Instruction Manual

HY-TIP/Clamp Bucket

ULRICH
ATTACHMENTS LTD



Loader Attachments & Winches by Design

CE

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Foreword

Please read the handbook carefully before operating the equipment. It is important that all safety and maintenance checks are carried out regularly to ensure 'trouble free' running of your equipment.

This manual describes the options and levels available throughout this model range and, therefore, some of the items covered may not apply to your equipment. If you have any doubt of the applicability of this manual to your particular equipment, we will be only too pleased to assist you.

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FOR SPARES ORDERS STATE:

1 Serial Number
2 Part number and description
3 Quantity required
4 Destination
5 Method of despatch

IMPORTANT NOTE:

Whilst every effort is made to keep this book accurate and up to date the Company does not accept responsibility for errors therein.

PREFACE

The Ulrich 'Hy-Tip Clamp' Bucket is designed to give a high discharge. This is achieved by mounting the bucket on a carrying cradle with a pivot located just behind the cutting edge. The dump action is activated by two hydraulic cylinders mounted in the bucket sides allowing the bucket to be forward dumped while the cradle and loader linkage remain in the high carry position.

The 'Hy-Tip Clamp' Bucket is designed for light material re-handling into high sided trucks and hoppers. Capacities for the bucket start at $0.7m^3$ and give an additional discharge height of up to 1.2 metres above that obtained with a conventionally mounted standard bucket.

The 'Hy-Tip Clamp' Bucket is fully interchangeable with standard and multipurpose buckets and uses the existing loader control valve and pipework for operation.

EQUIPMENT SERIAL NUMBERS

See Serial Number Plate for the following information:
- Loader Model No.
- Bucket Model No.
- Bucket Capacity
- Max Material Density
- Date of Manufacture

INSTALLATION SAFETY

It is important that both industrial and government specifications relating to the following safety instructions are adhered to at all times.

1. The necessary protective clothing (eg. facemask, goggles, hard hat and heavy duty gloves) must be worn during the installing of the equipment.
2. Installation of the equipment must only be carried out by an experienced qualified engineer.
3. Sufficient access at the installation areas must be provided for loading and moving the bucket assembly.
4. Always use the proper lifting eyes when manoeuvring the bucket.
5. Ensure that sword pins are fitted prior to lifting the bucket assembly for installation (applicable to Hy-tip buckets only).

INSTALLATION

These instructions must be carried out in conjunction with the information listed in the **Installation Safety and Maintenance Safety**.

General

The bucket may be mounted direct to the existing loader arms, or to a quick hitch attachment already fitted to the loader arms. Operations of the controls are described in the vehicle handbook.

To Fit Bucket - Direct Mount

1. Align the bucket with the vehicle.
2. Raise or lower the loader lift arms so that the mounting bosses on the bucket and the loader are at the same level.
3. Slowly drive the vehicle forward until the loader arms are located between the lower mounting pivot bosses of the bucket.
4. Insert the pivot pins into the lower mounting and secure the pins in position with the bolts provided.
5. Manoeuvre the tilt arms forward and align the top mounting bosses of the tilt arms with the bosses on the bucket.

6. Insert the pivot pins into the top mountings and secure in position using the bolts provided.
7. Connect the jumper hoses.
8. Remove sword pins from bucket (note applicable to Hy-tip buckets only).
9. Check hydraulic operation including open and close cycle times on Hy-Tip operation (approx. 4 seconds). Adjust machine flow where required.

Note:

The bucket can be lifted using its central lifting eye, to assist in alignment while manoeuvring the vehicle.

To Remove Bucket - Direct Mount

1. Removal is the reversal of the fitting procedure.

To Fit Bucket - Quick Hitch Attachment

1. Roll the quick hitch attachment forward and engage with the hooks on the bucket.
2. Roll the quick hitch attachment slowly back until the attachment stops strike the quick hitch. Engage the quick hitch pins.



Ensure that the pins are fully extended.

3. Connect the jumper hoses.
4. Remove sword pins from bucket (note applicable to Hy-tip buckets only)
5. Check hydraulic operation including open and close cycle times on Hy-Tip operation (approx. 4 seconds). Adjust machine flow where required.

