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RX & CX Shelbourne Header

OPERATORS MANUAL (1996)

Shelbourne
REYNOLDS

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1992 THE QUEEN'S AWARD FOR TECHNOLOGICAL ACHIEVEMENT

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OPERATORS MANUAL

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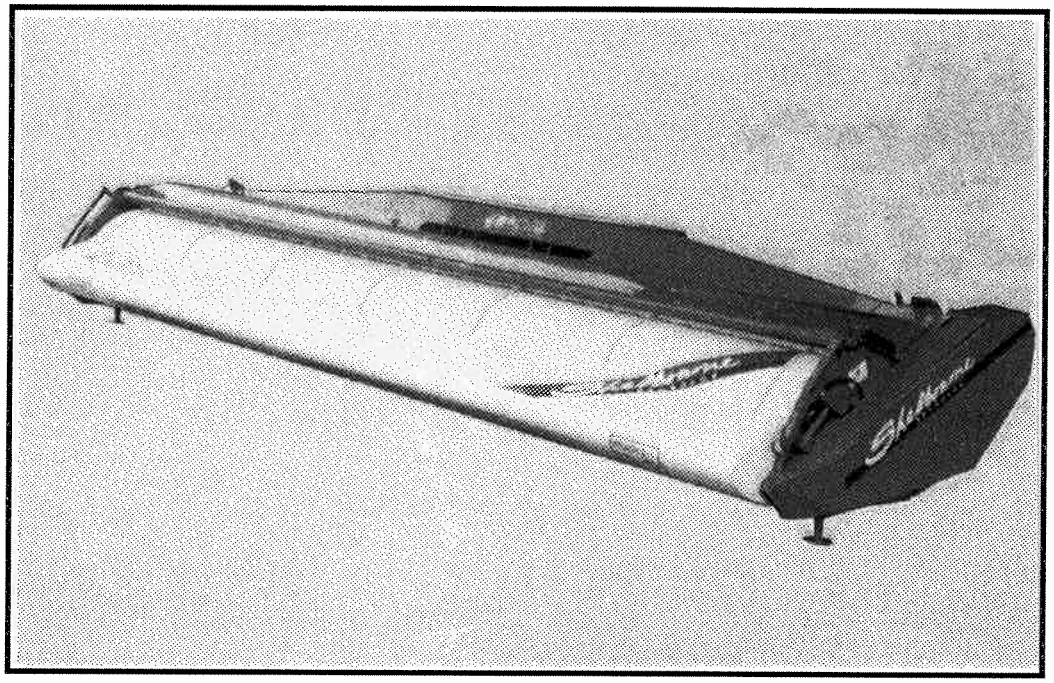
SECTION 1 **INTRODUCTION**

1.1

FOREWORD

This manual will assist the operator in setting the ***RX*** and ***CX*** *Shelbourne* Header and combine combination to give optimum throughputs and loss levels in particular crops and field conditions when used in conjunction with the combine manufacturers operators manual.

The *Shelbourne* Header has been successfully tested in a wide range of crops and crop conditions in terms of throughput and crop recovery with a *Shelbourne* Header and combine combination, when compared against a conventional cutterbar and combine combination of similar size in the same crop and conditions.



PATENTS

The ***RX*** and ***CX*** *Shelbourne* Header is protected by world-wide Patents:

Developed jointly with Silsoe Research Institute, and manufactured under licence from British Technology Group under GB patent 2176685, and other British and foreign patents.

U.S Patent Nos 4790128, 4843806, 4951453, 5044147, 5389038 and 5438818.
Also counterpart patents in other countries.

1.2

IMPROVEMENTS AND CHANGES

Shelbourne Reynolds Engineering are continually improving their products to meet the farmers needs and therefore reserve the right to make improvements and changes when practical to do so, without incurring any obligation to make changes and additions to equipment which has been sold previously.

1.3

SERVICE PARTS

Use guaranteed and genuine Shelbourne Reynolds Engineering service parts on Shelbourne Reynolds machinery to ensure maximum life and best performance. These are available through your Shelbourne Reynolds Engineering dealer.

When ordering service parts always quote the model, serial number and machine number.

1.4

MACHINE IDENTIFICATION

The serial and machine numbers of the *Shelbourne* Header are located on the top right hand corner of the machine.

The machine number of the adapter plate is located on the top right hand corner of the adapter plate.

1.5

SHELBOURNE REYNOLDS ENGINEERING LTD - WARRANTY TERMS AND CONDITIONS TO THE PURCHASER

GENERAL

1. This warranty will become available to you when you have paid for the equipment and returned, duly completed, the delivery and warranty registration forms. It will expire on the anniversary of purchase from the dealer. After that date Shelbourne Reynolds will have no further liability under this warranty to you except in respect of claims already notified. This warranty is not transferable and is available only to the original purchaser from our dealer. In the case of purchasers having leasing or similar arrangements the first user shall be deemed the original purchaser and you shall be deemed to have paid for the equipment.

USE AND MAINTENANCE

2. To maintain the benefit of the warranty throughout the twelve month period you must have the machine serviced in accordance with our recommendations and use the machine properly. If on inspection the machine appears to have been either misused, overloaded, improperly operated, neglected, not properly maintained, altered or repaired without our consent this will invalidate the warranty. We shall have no further liability under it to you at all. (If you require any guidance as to use you should contact the dealer.)

3. Our liability under this warranty is dependent upon your making the equipment and facilities available, for inspection and testing.

4. In this warranty the expression, "defective product" means any part of the equipment you have purchased which shows evidence of a defect in the materials, design (due regard being given for the state of the art at the time we designed it) or Shelbourne Reynolds' workmanship. Wearing parts, such as belting, are excluded. Parts not manufactured by Shelbourne Reynolds, for example tyres and alternators, are also excluded.

OUR OBLIGATIONS

5. If you discover a defective product you should contact the dealer from whom your machine was purchased. The dealer will notify us of your claim. Our obligation will then be to either replace, or if we consider it appropriate, repair the defective product. Alternatively, we may arrange for our dealer to carry out this work. YOU MUST NOTIFY THE DEALER OF THE DEFECT WITHIN SEVEN DAYS OF THE DAY ON WHICH IT IS DISCOVERED AND YOU MUST NOT USE THE EQUIPMENT AFTER DISCOVERY. FAILURE TO OBSERVE EITHER OF THESE OBLIGATIONS WILL INVALIDATE THE WARRANTY AS IS APPLIED TO THAT DEFECT. Any defective products replaced must be returned to SRE for inspection.

NO ADMISSION

6. On occasions we may, to preserve goodwill, replace parts even though they are not in our opinion defective. Accordingly, our agreeing to repair or replace a part cannot in any circumstance be deemed an admission that it was defective.

LIMITATIONS

7. This warranty shall not apply to products made up in accordance with customer originated designs.

8. No warranty, condition or other term implied by statute or common law as to the merchantability or fitness for a particular purpose, is intended or given by this warranty. All such warranties which may apply between Shelbourne Reynolds and yourself are excluded to the fullest extent permitted by law.

9. In any case, except in respect of death or personal injury caused by our negligence, we shall not be liable to you by reason of any representation or implied warranty, condition or other term, or any duty at, law or under the express terms of any contract, for the consequential loss or damage (whether for loss or profit or otherwise and including delay in harvesting, loss of crops, expense incurred for labour, additional or substitute material, rental whatsoever and whether caused by our negligence, the negligence or our employees or agents or otherwise) which arises out of or in connection with the use of the goods by you.

10. Time of repair is not of the essence.

11. No person or persons are authorised to alter, modify or enlarge this warranty on behalf of Shelbourne Reynolds.

Shelbourne Reynolds shall not be liable for any failure to comply with any part of the warranty where such failure is due to circumstances beyond their reasonable control, including difficulty in obtaining materials or replacement parts.

CALL OUT CHARGES

13. Shelbourne Reynolds and all dealers reserve the right to make a reasonable charge for call outs made at your request which do not turn out to relate to defective products.

YOUR STATUTORY RIGHTS ARE UNAFFECTED.

SECTION 2 SAFETY PROCEDURES

2.1

⚠ ACCIDENT PREVENTION

Accident programmes can only prevent accidents with the co-operation of the persons responsible for the operation of the equipment.

For safety of yourself and others, operate equipment with care and do not take unnecessary risks which could cause an accident.

The combine manufacturers operators manual safety precautions should be adhered to along with the following additional safety precautions listed when using a *Shelbourne* Header

⚠ CAUTION

In addition to the following list, this symbol will appear throughout this manual whenever your safety is involved.

PRECAUTIONS

2.2

BEFORE STARTING THE MACHINE

1. Read the manual thoroughly.
2. Check that all guards are properly secured.
3. Ensure that no person is working on or inside the machine.
4. Check that all observers are clear of the machine. Warn bystanders by sounding the horn several times.

2.3

THE MACHINE IN THE FIELD

5. Do not brake abruptly to avoid tipping the combine.
6. Do not permit anyone other than the operator to ride on the combine.
7. Always stop the engine and apply handbrake before removing or opening any guards or clearing a blockage.
8. Do not go under the *Shelbourne* Header unless it is securely blocked or the combine feed elevator safety latch is lowered onto the lifting cylinder.
9. Engage front cowl safety lock before working on rotor.
10. NEVER go in front of the machine whilst the rotor is rotating.

11. Always use locktight, (or self locking bolts) for rotor stripping element attachment.
12. Always replace all guards after making any adjustments or lubricating the machine. Replace or repair any damaged or missing guards immediately.
13. Do not work around the machine in loose clothing that might get caught in moving parts.
14. Keep hands away from moving parts.
15. Keep children away from and off the machine at all times.

2.4

LEAVING THE MACHINE

16. Park the machine on reasonably level ground.
17. Apply the parking brake.
18. Lower the header, and front cowl to the ground.
19. Stop the engine and remove ignition key.

2.5

SERVICING THE *SHELBOURNE* HEADER

20. Ensure that the header is on the ground or if in the raised position, that it is securely blocked or the header safety latch is lowered onto the lifting cylinder.
21. Stop engine and apply handbrake before performing any adjustments or lubrication and before opening or removing any guard.
22. Always re-install all safety guards on completion of servicing.

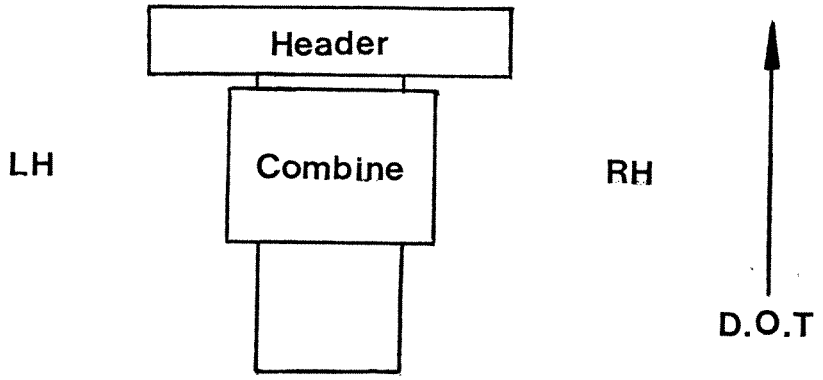
2.6

HEADER ATTACHMENT AND TRANSPORTATION

23. Follow the procedure described in the combine operators manual for header attachment and detachment.
24. When using the *Shelbourne* Header trailer ensure header is situated correctly in its seats and that all securing hooks are locked in position.
25. When removing the header onto the ground, put the foot supports, which are stowed on the rear right hand side of the machine, under the front corners. They fit between the anti-wrap dividing plate securing bolts, inline with the centre of the rotor. These will prevent the header from rolling forward, and make attachment easier.
26. Ensure coupling guards are in place.

