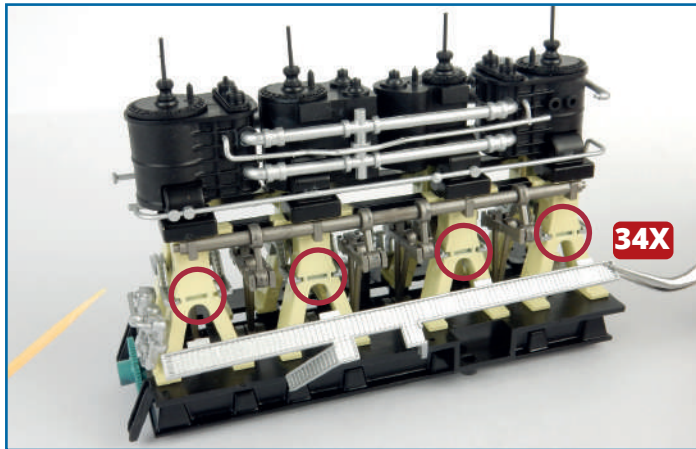
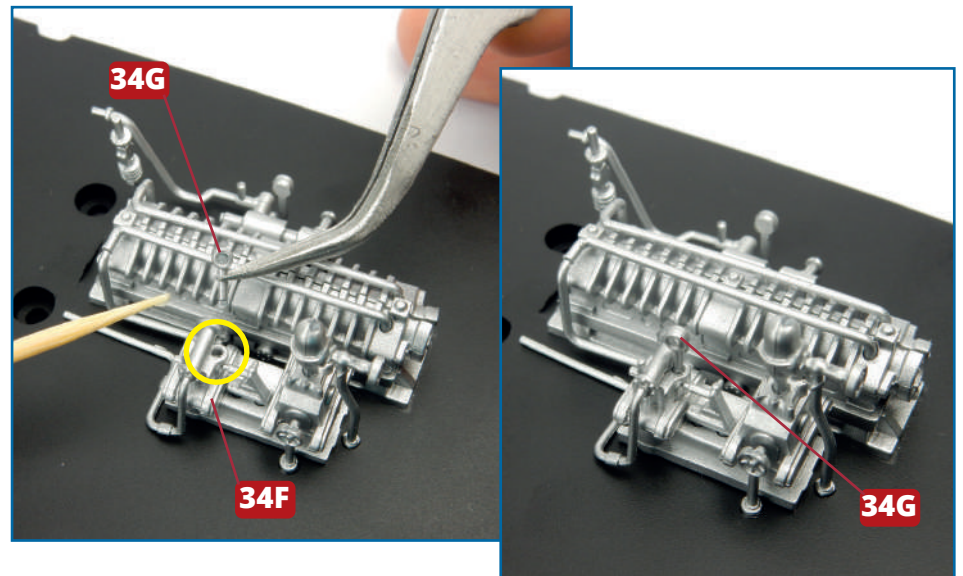
7 Take the base of the lubrication pump **34D** and fit the shaped raised screw socket on the base into the corresponding hole beside the thrust block (above left). Turn the assembly over so that you can fix part **34D** in place with an **FP** screw (left). Glue detail **34K** in place in the hole near the end of the thrust block as shown (above).

8 D-shaped pegs on details **34E** and **34H** fit in corresponding holes in the floor next to the lubrication pump. Glue in place.

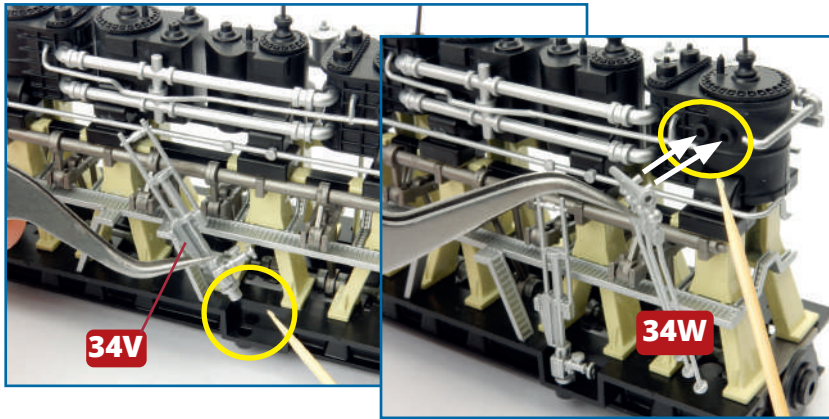


★ STEP-BY-STEP INSTRUCTIONS ★

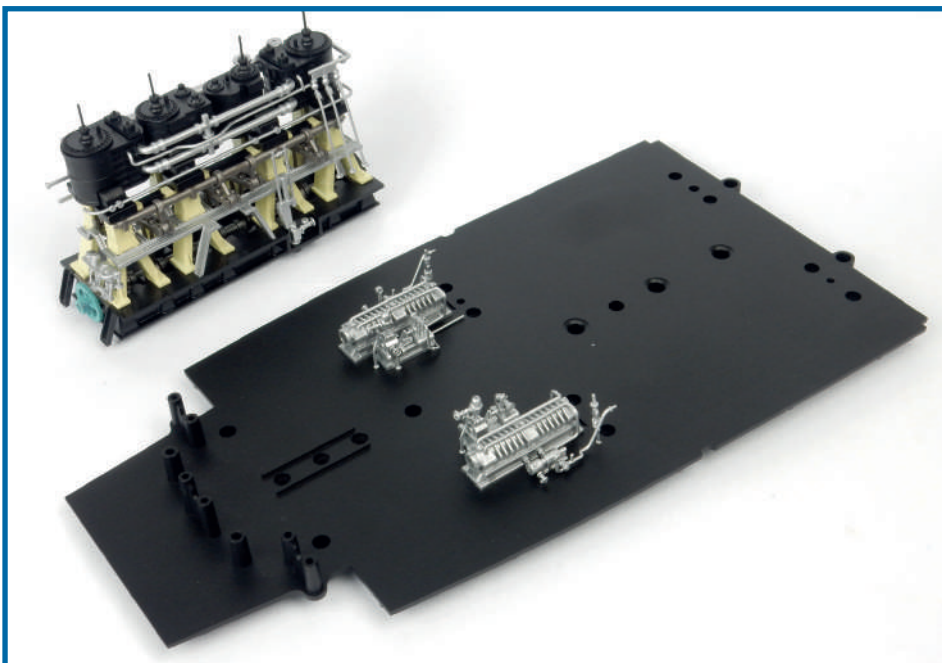
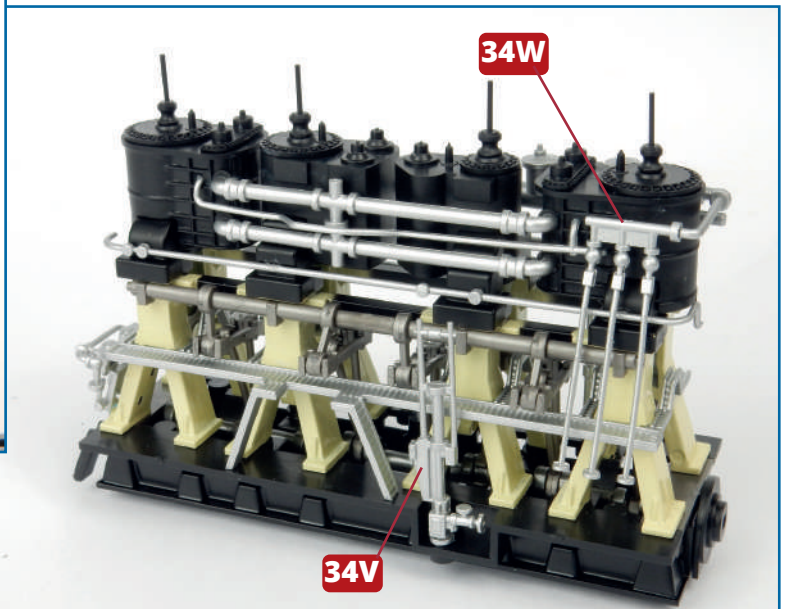
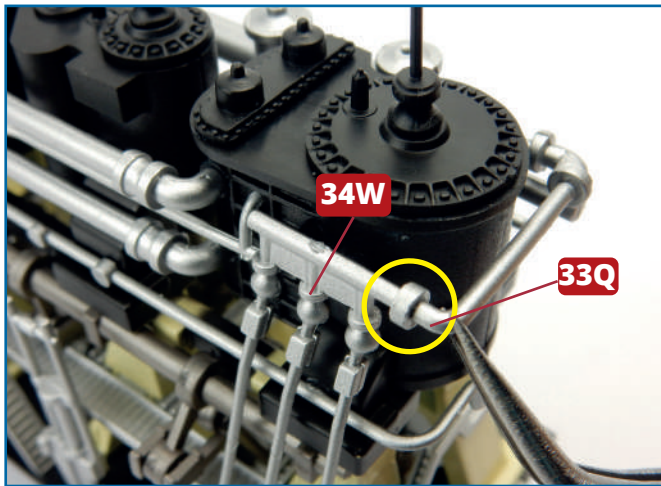
9 Complete the large pump by fitting the pressure gauge **34G** into the hole of part **34F**. When you are happy with the fit, use a little glue to fix part **34G** in place.



10 Take the starboard reciprocating engine assembly from issue 33. The gangway **34X** fits along the starboard side of the engine, as indicated: pegs on the bottom of the ladders fit into holes in the base and tabs on the side of the gangway fit into slots in the columns. When you are happy with the fit, glue in place.



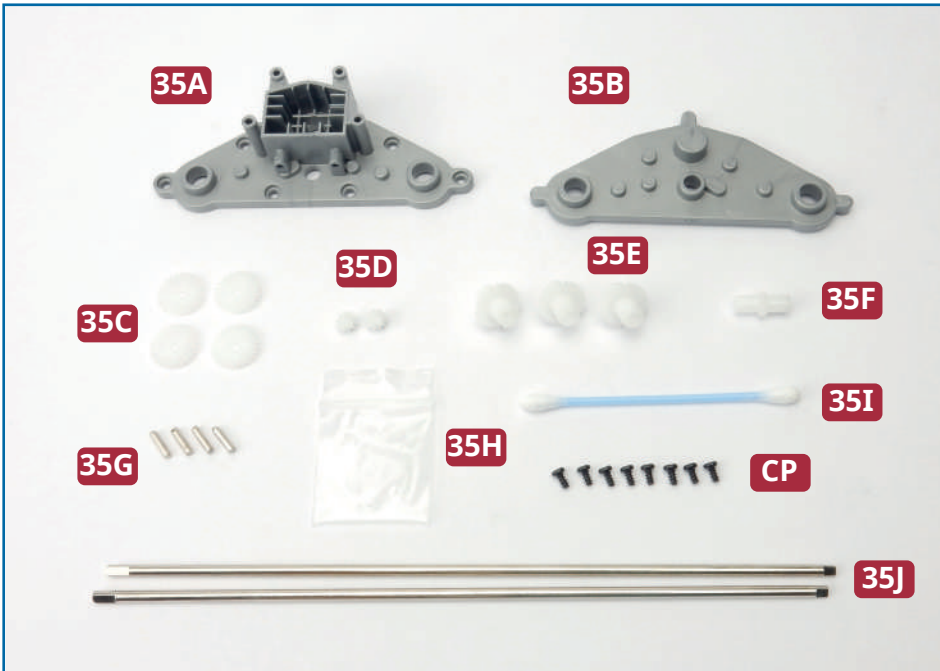
11 Take the reversing engine **34V** and check how it fits on the starboard side of the engine. The peg on the base of part **34V** fits into a hole in the rectangular recess in the catwalk **30B** (far left). Glue the peg in place. The pegs near the top of the valve control rods **34W** fit into holes in the low pressure cylinder (left). At the same time, pipe **33Q** fits into the side of the valve control rods **34W** (below left). Glue all the pegs in place.



Completed work

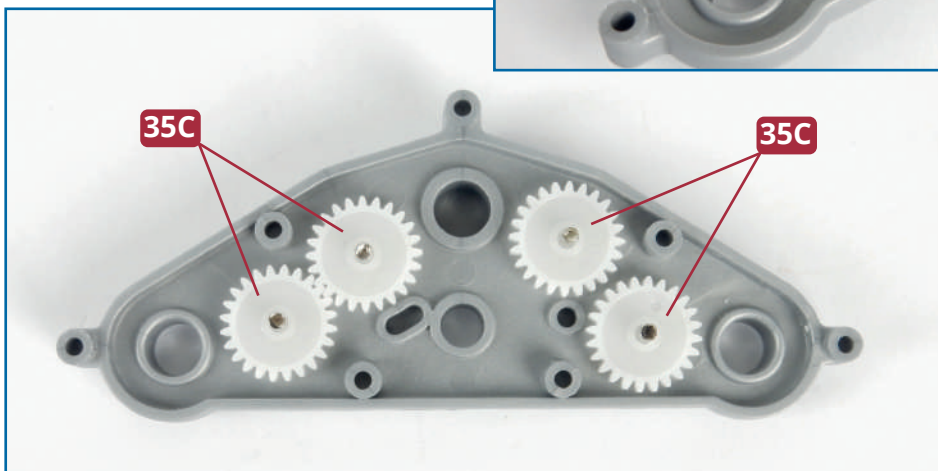
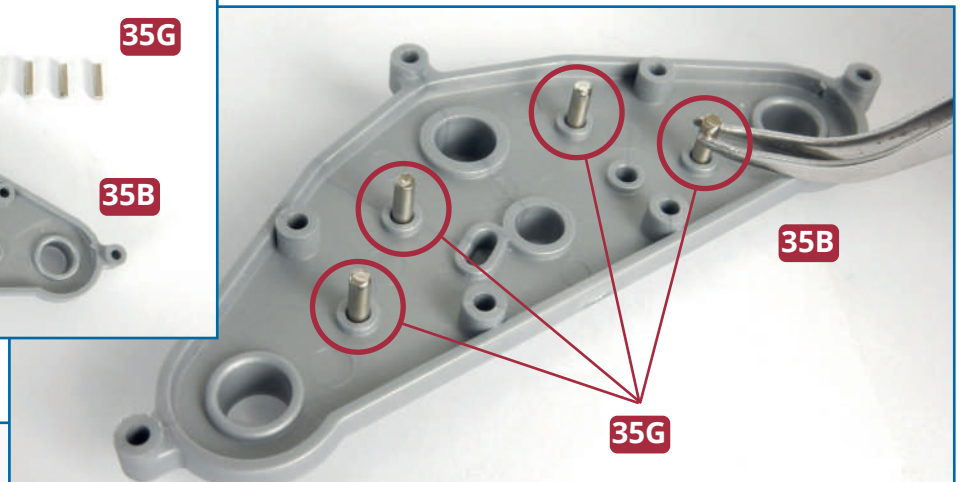
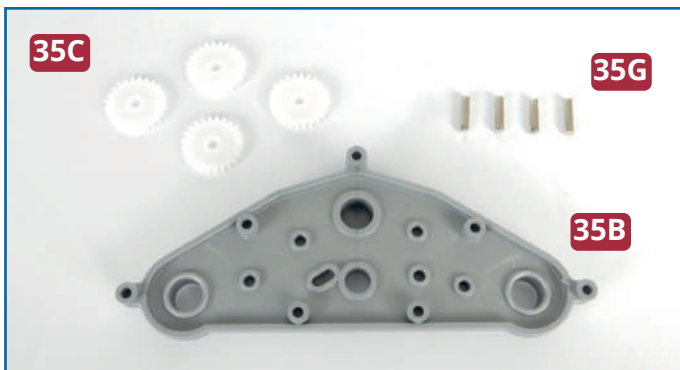
The second reciprocating engine is complete and the starboard thrust block has been fixed to the floor of the engine room.