To Remove Bucket - Quick Hitch Attachment

1. Disconnect the jumper hoses.
2. Place the equipment flat on the ground and disengage quick hitch pins.
3. Roll the quick hitch forward to disengage from the hooks on the bucket.
4. Reverse the vehicle slowly.



USER SAFETY

1. Carry out all actions listed in Routine Maintenance and report any faults immediately to a superior.
2. Operators must be thoroughly trained in the safe operating procedures of the bucket attachment as described in this publication.
3. Personnel must not be transported in the bucket.
4. Ensure that the fingers and other parts of the hand are not trapped when fitting the bucket.
5. Ensure that all personnel stand clear during loading and unloading of the bucket.
6. Do not use the bucket if the pivot pins and/or retainers are not properly secured.
7. Do not overload the bucket.
8. The load on the bucket must be centrally stable and secure at all times.
9. Always manoeuvre bucket for attachment using lifting eye provided.
10. The bucket must be grounded when not in use and where applicable, the bucket clamp must be left closed.
11. The bucket must only be used with the loader for which it was designed.
12. Remove sword pins before operating bucket - if applicable.

OPERATING INSTRUCTIONS



These instructions must be carried out in conjunction with the information listed in the User Safety instruction and the vehicle hand book.

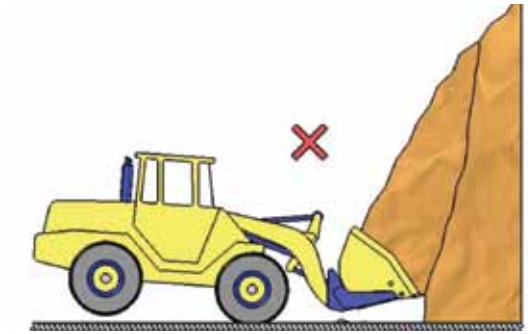
The bucket is mounted to the existing loader arms of the vehicle or to a quick hitch attachment already fitted. Controls and procedures for operating the bucket are described in the vehicle handbook.



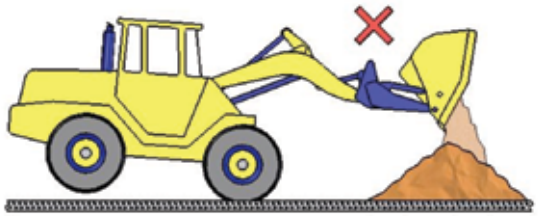
Do Not load from the middle of a material heap with the arms horizontal. This can cause damage to the bucket and loader linkages.



Do Not overload the bucket when loading from the base of a material heap. This can cause the loader to become unstable.



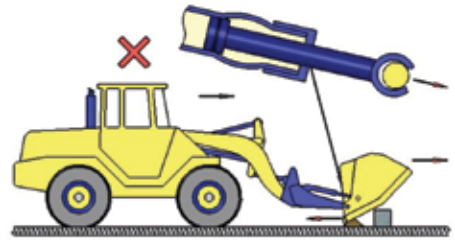
Do Not use the bucket dump facility to dump material with the loader arms and bucket cradle in the horizontal position. This can cause the loader to become unstable.



Do Not tamp the load in the truck body with a force sufficient to lift the loader wheels clear of the ground. This can cause damage to the bucket and loader linkage and cause the loader to become unstable.