SECTION 3 SPECIFICATION & DESCRIPTION

RIGHT AND LEFT HAND OF THE MACHINE AS TERMED IN THE MANUAL IS AS VIEWED WHEN IN THE DRIVERS SEAT.



RX and *CX SHELBOURNE* HEADERS

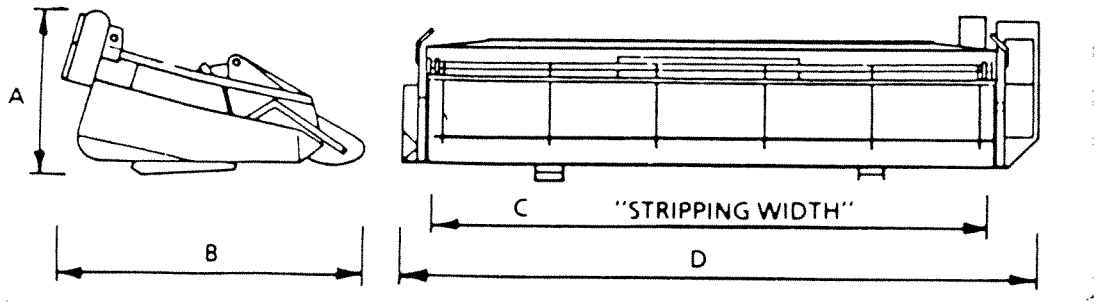
Multi-plate	- Mounts on combine standard mounting points. - Interchangeable adapter plates and drive kits for mounting the *Shelbourne* Header to other popular combine types.
Auger	- Speed fixed, Nom 190 rpm, diameter 584mm (23") over flights with fixed lower stripper bar, adjustable upper stripping plates and retractable fingers. - Outside retractable fingers, and flight extensions, removable to suit various combines. - auger and drive protected by a slip clutch.
Transfer system	- *RX* Headers are fitted with a moving non-adjustable stepped shakerpan transfer system. Speed Nom 380 rpm. - *CX* Headers have a fixed Stainless Steel covered feed chute.
Stripping rotor	- Octagonal construction with 8 rows of flexible stripping elements in 600mm sections, backed up with steel wear plates. - *RX* and *CX* Headers have a split rotor, with flexible division support. - Division plate and rotor ends are fitted with Patented anti-wrap system.
Rotor speed	- Variable in five steps from between 400 to 950 RPM
Rotor drive line	- Drive shaft fitted with a 1600Nm shearbolt type torque clutch.

Rotor and auger speed monitor	- Electronic performance monitor and alarm, with semi-automatic alarm set feature.
Top cowl deflector cover	- Access cover with gas strutt assistors.
Adjustable crop deflector	- Operated by combine hydraulics (reel lift). - Visual colour coded position indicator.
Dividers	- Adjustable height torpedo type with fixed inner wing, as standard. - Hoop type also available.
Adjustable skids	- Infinitely adjustable throughout range. - High density plastic wear plates fitted standard to CX models, and optional on RX models.
Centre Protection pans	- Available for *RX* models only.
Front stands	- Detachable front feet for use only when the header is removed onto the ground.
Side guards	- Hinged for ease of access.

RANGE OF SIZES

Sizes are as follows:-

	A	B	C	D	WEIGHT
RX54	1160mm 3'10"	2100mm 6'11"	5400mm 18'0"	5820mm 19'1"	1780kg 3915 lbs
RX60	1160mm 3'10"	2100mm 6'11"	6000mm 20'0"	6420mm 21'1"	1880kg 4135 lbs
RX66	1160mm 3'10"	2100mm 6'11"	6600mm 22'0"	7020mm 23'1"	1980kg 4355 lbs
CX72	1160mm 3'10"	2060mm 6'9"	7200mm 24'0"	7620mm 25'0"	1960kg 4312 lbs
CX78	1160mm 3'10"	2060mm 6'9"	7800mm 26'0"	8220mm 27'0"	2160kg 4752 lbs
CX84	1160mm 3'10"	2060mm 6'9"	8400mm 28'0"	8820mm 29'0"	2360kg 5200 lbs



For complete details of the correct sizes and fitting for the combine on which the *Shelbourne* Header is intended to be used, please contact your local SHELBOURNE REYNOLDS Dealer or the factory direct.

SECTION 4 TRANSPORTATION

To prevent damage to the *Shelbourne* Header, the machine should be moved either by:

- Attaching to combine
- By slings through the lifting lugs provided for overhead lifting.
- On a trailer which gives suitable support in the correct positions of the header and provides adequate stability.

DO NOT

- Attempt to lift under the header with a fork lift, unless the header is fitted with fork lift shoes i.e. *CX* models from 1996, or on an adequately supportive pallet.
- Remove header onto floor without placing the foot stands under the front corners of the machine.
- Never support machines weight on the front beam or front of the skids under the header.

SECTION 5 PREPARATION AND ADJUSTMENTS FOR USE

⚠ Read this section carefully before use.

If in any doubt of adjusting the following, consult your dealer.

When using the *Shelbourne* Header, the following features are required on your combine. (Some of these features may already be fitted as standard to your combine.)

5.1

1. **HEADER DRIVE**
   Due to the extra power required to drive the *Shelbourne* Header compared to the conventional cutterbar, some makes and model of combine require a maize header drive kit which will increase the power available to drive the *Shelbourne* Header.

   Shelbourne Reynolds dealers should be consulted to select the correct drive for your machine.

2. Combine grain loss monitors, mainly on the sieves.

3. De-awner or concave blanking plates.

4. Lights on top corners of cab for night work. The lights which are mounted at the bottom of the cab are designed to throw the light through the cutterbar reel, but as the *Shelbourne* Header has a solid cowl, the light cannot shine through it. The operator will require light at the front of the nose where the crop enters the header.

5. A straw chopper will be useful for dealing with straw intake in laid and lodged crops.

The following adjustments need to be checked and carried out:-

5.2

CONCAVE SETTING - conventional cylinders
As there is less straw intake in most crop conditions, it is necessary to adjust the concave to give a minimum clearance of 3-4mm on the first 5 bars.

This is achieved by putting the concave lever(s) into the top hole to give minimum clearance between the drum and concave.

Refer to the combine manufacturers operators manual to reduce this clearance, which is usually adjusted by threaded studs on each side of the combine supporting the concave. The clearance is normally measured by removing side covers at the end of the drum on each side of the machine, and using a piece of flat metal to the depth of 3-4mm to check the clearance between the concave bar and drum bars.

⚠CAUTION

After adjusting but before running, check that the concave cannot hit the drum when the concave hand adjusting lever is released from the top notch and pulled up as far as it will go, i.e.. until it hits the stop.

If when this is carried out the concave touches the drum rasp bars, it is necessary to adjust the stop on the concave, adjusting lever to prevent it from going up so high. The stop is often a bolt in the top of the lever ratchet plate.

Cleaning shoe sieves (screens) need to be opened further than usual, the best result is usually achieved by fully opening the top screen and then cleaning on the lower screen.

Higher cleaning fan speeds are also used.

- axial flow cylinders:
See section 5.9

5.3

HEADER LOWERING SPEED

⚠**Beware until set**

The *Shelbourne* Header is heavier than most types of conventional cutterbar header, therefore, when on the combine, it may drop at a very fast speed until adjusted.

This is usually adjusted on the hydraulic feeder housing direction control valve which may be mounted under the cab floor, or on the side of the machine. When set correctly, the header will gently lower to the ground without banging on the skids.
Header damage can be caused if the drop is to fast ! .

⚠ Refer to the combine manufacturers operator manual for adjustment of the header lowering speed.

5.4

COMBINE FRONT ELEVATOR DUST COVERS

Most of the *Shelbourne* Header adapter plates for various combine models with the exception of New Holland and John Deere, have an elevator dust cover built into the header adapter plate itself. For this reason it is necessary to remove the dust cover from the combine elevator if fitted. If this cover is not removed, uneven feeding and blockage may occur.

It is not usually necessary to remove the cover on New Holland, Case IH, or John Deere combines, but often feeding will be improved if the centre section of the cover is removed, leaving the outer side deflectors of the cover in place.

5.5

LEVELLING THE HEADER

The header should be parallel with the front axle of the combine, if it is not, then it should be adjusted according to the combine operators manual, as adjustment method is the same as that for the conventional cutterbar.

Note-

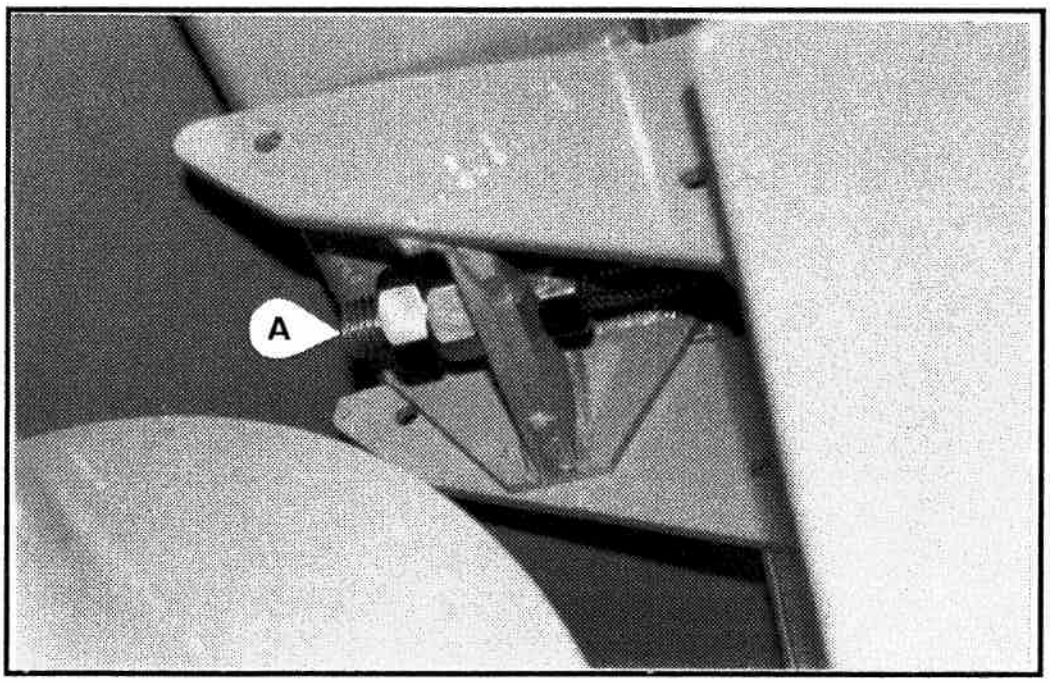
If levelling a USA built John Deere, it is necessary to remove the existing spacer plates from under the pick-up lugs, and put the Shelbourne Reynolds spacer plates under the LH side lug only. Two plates are required for *RX* models, and three plates for *CX* models. Put the radii corners of the plates to the outside corner of the feeder.

5.6

IMPORTANT - TILT ADJUSTMENT AND ROTOR CLEARANCE HEIGHT OF THE *SHELBOURNE* HEADER

The angle of the *Shelbourne* Header is adjustable. The bolt in adapter plate attaching the header to your combine has two fixing studs at the top, (A) Fig.1 located just under the top beam near the centre opening. These fixing studs are adjustable and will therefore change the angle of the *Shelbourne* Header, and hence the auger to feed elevator clearance, and rotor height from the ground.

