DAVID BROWN

SUPER LOADERS

operating and fitting instructions

DAVID BROWN

Super Loaders

LS7 for 770 & 780 Tractors
LS8 for 880 Tractor
LS9 for 990 Tractor
LS12 for 1200 Tractor

OPERATING AND FITTING INSTRUCTIONS

DAVID BROWN TRACTORS LIMITED
MELTHAM · HUDDERSFIELD · ENGLAND

Publication No. TP648

INTRODUCTION

The David Brown Super Loader is available in versions to suit each model of the Selectamatic range of tractors and has been designed for direct attachment to the tractor.

Alternative versions are available for operation from the tractor 3-way valve using a Gresen valve unit mounted on the right-hand loader support assembly, but where a live, double-acting control valve is already fitted to the tractor, the loader may be operated directly from this without the necessity for fitting an additional control valve.

Single or double-acting lift rams are available. Where double-acting lift rams are specified for full control of digging and loading operations, the lift rams may be ordered for operation by a loader-mounted twin Gresen valve or by two tractor fitted live, double-acting take-off valves.

A single double-acting ram controls the angle of the bucket or other unit. A list of available alternatives is given at the back of this booklet.

If side-mounted headlamps are fitted, these must be re-located and brackets are available for mounting them on the radiator guard support member.

The loader support frame is attached to the main frame of the tractor together with the hydraulic lift rams. These parts may be left in position without restriction to the other uses of the tractor. The boom is then attached by means of four Quick Release pins and the two pipes to the dump ram.

All main pivot points are fitted with case hardened zinc coated Quick Release pins and special tension bushes which give long life with a minimum of lubrication.

First Published December 1967
Second Edition July 1968

SAFETY PRECAUTIONS

The front track should **not** be set to the narrowest settings to avoid damage to power-assisted steering and to maintain stability of the tractor.

Place a substantial support under the boom, or rest the bucket on a wall if it is necessary to work on the engine with the boom raised.

Lower the bucket to the ground before leaving the tractor unattended.

Do not travel quickly over uneven ground with a loaded bucket in the raised position. Keep the bucket as low as possible while on the move. Use the steering brakes cautiously, particularly when on sloping ground.

Do not allow passengers to stand or sit in the bucket.

WARNING

Stops are fitted to prevent excessive movement of the buckets which might cause damage to the dump ram. However, they are **not** intended to enable the bucket to be used in the tilted position for levelling or bulldozing. If used in this way, resulting damage to the loader will not be covered by warranty.

OPERATION

WHEN CONNECTED TO THE TRACTOR'S LIVE, DOUBLE-ACTING CONTROL VALVE

Reference should be made to the Tractor Instruction Book for operation of the hydraulic system. The selector dial should be set to EXTERNAL as directed under "Operation of Service 4".

DOUBLE-ACTING LIFT RAMS

The lifting and lowering of the bucket is controlled by the upper valve, pushing the leaver forward to lower and rearwards to raise The angle of the buket is adjusted by the lower valve.

SINGLE-ACTING LIFT RAMS

Set the 3-way valve to output 1. Lift, hold, and lower of the boom is then controlled by the Selectamatic Hydraulic hand lever. Moving the hand lever fully rearward to the "lift" position will cause the loader boom to rise. When the loader has reached the desired height, allow the hand lever to return to the "hold" position. To lower the boom, push the hand lever forward to the pre-set guide and adjust the rate of lowering as desired, by the lowering control.

The angle of the bucket may be adjusted to any desired position for digging, discharging, and crowd action, by means of the double-acting control lever to which it is attached (usually the lower one where two are fitted). Move the lever forward for forward tilt or discharge and rearward for upward tilt or crowd.

WHEN CONNECTED TO GRESEN CONTROL VALVE UNIT

Set the selector dial to EXTERNAL as directed under "Operation of Service 4" in the tractor Instruction Book. Pull the hydraulic hand lever fully rearward and secure in this position by using the Catch Unit (U730).

Set the 3-way valve to No. 1. The bucket is then controlled by the left-hand lever and the boom by the right-hand lever on the Gresen control unit as indicated on the instruction plate.