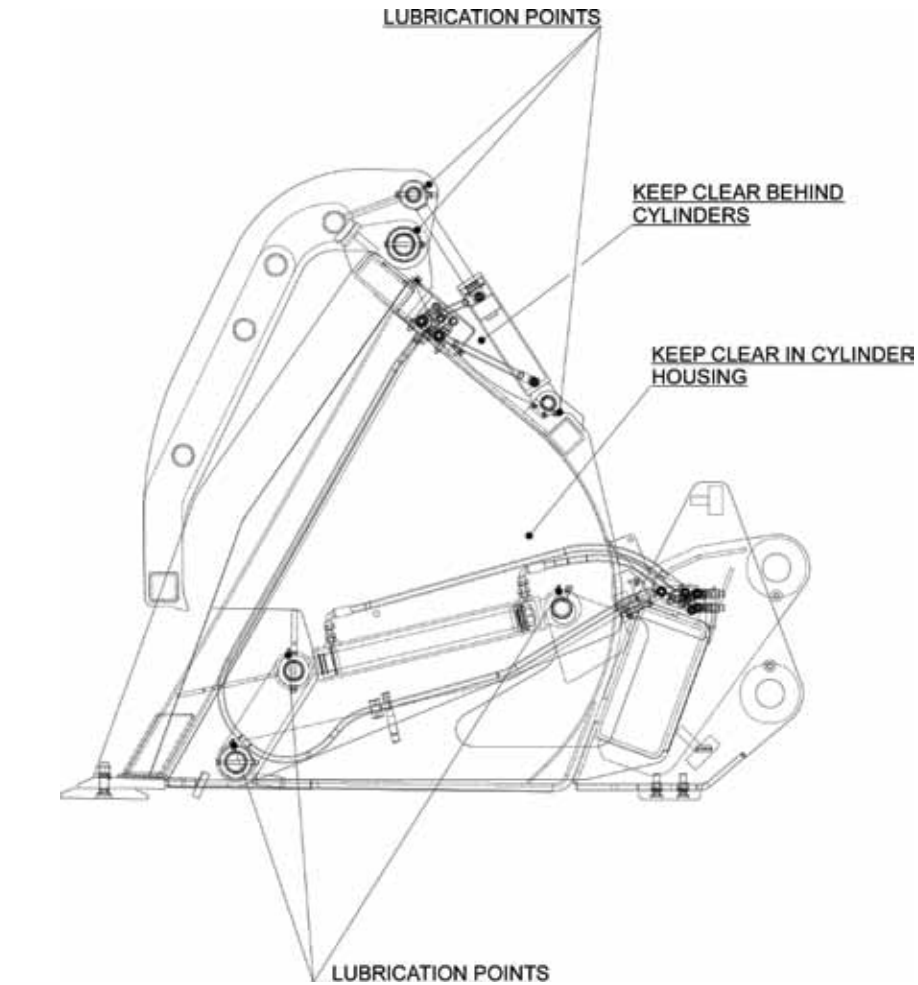


Do Not open the bucket from it's cradle and scrape the ground with the cutting edge. This can cause damage to the bucket cylinders, bucket linkage and loader linkage.



Do Not roll the bucket forward into the dump position and the use the bucket cutting edge/floor to push material up the heap. This can cause the loader linkage to go over centre and cause damage to the bucket cradle and loader linkage.





HYDRAULIC OIL AND LUBRICANTS

Recommended hydraulic oil - BP Energol, HLP 32 or direct equivalent.
Recommended multi purpose grease - BP Energol L2 or direct equivalent.

MAINTENANCE SAFETY

1. Repairs, servicing and maintenance must be carried out by qualified and/or specialised engineers.
2. All repairs, service and maintenance operations must be carried out on firm level ground.
3. Check for overhead height restrictions when working undercover.
4. Always remove vehicle ignition and control panel keys before carrying out repair, service and maintenance tasks, only applicable if bucket is attached to loader.
5. Do not change pressure relief valve settings.
6. Do not remove or restrict the operation of any of the installed safety switches.
7. Allow the hydraulic oil to cool before attempting repairs.
8. Do not retighten leaky seals, nuts, etc. while the hydraulic system is under pressure.
9. Do not use hands to suppress a hydraulic oil leak.
10. If authorised arc welding is to be carried out on the bucket, the alternator and battery MUST be disconnected or remove the bucket from the loader. When brazing, soldering or welding it is essential that any excessive heat course is kept away from the vicinity of the alternator, road springs, any nylon air piping and hydraulic equipment - only applicable if bucket is attached to loader.

MAINTENANCE SCHEDULE

Observe all user and maintenance safety instructions.

All checks and routine inspections should be carried out by a competent person unless otherwise stated.