GEARBOX



PARTS IN THIS ISSUE

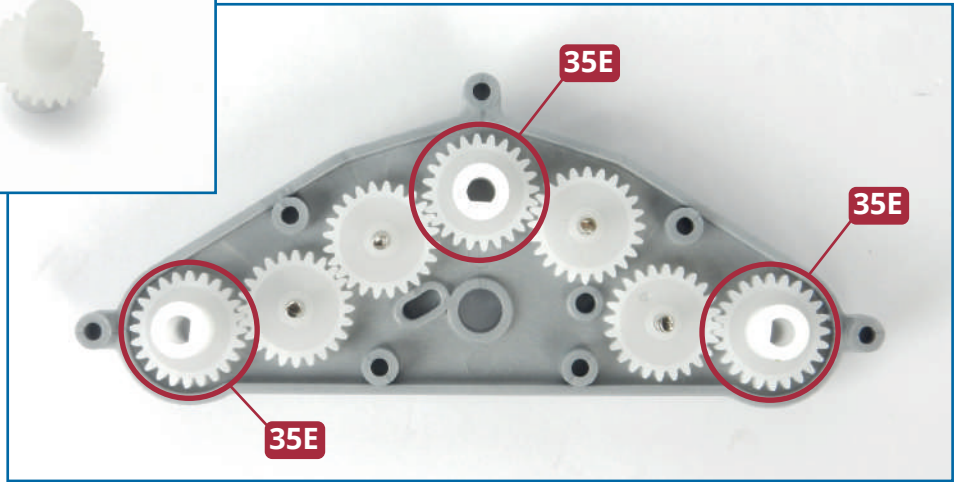
- 35A** Gearbox cover
- 35B** Gearbox
- 35C** Cog A (x 4)
- 35D** Cog B (x 2)
- 35E** Cog C (x 3)
- 35F** Cog D
- 35G** Cog shafts (x 4)
- 35H** Lubricant
- 35I** Applicator (cotton bud)
- 35J** External propeller shafts
- CP** Eight 2.3 x 4mm PB screws



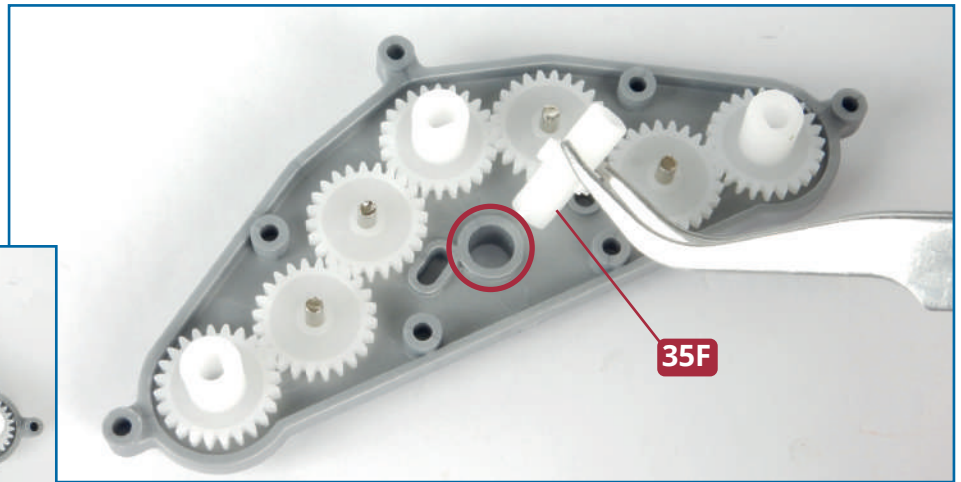
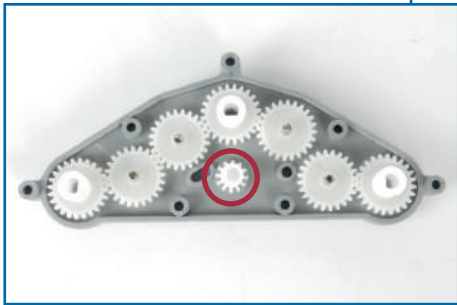
1 Take the gearbox **35B**, the four **A** cogs **35C** and the four shafts **35G**. Insert the shafts into the four holes (circled, above), then slide the **A** cogs, **35C**, onto the shafts. Note that the cogs on the left-hand side interlock (left).



2 Take the C cogs **35E** and fit the raised parts into the three large round holes. Note that the D-shaped holes in the cogs face upwards and the teeth of the cogs interlock with the A cogs **35C**.



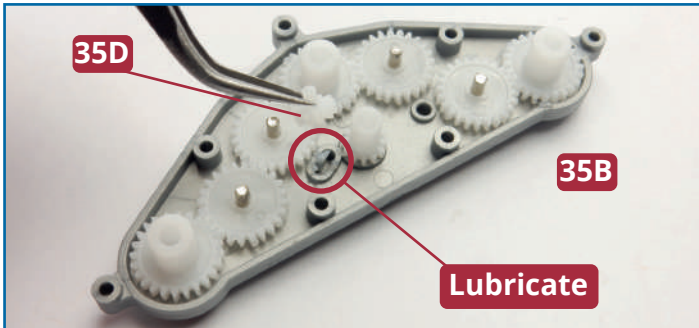
3 Fit the D cog **35F** in the hole in the centre of the gearbox. (Both ends are the same so the cog can be fitted either end first.)



4 To make sure the gearbox works properly, it is essential to lubricate the moving parts. Dip the applicator **35I** into the lubricant **35H** and apply it to the teeth of the cogs and to the cog shafts.

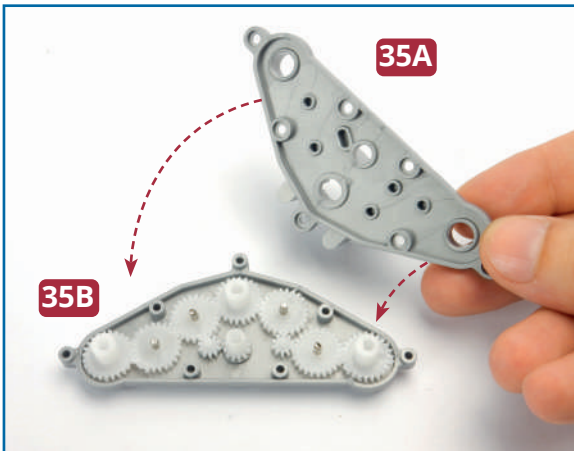
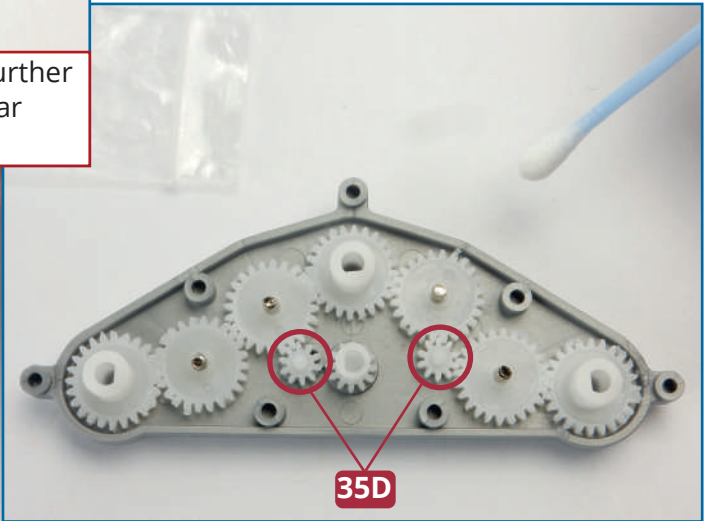


★ STEP-BY-STEP INSTRUCTIONS ★

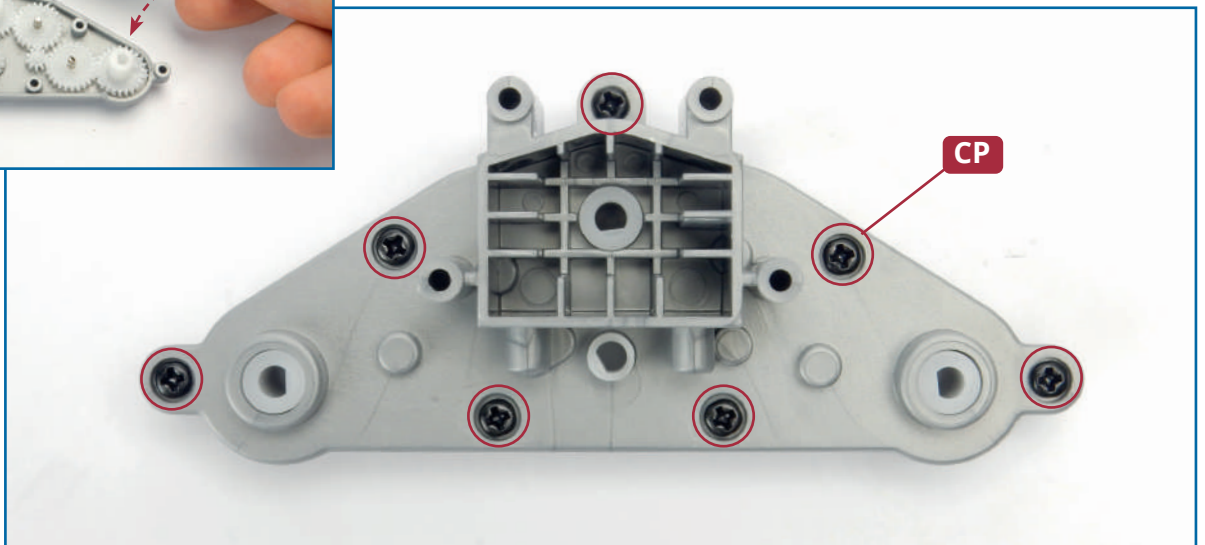


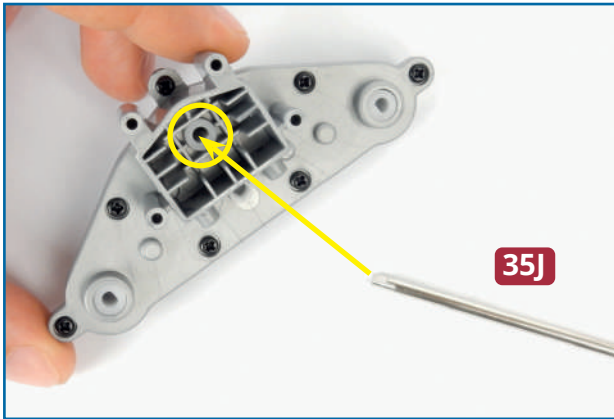
5 Apply lubricant to the oval hole in the gearbox **35B** (left), then fit the first of the two B cogs **35D** into the oval hole. Fit the second B cog **35D** into the round hole (below left). The teeth of cogs **35D** interlock with cogs **35C** as shown below. Apply lubricant to the B cogs (below).

If you wish to lubricate the gearbox or gears further you can use Vaseline, any grease sold for RC car gearboxes, or a general purpose grease.

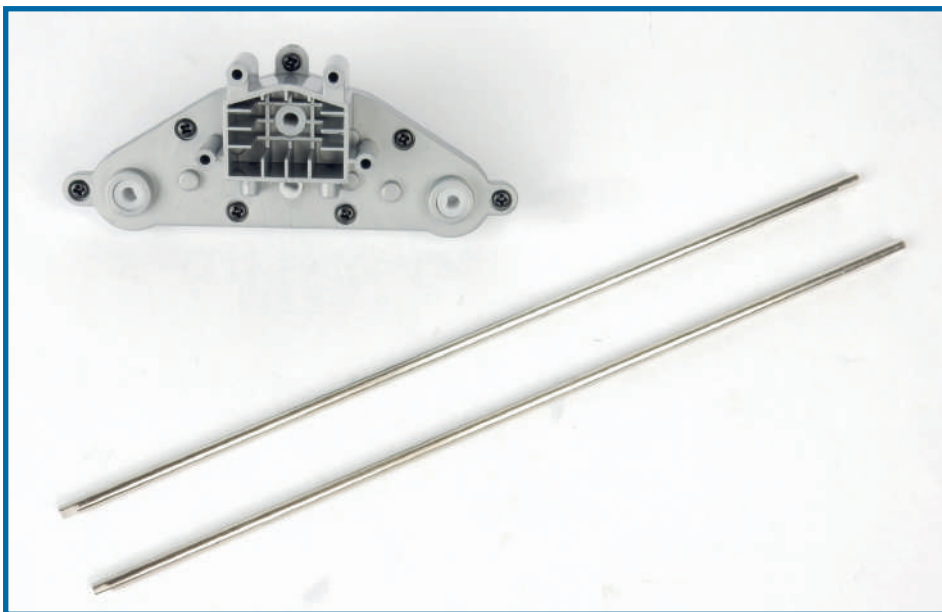
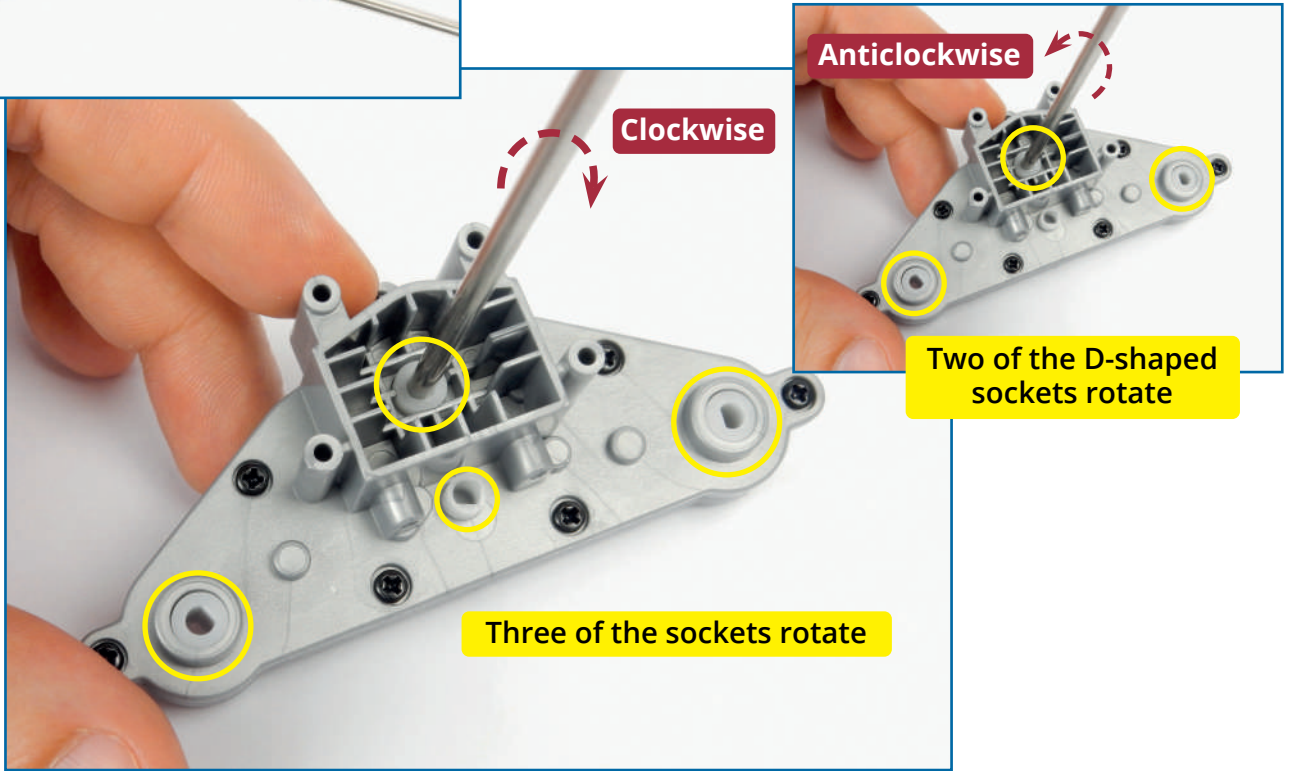


6 Fit the cover **35A** on the gearbox, ensuring that the shafts and stems of the cogs B, C and D fit into the corresponding sockets and holes in part **35A**. Fix the cover in place with seven **CP** screws: tighten each one just a little at a time, working round the assembly a couple of times until they are all secure.