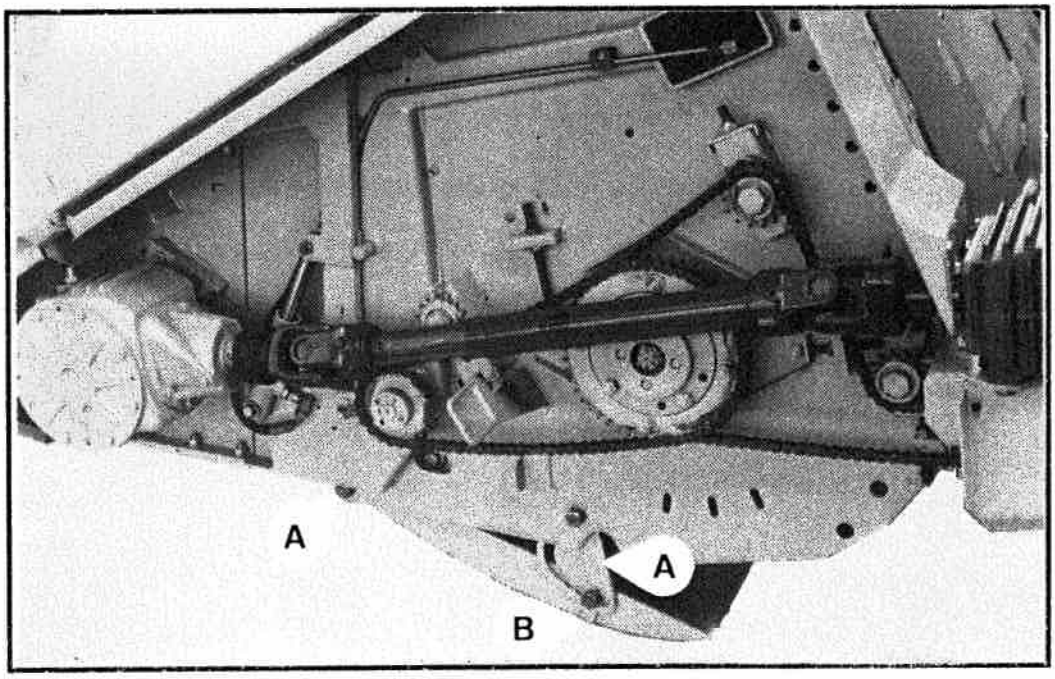
FIG 1



Skids

The function of the adjustable skids under the header is to prevent the rotor from hitting the ground, and to keep the rotor at a constant height above the ground when working at low levels e.g. laid crops.

FIG 2



The skids under the *Shelbourne* Header are adjustable FIG 2, and can be moved by slackening off the 6 bolts (A) on each skid, and using a 24mm (15/16") open end spanner (B) as shown, rotate the cam plates in the slots to the required position. Tighten the bolts.

⚠ ***CAUTION -***

Raise the header fully and engage the header safety latch before going under to inspect or adjust.

To correctly set the header tilt and rotor to ground clearance:-

- If your machine is fitted with a bearing box or solid drive input, which is fitted to the *Shelbourne* Header main frame and not the adapter plate i.e. JD then DISCONNECT the drive coupling.

- Set the *Shelbourne* Header skids in the middle position.

- On level concrete lower the *Shelbourne* Header to the ground i.e. so the skids touch the concrete.

- Check tilt adjustment. The side plates of the header should be approximately horizontal to the ground line or tilted back very slightly.

- If adjustment is required, before adjusting the adapter studs, the bolts securing the auger stripper plates on the adapter plate only should be loosened to prevent jamming.

- Adjust the studs (A) Fig.1 of the adapter plate equal amounts until the setting is approximately correct.

- Lock the adjusting stud nuts.

- In such position the rotor clearance to the ground should be approx **50mm** to **75mm** for ***RX*** models, and **75mm** to **125mm** for all ***CX*** models.
  This clearance is adjusted by moving the skid cam plates in the slots.

- Re-set the auger stripper plates on the adapter plate, FIG 11 section 7.4, to give approx 5mm clearance from the auger flights.

- For machines fitted with a bearing box or solid drive shaft on the header main frame, realign the header drive as described below.

NOTE: When making this adjustment the auger to feed elevator clearance will also change. Before operating the machine, check that the auger and feed elevator do not hit each other, re-adjust the auger, or elevator if necessary.

5.7

ALIGNING HEADER DRIVE

If your *Shelbourne* Header is fitted with a ***standard PTO shaft*** e.g. Claas or Deutz-Allis, no adjustment should be required to align the shaft. Simply press in the button of the coupling and push onto the shaft. Ensure that the coupling seats correctly i.e. when the pin pops out again.

Note - The angle of either the side PTO Fig 12(D) and rear PTO Fig 4(C) shaft should not exceed 20 degrees. This is determined by the position of the five speed gearbox and dropbox assembly.

Recommended shaft positions are given in the combine model drive kit section, and is determined by the combine drive type and guard kit used.

If your *Shelbourne* Header is fitted with a ***solid shaft*** combine/header drive arrangement, or if the *Shelbourne* Header is ***narrow***, input drive alignment to the combine drive shaft adjustment is as follows:

Loosen or remove the shaft support plate positioned on the rear of the header.

The complete five speed gearbox and dropbox assembly can be moved up or down in 2 different hole positions on CX models, and 7 positions on RX models, (position 1 being the top and 7 being the bottom) Fig 3 (A), to approximately align the shafts. The shafts are finally aligned with the micro adjusting studs (B), and the adjusting tie rod Fig 4 (A) which will pivot fore and aft in an arc the dropbox Fig 3(C), after loosening the three bolts, and three nuts Fig 4 (B). Care should be taken not to damage the sealing gasket between the dropbox and five speed box.

FIG 3

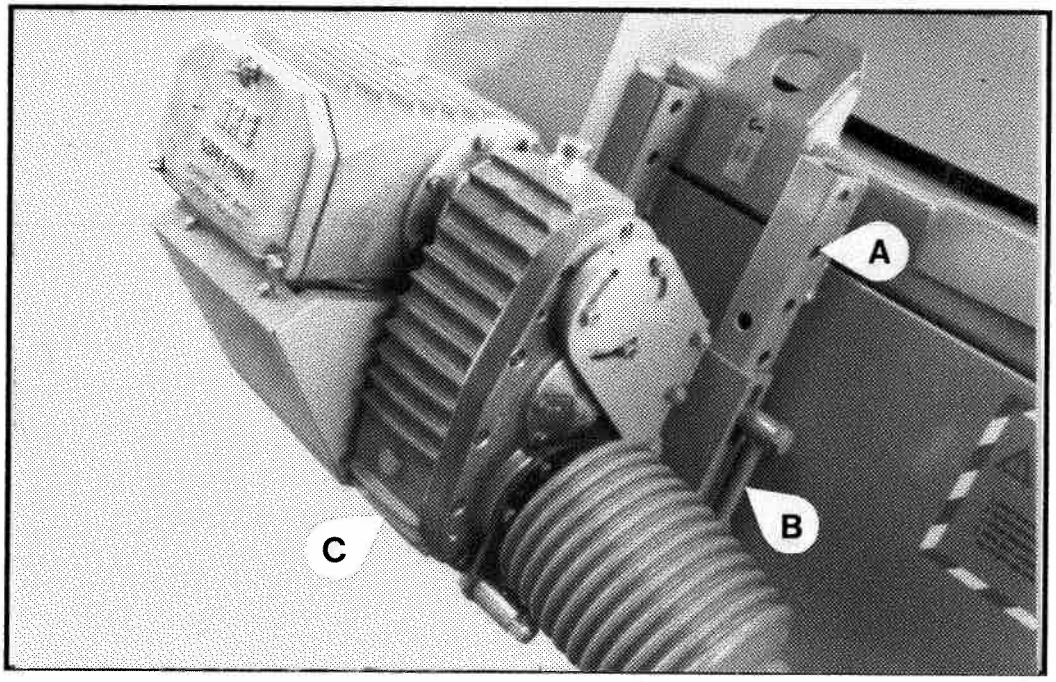
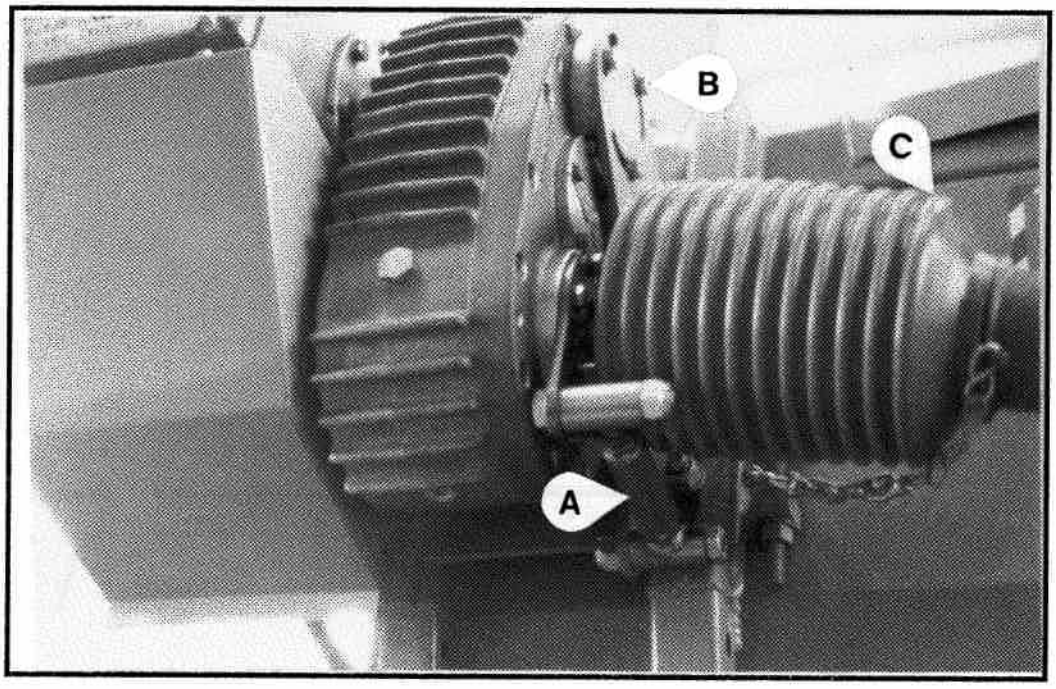


FIG 4



When finally aligning the shafts connect the coupling to the combine and ensure that there is no side pressure on the coupling caused from misalignment.

