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NSWGR C38 (Standard) Locomotive and Tender Kit

E200 Manufactured Exclusively for AR Kits by DJH Engineering from Patterns owned by AR Kits

PLEASE READ INSTRUCTIONS THOROUGHLY BEFORE COMMENCING ASSEMBLY

CONSTRUCTION

It is important to ensure that all parts are clean, free of "flash" (excess metal on castings) and fit properly. The "flash line" is easily removed from most areas by scraping gently with a sharp hobby knife - a round blade is more effective than a straight pointed type. Pull the blade along the "flash line" - several light strokes are better than a single one. Some areas are better cleaned up with 6" jewellers' files. Take care not to flatten round parts by filing too heavily. All locating holes for detail fittings should be pre-drilled to the size specified in the instructions. Sometimes it is necessary to clean out these holes with a "rat tail" file; take care not to snap off the tip of the file. Gently wash the castings in warm soapy water to remove mould release residue.

Etched brass items are best removed from the fret by placing the fret on a scrap piece of hard timber (eg Pyneboard) and cutting the tabs with a large Stanley knife - cut the tab at the point furthest away from the part, then trim the tab off close to the part with a small pair of quality side cutters. Hold small parts with a pair of flat nosed (not serrated jaws) pliers while cleaning up with j ewellers' files. Be careful not to distort the etchings; they are difficult to straighten if bent or twisted. Drill all required holes before assembly, noting the spigot sizes of the fittings, because some holes will be difficult to drill after parts are assembled.

As with all classes of NSWGR locomotives, individual C38s varied in minor details from time to time in their life. Modellers are therefore advised to check photographs of the particular locomotive they have chosen to model.

These kits are designed to give many years of operating pleasure. A little extra time taken during construction will ensure that your kit will do this. It cannot be emphasised too strongly that the basis of a smoothly operating model is care when constructing the chassis and valve gear, ie you must double check every step. Check that the axles turn freely in their bearings, check again with the coupling rods on, then again with the connecting rods on, etc, etc.

Assembly methods:

'The two main construction methods are:

(a) Low melt solder - Low melt solder is an excellent medium for use with white metal kits. It is quick and easy providing a stronger joint than can be achieved with glue. It has the added advantage of easily repairing minor casting flaws, and because of the relatively low temperature, many parts can be held in the fingers while soldering. Brass to white metal joints can also be made by "tinning" the brass first with normal solder. Low melt soldering requires the correct type of soldering iron (eg Dick Smith T2200). These irons have temperature control, as low melt solder only requires around 200 degrees centigrade. You must use special low melting point solder, such as that available from AR Kits.

IT IS ADVISABLE NOT TO ATTEMPT TO SOLDER ANY CASTINGS WITH A STANDARD SOLDERING IRON

(b) Glue - Superglue and Plastibond are two types of glues suitable for use with this kit. Some modellers prefer to superglue major joints first then "fillet" the joint with Plastibond. Small detail parts are best glued with Superglue. Glue is not recommended for those parts needing good electrical contact, such as the tender bogies.

Whichever method you choose, "dry fit" parts first to ensure a good fit.

Electrical pickup:

The electrical system used on these kits is called "half live". Looking from the top facing forward the locomotive chassis collects current from the live wheels on the right-hand side, shown as LS (live side) on the drawings. The tender is insulated from the locomotive and current is collected from the wheels on the left-hand side of the tender.

Cleaning up/Painting:

On completion, any areas which were soldered should be washed using a soft brush and methylated spirits. An excellent pressure pack flux remover is also available from Dick Smith stores. Then wash thoroughly in warm soapy water. Rinse with clean water and allow to dry thoroughly before applying a suitable self-etch primer.

Spare Parts:

Spare parts are available on a replacement basis. Should any part be missing or damaged contact AR Kits for a replacement. Should you have any problems with the Mashima motor please do not attempt to repair it yourself - return the motor to us. Mashima will not replace motors which have been tampered with.

Should you have any queries or problems with construction please drop us a note and we will do our best to advise. Likewise we would be pleased to hear any suggestions you may have for improving the kits or instructions.

General:

The following drill sizes are required: 0.4mm, 0.5mm, 0.6mm, 0.7mm, 0.8mm, 0.9mm, 1.Omm, 1.1mm, 1.2mm, 1.5mm, 1.6mm, 1.7mm, 1.8mm, 1.9mm, 2.Omm, 2.9mm, 3.7mm.

During construction refer to the drawings at all times. A number of parts are quite similar, so double check if in doubt. Note that attached to the instructions is a photocopy of the lost wax brass castings sprues with each part numbered for easy identification. In the general instructions the part numbers are shown in brackets.

The instructions sometimes refer to the righthand (R/H) and lefthand (L/H) side. This is taken as viewing the model from above and looking forward.

Where parts or assemblies are joined together, usually by wire or screws, often they cannot be shown close to each other on the drawing. In such cases an asterisk (*) is used to identify the linking parts. For example, in Drawing 8 the single (*) shown against the expansion link assembly (C69) denotes that this joins to the motion bracket (C37) which also has a single(*) against it. Similarly, the three(***) shown against the slide bars (C46) denote that they join to the cylinders (C40) also shown with the asterisks (***).

Sometimes parts join to others which are shown on a different drawing. This is indicated by showing the linked drawing number in a circle. For example, in Drawing 1 the holes in the tender base (TI) link with the tender bolsters and bogies in Drawing 3: this is indicated by the 3 in Drawing 1, and the 1 in Drawing 3.

To minimise the risk of losing parts, do not remove them from the etched fret or the plastic packing until you are ready to use them. We recommend that you start construction with the tender.

Safety first:

These models are not toys and are not suitable for young children. White metal castings contain lead and modellers are advised to wash their hands after working with unpainted white metal castings. When using superglue, solder or when spray painting ensure your work area is well ventilated

Tender Drawings T1, T2 & T3 (Parts Tl - T45):

Take the tender base (Tl). At the front, fold the small side tabs down before folding the front down as shown on the drawing. At the rear of the tender base fold the small side tabs down before folding the buffer beam down, then fold the coupler base so that the small tab locates in the tender base. Take the tender back and sides (T2) and fold the bottom of the sides under as shown in the drawing before folding the three small tabs on each side (these locate in the tender base). Now fold the tender back and sides (T2) to form rounded corners front and back, note that the corners have a series of lines etched on the inside of the corners to facilitate rounded corners; fold the corners carefully to form a radiused corner, not a sharp one.

At this point solder the bogie centre pivots (T43x2) to the underside of the tender floor (Tl). Now fix the back and sides onto the tender floor (TI).

Fit the front bulkhead (T3) in position, then add solebars (T4xpair) to the tender base (T1) noting that they fix behind the small flaps at the ends of the tender base - solder from inside the tender. Fix the floor (T6) to the front bulkhead (T3) followed by the floor supports (T5x2). Fold and fit the shovelling plate (T7) note that the rear flap on the shovelling plate folds down to facilitate fitting. Before fitting the white metal coal doors (T8), fit small bulkhead tap (T25) using 0.4mm wire, large bulkhead tap (T26) using O.Smm wire, brake handle bracket (T27) using O.Smm wire, hand wheel (T28) and seat (T29). Now fit the coal doors (T8).

Fold and fit the steps (T12) before adding step treads (T13x2), (T14x2) and (T15x2). Fit the drawbar pin (T16) using M2 nut (T17). Detail the bottom of the tender fitting brake cylinders (T22x2), brake levers (T23x2) and valves (T24x2) using 0.4mm wire.

At the rear of the tender, fold and fit the grab handle (0.4mm wire) followed by the marker lights (T3 1x2), the junction boxes (T35x2), the brake pipe (T34) and the buffers (T32x2). Fold and fit the ladder (T33) after the tender deck has been fitted.