Daily

1. Visually check the hydraulic system for leaks. Immediately report any leaks to a superior for subsequent investigation and repair.
2. Clean all quick release couplings prior to engagement with vehicle couplings.
3. Visually check condition of hydraulic cylinders for signs of leaks or damage. Immediately report any leaks or damage to a superior for subsequent investigation and repair.

4. Visually check condition of all pivot pins for signs of excessive wear and damage. Immediately report any defect to a superior for subsequent investigation and repair.

Do not use bucket if pivot pins are defective.

5. Check condition of all cutting edges and cutting teeth (if fitted) for signs of excessive wear and damage and renew as necessary. Check tightness of all retaining bolts.

6. Apply grease to all pressurised grease points, as indicated in the lubrication diagram, using recommended grease.

7. Remove any material that may have built up between the cylinders and back of bucket.

Disregard may cause damage to the hydraulic cylinders.

8. Check all operational sequences to ensure that they function correctly. Any defects must be reported to a superior for further investigation.

Do not operate bucket if the operational sequences are defective.

Weekly

All daily tasks and the following:-

9. Wipe with a clean cloth all exposed piston rods.

Ensure no third party has access to the controls when undertaking this task.

Monthly

All weekly tasks and the following:-

10. Visually check Bucket Assembly and Mounting Brackets for cracks or distortion. (Qualified engineer).

Do not use bucket if any part of the assembly exhibits any cracks or excessive distortion.

11. Visually check 'D' shackle lifting bracket for signs of wear or cracks - if applicable. (Qualified engineer).

Do not use bucket assembly for lifting with the 'D' shackle if it exhibits any signs of cracks or excessive wear.

12. Bucket stops must be inspected on a monthly basis for signs of wear and tear and the bucket cyclinder centres must be checked to ensure correct operation.

HYDRAULIC CYLINDER SERVICE

The bucket hydraulic cylinders are manufactured for long life under arduous conditions.

Due to the eventual deterioration or wear of seals, the following may occur :-

1. A seepage of oil around the circumference of the end cap will indicate that the '0' ring and back up washer (where fitted) should be replaced. Refer to "Replacement of Cylinder Seals".

2. Oil seeping from around the piston rod, will indicate that the piston rod seals in the end cap should be replaced. Refer to "Replacement of Cylinder Seals".

NOTE If the cylinder end cap is fitted with a chevron type seal, it may not be necessary to remove the piston rod from the cylinder barrel. In such cases proceed as follows:-

Unscrew cylinder end cap, and withdraw from cylinder. Remove internal circlip in end of cap and insert shim. Refit internal circlip, and assemble end cap to cylinder.

CAUTION It is possible to add too many shims or shims of too great a thickness, overloading the seal causing excessive wear or a recurrence of the leak. Use only a minimum number of shims to stop the leak.

Replacement of Cylinder Seals

IMPORTANT Care should be exercised to ensure that the cylinder seals are correctly fitted and that they incurr no damage during assembly procedures. New seals should be lubricated with hydraulic oil prior to assembly.

1. End Cap Seals

Unscrew the cylinder end cap and withdraw the piston rod complete, from the cylinder barrel.

Remove the piston head with seals and slide the end cap from the piston rod.

Replace 'O' ring and assemble back up washer (if fitted) thread side of the 'O' ring.

Remove the internal circlip in the end cap and replace the piston rod seal.

Reassemble the internal circlip with spacer (if fitted).

Replace the scraper seal ensuring that the seal is installed correctly.

Slide the end cap onto the piston rod, scraper seal first, taking care not to damage the seals.

2. **Piston Head Seals**

   Replace the seals on the piston head and renew the piston head ‘O’ ring.

   Assemble piston head to the piston rod and retain using the stiff nut provided. Ensure that the threads are coated with loctite 242 and that the stiff nut is tightened to its specified torque.

3. **Assembly of the Piston Rod to the Cylinder Barrel**

   Smear the inner surface of the cylinder barrel with hydraulic oil and insert the piston head, rod and end cap.

   Care must be exercised during this procedure to ensure that the seals are not damaged.

   Thoroughly clean the threads of the end cap and the cylinder barrel. Smear the threads with loctite 242 and screw the end cap into the cylinder barrel. Tighten the end cap using a suitable ‘C’ spanner.