7 Check that the gearbox is working: fit the end of one of the shafts **35J** into the socket where the engine shaft will fit. Rotate it by hand clockwise, and the three propeller connection sockets (circled in yellow, below left) will rotate together. If you turn the shaft anticlockwise, only the two outer connection sockets will rotate (below), the central one remains stationary.



Completed work

Store the gearbox and the two propeller shafts carefully. They will be fitted to the model in a future issue.

STEAM TURBINE

PARTS IN THIS ISSUE

- 36A** Engine room floor section (stern)

- 36B** Steam pipe A

- 36C** Steam pipe B

- 36D** Condenser (port side)

- 36E** Turbine base

- 36F** Condenser (starboard)

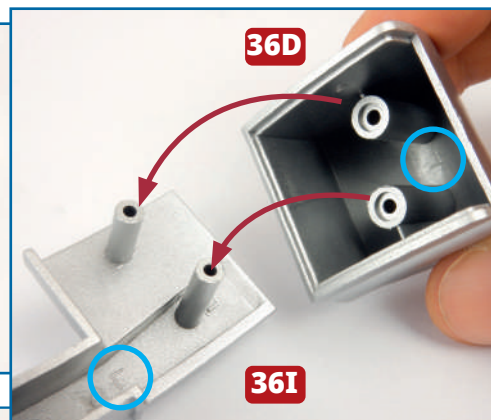
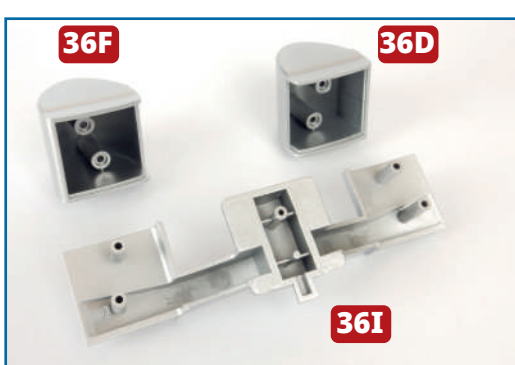
- 36G** Steam pipe C

- 36H** Steam pipe D

- 36I** Central turbine

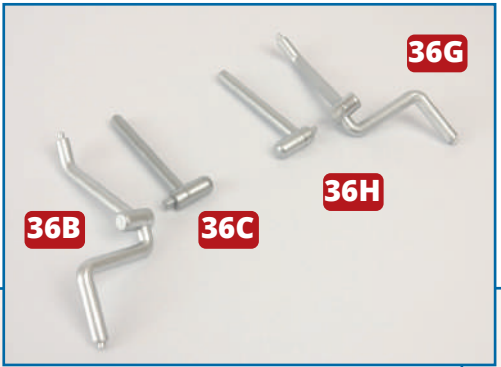
- AP** Eleven 2.3 x 5mm PB screws (1 spare)

- EM** Nine 2.3 x 4mm PM screws (1 spare)

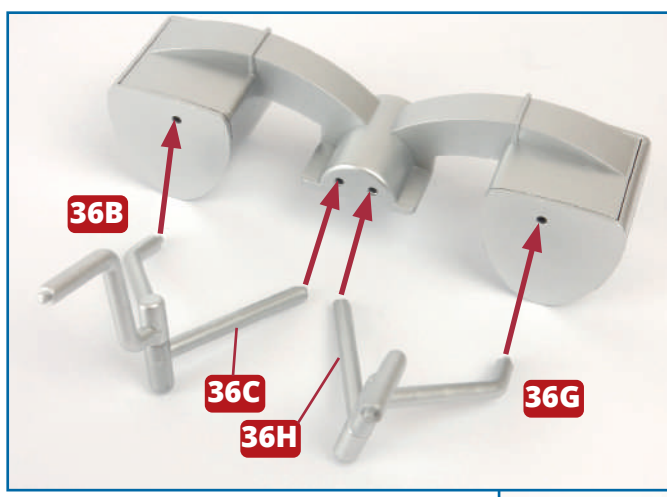
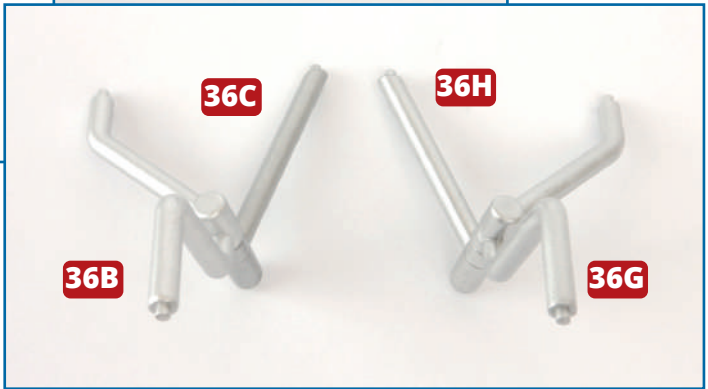
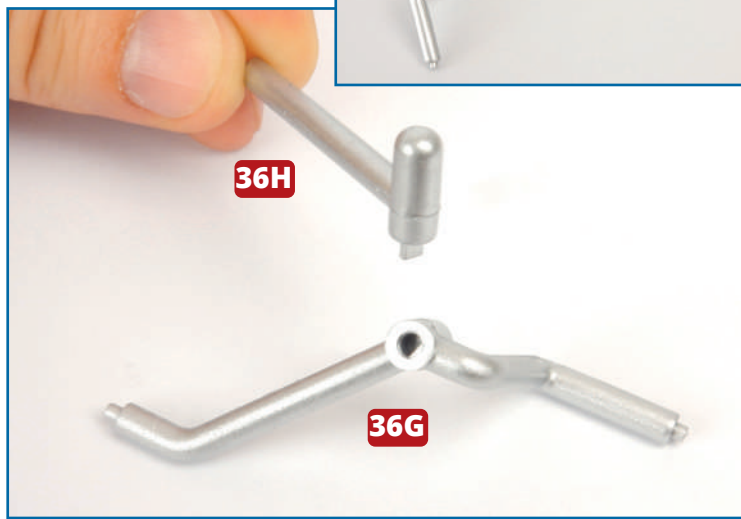


1 Take the turbine **36I** and the two condensers **36D** and **36F**. Note that letters L (circled in blue) and R are marked on the condensers to help you identify the left/port and right/starboard condensers. Fit the condensers on each side of the turbine so that the screw holes are aligned. Fix the condensers in place using two **AP** screws for each condenser.

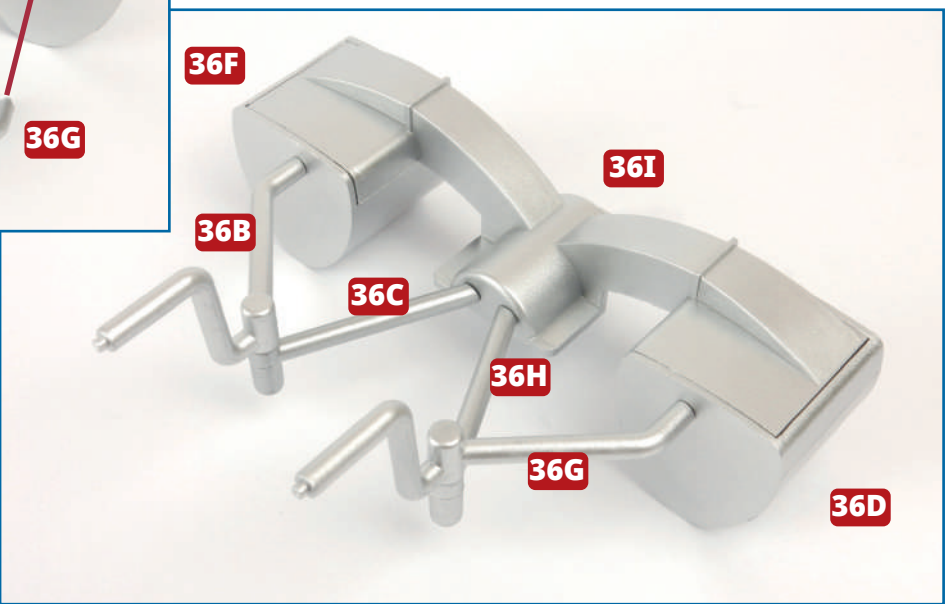




2 Fit the D-shaped peg on steam pipe **36H** into the hole in steam pipe **36G** (below left and below). This is a push fit connection. Similarly, fit the D-shaped peg on part **36B** into the hole in part **36C**. The remaining photo below shows all the parts assembled.



3 The assembled steam pipes have to be fitted to the assembly from step 1: fit the pegs on the ends of the pipes **36B**, **36C**, **36H** and **36G** into the holes as indicated (above).

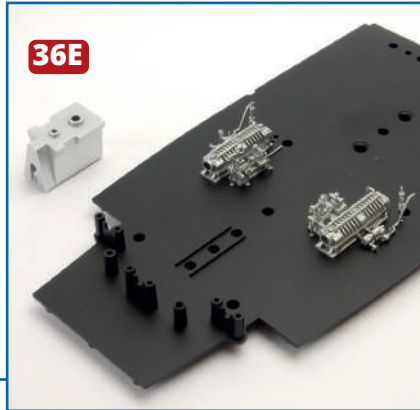


Important advice

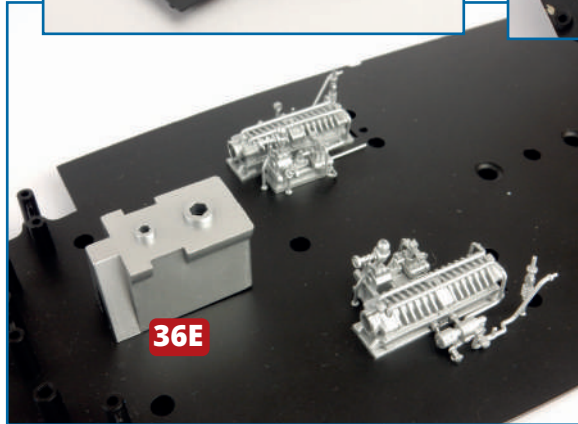
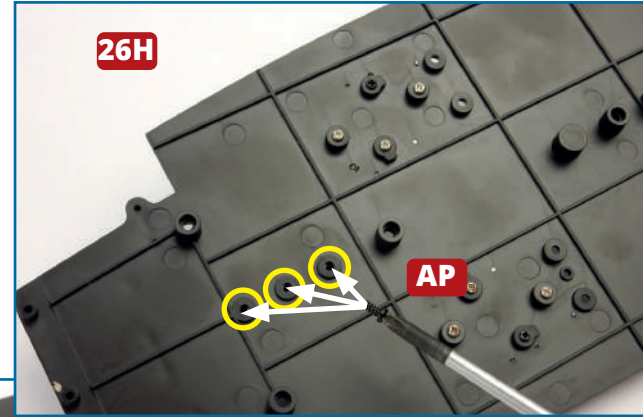
We now start work on fitting and testing the two reciprocating engines. It is important to ensure that all parts are correctly fitted. At each stage, check that your model matches the photos exactly.

You must handle model parts very carefully as there are many delicate parts that can easily come adrift. Work in a clear area: we suggest you cover the work surface with an old sheet so that you can easily see small parts and screws.

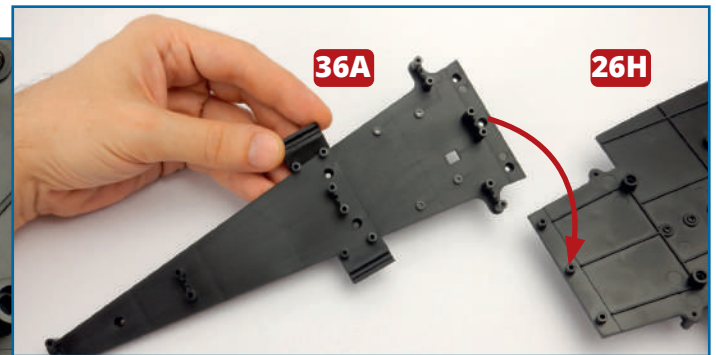
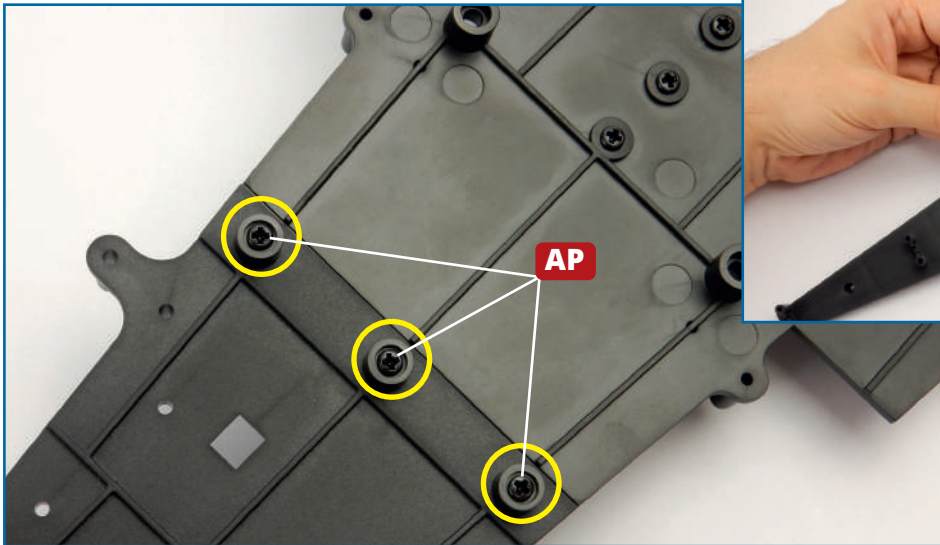
36E



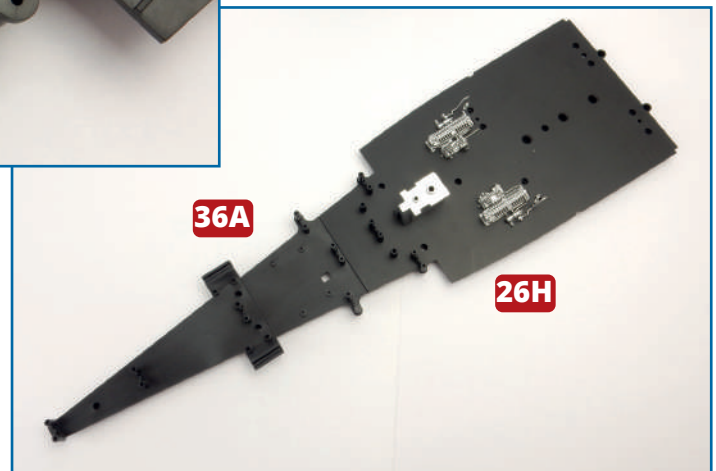
26H



4 Take the engine room floor **26H** and thrust block assembly from issue 34. Fit the turbine base **36E** to the floor: three screw sockets on the base of part **36E** fit into the three screw holes in part **26H** (between the two ribs, top left). Turn the assembly over so that you can fix part **36E** in place with three **AP** screws (above).

