DB1 MANUAL WHEELCHAIR RANGE

Technical reference information for service centre staff

This information may be used as part of a training programme.

Modularity and strength of the Greencare wheelchair frame allows servicing and build specification to be selective and controlled. Ongoing service is based upon preventive maintenance and worn or damaged part replacement, not a complete strip down and repainting.

Greencare DB1 Scoring Chart ***gcqa 017*** *provides an objective assessment method for planned preventive maintenance. High scores will require more frequent detailed attention and component part replacement than those with low scores. Wheelchairs which have been used in the field and returned to the centre, will require checking for suitability to be recycled to another user. Service Record* ***gcqa 019*** *has a checklist for going through the chair.*

Component replacement should be carried out as DB1 Technical Service Manual. Items such as replacement wheels, castors and armpads can be fitted from spares carried in a mobile service vehicle. DB1 component modularity provides an opportunity for such chairs to be reconfigured to meet a more specific assessment of the next user need.Frame component replacement operations are best carried out in a workshop where tools and equipment are available.

Service staff should wear necessary protective clothing when handling a wheelchair that has been in use. Users requiring a technical service visit should understand that it is their responsibility to make the chair available in a clean condition, chairs returned to the centre should be similarly cleaned before staff work on them.

On a service check, wheelchairs should first be subjected to a quick damage inspection, to expose obvious defect or strain that may require major component part replacement. If this is OK then proceed to full check.

DAMAGE CHECK – for damage requiring replacement of major parts

a) Close the chair and stand back 2 metres (8 to10 feet away), visually compare the side nearest with that furthest away to detect differences between the side frames. This will highlight any area of strain.

b) Check components for impact or surface damage and scuffing.

c) Visual check of welded joints for cracks or any sign of structural failure.

d) Look for any sign of deformity in frame tubes.

e) Open the chair and check that seat tubes locate into position.

f) Check upholstery for obvious tears and severe wear damage.

g) Review and document result.

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FULL SERVICE CHECK IN SEQUENCE from front of wheelchair

1) Go through maintenance check list as gcqa 019 and in User Guide

This may also a good time to provide more advice to users, who are present, showing how routine safety maintenance can improve operation, and how to avoid causes of damage. However, technicians should not discuss wheelchair supply or assessment and specification with clients. More technical detail for inspection and service of specific areas of the wheelchair are covered in 2) to 16) of this document.

2) Back support frame

Visually check alignment of both push handles front to rear. Carry out backrest pull test against the locked folding hinge, using tipping levers, and gripping both push handles with approximately 100Kg occupant load in chair. There are different back support options available for DB1. If backrest is strained, or if a different option is preferred for a change of use, undo the screw fixings in the rear frame moulding and remove the original unit for replacement with a new spare. It is possible to reconfigure the backrest position also at this stage if required. See gcqa048.

3) Push handle grips

Greencare handgrips should be strong, secure and undamaged. Grasp each handgrip in turn and try to rotate the grips around each push handle. Replacement grips are available if required. Removal of grips for upholstery replacement is possible if they are first heated up by immersion in hot water at 70 deg. centigrade for five minutes. Follow manual procedures for hand grip replacement operation.

4) Back comfort brace

Test the operation and security of the back comfort brace. Check for loosening of the M6 fixing screws. These should be tight and secured with threadlock loctite 270. We made a modification to the central moulding in 2008, shaping the profile to effectively eliminate the possibility of an accidental hand trap in the centre. This is shown in gcqa048, if an original plain straight surface item is found, it should be replaced. Replacements are available form Greencare FOC.

5) Upholstery

Lightly run fingertips around the upholstery, checking for signs of tearing or surface deterioration. Check security of Velcro connections. Check that seat tube end caps are all in position. For security against sliding, assembly, or re assembly, of the seat upholstery in the profiled frame tube involves the use of a small amount of flexible adhesive applied at each end. It is recommended to replace upholstery if there are signs of wear, or staining, when a chair is being recycled to another user. The removal and replacement of the seat upholstery requires the removal of the moulded seat tube end caps, which may become damaged, spare caps are supplied together with replacement upholstery. See gcqa052.