FITTING INSTRUCTIONS

1. On 1200 Selectamatic tractors, remove the toolbox.
2. Fit the right-hand support frame to the right-hand side of the tractor using six $\frac{3}{8}$ UNC bolts into the main frame — do not fully tighten the bolts. A stub shaft welded to the support frame locates in the $1\frac{1}{4}$ in (3·2 cm) diameter hole in the front extension to give extra support on 990 and 1200 tractors. (On early models of the 3-cylinder 880 tractor, spacers are required on each side of the front extension where the support assemblies are bolted to the tractor.)
3. Similarly fit the left-hand support frame after removing the power-assisted steering brackets. This can be re-attached using longer bolts to pass through the support frame once this is in position.
4. Thread the support frame stay, which serves as the hydraulic header, between the fuel tank and the tractor gearbox. (On the 880 tractor, it should be passed through the $2\frac{1}{4}$ in diameter hole in the clutch housing). The end with the two connections goes (*a*) to the left-hand side, if the bucket is controlled from the tractor live, double-acting control valve but (*b*) to the right-hand side, if control is from a loader-mounted Gresen control valve unit. The union should be positioned to the rear. The stay is secured with a $\frac{3}{4}$ UNC bolt at each end. All mounting bolts should now be fully tightened to make a good sound structure.
5. Fit the left-hand and right-hand rams to the appropriate supports by means of 1 in (2·5 cm) diameter Quick Release pins. The cylinder is attached to the frame support with the stowing bracket uppermost and the pipe connection on the *inside* on 880/990/1200 tractors and on the *outside* on 770/780 tractors.
6. Identical flexible pipes, length: 770/780 — 26 in (66 cm); 880 — 20 in (50·8 cm); 990/1200 — 17 in (43·2 cm) should be fitted between each ram and the connection on the support frame stay. Ensure that the pipes are not twisted when tightening.
7. Assemble the loader boom. The front stay assembly is bolted between the two beams by means of $\frac{3}{8}$ UNC bolts to each side. The ram support tube is fitted behind the front stay using two long $\frac{3}{8}$ UNC bolts at each end. The ram support is on the underside.
8. Fit the twin steel supply pipes on top of the right-hand beam by means of the $\frac{3}{8}$ UNC bolts through the bracket fastened to each end of the pipe assembly.
9. Fit the boom assembly to the left-hand and right-hand support assemblies by means of $1\frac{1}{8}$ in (2·9 cm) diameter Quick

Release pins. The ram rods are attached to the boom assembly by two 1 in (2·5 cm) Quick Release pins.

The supply and exhaust pipes may now be fitted depending upon the valve being used.

TRACTOR LIVE, DOUBLE-ACTING CONTROL VALVE

1. Fit the supply pipe to the lift rams between the support frame stay and the 3-way valve. A $\frac{3}{4}$ UNF male union is first fitted to the No. 1 (top) connection on the lever type 3-way valve. (If a 3-knob type 3-way valve is used, it will be necessary to fit a $\frac{3}{4}$ UNF/$\frac{1}{2}$ BSP reducing union to the port of the valve). Use the aluminium washers provided to ensure oil-tight joints. The pipe should be anchored with two clips; the front one under a bolt securing the steering box and the rear one under a bolt securing the gearbox cover.
2. Two long flexible pipes are fitted between the steel pipes on top of the right-hand loader beam and the tractor live, double-acting control valve. (If two valves are fitted, use the lower one.) The inside steel pipe should be connected to the front part of the same valve. The pipes should be routed down the right-hand side of the gearbox cover and secured by two clips under the front gearbox cover bolt. Two double clips also secure the pipes to the rear vertical face of the loader support frame.