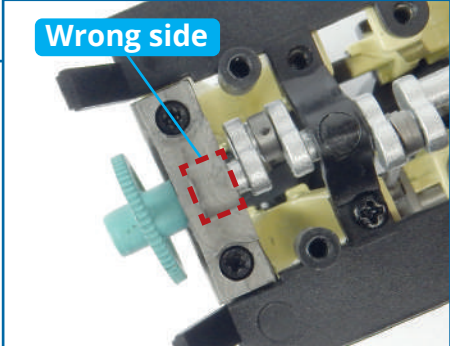
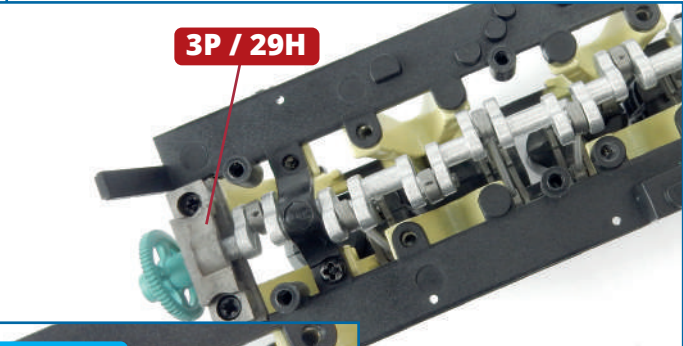
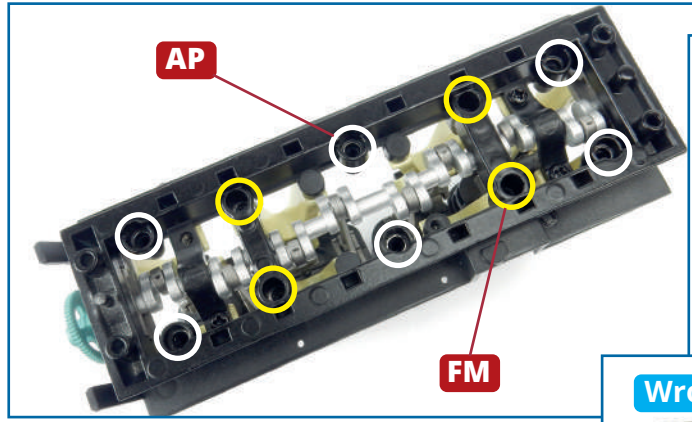
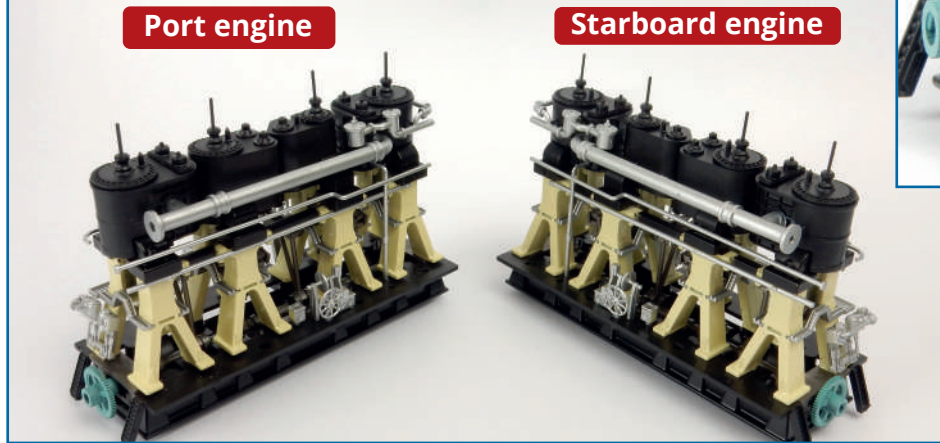
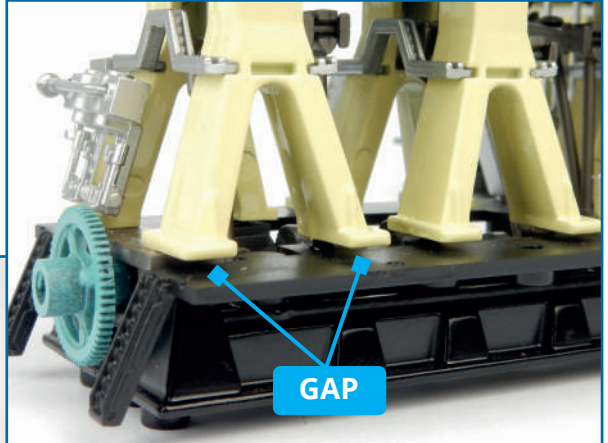


5 Fit the three recessed screw sockets on the aft end of the upper side of the floor part **36A** over the screw sockets on the underside of the engine room floor **26H**. Fix in place with three **AP** screws (circled, above).

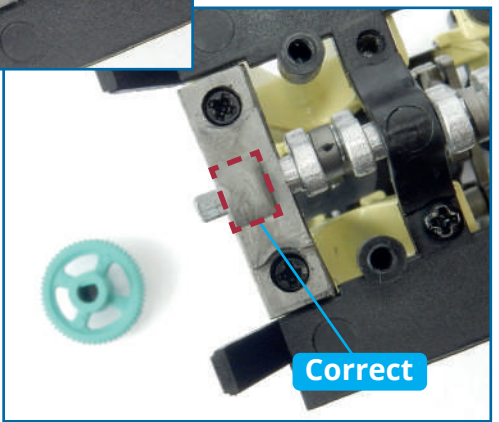




6 In the next steps you will have to fix the two reciprocating engines to the floor of the engine room. Before proceeding, make sure that the engine has been assembled correctly. In particular, check that there is no gap between the feet of the columns and the catwalk around the base of the engine. If there is a gap (right) you can correct it by following step 7, below.

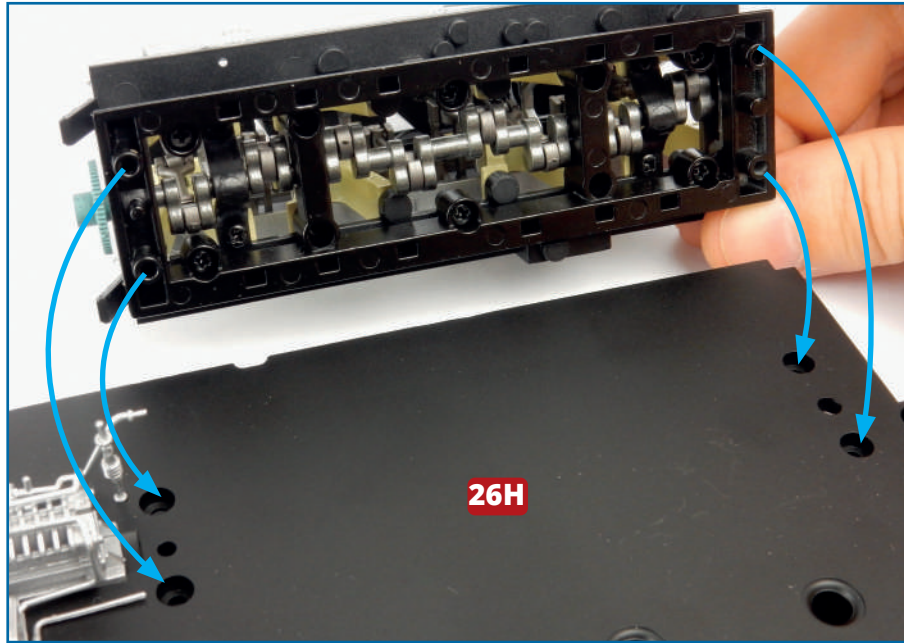
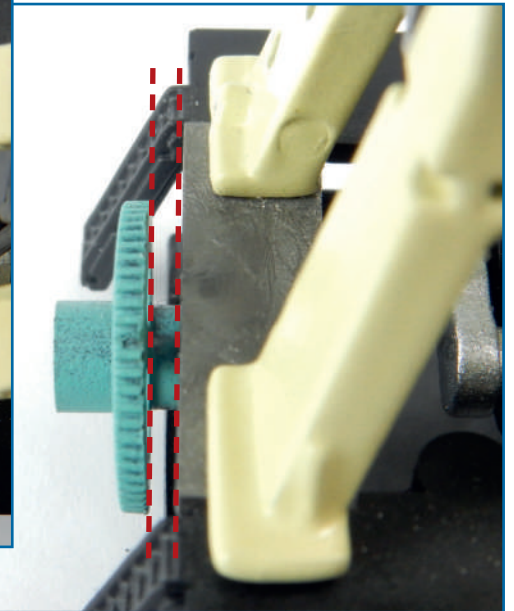
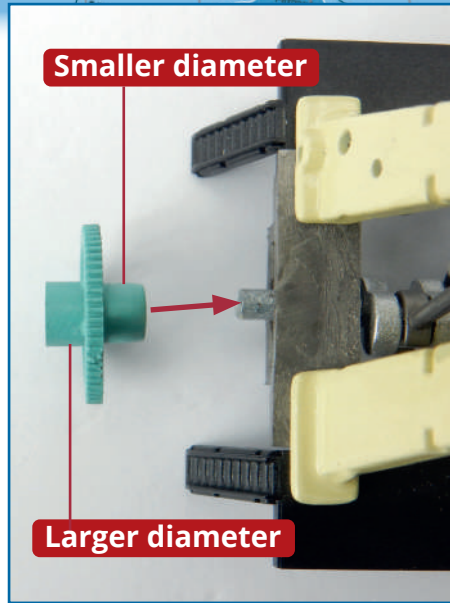


7 If there is a gap at the base of the columns, turn the engine upside down and remove the **FM** screws (yellow circles, above). Place on one side so that you can use them to replace the base. Remove the **AP** screws (white circles) and place on one side, taking care not to confuse them with the **FM** screws. Remove the base and check the orientation of piece **3P** (the port engine) or **29H** (starboard engine). There is a small hump on this piece, which must be positioned at the rear of the assembly, next to the flywheel. If it is in the wrong position (middle right) remove the screws and turn it around, fixing it in place again with the same screws (below right). Refit the base, using the same screws, and the base of the columns should be flush with the catwalk.

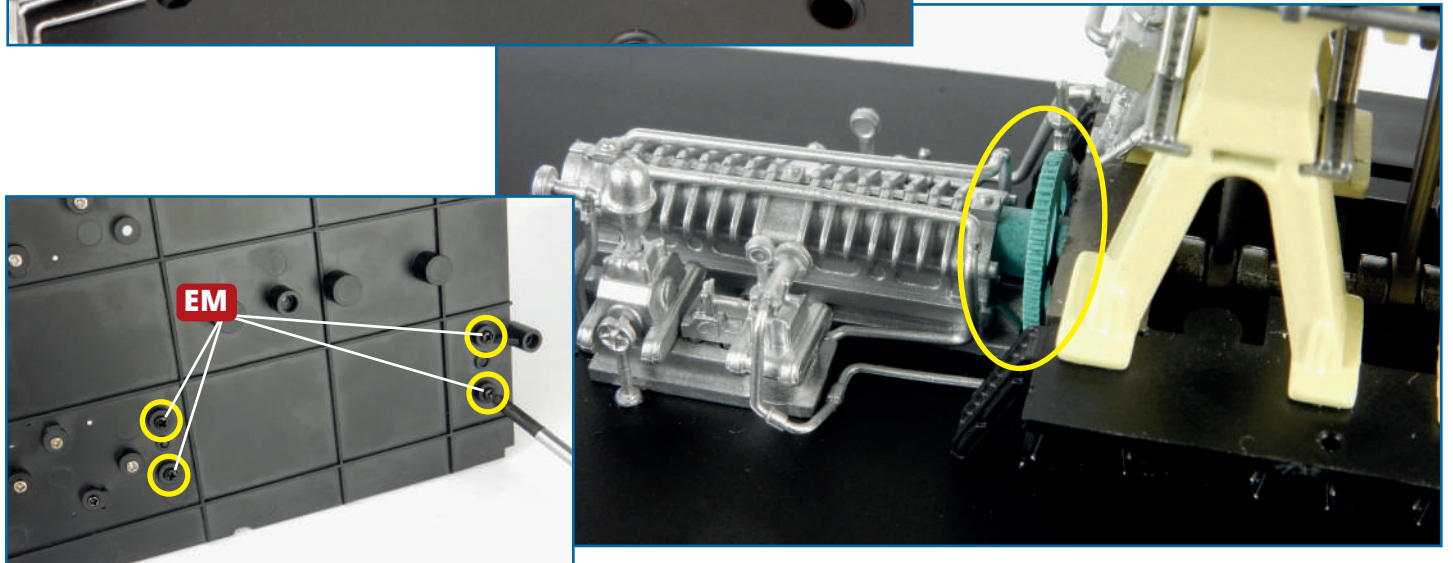


8 Also check the orientation of the flywheel **3N** (for port engine) and **29E** (starboard engine). The hubs on each side of each flywheel are slightly different in diameter: the side with the smaller diameter should be fitted on the end of the crankshaft (near right). The side with the smaller diameter also has a slightly longer shaft. The photo on the far right indicates the spacing between the flywheel and the engine.

Check that all the pipes and details around the reciprocating engines have stayed in the correct positions.