Fit the deck supports (T9x2) to the inside face of the tender sides making sure that they locate on the tender base. Fix the coal partition (T18) to the deck (T10), followed by lamp stanchion (Tll) and lamp (T21) using 0.4mm wire, soldering from underneath the tender deck. Now test fit the tender deck (T10) to the tender body from the rear of the tender, slipping it in between the tender sides. Check that it is a neat fit inside the tender (and level) before fixing in place - we recommend a small amount of Superglue on the top of the deck supports to retain the deck in place.

Using 0.4mm wire add two handles to the water filler (T20) before fixing the assembly to the tender deck. Test fit the toolbox (T30) - you may need to file lightly for a neat fit, before fixing flush against the curve of the tender side. Fit toolbox (T19).

Fix the turned brass sideframe mounts (T38x4) to the bogie sideframes (T36x4). For good electrical pickup low melt solder is recommended here. The bogie stretchers (T41x2) are on the etched nickel silver valve gear fret -remove them and check that the holes either side fit over the brass sideframe mounts (T38), you may need to enlarge the hole slightly. Fold the stretchers as per Drawing 3, using a pair of flat nosed (non-serrated) pliers.

Push the brass wheel bearings (T37x8) in the bogie sideframes using low melt solder if necessary, and attach the sideframes to the stretcher with brass spacer screws (T39x4) and washers (T40x4) also from the nickel silver fret.

Tighten the screws, then gently ease the sideframes apart to fit the wheelsets (T42x4) in place, making sure the insulated wheels are on the same side for each bogie - see drawing 1. Place the bogie on a piece of flat track and test run, some "fine tuning" may be necessary.

Take the bogie mounting screws (T4x2) and attach the assembled bogies to the tender (insulated wheels on the R/H side) using the washers (T45x2).

Locomotive Drawings 1 and 2 (Parts 1 - 60):

As mentioned previously all holes shown on the drawings should be drilled prior to assembly.

Clean up the footplate (1) and remove any feed sprues from the centre cutout under the boiler - take care not to remove the four valance support lugs. Fix the smokebox/boiler/firebox (3) to the footplate (1) by lowmelt soldering inside the smokebox and at the bottom edge of each side of the firebox.

Fit the cab (2) to the firebox (3). Fold the tabs on the rear of the valance plates (1lxpair) as shown. Using "standard" solder lightly "tin" the back of the valance plates (l lxpair) and fix to the footplate (1) using "low melt" solder, ensuring that they are level with the top of the footplate.

Take the fallplate (36) and fold the tabs down 90 degrees, then glue the plasticard (59) to the underside, trimming it so that it overlaps the three outside faces by 0.8mm to prevent it shorting out against the tender. Fit the tabs on the fall plate into the slots in the base of the cab, and retain the fall plate in position by adding the cab floor (37). Detail the boiler backhead (38), adding firebox control lever (39) and regulator (40) using 0.7mm wire. Fit the backhead assembly into the cab and fix in place. Trim the locating spigots on the bottom of the seats (41x2) and fix to the cab floor (37). Take the cab rear bulkhead (42) and fold the sides as shown in Drawing 5, with the two "triangles" at the top of the sides folded down slightly. Test fit the cab rear bulkhead to the back of the cab and adjust folds if necessary. Using "standard" solder, lightly "tin" the top and bottom edges of the cab rear bulkhead. Position the cab rear bulkhead against the cab and join the two using "low melt" solder.

Fit the ashpan sides (lOxpair) to the bottom of the footplate. Detail the locomotive body, adding steam turret cover (4), safety valves (Sx3), steam dome (6), sand dome (7) using 0.4mm wire for handles, and add chimney (8). For extra strength we recommend "low melt" soldering the headlamp (18) to the smokebox door (9) before fixing the smokebox door in place. Detail the smokebox door, adding junction box (19), marker lights (20 x 2), smokebox door handle (21), and step tread (22).

Continue detailing, adding steam turret boxes (13xpair), steam turret valves (14xpair), blowdown valve (15) using 0.4mm wire, clack valves (16x2), whistle (17) using 0.4mm wire and tap valve (23) using 0.4mm wire. Make up steps using step treads (25x2) and step tread fillet plates (26x2) and fit to the boiler. Using O.Smm wire, fit the small pipes either side of the boiler between the footplate and boiler (just behind the smokebox), before fitting the mechanical lubricator cover (12) to the L/H side of the footplate - you may need to make a small cutout in it to clear the 0.5mm wire; note that the cover plate is aligned with the raised section on the top of the valance.

Now fit the anti-vacuum valves (27x4) followed by the firebox valves (28x2) using O.Smm wire. Note that the front steps (24xpair) will be fitted later.

The detailing goes on... Add power reverser (43) and reversing lever (44). Solder reverser handwheel (45) to a length of 0.4mm wire, and pass the end of the wire through the cab front to locate in the power reverser (43). Add the regulator linkage (46), regulator lever (47), valve (48) using 0.4mm wire, steam pipes (49x2) and steam generator (50) using 0.4mm wire. If fitting the optional driver's window shade, trim the window shade (51) to a length of 2.5mm, add window shade beading (52) and fix the assembly in place.

On the L/H side of the locomotive fit handrail brackets (53 through to 57x6) as shown in the drawing, and slip two handrail knobs (35x4) on the handrail after shaping. The handrails should be added after the pipework, as shown in Drawing 6 - refer to photographs for assistance with pipe detailing. On the R/H side, because the handrail is continuous, you will find it easier to shape the handrail, then slip the handrail brackets (29 through to 33 and 35x4) and two handrail knobs (35x4) onto the wire before fitting the assembly to the body. Fit handrail knobs (34x4) to the front of the cab and add 0.4mm wire. Add handrail knobs (58x2) to the cab rear bulkhead (42) and using 0.4mm wire, fit cab handrails and grab handles as shown in Drawing 6.

Locomotive Drawing 3 (Parts 61 - 62):

Fit the injectors (6lxpair) and add O.Smm wire. Complete piping and handrails as shown in Drawing 6. The etched fret containing the builder's plates (62) has the Clyde builder's plates at the top (B in Drawing 6) for the streamlined locomotives (and tenders) 3801 -3805. The bottom oval plates (A in Drawing 6) are for the standard locomotives (and tenders) 3806 - 3830.

Chassis Drawings C1 and C2 (Parts Cl - C73)

Take the L/H frame (Cl) and R/H frame (C6) and fold the rear tabs as shown in the drawing. Secure the two frames together using the spacers (C3x2) and four spacer screws (C2x6), tightening these screws only enough to allow fitting of the cylinder mounting plate (C4) - etched arrow on top facing forward, and insulator mounting plate (CS). Align the spacers (C3x2) so that the cross-hole is vertical and tighten the spacer screws (C2x6). If you find the frame does not fully tighten against the spacer, remove the spacer and, using a large drill (around S.Omm dia), slightly chamfer the holes in the spacers. Solder the plates (C4) and (CS) to the frames.

Now fit drawbar/tender pickup placing the insulated bush (C9) on the M2 screw (C8) - cut to 8.Smm and pass this through the insulator mounting plate (CS). Add the insulated washer (C10), power tag (C11), M2 nut (C12), spring (C13) - cut to S.Omm, spring plate (C14), coupling arm (C15) and M2 nut (C16). Before fitting the motor mounting plate (C19) using two spacer screws (C2x6), reinforce the fold in the motor mounting plate with a fillet of solder.

Fit pony support beams (7x2) to the rear of the frames. Cut the M2 screw (C33) to a length of 10.5mm and fit to the cylinder mounting plate (C4) using M2 nut (C34).

Fit the front pilot deck (C51) to the chassis. Makeup the cylinders using cylinder block (C40), front cylinder covers (C41x2), front valve covers (C42x2), lubricator tank (C43), valve crosshead guides (C44), rear cylinder covers (C45x2), cylinder drain cocks (C47x2) and cylinder drain cock covers (48x2). Before fitting the completed assembly to the chassis, using 12BA screws (C50x2), drill the valve crosshead guides (C44x2) 0.8mm, the rear cylinder covers (C45x2) 1.Omm at the top, and 1.0mm in the centre. Also drill the front cylinder covers (C41x2) 0.7mm as shown, fit the cylinder anti-vacuum valves (C49), and add O.5mm wire.