GRESEN CONTROL VALVE UNIT

1. A horizontal platform is bolted to the right-hand loader support frame and the Gresen control valve unit should be bolted to this. The two rear bolts also secure the instruction plate.
2. Reference to Figure 1 will show the position of the control valve ports with the elbows and adaptors fitted. These are normally fitted before the unit leaves the factory.
3. Connect a flexible pipe, length: 770/780 — 20 in (50·8 cm); 880 — 23 in (58·4 cm); 990/1200 — 26 in (66 cm) between elbow at port A and the connection on the support frame stay. This supplies oil to the lift rams.
4. Fit a $\frac{3}{4}$ UNF male union to the No. 1 (top) connection on the lever type 3-way valve. (If a 3-knob type 3-way valve is used, it will be necessary to fit a $\frac{3}{4}$ UNF/$\frac{1}{2}$ BSP reducing union to the port of the valve). Use the aluminium washers provided to ensure oil-tight joints. Connect one end of a long, high pressure pipe, length: 770/780 — 68 in (173 cm); 880/990/1200 — 78 in (198 cm) to this union and the other end to the supply port elbow B on the control valve. This pipe is routed down the left-hand side of the gearbox cover.

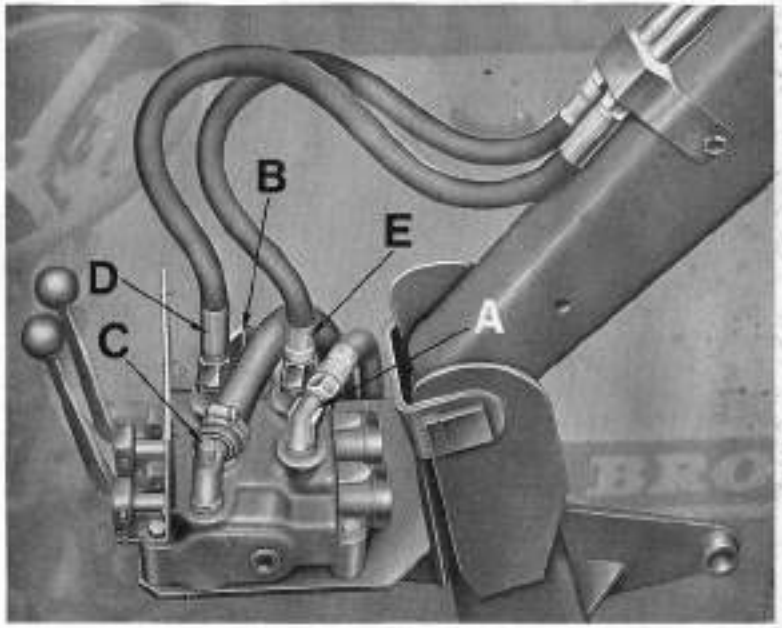

FIGURE 1. CONNECTION OF PIPES TO GRESEN CONTROL VALVE

5. When fitting the low pressure exhaust pipe between the elbow C on the control valve and the hydraulic return point on the tractor, refer to the tractor instruction book for the correct oil return point. An elbow adaptor is secured into this point and the pipe is clamped using two hose clips at each end. Route down the right-hand side of the gearbox cover and secure with a clip under the front bolt.
6. Fit the 23 in (68·5 cm) pipe between the union on port D and the outside steel pipe on top of the loader beam and the 26 in (66 cm) long pipe between the union in port E and the inside steel pipe.

FITTING THE DUMP RAM AND BUCKET

(Refer to Figure 2)

Fit the double-acting dump ram, cylinder end rearwards, connector uppermost, to the ram stay tube with a 1 in (2·5 cm) diameter Quick Release pin.

Fit two 26 in (66 cm) pipes to the front ends of the steel pipes on top of the right-hand loader beam. The inside pipe should be connected on the side of the ram cylinder which runs to the front of the ram via a steel pipe.

The bucket or other unit may then be attached to the loader beams with $1\frac{1}{8}$ in (2·9 cm) diameter Quick Release pins and the

dump ram rod connected with a 1 in (2·5 cm) diameter Quick Release pin.

WHEEL SETTING

To give reasonable stability, the front wheels should *not* be set to minimum track. The 770/780 tractor should be set to a minimum of 52 in (132 cm) and other tractors to a minimum of 56 in (142 cm). Where power-assisted steering is fitted, the front track must not be set below these settings otherwise damage may occur.