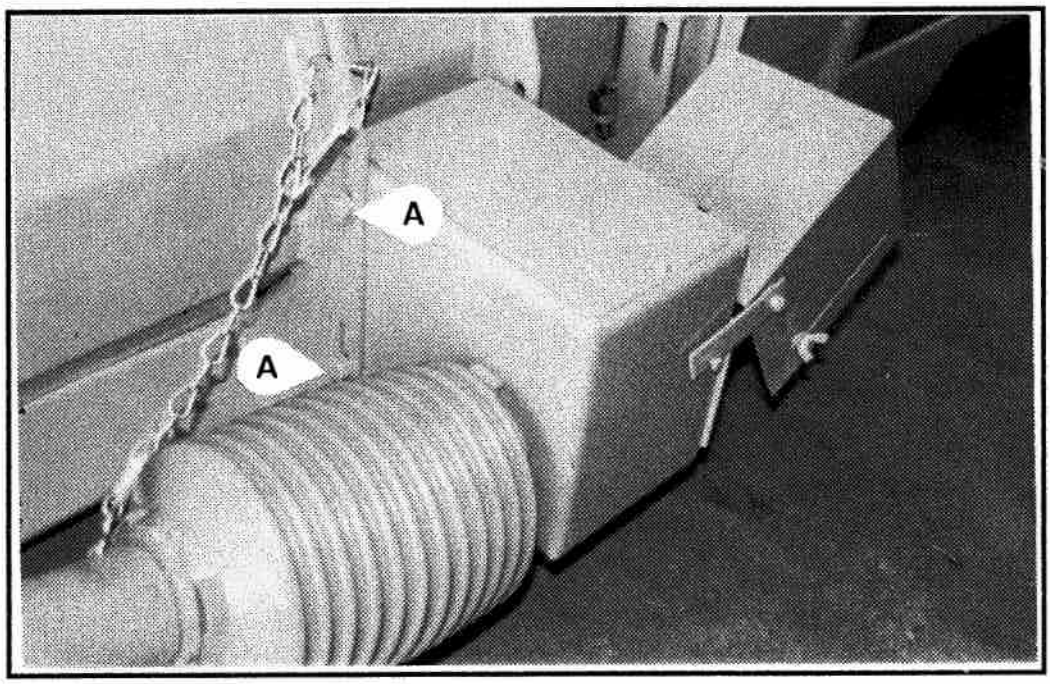
When satisfactorily aligned tighten the shaft bearing/bracket support, without flexing the shaft. Also check the clearance of the shaft protection support bracket and adjust if necessary to ensure it does not foul the guard.

If at any time the header tilt or levelling is adjusted the drive will need re-aligning with the combine drive shaft.

If your *Shelbourne* Header is fitted with a ***bearing box*** assembly supporting the header drive shaft, on initial header attachment, tilt or levelling adjustment the drive will need aligning with the combine drive shaft as described below:

- Remove guard and slacken the 4 bolts which hold the bearing box as shown in Fig 5 (A).
- Move the bearing box to align the shaft in the correct position and engage the coupling connector to the drive shaft on the feed elevator.
- Tighten the 4 bolts which hold the bearing box to lock the shaft in the set position.
- Replace the guard.

FIG 5



JD American combines.

9600 and ***8820*** when aligning the drive on these combines, the female drive coupling assembly on the header is required to slide. The grub screw on the drive hub should be left loose to allow this, so that the header can be attached and detached without the drives interfering. When fitting to other JD American combines the female drive coupling should be locked with the grub screw so it does not slide.

5.8

AUGER FINGERS AND FLIGHT EXTENSIONS

Different combines have different width feed elevators.
To accommodate this the *Shelbourne* Header has removable retractable fingers, and flight extensions (KIT-00965) available so feed adjustment can be made.

To prevent auger plugging and uneven feed, it is important to ensure that the outer retractable fingers are not feeding in a position wider than the feed elevator of the combine.

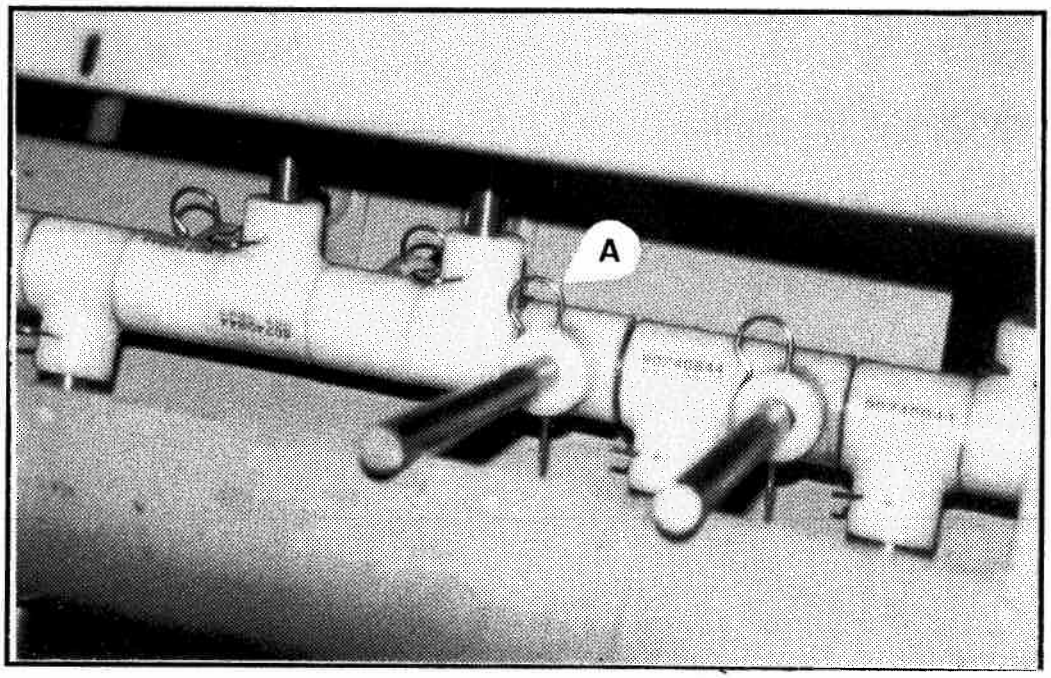
The outer fingers should be removed until the outermost finger is in board of the feed chain by at least 100mm (4"), otherwise wrap in the ends of the elevator roller may occur.

To remove the fingers;

1. Remove the cover plates near the auger centre FIG 6.
2. Remove the `R' clip FIG 6.(A) securing the finger in the plastic holder, and pull the finger out of the holder.
3. To prevent dust and particles filling the auger tube through the remaining hole, remove the ball guide from the auger tube and replace with filler plate. (Pt No. 190735 01)
4. When enough fingers have been removed, replace the auger cover plates.

The auger flights should pass the end of the combine feeder chain by at least 75mm, if required fit flight extensions (Ref. Bulletin TSB-01010). It will be necessary to cut out the corners of the rubber flap above the auger, so that the flights do not catch on it.

FIG 6



5.9

HEADER HEIGHT INDICATOR
This should be set as described in the combine operators manual.

5.10

AXIAL FLOW COMBINES -

All crops except rice:-

When fitting the *Shelbourne* Header to an axial flow combine it will be necessary to adjust the following for efficient separation of stripped material.

The axial flow concave will consist of front concaves, usually in 3 sections and a rear separating grate also usually in 3 sections.

The front concaves will adjust in relation to the rotor, the back separating grate is fixed.

For harvesting **most** crops of wheat and barley and other small seed crops, it will be necessary when using the "small wire concaves" to put concave wires in all the holes of the first concave. Second and third concave should have the wires fitted in every other hole. The rear grate which is a welded construction should be of the small hole type. The rotor and concave clearance should be 1mm to 3mm.

If all the crop is not threshed, then it may be necessary to fill the second concave with wires in each hole, or fit blanking plates on the first half of the concave to block it completely.
However, if the crop is damp it may be necessary to remove wires from the concaves, and/or open the rotor to concave clearance to allow the damp crop to flow through. If the drum to concave clearance is opened above 3mm, short straw etc. may block the concaves due to centrifugal force, if this occurs the clearance should be reduced.

The rotor speed settings will be set the same as for a conventional cutterbar.

Cleaning shoe sieves (screens) need to be opened further than usual, the best result is usually achieved by fully opening the top screen and then cleaning on the lower screen.

Higher cleaning fan speeds are also used.

Axial flow combines have a narrow feeder housing, it may be necessary to raise the front roller to the top position and lock the float of the roller to allow even feed. Adjustment method is described in the combine manufacturers operators manual.

Rice
When harvesting rice with axial flow combines it will be necessary to raise the front roller of the feeder housing to the top position, and lock the float of the roller to enable an even feed. Adjustment method is described in the combine manufacturers operators manual.

On Case IH 2188, 1688, 1680, 1480 combines it is preferred to have 4 ears on the front of the rotor to keep the feed even, ensure smooth operation, and optimum performance. The front 3 concaves should be of the "large wire" type. The rear grates should be changed to the SRE modified type KIT-00903, and best results are achieved with the speciality rotor fitted with spiked raspbars in the area of the rear grates only.
It is important to ensure that the rotor is adjusted central to the concaves for even material flow. It may be necessary fit an adjustment kit to some of the earlier models. Adjustment method will be explained in the combine manufacturers operator manual.

Best results are usually achieved with an axial rotor speed of 660 rpm.

On smaller Case IH combines i.e. 2166, 1666, 1660, 1460 it will also be necessary to fit the SRE modified grates, consult your dealer for details.

SECTION 6

FIELD OPERATION

It is important to read this section of the manual before operating the *Shelbourne* Header.

This section contains tables and other references to the basic settings of certain components of the *Shelbourne* Header and combine in various crops.

As the *Shelbourne* Header does not feed much straw into the combine the settings may vary to those you would normally set with a conventional cutterbar.

It is impractical to give the settings for every crop variety and conditions in the various soil types and weather conditions, so the settings given in the tables are initial settings to be used as a starting point.

This section then follows on to indicate further adjustments which can be made to suit specific conditions.

Read and carry out the procedures in section 5 before attempting to operate the machine.

Field adjustment details are only given for the *Shelbourne* Header. For combine adjustment details use the combine manufacturers operators manual.

6.1

FIELD ADJUSTMENTS

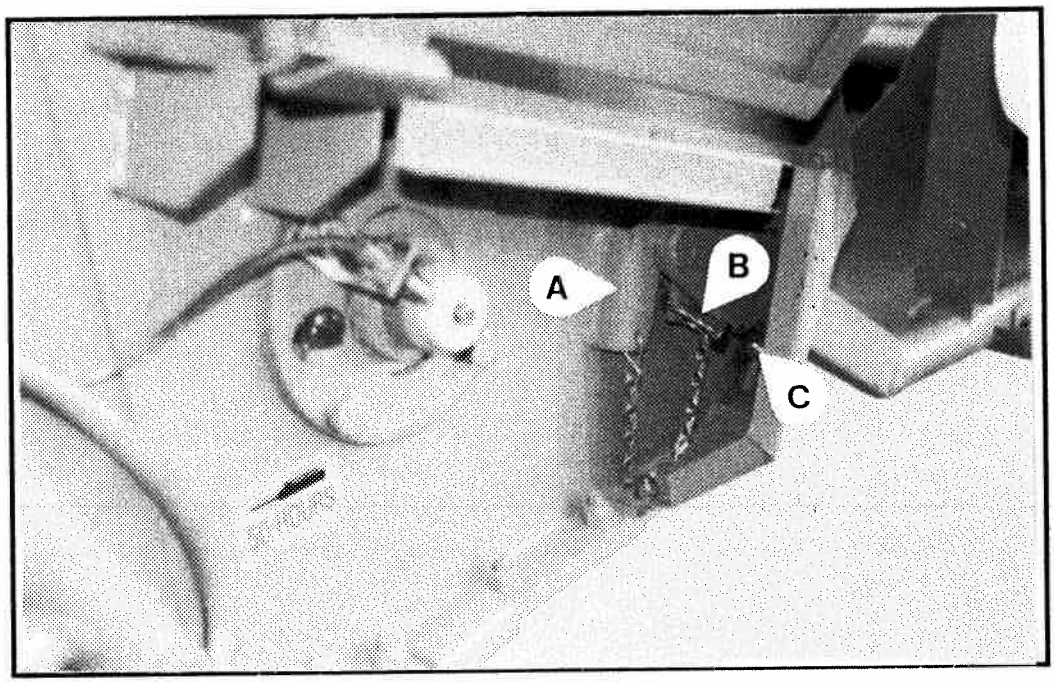
Crop Dividers

Torpedo type dividers are quick release. To fit the dividers, open the side guards, put the divider through the slot in the side frame, and hook into the catch at point (A) as shown in FIG 7. Place the clip (B) in the catch to prevent the divider falling out. The height of the divider can be adjusted by slackening the bolt and moving the adjusting bracket (C) to set the divider to the correct height.