Before folding the motion bracket (C37) add motion bracket detail plates (C38x2), you may find this easier by pushing a short length of 1.0mm wire into a piece of timber and placing the etches on this to align them while you solder the two parts together. Fit the assembly to the chassis then add reversing brackets (C39x2) and reversing link (C67) using 0.7mm wire - use sufficient wire to allow later fitting of valve gear. Fit the slide bar support brackets (C62x2) to the chassis.

Before fitting the driving wheels (C21x2) and (C22) note that the insulated wheels are on the L/H side as viewed from the top facing forward. The insulated driving wheels can be identified by the thin insulation strip between the tyre and the wheel.

Fit the driving wheels (C21x2) and (22), note that the horn blocks are a "snap" fit into the chassis, and should not be soldered in place. Check that all axles rotate freely in the horn blocks.

Make up the brakes using brake shoes (C25xpair) and rear brake hangers (C26x2), and brake hanger detail plates (27x4) and brake hangers (C27x4)

You may find this easier by pushing a short length of 0.7mm wire into a piece of timber and placing the etches on this to align them while you solder the two parts together. Fit the completed assemblies to the keeper plate (C23) using 0.7mm wire - the brake shoe assemblies should be around 20.Omm apart. Fit the completed keeper plate/brake assembly to the chassis using spacer screws (C24x2).

Fit the coupling rods (C35xpair) to the driving wheels using crankpin screws (C36x4). Trim the crosshead (C65xpair) to a length of 16.5mm as shown then test fit the crosshead into the slide bars (C46x2) - make sure it is a smooth sliding fit. With the crosshead on the slide bars, fold the vertical tab on the slide bars down as shown. Fix the connecting rod (C64xpair) to the crosshead using the 14BA screw (C63x2) and 14BA nut (C66x2). Use a pair of flat nosed pliers to firmly push the end of the slide bars into the cylinder block and place a crankpin spacing washer (C72x2) on the centre crankpin followed by the connecting rod (C64xpair). Take the end of the crosshead assembly (C65xpair), place it on the 0.7mm wire (previously fitted to the motion bracket (C37)) and use the 14BA screw (C68x2) and nut (C70x2) to attach the expansion link assembly (C69xpair). Attach the expansion link assembly to the crankpin on the centre driver using 12BA screw (C71x2). Note that the return crank has a small lug which locates into the driving wheel to set the correct angle of the return crank. Check that the wheels and valve gear operate freely.

We recommend that the front steps (24xpair) be fitted at this stage - to do this, tin the outside face of the steps with "standard" solder. So you can align the steps correctly, place the locomotive body on the chassis and, holding the steps in position with a pair of tweezers, use "low melt" solder to "tack" the steps to the valance - remove the body and complete "low melt" soldering the steps.

Detail the front pilot deck (C51) adding brake pipe (C52), dummy coupler (C53), guard irons (C54x2), steps (CSSx2), buffers (C56x2) and handrail poles (C59x2). Fold the pump bracket fillets (C58) and fit it to the pump bracket (C57), then fit the assembly to the front pilot deck (C51). Add the pump (C60) to the pump bracket then add pump air filter (C61) using O.5mm wire.

Fit the motor (C20) to the motor mounting plate (C19) with motor mounting fixing screws (C17x2) and power clip (C18). When attaching pickup wires to the motor note the polarity as shown on the drawing.

Assemble the gearbox (C29) as per the accompanying instructions. Trim the gearbox shaft as shown, taking care to remove any burrs from the motor end of the shaft, and add a 16.5mm length of sleeve neoprene (C30). Fit the gearbox to the chassis using gearbox keeper plate (C31) and gearbox screws (C32x2)- note because the gearbox screws are "self tapping", screw the keeper plate screws (C32x2) in and out of the gearbox to cut a thread before fitting the gearbox to the chassis.

Chassis Drawing C3 (C74 - C83):

Assemble the rear bogie (C76) using 12mm bogie wheel (C75) and mounting block (C74). Attach the bogie assembly to the chassis using the spacer screw (C24x2) - this is the rear screw securing the keeper plate.

Assemble the front bogie (C77) using 10.5mm wheels (C78x2) fitted with wheel inserts (C80x4), and keeper plates (C79x2). Attach the front bogie assembly to the chassis using spring (C81) -cut to 6.Omm, bearing washer (C82) and M2 nut (C83). The front bogie mounts on the M2 screw (C33) previously attached to the cylinder mounting plate (C4) and should be fitted after the body has been fitted to the chassis.

Fit the locomotive body to the chassis using spacer screws (60x2) at the rear - see Drawing 5, and M2 screw (C73) at the front - see Drawing 8.

Lightly oil the mechanism and test run, checking for electrical "shorts" on sharp curves etc. Also check that the motor does not overheat due to chassis binding/stiffness.

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Tender Drawing 1.

T1.	Tender Base	E
T2.	Sides and Back	E
T3.	Front Bulkhead	E
T4.	Solebars x 1 Pair	E
T5.	Floor Supports x 2	E
T6.	Floor	E
T7.	Shovelling Plate	E
T8.	Coal Doors	W/M
T9.	Deck Supports x 2	W/M
T10.	Deck	E
T11.	Lamp Stanchion	E
T12.	Steps	E
T13.	Step Treads x 2	E
T14.	Step Treads x 2	E
T15.	Step Treads x 2	E
T16.	Drawbar Pin	T
T17.	M2 Nut	T
T18.	Coal Partition	E
T19.	Toolbox	W/M
T20.	Water Filler	W/M
T21.	Lamp	L/W
T22.	Brake Cylinders x 2	W/M
T23.	Brake Levers x 2	E
T24.	Valves x 2	L/W
T25.	Small Bulkhead Tap	L/W
T26.	Large Bulkhead Tap	L/W
T27.	Brake Handle Bracket	W/M
T28.	Handwheel	E
T29.	Seat	W/M
T30.	Toolbox	W/M

0.4mm dia. Wire
0.5mm dia. Wire

Tender Drawing 2.

T31.	Marker Lights x 2	L/W
T32.	Buffers x 2	W/M
T33.	Ladder	E
T34.	Brake Pipe	L/W
T35.	Junction Boxes x 2	L/W

0.4mm dia. Wire

Tender Drawing 3.

T36.	Bogie Side Frames x 4	W/M
T37.	Pin Point Bearings x 8	T
T38.	Sideframe Bosses x 4	T
T39.	Spacer Screws x 4	T
T40.	Sideframe Bearing Washers x 4	E
T41.	Bogie Stretchers x 2	E
T42.	10.5mm Tender Wheels x 4	T
T43.	Bogie Bosses x 2	T
T44.	Spacer Screws x 2	T
T45.	Bogie Bearing Washers x 2	E

Locomotive Drawing 1

1.	Footplate	W/M
2.	Cab	W/M
3.	Boiler	W/M
4.	Steam Turret Cover	W/M
5.	Safety Valves x 3	L/W
6.	Steam Dome	W/M
7.	Sand Dome	W/M
8.	Chimney	W/M
9.	Smokebox Door	W/M
10.	Ashpan Sides x 1 Pair	W/M
11.	Valance Plates x 1 Pair	E
12.	Mechanical Lubricator Cover	W/M
13.	Steam Turret Boxes x 1 Pair	W/M
14.	Steam Turret Valves x 1 Pair	L/W
15.	Blow Down Valve	L/W
16.	Clack Valves x 2	L/W
17.	Whistle	L/W
18.	Headlamp	L/W
19.	Junction Box	L/W
20.	Marker Lights x 2	L/W
21.	Smokebox Door Handle	L/W
22.	Step tread	E
23.	Tap Valve	L/W
24.	Front Steps x 1 Pair	L/W
25.	Step Treads x 2	E
26.	Step Treads Fillet Plates x 2	E
27.	Anti-Vacuum Valves x 4	L/W
28.	Firebox Valves x 2	L/W
29.	Rear Firebox Handrail Bracket	L/W
30.	Central Firebox Handrail Bracket	L/W
31.	Leading Firebox handrail Bracket	L/W
32.	Large Handrail Bracket	L/W
33.	Boiler Handrail Brackets x 6	L/W
34.	Handrail Knobs x 4	T
35.	Handrail Knobs x 4	T