TOOL BOX

Where the toolbox has been removed from its normal position, two angle brackets are provided which should be bolted to the triangular webs on the right-hand loader support frame. These brackets are bolted on the inner faces of the webs with the flanges turned in towards one another. The tool box may then be bolted to the two brackets.

OUTBOARD HEADLAMPS

Where outboard headlamps are fitted, it will be necessary to remove these and re-mount them on brackets which may be obtained as a Unit ULS21/7–8–9 for 770, 780, 880 and 990 Tractors or ULS21/12 for 1200 Tractors. These brackets should be attached to the radiator guard and the headlamps bolted to them and re-connected using the existing wiring.

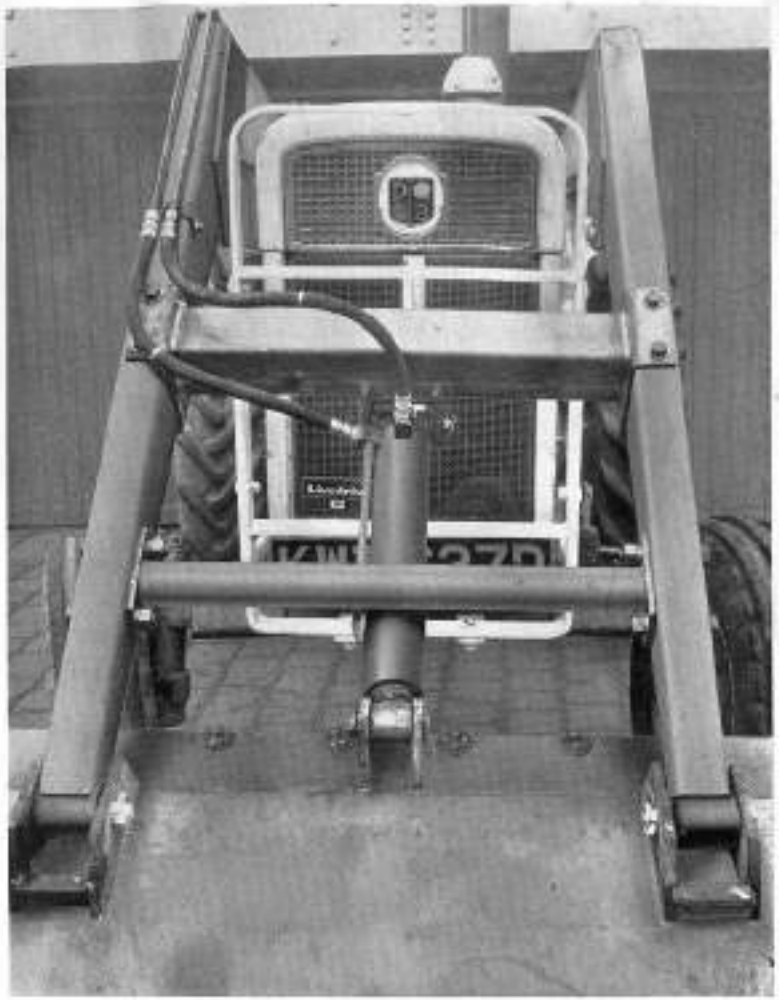

FIGURE 2. FITTING OF DUMP RAM AND BUCKET

MAINTENANCE AND REPAIR

When carrying out the tractor maintenance make a visual check to locate any loose nuts or bolts, and examine the hydraulic system for oil leakage.

The boom and ram pivot do not require lubrication and should be kept clean and dry.

The boom and rams are fitted with split tension bushes, these are of special material and are a press fit in their bores. If wear takes place the bushes may be removed by driving out with a suitable drift, and new bushes fitted.