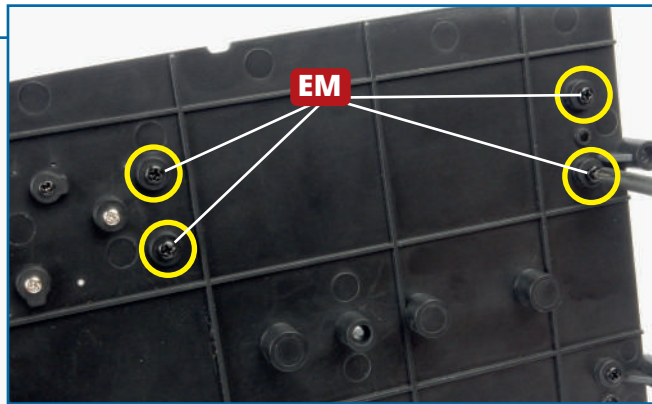
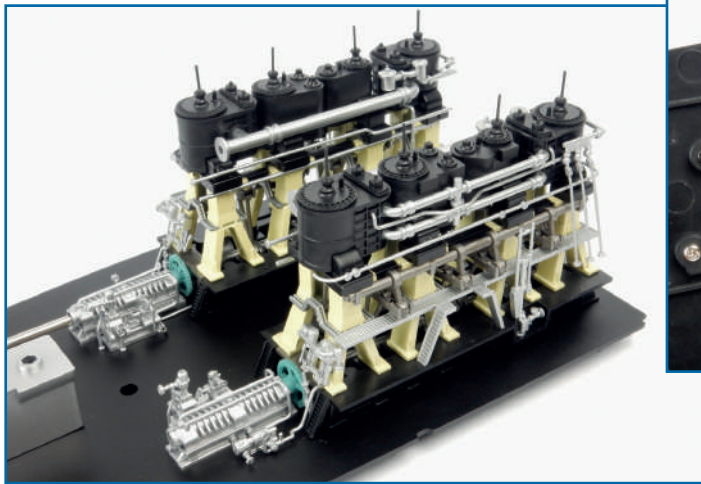
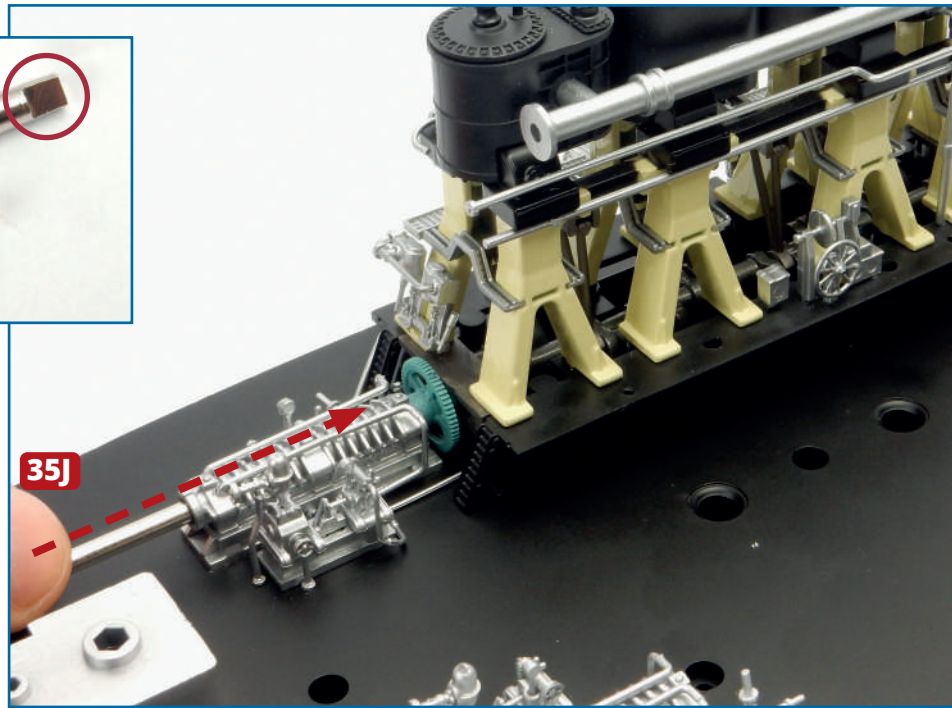


9 Once you have completed all these checks, take the port reciprocating engine and place it on the floor of the engine room **26H**. Raised screw sockets on the base of the engine fit into recessed screw holes in the floor and there are central pegs at each end to help ensure correct fitting. The hub of the flywheel has to fit against the open end of the thrust block. Secure the reciprocating engine in place with four **EM** screws. Make sure that all screws are fully tightened.

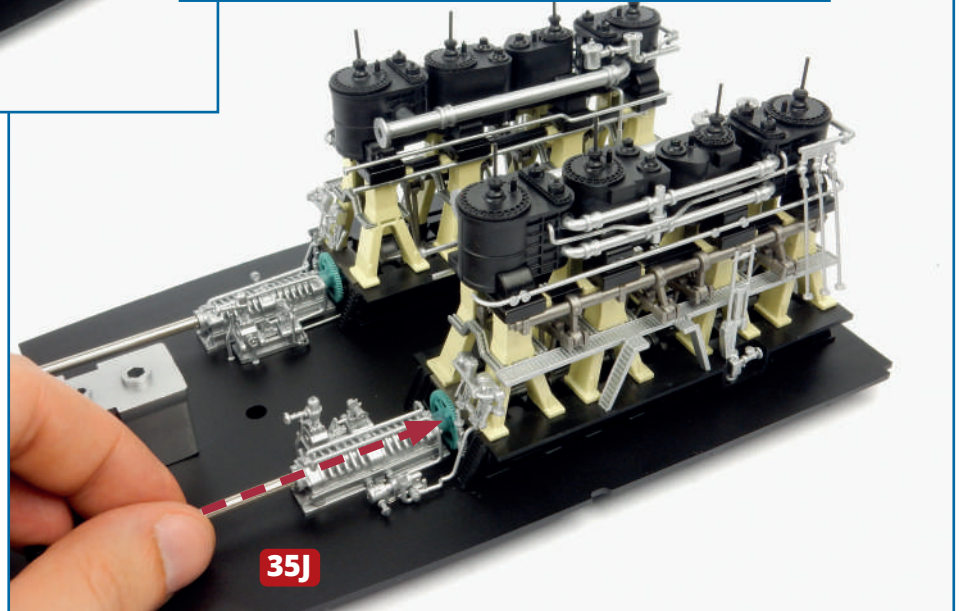




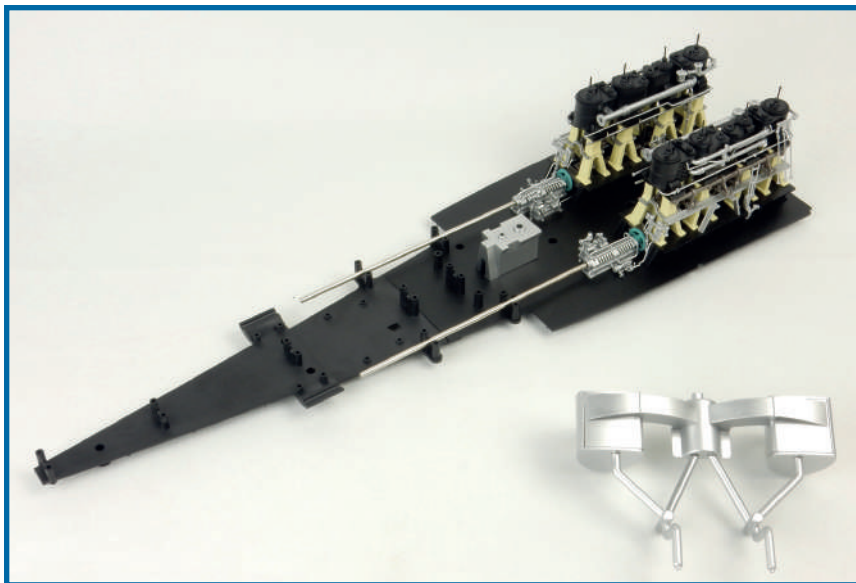
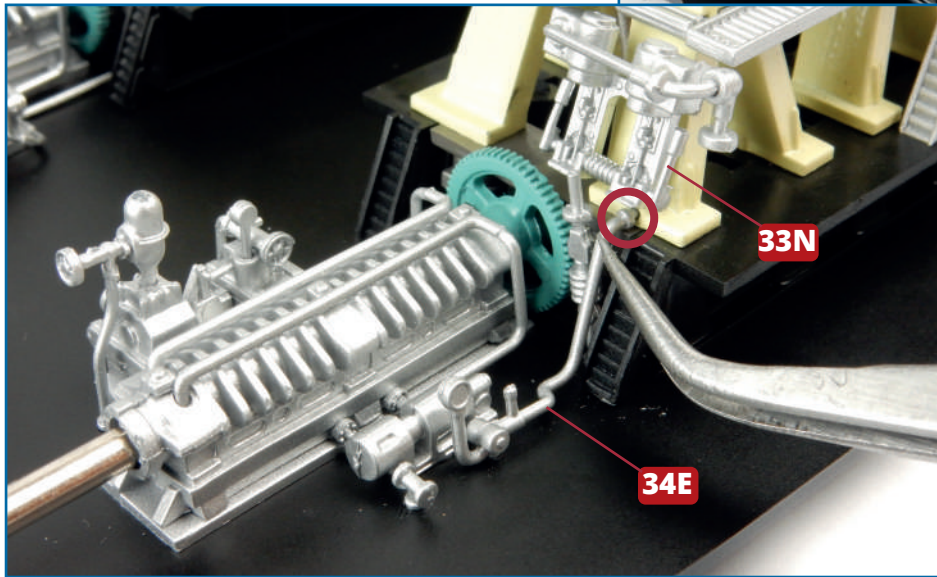
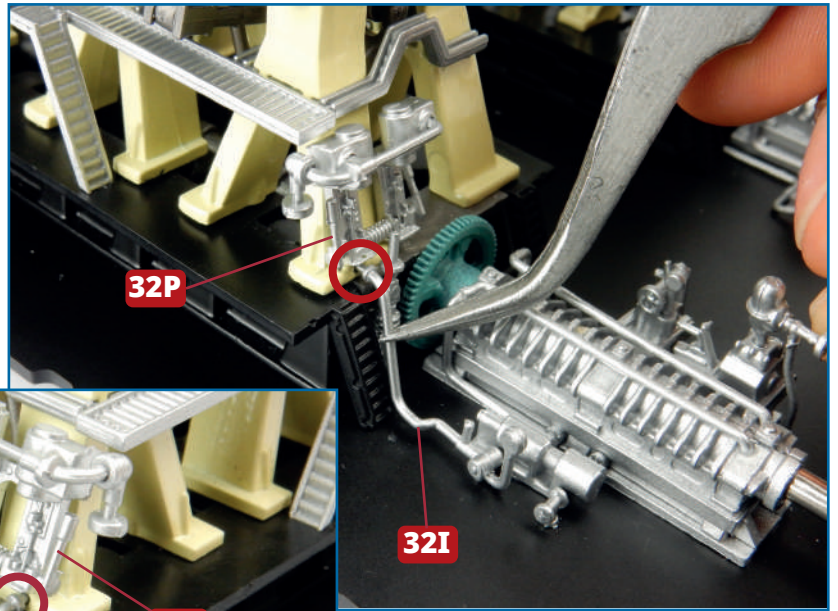
10 To test the movement of the engine, take one of the shafts **35J**. Note that one end has a shorter tab (circled in red, above). Fit this end of the shaft through the thrust block and into the D-shaped socket in the flywheel. If you have difficulty fitting the shaft, it may help to loosen the thrust block slightly. Twist the shaft both clockwise and anticlockwise to ensure the crankshaft is turning freely.



11 Similarly, fit the starboard engine. Again, the screw sockets have to be aligned and there is a peg at the centre of the forward end of the motor to help to ensure the engine is fitted the right way round. Fix the engine in place securely with four **EM** screws. Test the workings of the engine with shaft **35J** (right), loosening the thrust block if necessary. When all is working, tighten the thrust blocks again.



12 Fit the free ends of pipes **32I** and **34E** into the holes at the base of the columns, as shown. This is easier if you use tweezers.

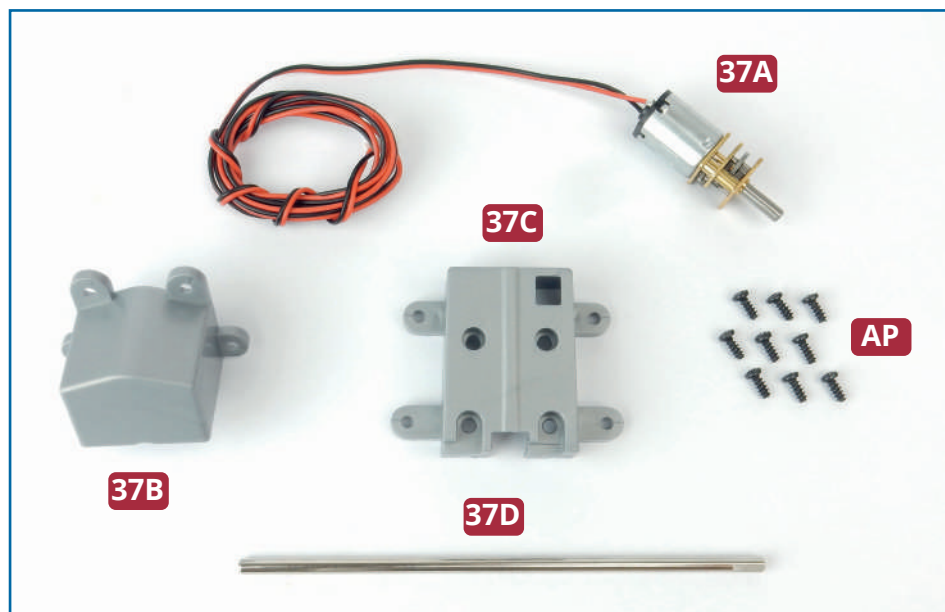


Completed work

The engine room is beginning to take shape. Store the turbine assembly carefully until it is needed.