0.4mm dia. Wire
0.5mm dia. Wire

Locomotive Drawing 2

36.	Fallplate	E
37.	Cab Floor	E
38.	Boiler Backhead	W/M
39.	Firebox Control Lever	L/W
40.	Regulator	E
41.	Seats x 2	W/M
42.	Cab Rear Bulkhead	E
43.	Power Reverser	W/M
44.	Reversing Lever	E
45.	Reverser Handwheel	E
46.	Regulator Linkage	L/W
47.	Regulator Lever	L/W
48.	Valve	L/W
49.	Steampipes x 2	W/M
50.	Steam Generator	W/M
51.*	Window Shade	W/M
52.*	Window Shade Beading	E
53.	Rear Firebox Handrail Bracket	L/W
54.	Central Firebox Handrail Bracket	L/W
55.	Leading Firebox Handrail Bracket	L/W
56.	Large Handrail Bracket	L/W
57.	Boiler Handrail Brackets x 6	L/W
58.	Handrail Knobs x 2	T
59.	Plasticard	P
60.	Spacer Screws x 2	T

0.4mm dia. Wire
0.5mm dia. Wire
0.7mm dia. Wire

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Locomotive Drawing 3

61.	Injectors x 1 Pair	L/W
62.	Builders Plate Fret	E
	0.4mm dia. Wire	
	0.5mm dia. Wire	

Chassis Drawing 1

C1.	L/H Frame	E
C2.	Spacer Screws x 6	T
C3.	Spacers x 2	T
C4.	Cylinder Mounting Plate	E
C5.	Insulator Mounting Plate	E
C6.	R/H Frame	E
C7.	Pony Support Beams x 2	W/M
C8.	M2 x 12mm C/S Screw	T
C9.	Insulated Bush	P
C10.	Insulated Washer	P
C11.	Power Tag	E
C12.	M2 Nut	T
C13.	Spring	-
C14.	Spring Plate	E
C15.	Coupling Arm	E
C16.	M2 Nut	T
C17.	Motor fixing Screws x 2	T
C18.	Power Clip	E
C19.	Motor Mounting Plate	E
C20.	Motor	-
C21.	20mm Driving Wheels x 2 Pairs	T
C22.	20mm Geared Driving Wheels x 1 Pair	T
C23.	Keeper Plate	W/M
C24.	Spacer Screws x 2	T
C25.	Brake Shoes x 1 Pair	E
C26.	Rear Brake Hangers x 1 Pair	E
C27.	Brake Hanger Detail Plates x 4	E
C28.	Brake Hangers x 2 pairs	E
C29.	Gearbox	-
C30.	Sleeving	-
C31.	Gearbox Keeper Plate	P
C32.	Gearbox Screws x 2	T
C33.	M2 x 16mm C/H Screw	T
C34.	M2 Nut	T
	0.7mm dia. Wire	
	Insulated Wire	

Chassis Drawing 2

C35.	Coupling Rods x 1 Pair	E
C36.	Crankpin Screws x 4	T
C37.	Motion Bracket	E
C38.	Motion Bracket Detail Plates x 1 Pair	E
C39.	Reversing Brackets x 2	E
C40.	Cylinder Block	W/M
C41.	Front Cylinder Covers x 2	E
C42.	Front Valve Covers x 2	W/M
C43.	Lubricator Tank	W/M
C44.	Valve Crosshead Guides x 2	W/M
C45.	Rear Cylinder covers x 2	W/M
C46.	Slidebars x 1 Pair	E
C47.	Cylinder Draincocks x 2	E
C48.	Cylinder Draincock Covers x 2	W/M
C49.	Cylinder Anti-Vacuum Valves x 2	L/W
C50.	12BA x 3/16" CH Screws x 2	T
C51.	Front Pilot Deck	W/M
C52.	Brake Pipe	L/W
C53.	Dummy Coupler	W/M
C54.	Guard Irons x 2	E
C55.	Steps x 2	E
C56.	Buffers x 2	W/M
C57.	Pump Bracket	E
C58.	Pump Bracket Fillets	E
C59.	Handrail Poles x 2	L/W
C60.	Pump	W/M
C61.	Pump Air Filter	W/M
C62.	Slidebar Support Brackets x 2	W/M
C63.	14BA x 1/8" CH Screws x 2	T
C64.	Connecting Rods x 1 Pair	E
C65.	Crosshead Assemblies x 1 Pair	E-L/W-T
C66.	14BA Nuts x 2	T
C67.	Reversing Link	E
C68.	14BA x 1/8" CH Screws x 2	T
C69.	Expansion Link Assemblies x 1 Pair	E-L/W-T
C70.	14BA Nuts x 2	T
C71.	12BA x 3/16" CH Screws x 2	T
C72.	Crankpin Spacing Washers x 2	E
C73.	M2 x 16mm CH Screws	T
	0.5mm dia. Wire	
	0.7mm dia. Wire	

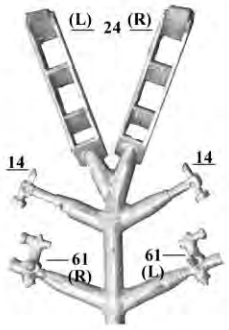
Chassis Drawing 3

C74.	Mounting Block	W/M
C75.	12mm Bogie Wheel	T
C76.	Rear Bogie	W/M
C77.	Bogie Body	W/M
C78.	10.5mm Bogie Wheels x 2	T
C79.	Keeper Plates x 2	W/M
C80.	Wheel Inserts x 4	W/M
C81.	Spring	-
C82.	Bearing Washer	E
C83.	M2 Nut	T

Legend:

W/M - White metal
L/W - Lost wax brass casting
E - Etched brass
T - Turning
P - Plastic

(E200) - C38 (Standard) - Lost Wax Brass Castings and Assemblies



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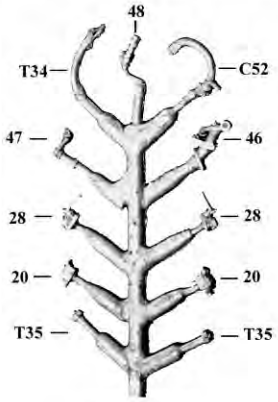

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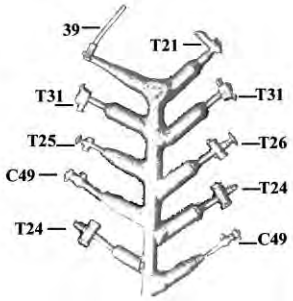

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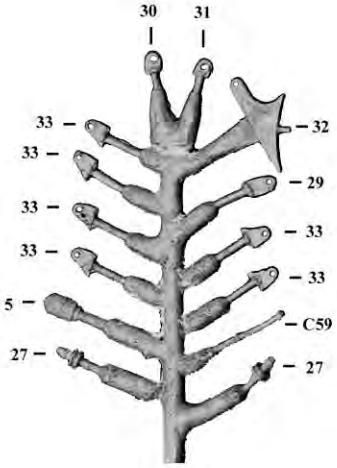
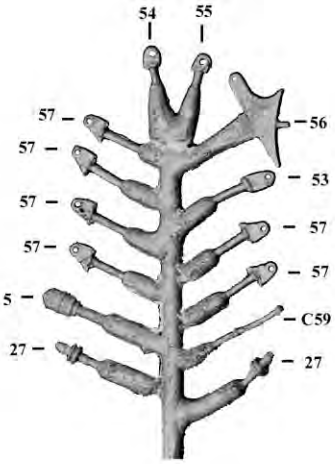
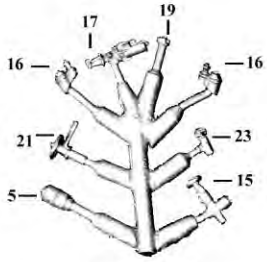
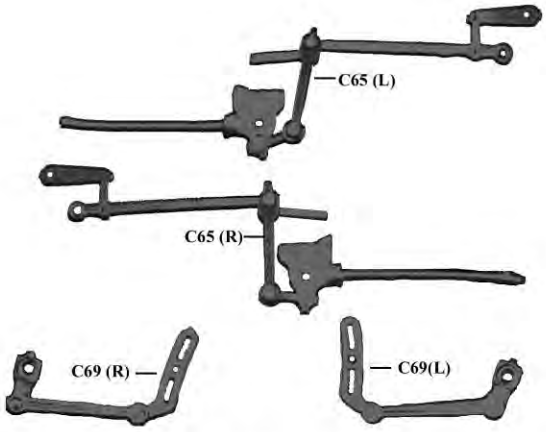