HYDRAULIC RAMS

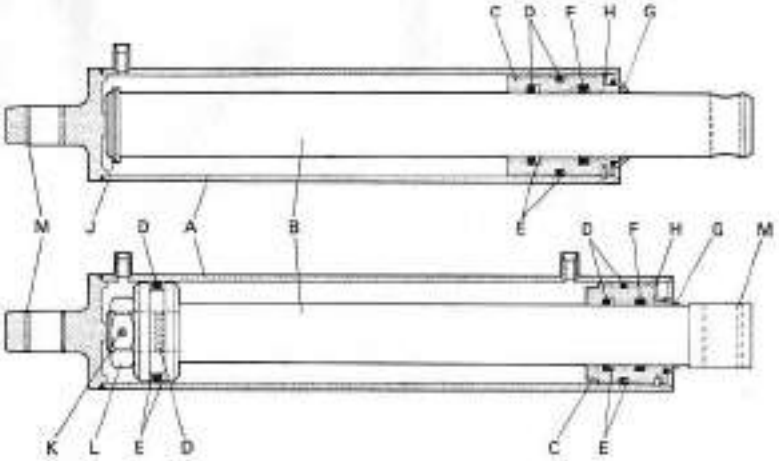

FIGURE 3. LIFT RAM (UPPER) AND DUMP RAM (LOWER)
(Ports are only diagrammatic)

A. Ram Cylinder	E. Leather Seal	J. Circlips
B. Ram Rod	F. Nu-Lip Seal	K. Tension Pin
C. Sleeve	G. Scraper Seal	L. Nut
D. 'O' Rings	H. Circlip	M. Tension Bushes

The illustration shows a section through the hydraulic rams. To dismantle the ram, insert a bar through the hole in the end of the ram rod B and withdraw the ram rod complete with sleeve C and circlip H.

After removing the ram rod B, slide the sleeve C off the outer end of the lift ram rod. On the dump ram, remove the nut L (after removing the tension pin K) and slide the sleeve C off the rod. The lip seal G may then be removed.

Remove all the old 'O' rings and leather seals including those inside the sleeve and piston. They should be discarded when removed and new seals fitted during assembly.

The ram is chromium plated to prevent corrosion and it is essential that the surface of the ram rod is not damaged in any way, otherwise the seals will be unable to prevent oil leakage. The ram rod should be handled carefully and not gripped in a vice.

The leather seals should be soaked in thin oil for 30 minutes before assembly and fitted with the rough (hair grain) side next to the 'O' rings. Note that the 'O' rings should be fitted towards the inner end of the sleeve.

Smear the sleeve with oil and carefully fit the sleeve onto the ram rod, taking care not to damage the seals. Replace the nut on the dump ram rod and fit a new tension pin. The pin should have the split to the side as shown in Figure 3 and be positioned centrally in the nut.

Fit the assembly carefully into the outer cylinder, coating the seals with oil and taking care not to damage them on the circlip grooves. Ensure that the circlip H is seated correctly in the groove before fitting the scraper seal.

DIMENSIONAL DATA

	LS 7 (770/780)	LS 8 (880)	LS 9 (990)	LS 12 (1200)
Maximum height — bucket pivot to ground	108 in (274 cm)	116 in (295 cm)	124 in (315 cm)	134 in (340 cm)
Reach at maximum height	19 in (48·3 cm)	23½ in (59·7 cm)	22½ in (57·1 cm)	23 in (58·4 cm)
Clearance — bucket dumped	81 in (205 cm)	89 in (226 cm)	96 in (244 cm)	105 in (267 cm)
Reach — bucket on ground	68 in (173 cm)	76 in (193 cm)	73 in (185 cm)	75 in (191 cm)
Bucket roll back	30°	30°	27°	27°
Maximum dumping angle	45°	45°	45°	48°
Digging depth	6 in (15·25 cm)	6 in (15·25 cm)	6 in (15·25 cm)	6 in (15·25 cm)
Lifting Capacity (payload)	1700 lb (770 kg)	1800 lb (816 kg)	2000 lb (907 kg)	2200 lb (998 kg)
Breakout effort — at bucket lip	1800 lb (816 kg)	2000 lb (907 kg)	2200 lb (998 kg)	2200 lb (998 kg)
Lift ram — diameter — stroke	2 in (5·1 cm) 20 in (51 cm)	2 in (5·1 cm) 23 in (58·4 cm)	2 in (5·1 cm) 30 7/8 in (76·6 cm)	2 in (5·1 cm) 34 in (86·4 cm)
Dump ram — diameter — stroke	2 3/4 in (7 cm) 13 3/8 in (34 cm)	2 3/4 in (7 cm) 13 3/8 in (34 cm)	2 3/4 in (7 cm) 13 3/8 in (34 cm)	2 3/4 in (7 cm) 13 3/8 in (34 cm)