The wings of the divider are fixed and set inboard to push the crop into the rotor away from the header edge.

A hoop divider is available if required (Ref. Bulletin TSB-01015). This bolts onto the end plate of the header replacing the existing lower anti-wrap dividing plate.

FIG 7



6.2

Header Height

The height of the header is adjusted from the combine cab by the operator using the header height hydraulic adjusting lever.

6.3

Adjustable Deflector

This too is adjusted hydraulically by the operator from the combine cab using the conventional header reel lift lever.

6.4

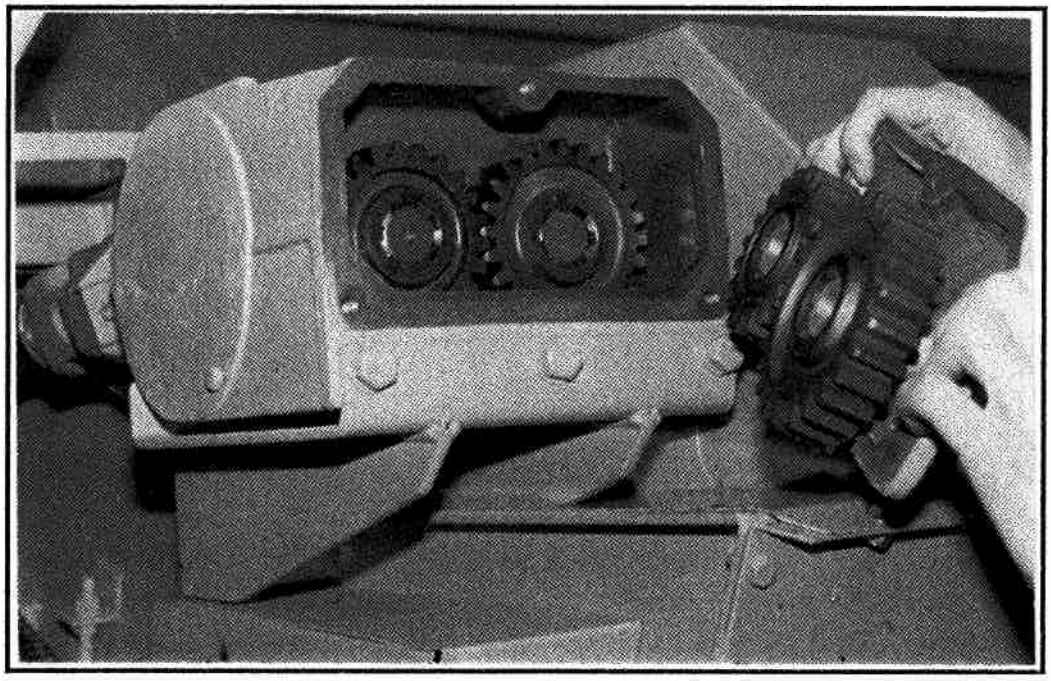
Stripping Rotor Speed

The rotation speed of the stripping rotor is adjusted by a variable speed gearbox using change gears to select the required speed.

The procedure for changing the gears in the gearbox to alter the rotor speed is as follows:

1. Lower the header to the ground.
   ⚠ Do not remove the cover unless this is carried out, or oil will spill out of the gearbox.
2. Remove the 3 thumb screws in the back of the gearbox and pull the cover off.
3. Refer to the chart of rotor speeds and select the correct gears for the required speed, slide the gears off the shafts and replace with the selected gears.
4. Check oil level - see section 8.
5. The spare gears must be replaced onto the back of the gearbox cover to keep the driving gears in position.
6. Replace the gearbox cover and tighten the screws. (Hand tight only)

FIG 8



Speed Ratios

Driven (LH)	**Driver** (RH)	**Rotor Speed** (RPM) approx
20	26	850
22	24	710
24	22	600
26	20	500
28	18	420

6.5

Tacho Performance Monitor

For installation and operation procedures see Shelbourne Header monitor information in Section 10 of this manual.

The tacho performance monitor will monitor the shaft speed of the feed auger and the stripping rotor shaft.
The monitor will need to be ***auto-set*** before use, and reset whenever the rotor speed is changed.

The tacho is fitted with an audible alarm. As the speed of the rotor and or auger reduce due to overload or blockage, the alarm will warn the driver to slow down or to stop. The arrow on the tacho display panel will automatically indicate which shaft has reduced speed during operation.

Auger - This is monitored only to alert the driver that the auger is blocked. The alarm speed should be set at 100rpm.

Rotor speed - Monitoring the rotor speed enables the driver to monitor the effort required by the rotor to strip the crop. By correctly setting the audible alarm speed, the torque limiter shearbolt can be prevented from shearing.
The alarm speed value on this channel only, is adjusted semi-automatically (auto-set feature) using a percentage value.

i.e. If rotor speed with NO LOAD (machine running empty) is 600rpm, and the shearbolt shears in operation when the tacho monitors the rotor speed at 550rpm, by setting the alarm speed above 550rpm the driver can prevent the bolt from shearing by slowing down the forward speed, or raising the header when he hears the alarm, to reduce the load on the rotor.

For ease of operation, the monitor has an Auto-set feature which uses a percentage value set in the monitor, default is 8%. Therefore if the NO LOAD speed is 600rpm, the alarm will sound if the speed goes 8% below this speed, which is 552rpm. This speed value can be seen when auto-setting the monitor.
This percentage default is an approx setting which will suffice for most circumstances as engine power, and combine drive design to the *Shelbourne* Header will affect the value the alarm needs to be set. The percentage value can therefore be changed if required as described in the above mentioned manual.

6.6 *BASIC MACHINE SETTING TABLE*

TYPE OF CROP	DIVIDERS	STRIPPING ROTOR SPEED Rpm (APPROX)	FRONT COWL POSITION. (For standing unless stated)	COMBINE DRUM SPEED Rpm
WHEAT DURAM TRITICALE RYE	MOSTLY	500 WHEN DRY. UPTO 700 WHEN TOUGH	GREEN TO YELLOW. IF TALL LOWER RED	900 to 1000
WINTER / SPRING BARLEY	NOT USUALLY YES IF 4 / 6 ROW BARLEY	500 to 600	YELLOW, GREEN IF SHORT	900 to 1000
OATS	USUALLY	500 to 600	YELLOW	600 to 700
RYE GRASS, ALL TYPES	NO	400 to 700	UPPER RED TO BLUE IF LAID. GREEN IF STANDING.	800 to 900
GRASS FESCUE	YES	600	GREEN to YELLOW	800 to 900
RICE	YES	400 to 500	GREEN	RICE DRUM 450 to 700. RASP BAR 550 TO 800.
LINSEED	YES	700	YELLOW	MAX
CLOVER	NO	400	UPPER RED	MAX
PEAS	NO	400 to 500	UPPER RED	500 to 600

NOTE: When harvesting peas best results are achieved with a soil kit fitted to the combine

Lower red = Front cowl up. Upper red = Front cowl down.

CONCAVE CLEARANCE	CONCAVE BLANKING PLATES	COMBINE FAN SETTING	COMBINE SCREEN (SIEVE) OPENNING SETTING
3 - 5 mm	USUALLY BOTH SETS	FULL	TOP: FULLY OPEN BTM: 1/3 OR MORE OPEN
3 - 5 mm	USUALLY BOTH SETS	FULL TO JUST BELOW FULL	TOP: FULLY OPEN BTM: 1/3 OR MORE
7 - 15 mm	YES FRONT SET ONLY	APPROX 3/4 OPEN	TOP: FULLY OPEN BTM: 1/3 TO 1/2 OPEN
6 - 15 mm	NONE OR FRONT SET	1/2 TO 2/3 OPEN	TOP: 1/4 TO 1/2 OPEN BTM: 1/4 OPEN
3 - 10 mm	NONE OR FRONT SET	1/2 TO 2/3 OPEN	TOP: 1/4 TO 1/2 OPEN BTM: 1/4 OPEN OR LESS
RICE DRUM 1 - 3 mm. RASP BAR 3 mm.	N/A NO	FULL	TOP: FULLY OPEN BTM: FULLY OPEN
3 - 5 mm	YES BOTH SETS	3/4 TO FULL	TOP: 3/4 OPEN BTM: 1/4 OPEN
3 mm	YES BOTH SETS	LOW TO 1/4 OPEN	TOP: 1/4 OPEN BTM: ALMOST FULLY CLOSED
15 - 20 mm	NO	3/4 TO FULLY OPEN	TOP: FULLY OPEN BTM: 1/2 TO 3/4 OPEN

6.7

HARVESTING WITH THE *SHELBOURNE* HEADER

To get optimum performance from your *Shelbourne* Header the operator should follow the procedures and checks of operation:

1. **Ensure** that all the necessary procedures of preparation for use described in this manual have been carried out.

2. **Set** the combine and header to the basic setting chart for the particular crop to be harvested.

3. **Engaging the drive:** In order to prevent the rotor drive torque limiter from operating when engaging the header drive follow procedure below:
   - Run combine engine at idle speed.
   - If manual engagement, engage the drum of the combine and then gently operate the lever to engage the *Shelbourne* Header, avoiding snatch in the drive.
   - If your combine is fitted with electric or hydro-electric clutch engagement, the header drive should be engaged before the separator, therefore the separator of the combine and the header will engage at the same time, thus reducing the snatch in the header drive line. Alternatively, hydro-electric clutches maybe fitted with a restrictor (Ref. Bulletin TSB-01025).
   - Increase combine engine speed to the working rpm.

4. **Stripping rotor speed setting:** The minimum speed should be selected to ensure that all grain/seed is stripped from the ear of the crop. It is unnecessary to run the rotor faster than that required to strip all the crop, as this only causes the machine to intake more straw and also will reduce the life of the stripping elements.

5. **Front cowl setting** - (Adjustable deflector)

   This deflector is usually set first, then the header height is adjusted to suit.

   The front cowl setting is an important adjustment to ensure optimum performance of your *Shelbourne* Header.

   When correctly set in standing crop the front nose of the cowl should deflect crop below it, the top of the crop being level to 100mm below the top of the nose. Therefore creating a seal between the crop and the lower edge of the cowl.

   When correctly set in laid crops, the front nose of the cowl should ride over the top of the crop, the aim being not to push the crop down any further but to close the gap at the front to prevent grain losses.

When harvesting laid and standing crop in the same pass, lower the nose to recover the laid crop, therefore pushing over the standing crop, so it becomes laid.

The height indicator on the RH side will assist the operator to set the deflector in the best position for various crop conditions as described below -

Upper Red	-	Deflector fully down	-	Laid crops, grass, clover etc.
Blue	-		-	Lodged crops.
Green	-		-	Short crops.
Yellow	-		-	Normal operation.
Lower Red	-		-	Very tall crops.
Above		Out of working range	-	Do not use

6. **Header height setting:** This is an adjustment which the operator will have to continually adjust to suit the crop height as the machine travels across the field.