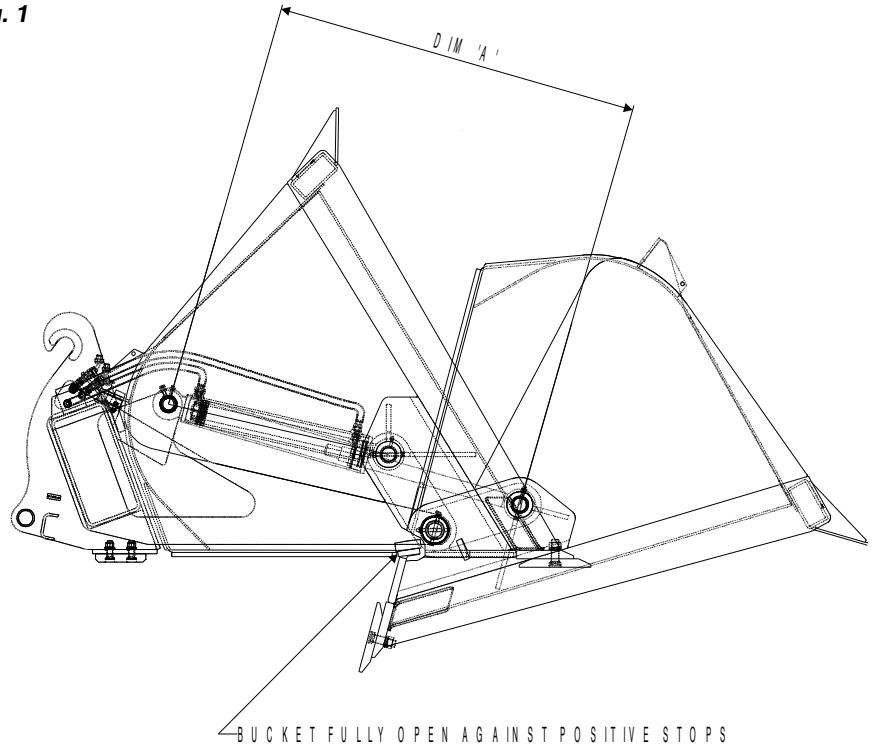
BUCKET OPENING STOPS

The bucket is fitted with two metal opening stops that contact corresponding pads on the under side of the cradle legs when in the fully open position.

These stops are designed to prevent twisting of the bucket when fully open and to prevent damage to the cylinders due to over stroking.

These stops must be inspected on a monthly basis for signs of wear and the bucket cylinder centres must be checked to ensure correct operation.

Fig. 1



Cylinder Part Number will be found stamped on the Cylinder

CYLINDER NO	DIM ‘A’ FACTORY SETTING	DIM ‘A’
607901-1	973-977mm	984mm
620699-1	1314-1318mm	1321mm
620700-1	1017-1019mm	1026mm
622011-1	1572-1575mm	1583mm

Observe all the information listed in the **User Safety** instructions and the vehicle handbook.

REPLACEMENT OF 3 PIECE BOLT ON REVERSIBLE CUTTING EDGES

When the cutting edges have worn, remove and refit them with the unworn edge leading. Secure in position with existing mounting bolts.

Ensure that the cutting edge is re-fitted with chamfer facing upwards.

REPLACEMENT OF WELDED CUTTING EDGES

All safety regulations regarding welding procedures must be applied.

IMPORTANT Pre-heat all weld joint areas to 260° for 1" on either side of joint. Use low hydrogen weld rods or a CO^2 welder. New cutting edges should be replaced at the same angles as the original edges.

1. Clean up all retaining joints.
2. Cut along the centre of all retaining welds and remove worn edge.
3. Grind flush all remaining weld from parts where cutting edges have been removed.
4. Insert new cutting edges are weld in place.

DOZER EDGE AND END BIT

These edges should be reversed when worn back to the bolt plate and subsequently replaced when the second edges are worn.

Torque chart (not to be used on safety critical items)

Recommended tightening torques and approximate induced bolt tensions unless otherwise stated on fitting instructions.