Sprue 6

Sprue 7



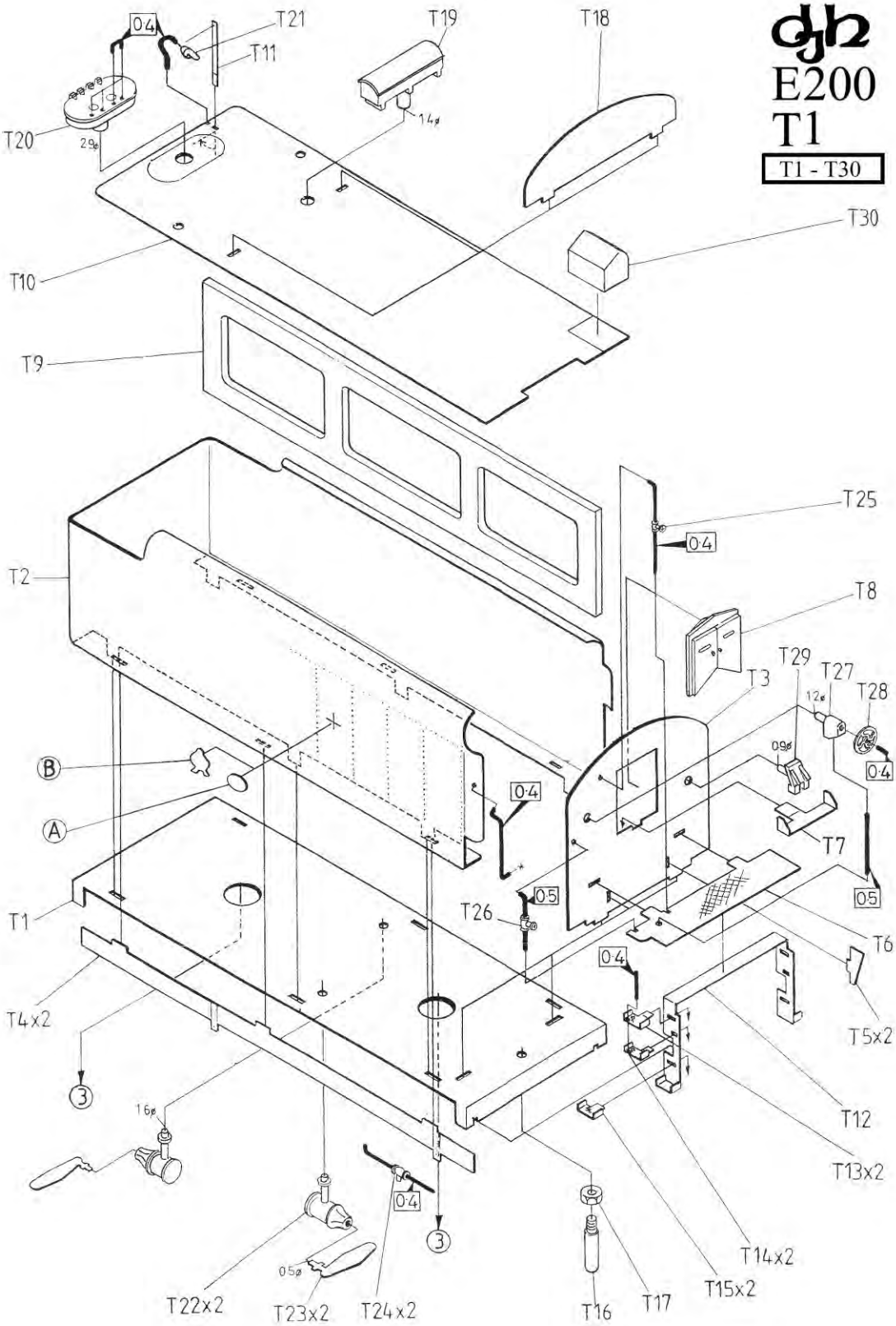
Cross Head and Valve Gear Assemblies

Builder Plate Etch

djb

E200
T1

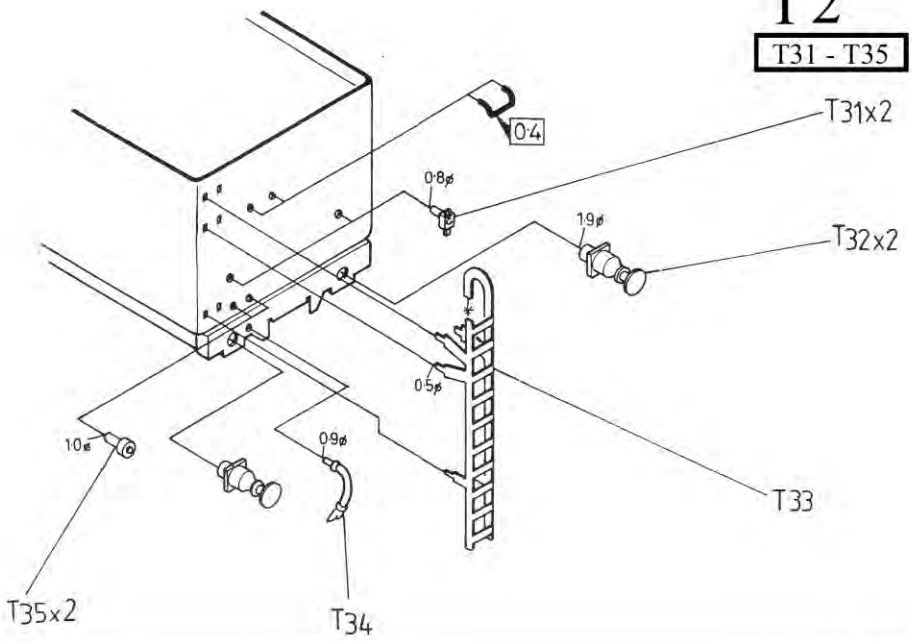
T1 - T30