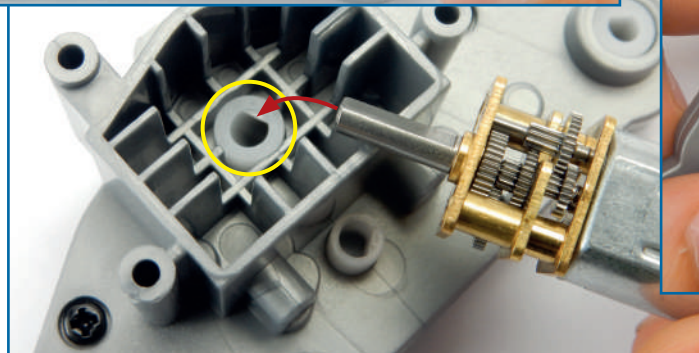
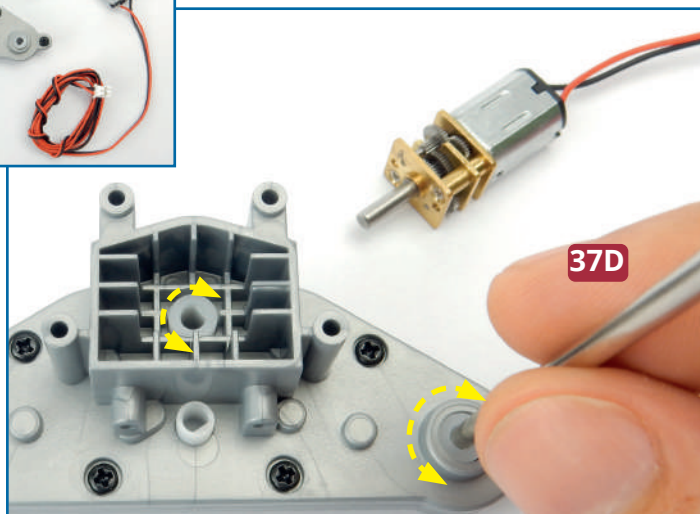
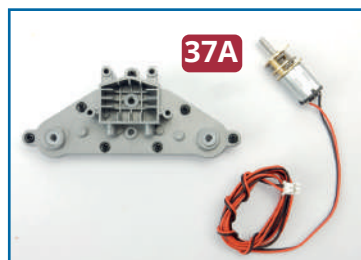


MOTOR FOR THE TRANSMISSION

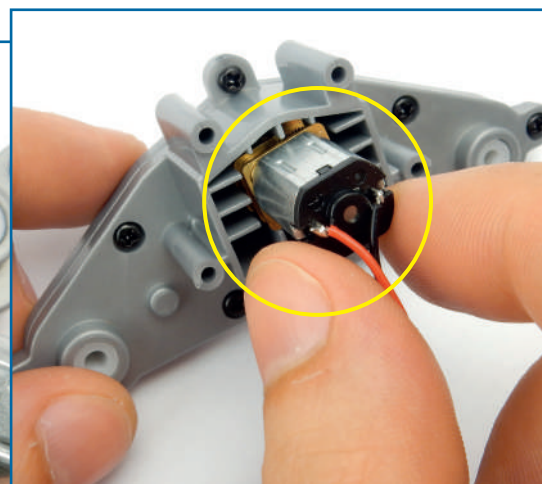


PARTS IN THIS ISSUE

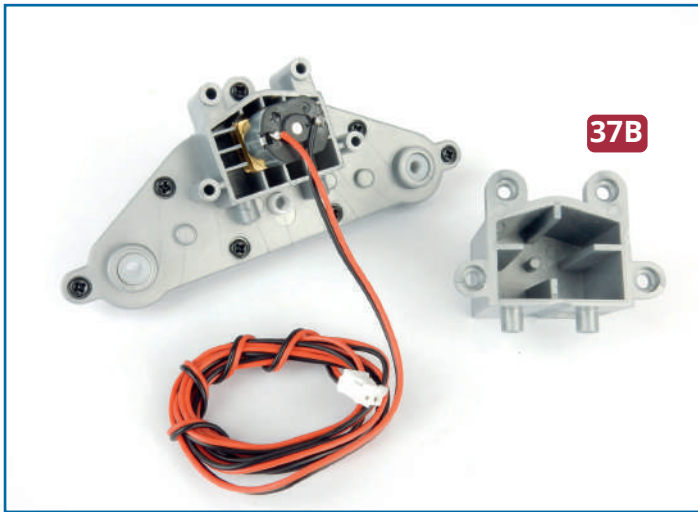
- 37A** Motor
- 37B** Motor housing
- 37C** Base
- 37D** Turbine shaft
- AP** Nine 2.3 x 5mm PB screws (1 spare)



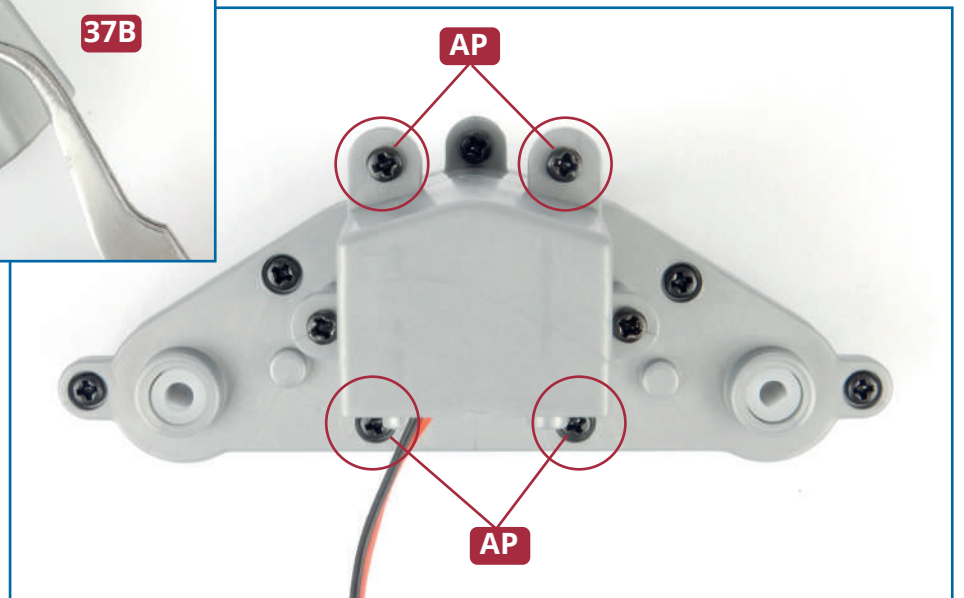
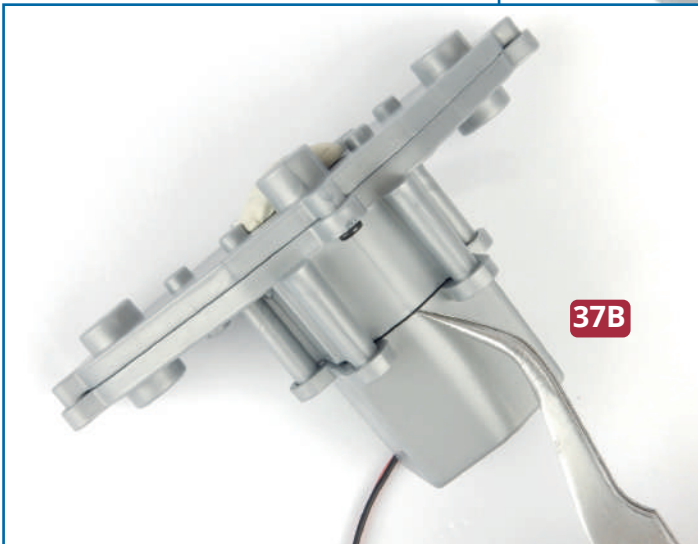
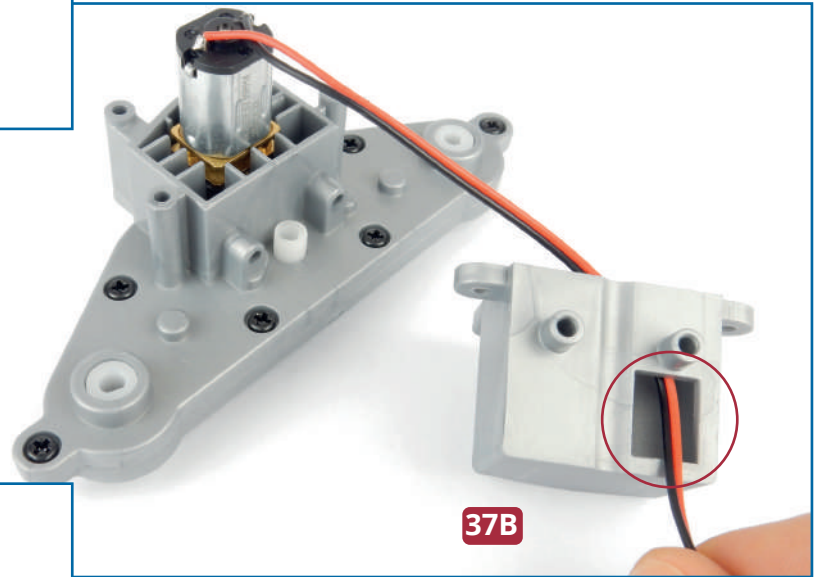
1 Take the motor **37A** and the gearbox from issue 35. The shaft of the motor has to be fitted into the socket in the cog at the top of the gearbox cover: you will need to rotate the socket so that the D-shape can be aligned with the shaft of the motor. To do this, use the shaft **37D** to rotate the cog at the bottom right-hand corner (left). Note the position of the flat side of the motor and the cables (red left, black right) when correctly fitted (below).

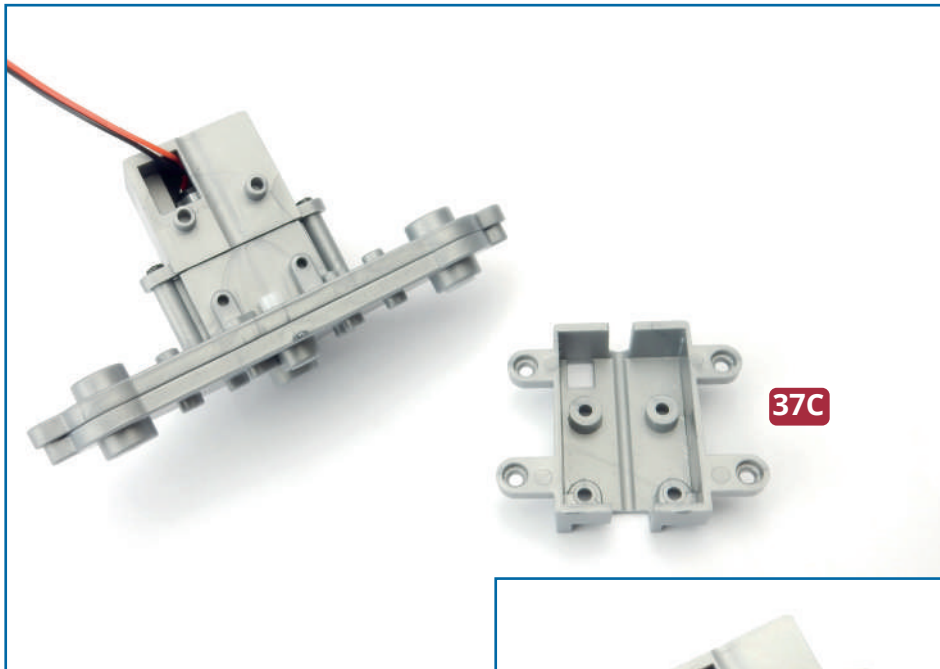


★ STEP-BY-STEP INSTRUCTIONS ★

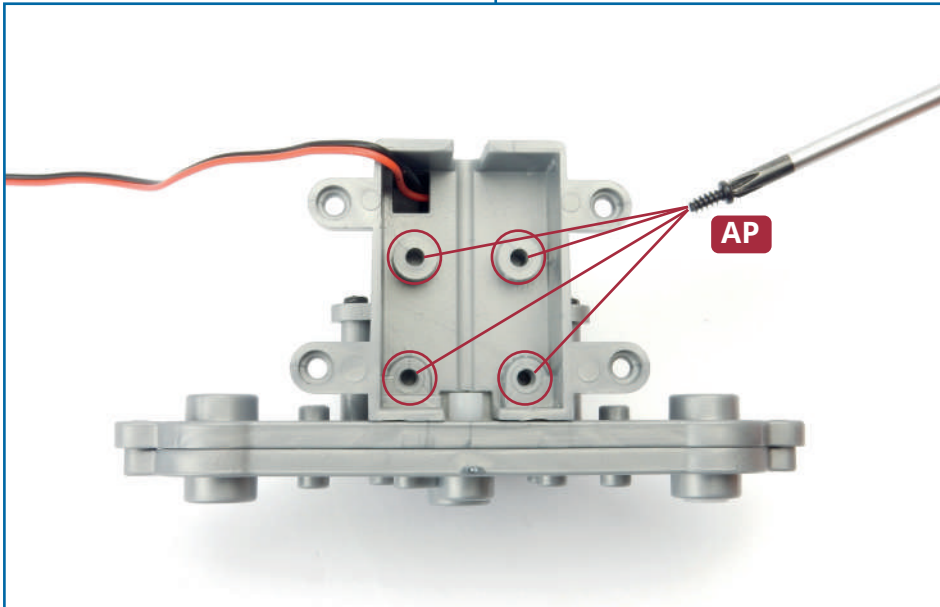
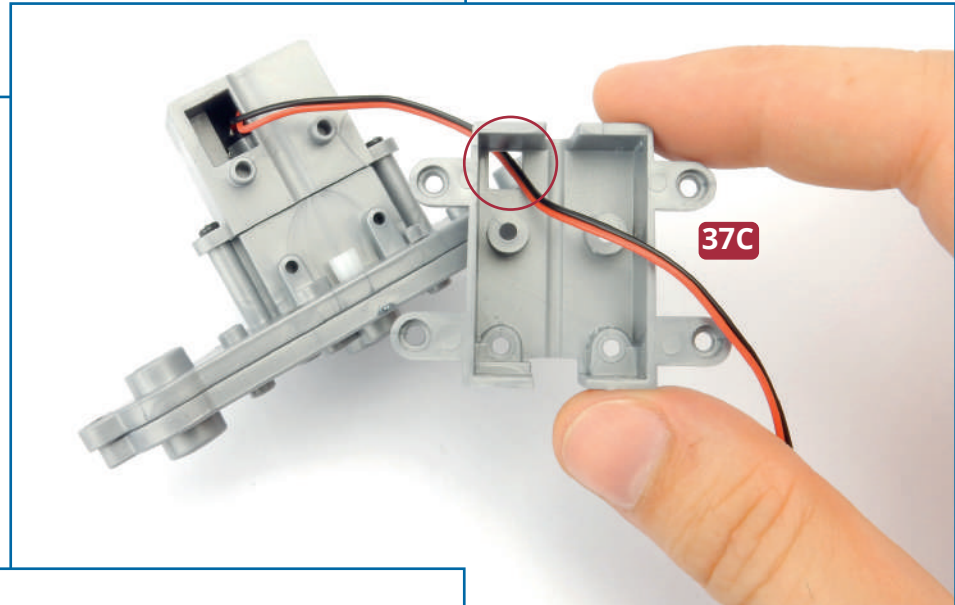