   When correctly set in standing crops the heads of the crop should be approximately level with the top to 100mm below the top of the adjustable deflector.

   When working in laid crops the header should be allowed to float over the ground contours using the header skids and combine header float system. Do not exert too much of the header weight onto the skids as this will cause the skids to dig into the ground.

   The aim is to carry the rotor as high as possible to reduce the amount of straw intake, but it must be low enough to lift and remove heads which maybe attached to stems low down in the crop, E.g.. bent over stems. Be sure that the front cowl is set, so that the seal is maintained between the crop and the lower edge of the cowl.

7. **Forward speed:**
   The *Shelbourne* Header is capable of very fast forward speeds due to its rotary action, unlike a conventional cutterbar.

   The forward speed will depend on the following:
   1. Crop ripeness
   2. Moisture level
   3. Standing or laid
   4. Levelness of the field
   5. Power available to drive the rotor
   6. Combine capacity
   7. Crop yield

Normal operating speeds in standing crops are expected to be between 4 - 12 km/hour (2.5 - 7.5 mph).
In laid crops the speed may be slower.

8. **Harvest** approximately 50 metres of crop, at a comfortable forward speed.

9. **Stop** the machine and look at the stripped crop for the following:-

- Check that all grain is stripped from the heads.
- Check that there are no heads which have been missed low down in the crop. Note: The *Shelbourne* Header will not recover pre-harvest losses.
- Check combine sieve and straw walker losses.

Note:
Do not do this from behind the combine where you have just stopped. The check should be carried out in an area where there has been continuous crop flow through the machine, whilst it has been on the move.

- Check header losses:
  This should again not be carried out where the machine has just stopped.
  An easy check is to back the combine away from the crop. Look in the area 2 - 3 metres back from where the header stopped, but before you get to the area where the sieves of the combine has blown out unwanted material.

10. **Also** check the grain sample for cleanliness and cracked grains.

11. **Use** adjustment charts to correct the results.

12. **Go** back to step 8 and repeat until satisfactorily set.

13. **Reset performance monitor** if required, see Section 10.

6.8

<u>Useful harvesting tips</u>:-

During Operation:
When operating the machine in the field it is important to keep the *Shelbourne* Header front cowl, and header height to the correct settings to suit the crop as it varies across the field. This means the operator will have to raise and lower the header and front cowl continually to suit the crop. If the crop is very even then very little adjustment will be necessary. If the crop is very uneven then the operator will have to adjust the header to suit the conditions much more frequently.

Use the combine grain loss monitors to determine the forward speed, unless the field is too rough or if the stripping rotor power requirement is high. This can occur in unripe or damp crops, and should be indicated by the audible alarm on the rotor performance monitor, before the shearbolt shears.

Standing Crops:
The adjustable crop deflector can usually be set in one position, and only the header height will need adjusting to suit slight crop height variations.
When operating in even standing crops the rotor will usually be carried between 150-300mm from the ground.

Laid Crops:
When operating in laid crops it will be necessary to operate with the rotor as close to the ground as possible but without digging up dirt. This is achieved by floating the header on the skids. When set correctly, the skids will prevent the rotor touching the ground.

To keep header losses to a minimum, it may be preferred in dry laid cereal crops (not Rice) to approach by harvesting either across or towards the way of lay, losses will increase if harvesting with the way of lay as the rotor is unable to lift the heads of the crop clear of the ground. However, if harvesting standing crop and small patches are laid, E.g.. at headlands, these patches can be harvested with the way of lay providing that the header and front cowl are lowered enough. Also see front cowl setting 6.3.

When operating in laid crops, forward speed will be limited due to higher straw intake, and higher rotor power requirement.

Harvesting standing and lodged or laid crop in the same pass:
There will be occasions where standing and laid crop will need to be harvested in the same pass. In these situations the header should be lowered down to lift and recover the laid crop,.

Performance monitor audible alarm speed adjustment:
When operating the machine it will be noted that the power required to drive the rotor depends mainly on forward speed and the height of the rotor from the ground.

i.e. - The closer the rotor to the ground, the more the power requirement and hence the rotor speed will reduce.
- The faster the forward speed, the more the power requirement and hence the rotor speed will reduce.

If the shearbolt breaks before the audible warning is heard, then the rpm warning value should be changed (For adjustment method see Section 10, *Shelbourne* Header monitor operating instructions). The setting value is determined by operating the machine in work and, gradually increasing the forward speed, watching closely the rotor rpm, until the shearbolt shears.

Set the rotor rpm warning value about 10rpm above the value the shearbolt sheared. This value is changed as a percentage of the *no load* speed, and you can reduce the percentage value 1% at a time. Then run the machine and auto-set the monitor, the *no load* value is first displayed, then the monitor will flash to **visually display the alarm set value**. If the alarm speed value displayed is still below the speed at which the shearbolt broke, re-adjust percentage value until the speed is above.
Note - The auto-set feature is adjustable in 1% increments, which should be sufficient. If extreme circumstances should require rpm values between whole percentages the manual override feature is used.

The same procedure will apply if the rpm warning value is set too far above the speed at which the bolt shears, only that instead the percentage value will be increased.

Should a fault occur with the monitor, reset the tacho as described in section 10, *Shelbourne* Header monitor operating instructions. If this fails consult your *Shelbourne* Header dealer.

6.9

ADJUSTMENT CHARTS

PROBLEM	CAUSE	REMEDY
Grain left in stripped heads.	Rotor rotation speed too slow.	Speed up the rotor. (see section 6.4)
	Stripping elements worn or broken.	Check elements, replace if necessary (see section 7. 8 & 7.9)
	Rotor too high when harvesting crop.	Lower rotor.
	Front cowl too low, pushing the crop away from the stripping rotor.	Lift the front cowl.
	Rotor torque limiter slipping causing loss of rotor speed.	Reduce forward speed lift the header.
Heads unstripped at division plate between the two rotors.	Rotor clearances and element clearance to the division plate incorrect.	Adjust the stripping element as close as possible to the division plate.
	Stripping fingers broken off at division plate.	Replace the element (see section 7.8 & 7.9)
	Fingers at division plate worn.	Replace the element (see section 7.8)
	Vee strip bent out of shape	Straighten strip or replace

PROBLEM	CAUSE	REMEDY
Excessive shedding of seeds at side of machine.	Crop not separating properly	Fit torpedo dividers (see section 6. 1)
	Header side crop deflectors badly bent.	Replace or repair
	Torpedo dividers are too aggressive	Install hoop type dividers
Crop wrapping around rotor.	Rotor rotation too slow.	Speed up the rotor (see section 6. 4)
Material not feeding to the header auger	Shakerpan drive failure	Investigate drive chain, and drive crank
	Shakerpan speed too slow	Check correct drive kit for combine is fitted
	Shakerpan steps plugged with mud	Clean the pan
Auger torque limiter slipping	Auger blocked by foreign object.	Clear blockage
	Retractable fingers feeding wider than feeder.	Remove outer fingers as described in section 5.8.
	Auger not feeding enough to the centre.	Fit auger flight extensions. (see section 5.8.
	Auger to low to auger trough	Adjust the auger clearance. (See section 7.2)
	Auger torque limiter spring tension incorrectly set	Re-adjust springs, (see section 7.1)

PROBLEM	CAUSE	REMEDY
Irregular feeding into feed elevator	Elevator feed chain too low at entrance.	Raise chain. (See combine manufacturers manual.
	Elevator feed chain too far away from auger	Move auger back or move elevator chain forward. (see section 7.2)
	Crop building up on feed elevator dust cover	Remove the centre section of the elevator dust cover
	Retractable fingers feeding wider than feeder.	Remove outer fingers as described in section 5.8.
	Auger not feeding enough to the centre.	Fit auger flight extensions. (see section 5.8.
Excessive shelling of seeds at header.	Rotor too high in relation to the ground.	Lower header.
	Front adjustable cowl too high.	Lower cowl.
	Front adjustable cowl too low.	Lift front cowl.
	Crop is laid and leaning away from direction of travel.	Approach crop from different angle.
	Shakerpan behind rotor not working.	Check for broken drive to pan
	Forward speed too slow.	Increase forward speed.

PROBLEM	CAUSE	REMEDY
Grain sample not properly cleaned.	No concave blanking plates fitted.	Fit concave blanking plates. (See C.M.O.M.)
	Concave to drum clearance not close enough.	Adjust clearance (See C.M.O.M.)
	Bottom sieve open too wide.	Close the sieve slightly. (See C.M.O.M.)
	Drive speed too slow.	Increase drive speed (See C.M.O.M.)
Excessive cracked grain in grain sample	Drum speed too fast	Reduce drum speed. (See C.M.O.M.)
	Concave set too close to drum.	Increase drum to concave clearance. (See C.M.O.M.)
	Concave blanking plates fitted.	Remove plates one set at a time. (See C.M.O.M.)
	Bottom sieve not open enough	Open bottom sieve
Grain loss over the sieves.	Sieves blocked	Increase air blast. (See C.M.O.M.
	Top sieve blocked air blast full.	Close top sieve slightly, (See C.M.O.M.)
	Too much air blast from the cleaning fan.	Reduce air blast or increase forward speed if possible to load more material onto the sieves. (See C.M.O.M.)

cont.

PROBLEM	CAUSE	REMEDY
Grain loss over the sieves	Excessive short straw on the sieves.	1. Reduce drum speed 2. Open concave 3. Remove concave blanking plates. (See C.M.O.M.) For other causes see C.M.O.M.
Stripping rotor torque limiter operating excessively	Rotor hitting the ground.	Raise header.
	Forward speed too fast.	Slow down.
	Crop too unripe.	Allow crop to ripen.
	Rotor rotating too slow.	Increase rotor speed. (See section 6.4)
Stripping rotor torque limiter operating before tacho audible warning heard.	Audible warning device rpm value set too slow.	Check value setting from graph. (See section 6.5) Check audible device is switched on. If the above is correct then recheck the value as in section operating the *Shelbourne* Header. (see section 6.5 & 6.8 performance monitor audible alarm speed adjustment)

PROBLEM	CAUSE	REMEDY
Crop wrapping in rotor ends and centre.	Anti-wrap plates out of adjustment	Adjust (see section 7.8)
	Anti-wrap plates not fitted	Fit plates
	Centre vee strip worn	Replace vee strip
Excessive back feed from feed elevator.	Combine feed chain too low.	Raise combine front feed roller. (see C.M.O.M.)
	Auger feed fingers not feeding well.	Adjust (see section 7.2)
	Combine cylinder speed too slow.	Speed up combine cylinder.
	Distance of feed elevator to auger too wide.	Move feed chain forward. (see C.M.O.M.)
	Problem is feed between top of elevator and cylinder.	Fit back feed kit to header. (KIT-00967).

SECTION 7 STRIPPER HEADER ADJUSTMENTS AND MAINTENANCE

7.1

AUGER SLIP CLUTCH SETTING

(Ref. Bulletin TSB-01012)
RX *Shelbourne* Headers have clutches fitted with 4 springs. The spring length is pre-set by a spacer to a length of 50mm.

CX *Shelbourne* Headers have clutches fitted with 6 springs. The spring length is pre-set by a spacer to a length of 55mm.