djh

E200 T2

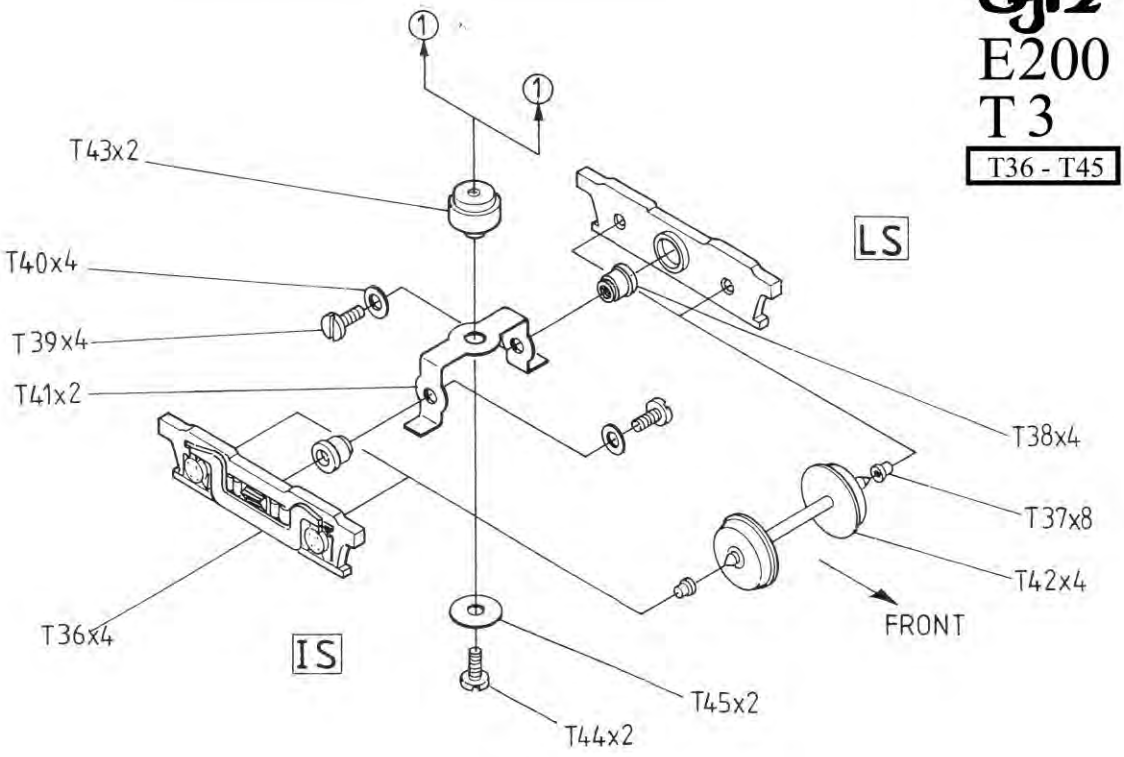
T31 - T35



djh

E200 T3

T36 - T45

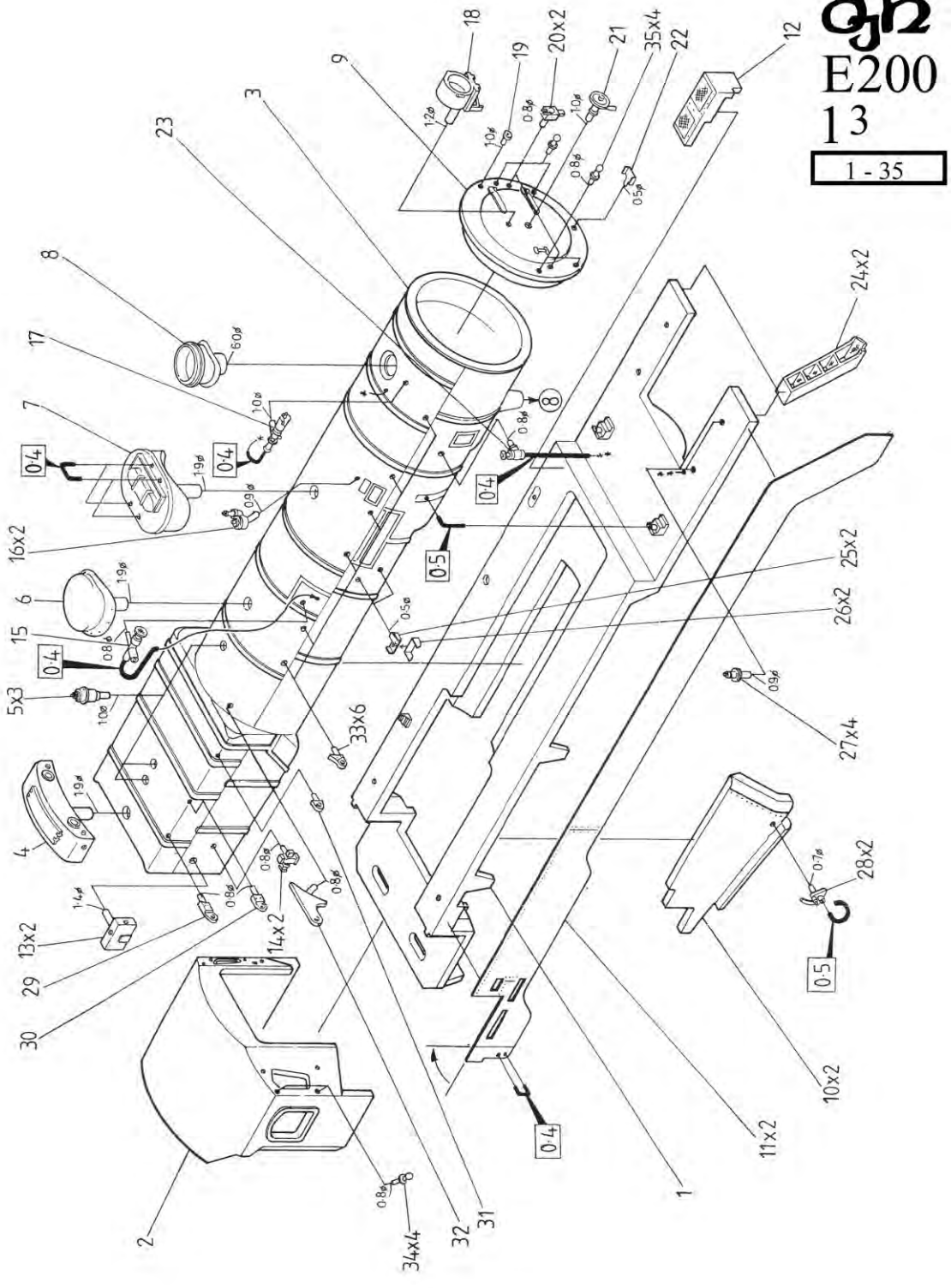


djh

E200

13

1 - 35

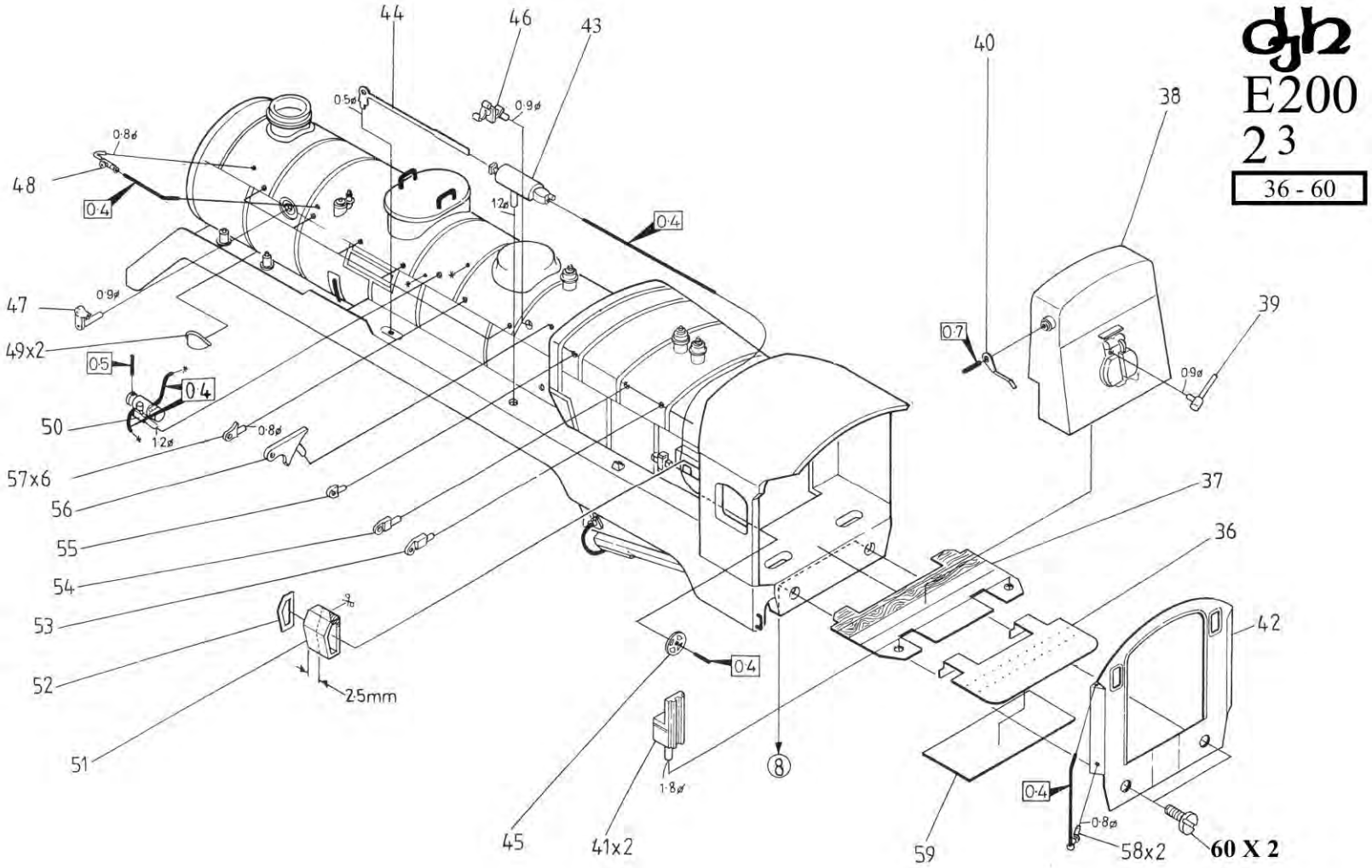