8.8 Quality

NOMINAL BOLT SIZE	BOLT TENSION Kg		'U' TORQUES				'P' TORQUES			
	Course	Fine	Course		Fine		Course		Fine	
			Nm	lbf ft	Nm	lbf ft	Nm	lbf ft	Nm	lbf ft
M6	1029	-	10.6	7.85	-	-	12.7	9.37	-	-
M7	1480	-	17.9	13.2	-	-	21.5	15.9	-	-
M8	1874	2007	25.8	19.1	27.7	20.4	31.0	22.9	33.2	24.5
M10	2970	3133	51.2	37.8	54.0	39.8	61.4	45.3	64.8	47.8
M12	4316	4716	89.3	65.9	97.6	71.9	107.2	79.1	117.1	86.4
M14	5888	6400	142.1	104.8	154.5	113.9	170.5	125.7	185.4	136.7
M16	8038	8550	221.7	163.5	235.9	173.9	266	196.2	283.1	208.8
M18	9830	11059	305.1	225	343.2	253.1	366.1	270.0	411.8	303.7
M20	12544	13926	432.5	319.0	480.2	354.1	519.0	382.8	576.2	425.0
M22	15514	17050	588.4	433.9	646.7	476.9	706.1	520.7	776.0	572.3
M24	18074	19661	747.8	551.5	813.5	599.9	897.4	661.8	976.2	719.9
M27	23501	25395	1093.9	806.8	1182.1	871.8	1312.7	968.1	1418.5	1046.2

41 Tons Per In^2 Yield

NOMINAL BOLT SIZE	BOLT TENSION Lb		'U' TORQUES lbf ft		'P' TORQUES lbf ft	
	UNC	UNF	UNC	UNF	UNC	UNF
1/4"	2350	2610	8.35	9.67	10.0	11.6
5/16"	3875	4160	18.0	19.3	21.6	23.2
3/8"	5720	6165	31.2	33.8	37.4	40.6
7/16"	7850	8255	50.5	54.1	60.7	64.9
1/2"	10175	11165	74.7	81.7	89.7	98.1
9/16"	13440	14550	110.8	119.5	133	143.4
5/8"	16680	17855	152.5	163.5	183.0	196.2
3/4"	24680	25865	274.7	288.8	329.6	346.5
7/8"	34015	35400	436.0	458.8	523.2	550.6

Safe working strength taken as 80% of yield strength.

10.9 Quality

NOMINAL BOLT SIZE	BOLT TENSION Kg		'U' TORQUES			
	Course	Fine	Course		Fine	
			Nm	lbf ft	Nm	lbf ft
M6	1447	-	15.0	11.0	-	-
M7	2081	-	25.1	18.5	-	-
M8	2635	2822	36.3	26.8	38.9	28.7
M10	4176	4406	72.0	53.1	76.0	56.0
M12	6070	6631	125.7	92.7	137.1	101.1
M14	8280	9000	199.5	147.2	217.1	160.1
M16	11304	12024	312.0	230.1	331.4	244.4
M18	13824	15552	429.0	316.4	482.6	355.9
M20	17640	19584	609.1	449.2	675.1	497.9
M22	21816	23976	827.1	610.0	909.8	671.0
M24	25416	27648	1051.3	775.3	1143.6	843.4
M27	33048	35712	1538.3	1134.5	1662.2	1225.9

'U' TORQUES - 'Self Colour' unlubricated bolts and zinc plated bolts into unplated holes and nuts for normal applications.

'P' TORQUES - Zinc plated bolts into zinc plated holes and nuts for normal applications.

CAPSCREWS - These should follow 10:9 quality torques unless otherwise specified.

ALUMINIUM - For bolts through Aluminium or into tapped holes in Aluminium the torques will be given in the fitting instructions.

IF IN DOUBT ABOUT ANY OF THE ABOVE, CONSULT THE ULRICH ATTACHMENTS LIMITED ENGINEERING DEPARTMENT.

CONVERSIONS : Nm into lbf ft – Multiply by 0.7375

Kgf m into lbf ft – Multiply by 7.246

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