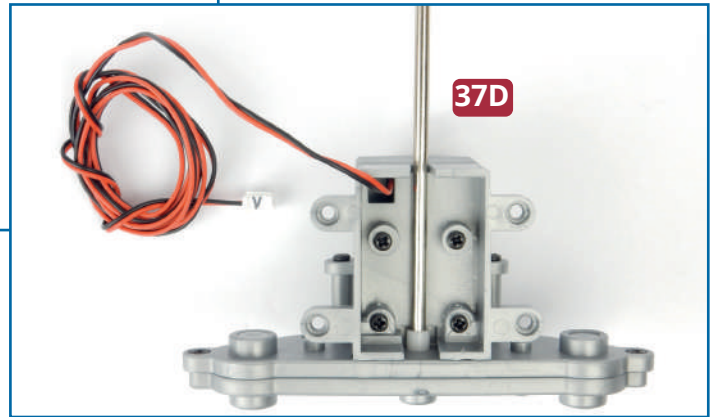
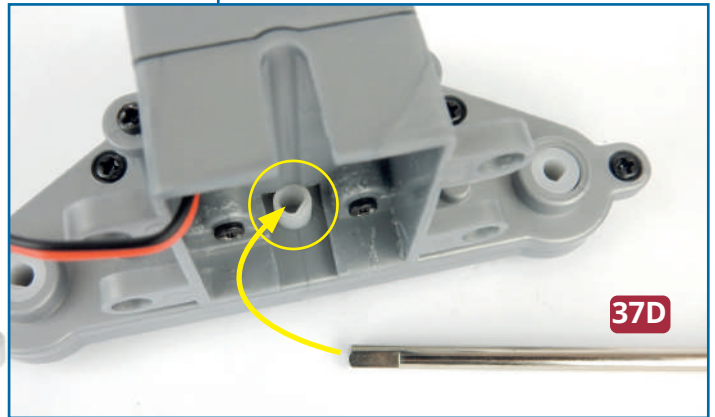
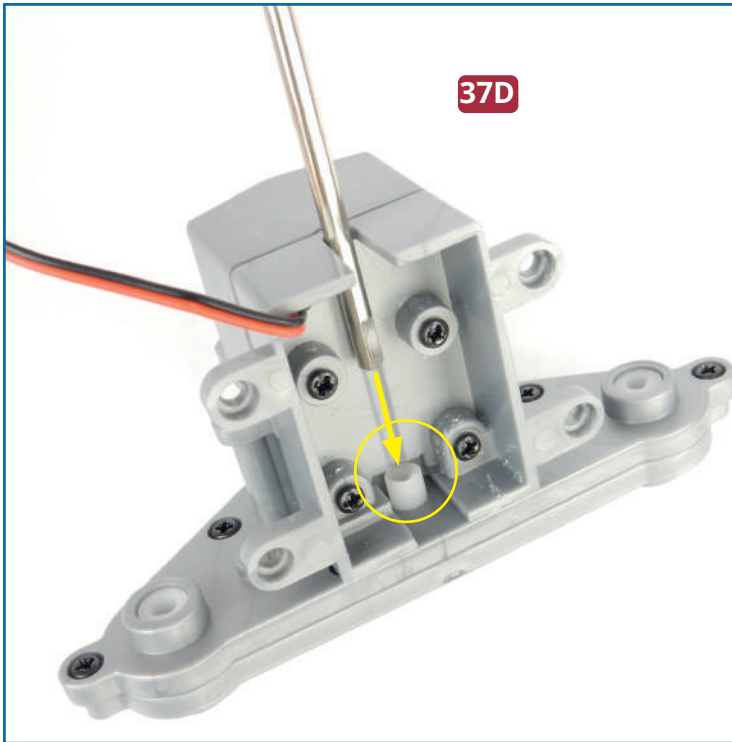
2 Ensure that the motor is fully inserted into the recess in the gearbox. Unwind the cable and thread the end into the motor housing **37B**, bringing it out through the opening in the side of the housing (below). Fit the housing **37B** over the engine so that it is flush with the edge of the gearbox (below left). Fix in place with four **AP** screws, tightening them firmly.



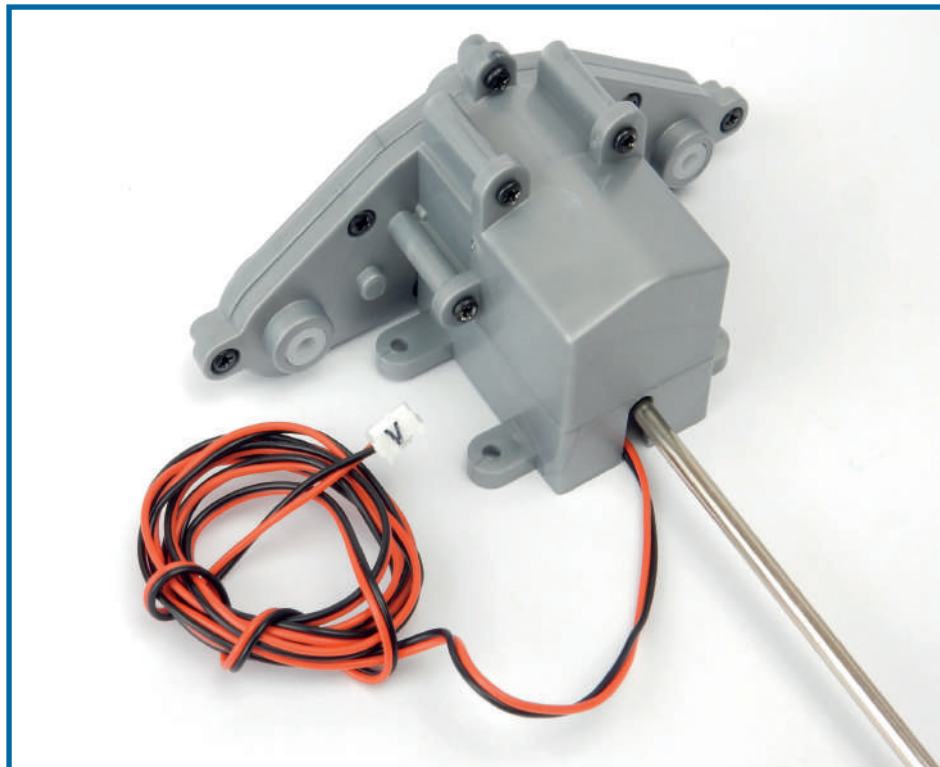


3 Now take the base **37C**. Thread the cable from the motor through the rectangular opening (circled, right). Fit the base against the housing so that the screw holes are aligned. Fix in place with four **AP** screws (below).





4 Take the shaft **37D**. Fit the D-shaped end of the shaft into the centre of the cog (circled, top right and above). Push the shaft firmly into the cog (right).

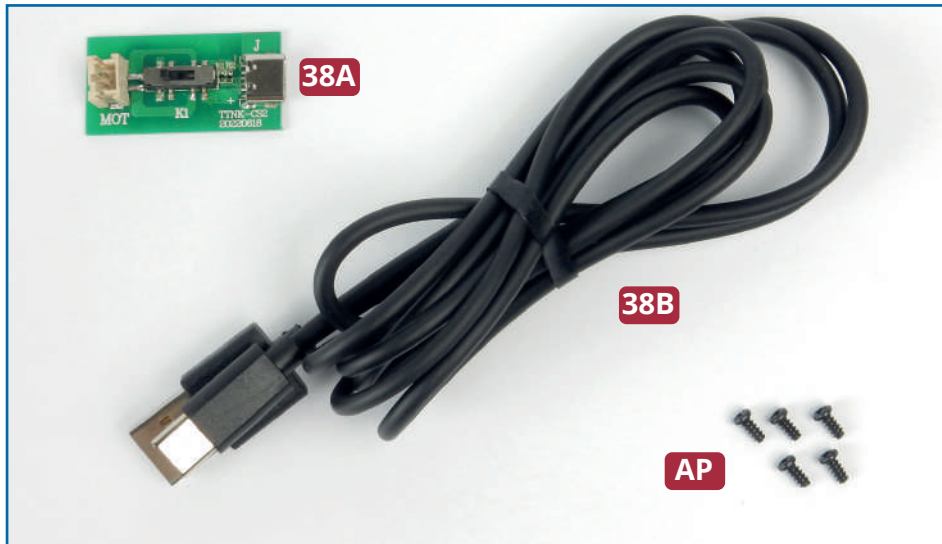


Completed work

The motor and a shaft have been fitted to the gearbox.



TESTING THE MOTOR



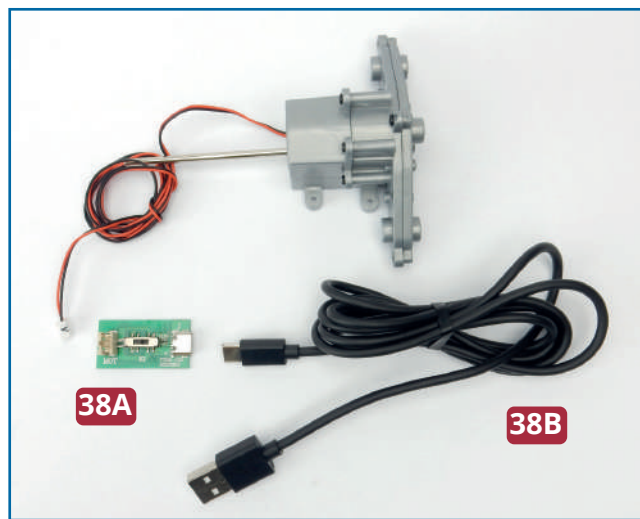
PARTS IN THIS ISSUE

38A Printed circuit board for motor, with switch (PCB)

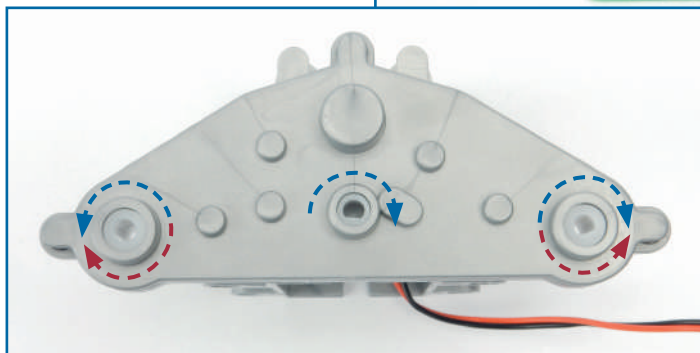
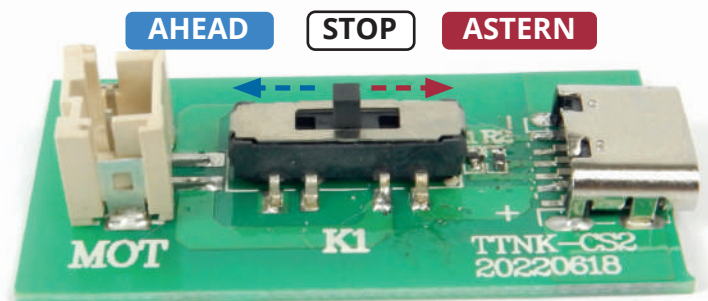
38B USB-C to USB-A cable

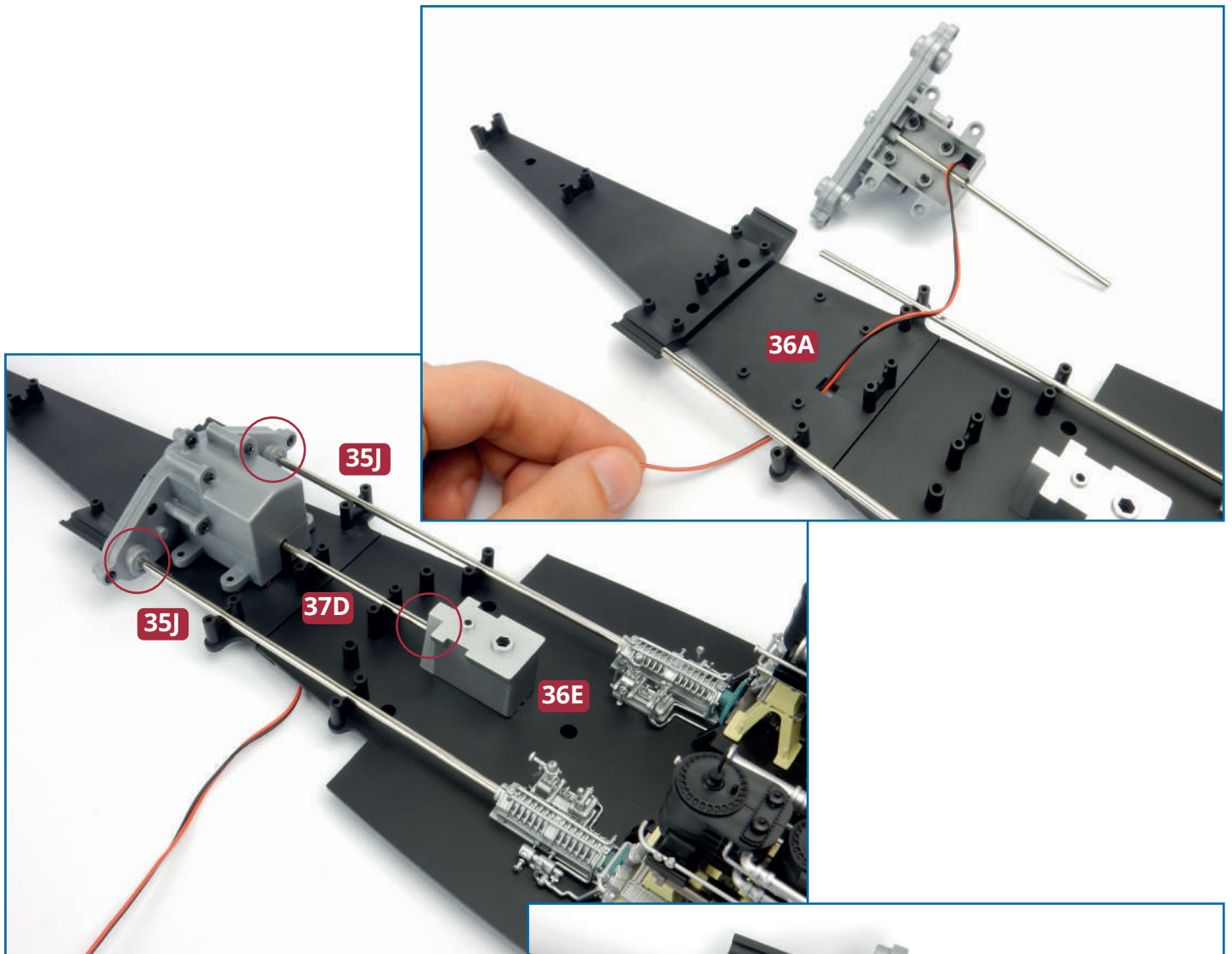
AP Five 2.3 x 5mm PB screws (1 spare)

You will need a power source, such as a computer or laptop, in order to plug in the USB to test the motor. You may be able to use a phone charger, but check the output is 5V and 1A or 2A.