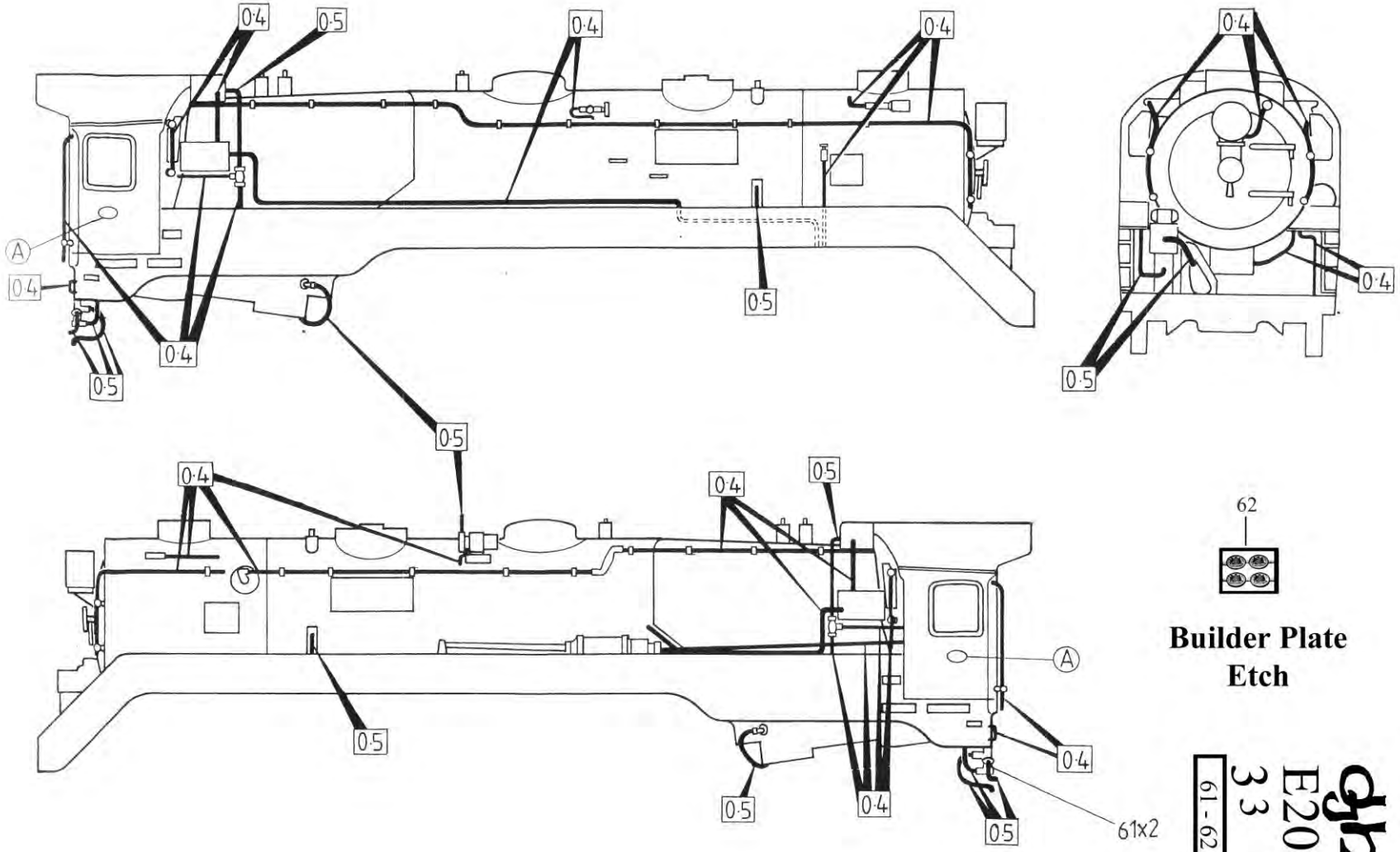
djh

E200

23

36 - 60





62

Builder Plate Etch

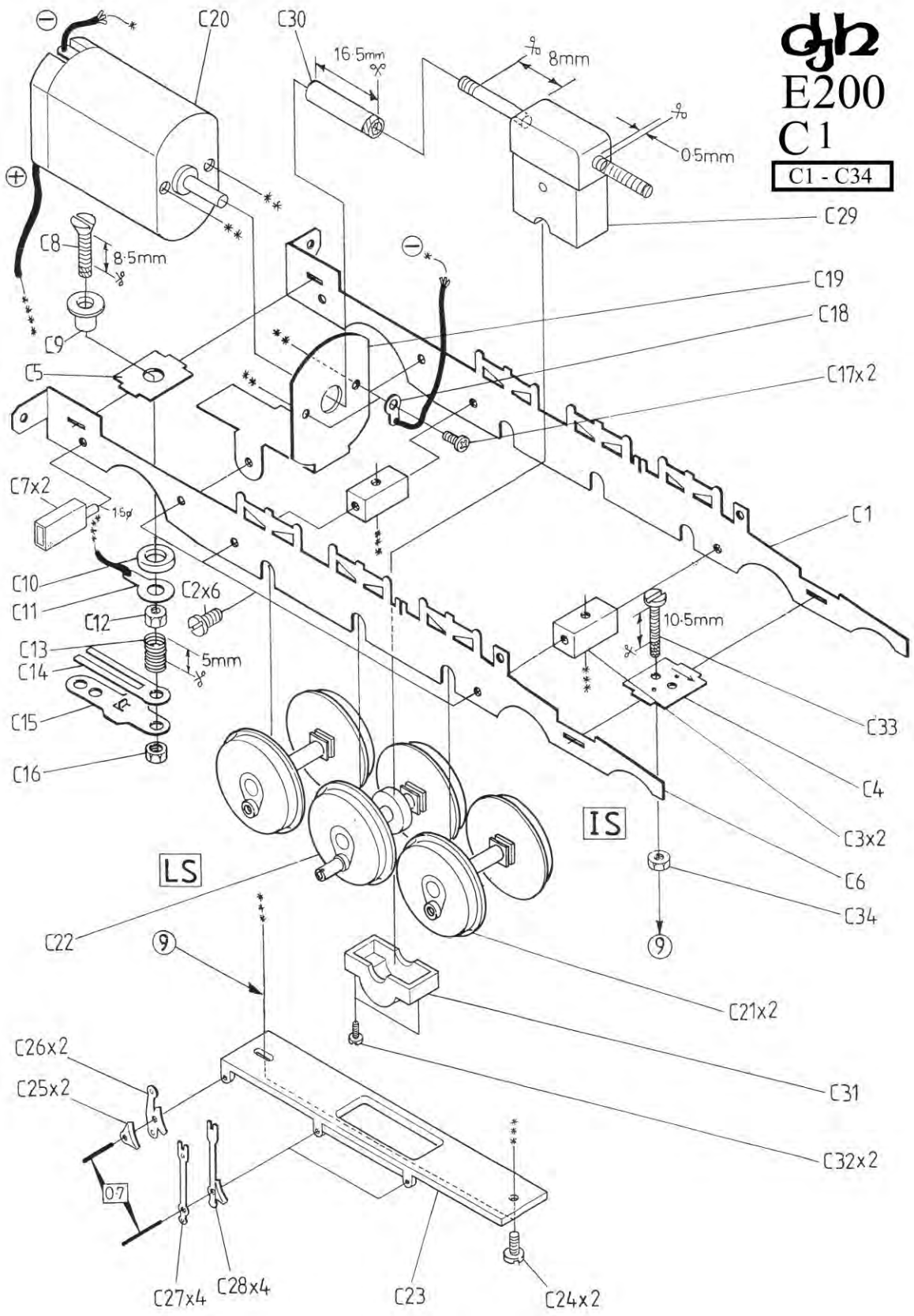
dp2
E200
33

61 - 62

djh

E200 C 1