To check the adjustment of the springs:-

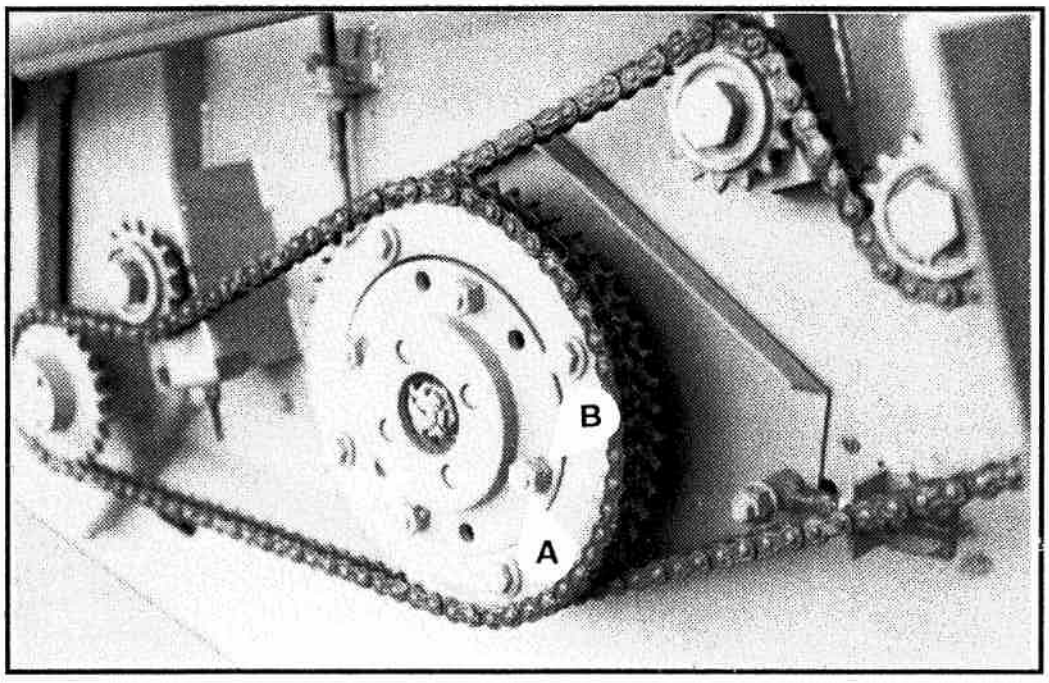
1. Loosen the locknut on each stud. See FIG 9.(A).
2. Turn the inner nut (B) until the spring is compressed to the length of the spacer.
3. Tighten the outer locknut.

⚠ Replace all guards.

Note;

If the clutch has slipped accessively the clutch plate teeth maybe worn, in such case they will need to be replaced.

FIG 9

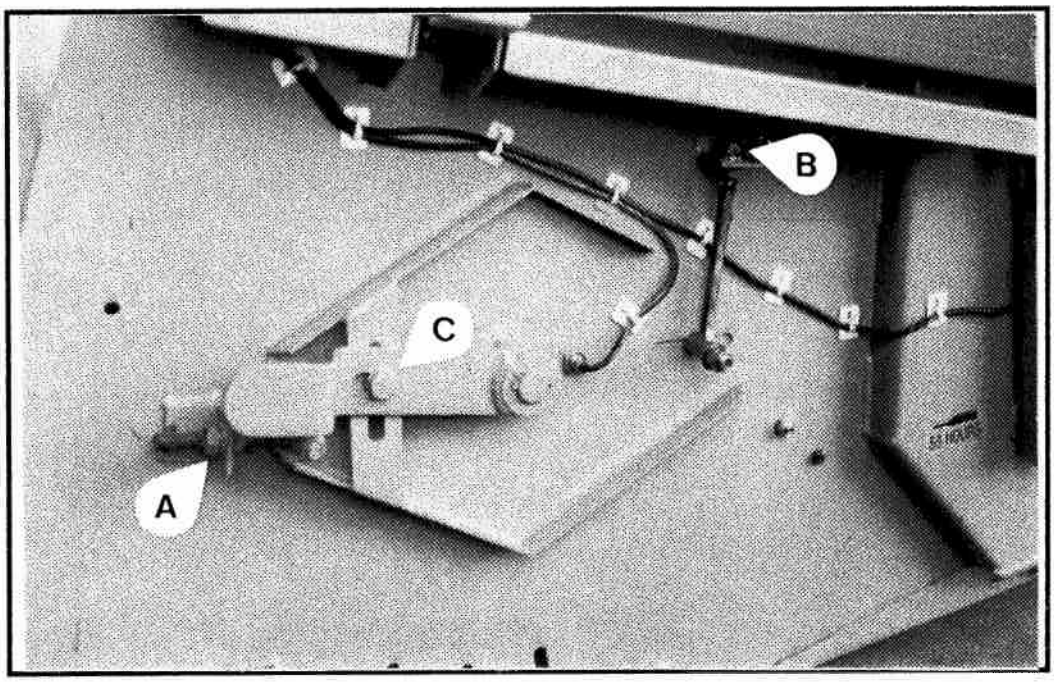


7.2

AUGER POSITION SETTING

The auger position is set at the factory. This pre-set position should be suitable for most crops and conditions, however, if the position needs to be altered the auger can be adjusted up or down FIG 10(B), and fore or aft, FIG 10(A).

FIG 10



NOTE: **When adjusting**, first slacken the drive chains, and all stripper plate securing bolts.

1. To **move up or down**, slacken off the auger support plate locking bolt and adjust stud 'B' as indicated. Adjust both ends of the auger equal amounts.
2. For **fore and aft** movements, slacken off the auger support plate locking bolt and adjust stud 'A' as indicated. Again adjust both sides of the auger equal amounts.
3. Tighten bolts and locknuts when adjustment is complete.
4. Reset auger stripper plates (see section 7.4).

IMPORTANT -

After adjusting the auger, it should be rotated by hand to ensure that nothing on the auger fouls. There is a fixed stripper angle on the frame to the back of the auger, it is not adjustable and the auger may have to be repositioned slightly so the flights do not foul on it.

5. Re-adjust the drive chains to correct tension.

⚠ Replace all guards.

7.3

AUGER FINGER ANGLE

The position of the auger finger retraction is pre-set at the factory. It is adjusted by opening the guard on the right hand side, slacken off the bolt on the handle as shown in FIG 10(C) and move the handle to the required position.

7.4

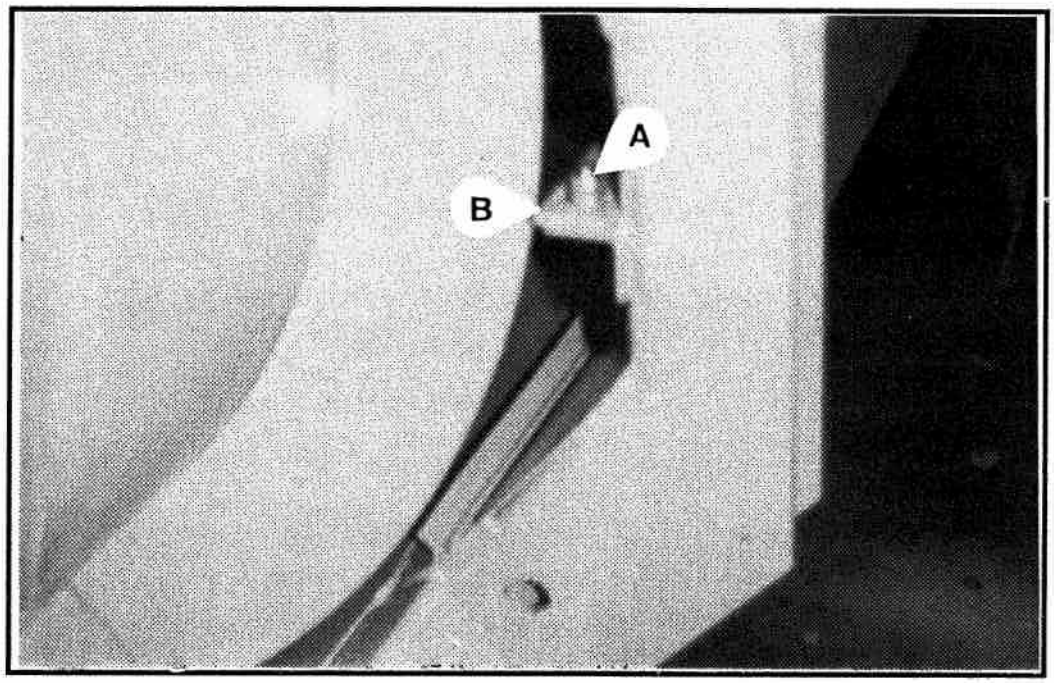
AUGER STRIPPER PLATES

There are two stripper plates each side of the header behind the auger across the width of the machine. The lower plate is fixed and cannot be adjusted, the upper rear stripper plate is adjustable FIG 11(B).

The upper stripper plates should be set approximately 3 to 5mm from the auger flight. They are adjusted by slackening all the bolts FIG 11(A) on the stripper plate and moving it on the slots before re-tightening.

The stripper plates on the adapter plate, are adjusted independently. These should be set back slightly in relation to the stripper plates on the frame so the crop does not catch on a leading edge.

FIG 11



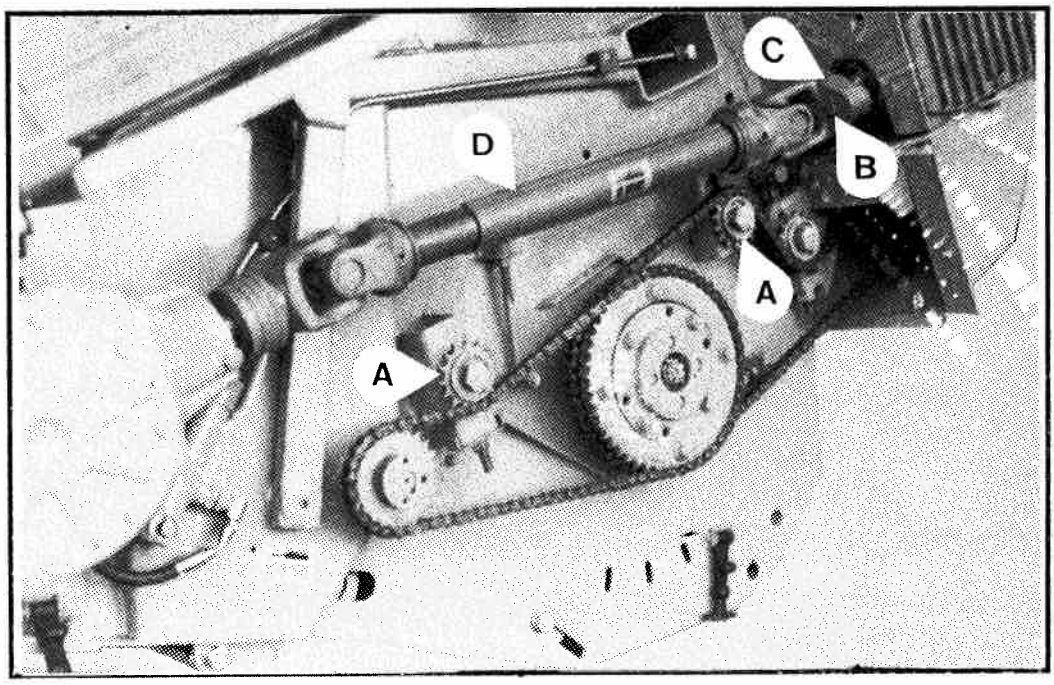
7.5

CHAIN TENSIONING

The auger and shakerpan (*RX* only) drive chains are all fitted with jockey sprockets and idler adjusters, so that the chains can be correctly tensioned. The position of the adjusting idlers is as shown in FIG 12(A).