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6) Rear wheels and tyres

Most Greencare chairs will be fitted with micro cellular polyurethane tyres, these are relatively maintenance free. Replacement of the tyre and wheel together after a period of three or four years continual use may be necessary. Replacement puncture free tyres are available in a range of colours. Grey and black are the most popular for general use. (Special fitting tools are available from Greentyre)

For effective service cost, and user convenience, we recommend that puncture free tyres are for all standard chairs, with pneumatics used only for specific requirement.

If pneumatics are fitted, Test the tyre pressure on pneumatics to ensure correct inflation pressure, this is 3 bar (45 psi).

As we have developed chairs to suit occupant weight rating, the range of wheel options has increased. See gcqa 003 for details.

To check wheel trueness, using the push handle to lift the R.H. rear wheel off the ground, gently spin the wheel backward checking that:

a) The wheel rim is running “true” in both planes.
b) The tyre is running “true” in both planes.
c) On occupant propelled chairs also check that handrims run true.

Repeat this operation on the LH side of the chair.

510mm, 565mm and 610mm wheels (20, 22 and 24 inch) wheels should not deviate from running true (side to side) by more than 3.0mm (.125 inch)
315 and 405mm wheels should not deviate by more than 2.0 mm (.080 inch).

Pushing the chair in a forwards direction on a level plane to check that it runs straight and true is a difficult operation to accurately control, but experience has shown that a chair that significantly deviates from a straight line has a problem.

With hand pressure, check security of both rear wheel retaining nuts on inside of rear frame moulding. In the case of QD wheels, check ease of QD spindle assembly and fit, adjust if necessary, lubricate QD spindle if required. See gcqa033.

7) Handrims

Check that handrims are fixed firmly through holes to the wheel rim using M6 screws and nyloc nuts. Heavier occupant rated wheels have six point handrim fixings. Access to fixings for hand rim removal will require tyre removal on wheel specifications where the handrim is attached by a welded lug. Where attachment is by a spacer bush, handrim removal can be done independently of the tyre fit.

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8) Brake setting

Brake position is nominally 15mm from the tyre, at this setting when an empty chair is pushed, the wheels should skid and not turn. If a ramp of 8 degrees is available, the brakes should prevent rear wheels turning when a 100Kg occupant is in the chair. Ramp testing with an occupant requires two people, one in the chair and one attendant for safety guidance. See gcqa049.

9) Anti tippers

From the rear, check tipping area for wear or damage. If anti tippers have been fitted, check free running and security of anti tipper wheel, check tubing for deformation. Anti tippers are not normally fitted to attendant propelling chairs, unless there are stability issues with the occupant. Correct position for anti tipper fixing knob is to outside of frame, behind the wheel, where it is less obtrusive in use.

10) Rear tie down and belt points

Tip chair forward and visually check underneath, look for missing or loose, fixings or damage. If the wheelchair has been used as a vehicle seat when the occupant has been transported, check security and shape of the rear belt guide and tie down point. Check labelling of tie down points and general batch identification.
Check security of seat belt if this is fitted.

11) Front frame bottom connection

Move to the front of the chair. Check security of the castor connector moulding. Check that the front tie down label is secure. Take the cap off the top of the connector moulding and check the internal ribs for first signs of stress cracks. Check connection security by gripping tubes and feeling for movement in frame to check security of fixing screws. See gcqa048 for reference.

12) Armrest

Move to the armrests. Check armpad for tears and scuffs. Replace if necessary. Firmly grasp each arm pad in turn and attempt to rock them side-to-side on the armframe tube. If movement is detected this will indicate that the screws on the underside of the armframe need further tightening. Check that the arm lock lever is in the “engaged” position, grasp each arm in turn at the front on the bend in the angled tube, and pull upwards to check that the arm lock plunger is properly engaged. Carers and attendants should understand that armrests should not be used to grasp a chair when it is being handled with a seated occupant, but security against such misuse is a safety recommendation. See qcqa051 for options.

Check security of the armrest front housing moulding to the frame, this also functions as the front seat tube location. Check for wear or damage. Stand in front of the chair with both hands on the arm pads and press outwards with normal arm pressure to check for armrest frame security. Disengage both forward arm locks and swivel both arms upwards to the rear. Check for excess movement, and swivel clearance in the rear arm pivot. Check that side panel is undamaged. Return the arm rests to their original position and check engagement of both front arm locks. Lubricate the sprung loaded lock pin action from the inside of the locating socket.