ACCESSORIES—Designations

Description	LS 7 770/780	LS 8 880	LS 9 990	LS 12 1200
Manure Fork	ULS1/7	ULS1/8–9	ULS1/8–9	ULS1/12
Dirt Plate for Manure Fork	ULS2/7	ULS2/8–9	ULS2/8–9	ULS2/12
Standard Dirt Bucket	ULS3/7	ULS3/8–9	ULS3/8–9	ULS3/12
Dirt Bucket with Digger Teeth	ULS4/7	ULS4/8–9	ULS4/8–9	ULS4/12
'V' Edged Dirt Bucket	ULS5/7	ULS5/8–9	ULS5/8–9	ULS5/12
Light Material Bucket	ULS6/7	ULS6/8–9–12	ULS6/8–9–12	ULS6/8–9–12
Root Crop Bucket	ULS7/7	ULS7/8–9	ULS7/8–9	ULS7/12
Angle Dozer	ULS8/7	ULS8/8–9	ULS8/8–9	ULS8/12
Stabiliser Bars	—	ULS17/8	ULS17/9	ULS17/12
Radiator Guard	ULS18/7	ULS18/8	ULS 18/9	ULS18/12
Implematic Fittings	—	ULS19/8–9	ULS19/8–9	—
Adaptors for B.S.P. Valves	ULS20/7–8–9	ULS20/7–8–9	ULS20/7–8–9	—
Fittings for Outboard Headlamps	ULS21/7–8–9	ULS21/7–8–9	ULS21/7–8–9	ULS21/12
Extension Lift Jib	ULS24/7–8–9–12	ULS24/7–8–9–12	ULS24/7–8–9–12	ULS24/7–8–9–12
Loader Grab Actuator	ULS25/7–8–9–12	ULS25/7–8–9–12	ULS25/7–8–9–12	ULS25/7–8–9–12
Manure or Silage Tines for ULS25	UADD/11	UADD/11	UADD/11	UADD/11
Clamshell Bucket for ULS25	UADD/12	UADD/12	UADD/12	UADD/12
Root Crop Tines for ULS25	UADD/13	UADD/13	UADD/13	UADD/13

SPECIFICATIONS OF ACCESSORIES

MANURE FORK

Fitted with easily removable hardened spring steel tines.

	770/780	880/990	1200
Length of tines	24 in (61 cm)	24 in (61 cm)	24 in (61 cm)
Width	35½ in (90·1 cm)	42 in (106·8 cm)	48 in (122 cm)
Height	23 in (58·5 cm)	23 in (58·5 cm)	23 in (58·5 cm)

DIRT PLATE FOR MANURE FORK

This converts the manure fork into a light dirt bucket.

STANDARD BUCKET

Fitted with a hardened spring steel cutting edge.

	770/780	880/990	1200
Width	35½ in (90·1 cm)	42 in (106·8 cm)	48 in (122 cm)
Depth	27 in (68·6 cm)	27 in (68·6 cm)	27 in (68·6 cm)
Height	23 in (58·5 cm)	23 in (58·5 cm)	23 in (58·5 cm)
Rated Capacity	8 ft³ (0·226 m³)	9 ft³ (0·255 m³)	11 ft³ (0·31 m³)
Struck Capacity	6·3 ft³ (0·178 m³)	7·55 ft³ (0·214 m³)	8·78 ft³ (0·249 m³)

DIRT BUCKET WITH DIGGER TEETH

Fitted with hardened spring steel cutting edge and 4/5 digger teeth.