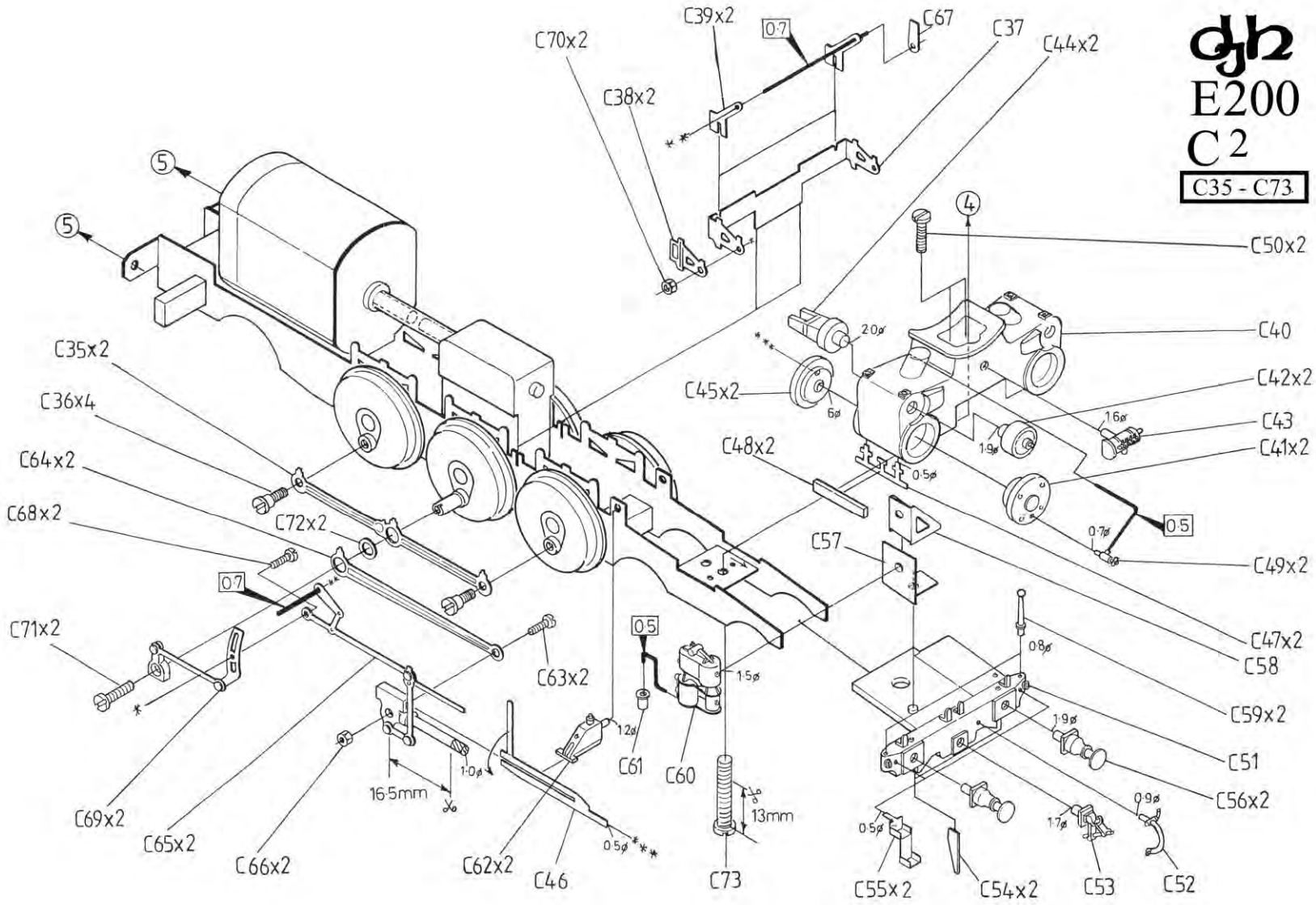
C1 - C34

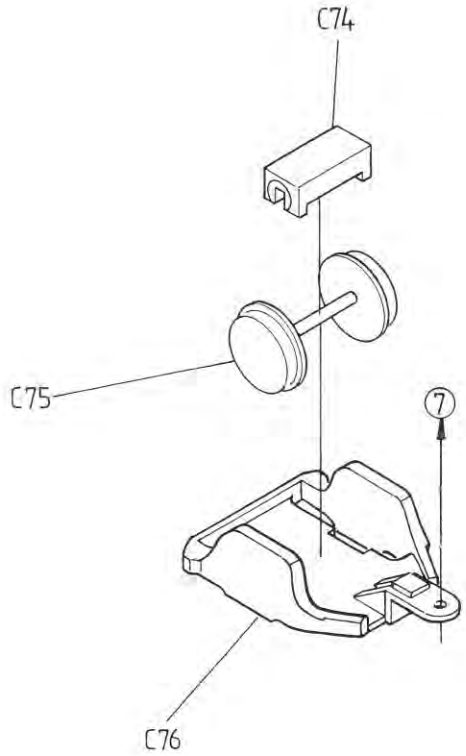


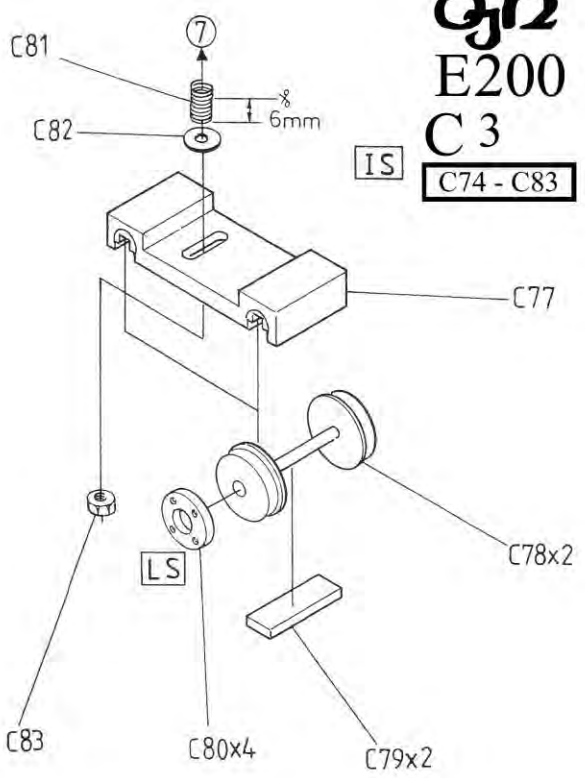
djh

E200 C 2

C35 - C73







djb

E200

C 3

C74 - C83