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13 Castors

Tip the chair onto its back until it rests independently on its push handles. Test both castors for any sign of head bearing rock. Some castors may have slight resistance to free swivel, but this resistance should be less than natural gravity, and the castor should swivel down under its own weight. Check the fork and wheel assembly for signs of damage, and the tyres for wear. Replace if necessary, see gcqa 036.

On chairs used by heavy occupants it is recommended to replace castors and front castor connectors after two years use. Castors for heavy occupants over 135Kg have M16 spindles. These may also be fitted as a preventive measure, where occupant has a history of castor damage through severe use. Special extended castor spigots used on high seat builds also need more frequent checking and service replacement, according to usage assessment gcqa017.

Assemble new castors torque to 40NM - 45NM with loctite 243 threadlock.
If the existing castor appears OK, spin each castor wheel in turn and first listen to the sound of the bearings in the wheels for signs of dryness or grating. Whilst the castor wheel is spinning, look for excess out of true running of both the periphery of the tyre (0.060” – 1,5mm total) and side-to-side run out of the tyre (0.030” – 0,75mm total). Next, grasp each wheel firmly and twist side-to-side looking for excess movement of the wheel on its bearings and also excess lateral movement.

Visually check that the wheel centre bush and fork inside faces are in contact. If there is a gap between the two, this indicates that the wheel centre bolt is insufficiently tightened. On the Greencare modular castor, access to the centre bolt requires removal of the protective cap, this can be loosened from the inside using a flat blade screwdriver on the central location peg. Always replace castor hub cap, as this has a safety back up function. If cap is damaged fit a replacement spare.

14 Foot support plates

Move attention to the footrests. The modular footplates, and brackets should be latched in the forward operating position see gcqa050. Fold down both footplates and first test each footplate is securely clamped into the hangers by grasping each footplate in turn and with hand pressure attempt to rotate it forwards and rearwards. Looking vertically down at the footplates, ensure that they are in line at the front. Test operation of the folding up and down of the footplates by raising each one in turn to near vertical. Finger tap the top of the plate several times there should be resistance to free downward movement, lubricate swivel action if required.
Look for signs of damage to the footplate.

Check that the side angle jacking screw has an end cap. Check the footrest position, and height, adjust if required, by repositioning fixing screws.

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15 Footrest bracket and options

Disengage the footrest from the chair and check the latch. Whilst it is disengaged, “flick” the latch several times to see if the return spring operates the locking plunger. Lubricate this action. Check that the upper footrest pivot moulding is secure, the internal pivot screw fixing is accessed down inside the moulded spigot diameter using a long pozidrive screwdriver.

Now re assemble the footrest bracket to the chair frame with the hanger to the front position and press down the bracket to engage the locking plunger. Check for engagement and security of the footrest bracket in its working position. Check security of the dovetail shaped locking stud which is secured to rear of the front frame tube, only tighten if required, use loctitite 270 studlock to secure if replacing the screw. Ensure that the footplate adjuster jacking screw has been locked tight with the footrests slightly, three to five degrees upwards when there is no load applied, the heavier the occupant, the greater the angle. Check that the end trim cap that retains the footplate onto the stem is secure.

Footrest options with different functions for specific user need, including footbar, dynamic footboard and multi position footrest are explained in gcqa 050. These may be supplied as part of an overall assessment of need. If they are part of the kit supplied, these items should also be checked.

General

In general, replace damaged or badly worn parts using Greencare DB1 spares. If there is a need for another type of component to be fitted, please check with Greencare. We will be helpful in meeting your requirement, and our compatibility policy does not rule out spares or accessory items of other manufacture provided that they are of known manufacture, and are supported for use by the manufacturer, or assessed through a documented approval procedure as compatible. Feedback is important to us in order that we can improve our service in future. Please read the Technical Service Information in our Greencare manual.

Chairs that have adapted components fitted will require these to be checked for security and function. Greencare is continually developing product features to meet user demand. We are continually updating technical information in the Technical Service Manual, if in doubt about any aspect please contact our Customer Service Dept. Our staff will always be helpful. Telephone No 01642 353492.

D O Batty
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