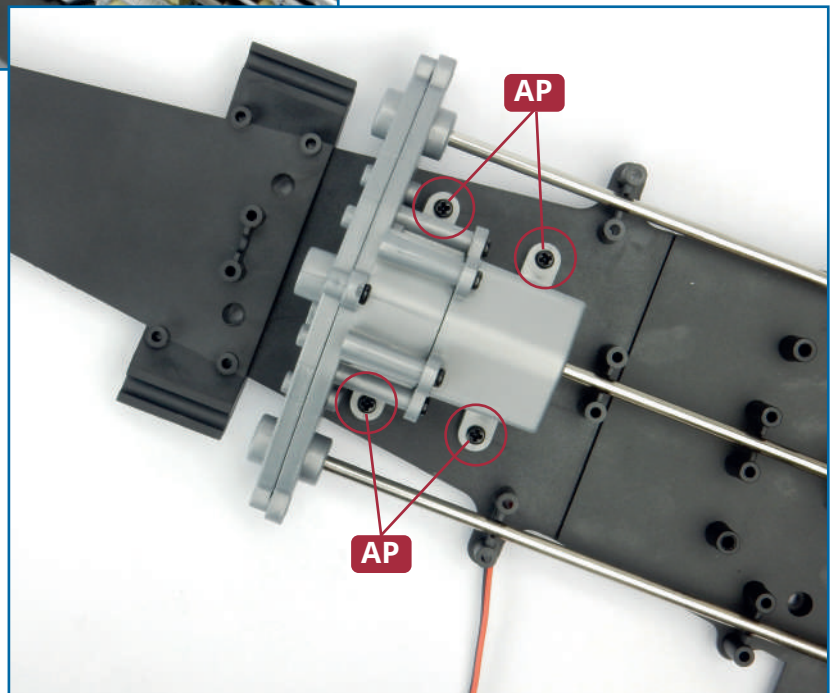
1 The next step is to check the operation of the engines of your model. You will need the PCB/switch **38A**, the USB cable **38B** and the gearbox, motor and shaft assembled in issue 37. The switch can move to the left ("Ahead") and to the right ("Astern"). In the centre, the motor will be switched off ("Stop"). In the "Ahead" position all three propeller shafts will rotate, in the "Astern" position only the two outer shafts will rotate.

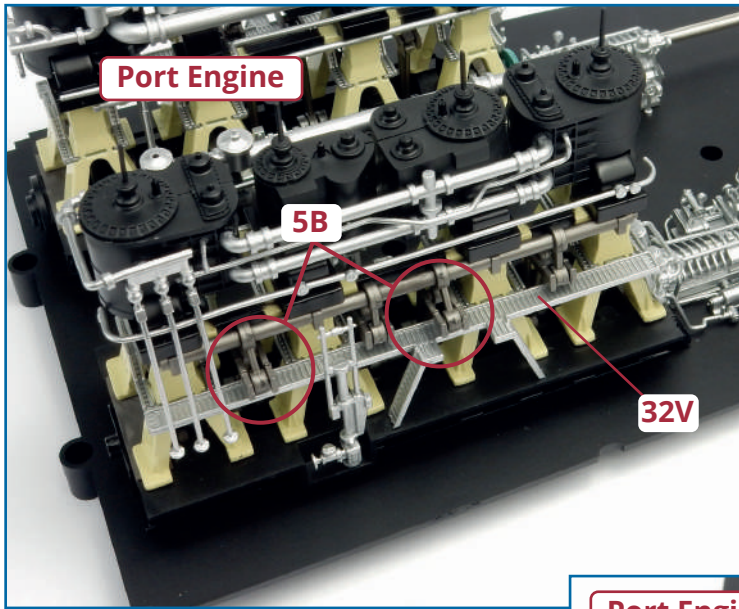




2 Take the engine room assembly from issue 36. Thread the cable from the motor through the rectangular opening in the floor section **36A** (top). Position the gearbox as shown (above) so that the shaft **37D** fits into the turbine base **36E** and the side shafts **35J** fit into the cogs in the outer corners of the gearbox. Take time to ensure it is correctly fitted. You may need to rotate the shafts **35J** in order to fit them into the centre of the cogs. Take care not to pull the shafts out of the thrust blocks/flywheels.

Fix the gearbox in place with four **AP** screws (right): there is no need to tighten them fully until you have finished testing the motor.



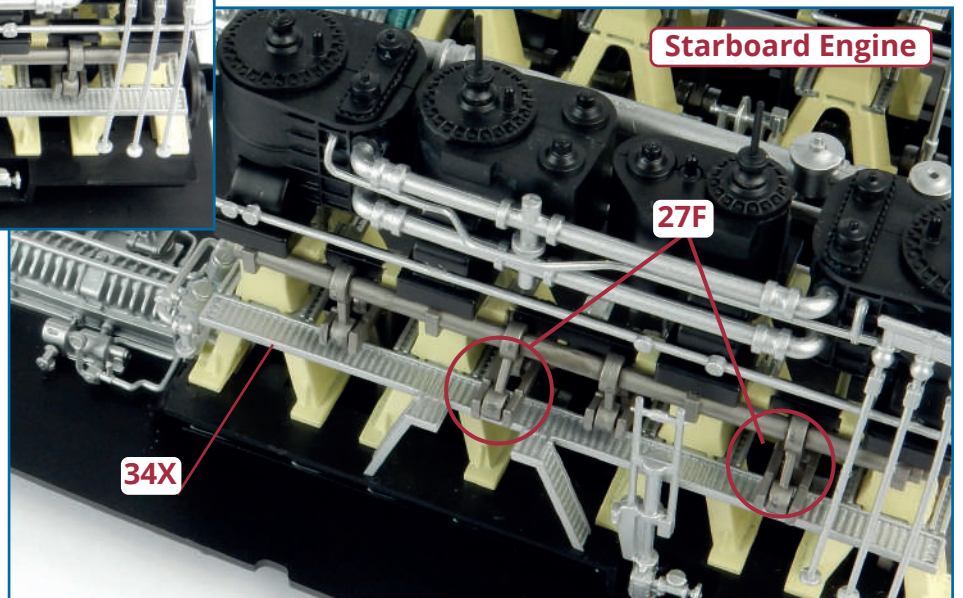
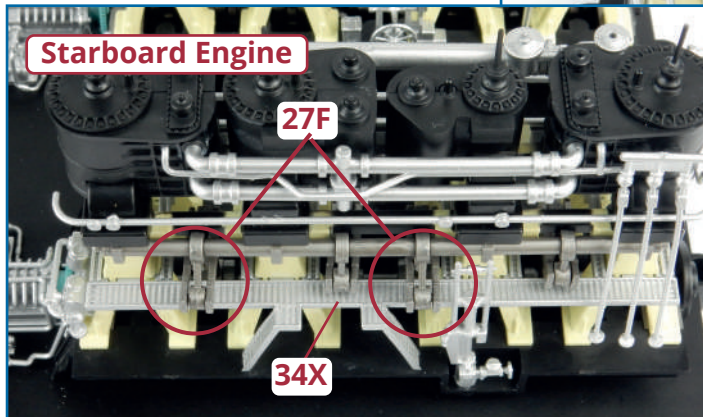
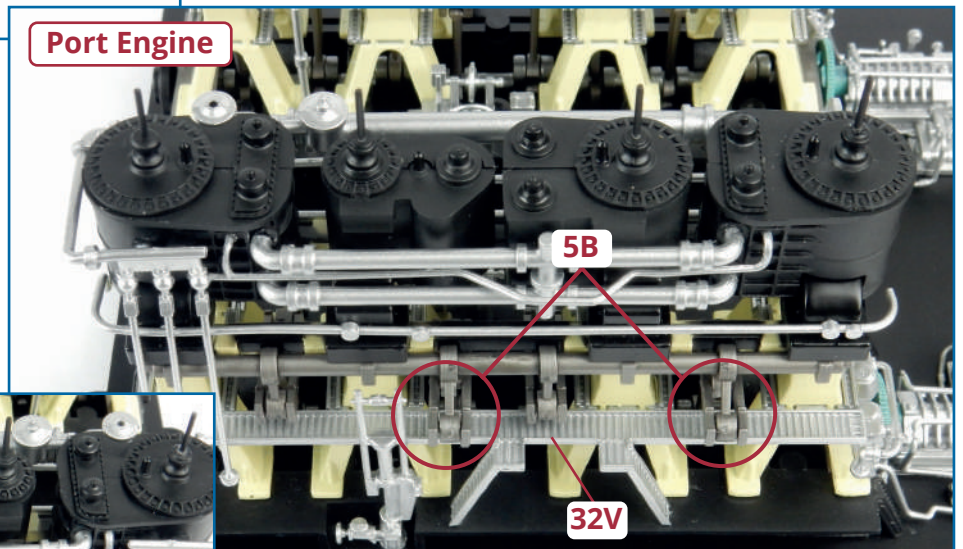


3 Before testing, check that the connecting rods on the engines are aligned correctly. On the port engine, the connecting rods **5B** move in and out in alternate pairs (first/third and second/fourth). Make sure that the pairs are aligned with each other, as follows.

The actual position of the parts will depend on the rotation of the crankshaft – the first and third connecting rods may be further out (left) or the second and fourth connecting rods may be further out (below). If, for example, the third connecting rod is pushed further in than the first, then use a small screwdriver to gently ease them into alignment.

Similarly, on the starboard side, connecting rods **27F** should be aligned in alternate pairs.

NOTE: The connecting rods **5B** and **27F** should not be further in that the inner edge of the gangway (**32V** on the port side, **34X** on the starboard side).

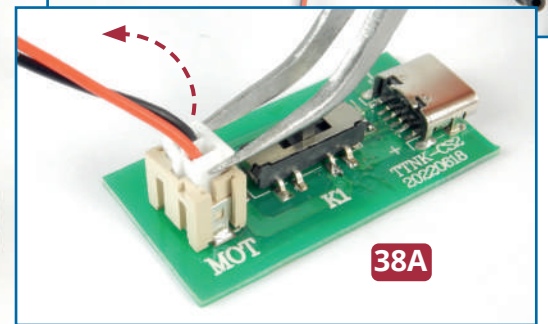
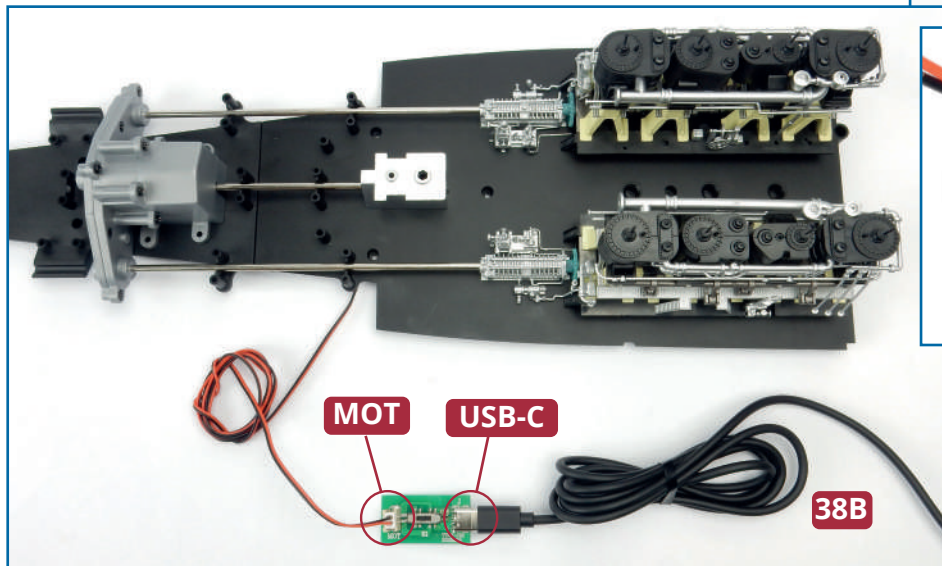
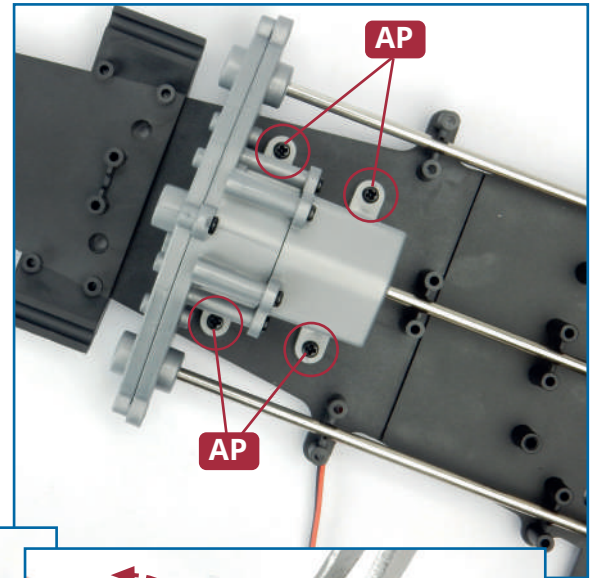


4 You are now ready for the test run. Connect the motor cable to the “MOT” socket on the PCB/switch 38A and fit the USB-C end of the **38B** cable into the socket at the end of the PCB. Ensure that the switch is in the “Stop” position.

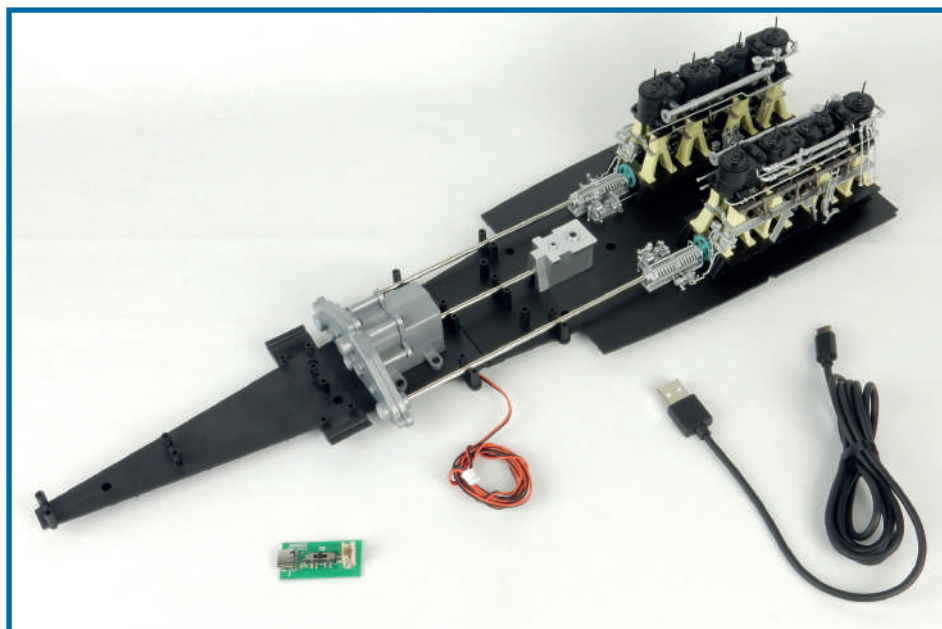
Connect the USB cable to the USB socket of a desktop or laptop computer or to a 5V 1A or 2A power supply (eg a phone charger).

Once the power supply is connected, move the switch to “Ahead” and let it run for about 30 seconds. Then check that it works in the “Astern” position.

When you are happy that it is working correctly, move the switch to the off position, unplug the USB cable and disconnect the motor from the PCB (use tweezers to avoid damaging the wires, right). Then tighten the screws holding the gearbox in place.



Troubleshooting: Ensure the screws holding the engines in place are fully tightened. Loosen the thrust blocks slightly if the engines are not working.



Completed work

The gearbox has been fitted and the engines have been tested. Store the parts very carefully, as there are small, delicate parts on the engines and thrust blocks.