	770/780	880/990	1200
Width	35½ in (90·1 cm)	42 in (106·8 cm)	48 in (106·8 cm)
Depth	27 in (68·6 cm)	27 in (68·6 cm)	27 in (68·6 cm)
Height	24 in (61 cm)	24 in (61 cm)	24 in (61 cm)
Rated Capacity	10 ft³ (0·283 m³)	11 ft³ (0·31 m³)	13 ft³ (0·368 m³)
Struck Capacity	8·36 ft³ (0·237 m³)	9·9 ft³ (0·281 m³)	11·44 ft³ (0·324 m³)

'V' EDGED DIRT BUCKET

An alternative standard bucket with a 'V' shaped front edge.

	770/780	880/990	1200
Width	35½ in (90·1 cm)	42 in (106·8 cm)	48 in (122 cm)
Depth	27 in (68·6 cm)	27 in (68·6 cm)	27 in (68·6 cm)
Height	23 in (58·5 cm)	23 in (58·5 cm)	23 in (58·5 cm)
Capacity	7½ ft³ (0·212 m³)	9 ft³ (0·255 m³)	10½ ft³ (0·298 m³)

LIGHT MATERIAL BUCKET

A large light-weight bucket with a welded front cutting edge.

	770/780	880/990/1200
Width	60 in (152·5 cm)	72 in (183 cm)
Depth	36 in (91·4 cm)	36 in (91·4 cm)
Height	26 in (66 cm)	26 in (66 cm)
Rated Capacity	⅞ yd³ (0·671 m³)	1¼ yd³ (0·86 m³)
Struck Capacity	20 ft³ (0·566 m³)	23·9 ft³ (0·676 m³)

ROOT CROP BUCKET

Made from steel tubes with rounded ends to prevent crop damage.

	770/780	880/990	1200
Width	53 in (134·5 cm)	60 in (152·5 cm)	67 in (170·2 cm)
Depth	36 in (91·4 cm)	36 in (91·4 cm)	36 in (91·4 cm)
Height	28 in (71·1 cm)	28 in (71·1 cm)	28 in (71·1 cm)
Rated Capacity	18 ft³ (0·51 m³)	¾ yd³ (0·574 m³)	⅞ yd³ (0·671 m³)
Struck Capacity	13·72 ft³ (0·389)	15·55 ft³ (0·44 m³)	17·61 ft³ (0·499 m³)

ANGLE DOZER

May be set as a straight dozer or angled 20° to left or right.

	770/780	880/990	1200
Width of Blade	60 in (152·5 cm)	70 in (178 cm)	84 in (213·5 cm)
Height of Blade	18 in (45·7 cm)	18 in (45·7 cm)	24 in (61 cm)

STABILISER BARS

Applicable only to 880, 990 and 1200 tractors, two stabiliser bars fit between the loader frame and the tractor rear hitch brackets to give additional strength to the tractor frame when excessive rear weights are used.

RADIATOR GUARD

A heavy duty steel frame to give maximum protection to the tractor radiator. An undershield is also included with the 1200 Tractor version.

IMPLEMATIC FITTINGS

Special adapters for the supply and exhaust hoses for use when the loader is to be fitted to Implematic 880 or 990 tractors.

ADAPTORS FOR B.S.P. VALVES

This consists of a ⅜ UNF/½ BSP union which allows the loader supply pipe to be connected to the 3-tap type 3-way valve which has a ½ BSP fitting.

EXTENSION LIFT JIB

This unit is primarily intended for use with the Loader Grab Actuator but gives extra lift-height and reach where this is required.

	770/780/880/990	1200
Extra Height	34 in (86·4 cm)	32 in (81·3 cm)
Extra Reach	31 in (78·7 cm)	33 in (83·8 cm)

LOADER GRAB ACTUATOR

This is similar to the Grab Actuator (UADD/10) used on the Digger/Ditcher/Loader and the units which fit the ditcher actuator also fit the loader actuator. (See Accessories, page 13).

It must be fitted to the loader after fitting the Extension Lift Jib ULS24/7–8–9–12.

Printed in England by The Cloister Press Ltd., Stockport, England

A SUBSIDIARY OF THE DAVID BROWN CORPORATION LIMITED

DAVID BROWN TRACTORS LTD.