To adjust the tension slightly loosen the centre idler support bolt. Then turn the nut on the adjusting stud to the correct chain tension. When complete tighten the centre idler support bolt, be sure to check that the chain tension does not increase as the support bolt is tightened.

FIG 12



7.6

STRIPPING ROTOR SAFETY CLUTCH

The rotor safety clutch is positioned as seen in FIG 12(C).
If the clutch operates, bolt FIG 12(B) must be replaced.

Use only Genuine Shelbourne Reynolds shearbolts.

⚠ Always stop the combine engine before replacing the shearbolt.

⚠ Replace all guards.

7.7

SHAKERPANS

The shakerpans are a low maintenance design. The speed and stroke are fixed and do not need adjusting.

The back edge of the pan rests on a wear strip and is held down with a link and tension springs.

7.8

STRIPPING ROTOR

⚠**CAUTION** - Block or fit header safety latch before carrying out adjustments on the rotor.
- Engage the front cowl stop to the left hand side arm.

Stripping elements

The plastic stripping elements, or crop engaging elements are sectioned into 600mm lengths, and secured with 4 bolts to allow replacement of individual sections.
On one side of the elements the corner has been removed. This face is mounted upwards (with Direction Of Travel), and will reduce the aggressiveness of the element when new.

Metal anti-wear plates bolt in front of the flexible plastic crop engaging elements, Fig.13 (B) these too are replaceable in sections.

Note; The joints of the plastic elements and metal anti-wear plates are staggered, therefore the ends are different to the centres and are handed left or right. This means different bolts need to be removed to change either the plastic element or the metal anti-wear plate.

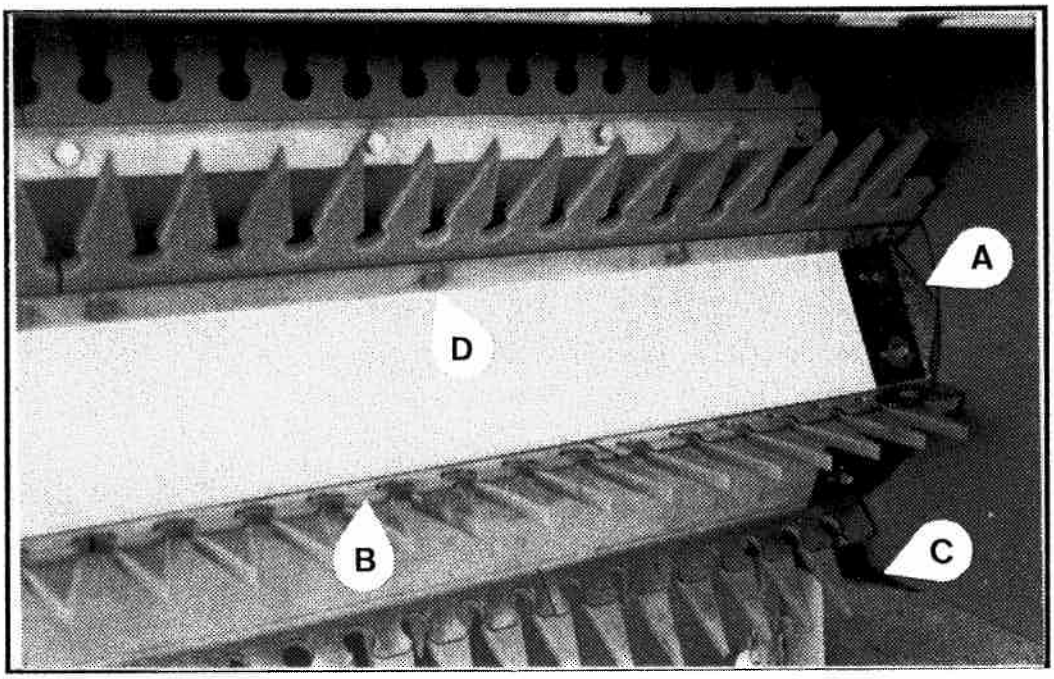
Anti-wrap plates

The ends of the rotor are fitted with a fixed dividing plate FIG 13(C) just below the rotor, and spring anti-wrap plates around the rotor circumference - FIG 13(A) to prevent the crop entering and wrapping in the rotor ends.

The spring anti-wrap plates around the rotor circumference are pre-set at the factory but if they need adjusting, follow the procedure below:

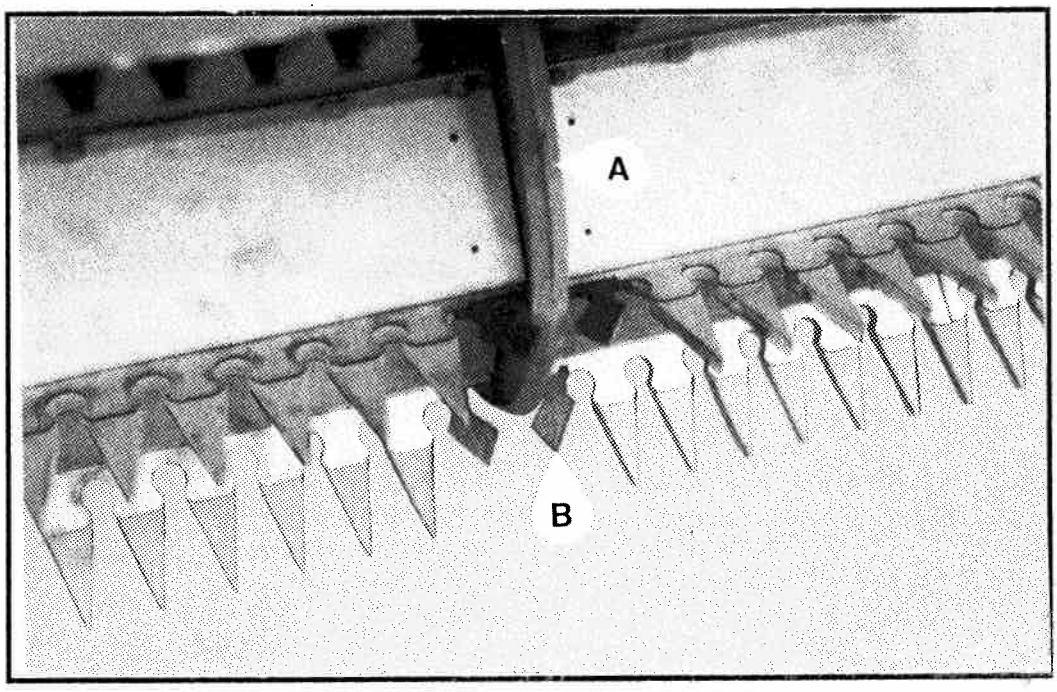
1. Loosen the two screws securing the plate as shown. FIG 13(A)
2. Push the anti-wrap plate to the machine side plate until the tip just touches.
3. Move the anti-wrap plate in a further 2mm, to apply slight spring pressure.
4. Tighten the two securing screws.
5. Repeat for the other plates.

FIG 13



The centre of the rotor is fitted with a replaceable `vee' divider plate FIG 14(A), and anti-wrap finger (B). It is important to ensure that the vee strip overlaps the finger as shown.

FIG 14



7.9

STRIPPING ELEMENT WEAR ASSESSMENT

During the first hours of use, it will be noticed that the corners of the plastic stripping elements will round off, this is normal. The plastic elements can be used until the distance from the end of the anti-wear plate to the tip of the element is about 20 to 15mm, stripping efficiency will be poor if they are worn more than this.
Do not reverse the plastic elements!.

The metal anti-wear plates should be replaced when the holes become distorted or enlarged by approx 50%.

All rows of elements do not have to be replaced at the same time. However it is important that at least 4 opposing rows have good shaped elements for effective stripping. The **selected rows must be opposite** each other to keep the rotor in balance (180 degrees). This along with the partially worn ones, will give effective stripping.

If a single finger breaks off a section of a stripping element, the other fingers on the other rows around the rotor will compensate for it and stripping will still be just as efficient.

If a few fingers break off in the same area around or along the rotor, then these stripping element sections should be replaced.

Procedure to replacing stripping elements and anti-wear plates:-

1. ⚠ If the machine is on the combine, lift header and securely block or engage lift ram safety catch.
2. Lift the front cowl with the combine hydraulics and engage safety stop.
3. Each individual stripping element and anti-wear strip is secured to the rotor by 4 bolts. Each section can be clearly seen by the joints. Note that the stripping element joint is staggered with the anti-wear plate joint.
   Remove the 4 bolts FIG 13(D) securing the element or the anti-wear plate, and pull from the rotor.

Important:-

To prevent bolt holes becoming mis-aligned and the rotor becoming out of balance, loosen, remove and replace no more than 1 or 2 sections from the rotor at a time, tightening as they are changed.
Sometimes it may be necessary to slacken the first bolt of the neighbouring element to release the one you want to remove.

4. Place the new section in position. If it is difficult to push into the rotor, it may be tapped into place with a small bar in the bottom of the stripping holes.
5. Replace the 4 bolts including the spring washer.

⚠ ***CAUTION*** - Nut Lock (loctite) or locking bolts must be used on the element section securing bolts.

Do not overtighten the bolts, when correctly tightened they should just nip up the stripping elements.
Torque setting is approx 17lb/ft.

Important:-

Do not remove the rotors from the header without consulting your dealer. The rotors should only be removed with reference to Bulletin TSB-01030. Failure to do this may result in rotor flexible coupling damage !

7.10

DROPBOX TYPE ROTOR DRIVE

Combine type - There are 2 select gears inside the dropbox, and an auger drive sprocket which determine the output speeds for the combine type. These must be changed for different combine models. Your dealer should be consulted if you require to change these as the gearbox cover has to be removed.
(Ref. Bulletin TSB-01035)

SECTION 8 LUBRICATION

Your *Shelbourne* Header is designed to reduce down time and therefore requires the minimum amount of lubrication.

Most of the bearings are of the sealed type, requiring no maintenance.

⚠ **CAUTION** - Stop engine before lubricating.

Chains

All chains as indicated, should be lubricated daily, and after work so that the oil will adhere to the chain to provide good lubrication.

Use an aerosol chain lubricant or SAE 90 gear oil.

Note: If your combine has a maize drive kit, with a chain to drive the header, this too should be lubricated daily.

Pivot points

It is recommended that all pivot points which may become stiff from corrosion should be occasionally oiled.

Short dropboxes

To check the oil level, the dropbox should be set vertically to the ground. This can usually be achieved by raising the header on the combine. The level plug is on the side of the gearbox.

Use oil type (synthetic) MOBILUBE S.H.C. or equivalent.

The gearbox capacity is 1.25 litre (2.2 pints).

Five speed gearbox

To check the level of the five speed gearbox, lower the header onto the skids, on level ground.

Remove the three thumb screws on the rear of the gearbox securing the back cover, and remove the back cover. Remove the oil level plug on the side of the gearbox. Replenish with (synthetic) MOBILUBE S.H.C. oil or equivalent. Give the oil time to run through the hole in the rear cavity to the front cavity to the level of the plug.

Replace the back cover.

The gearbox capacity is 1.25 litre (2.2 pints)

Bevel gearbox
To check the oil level the machine should be level i.e.. in the lowered position so the gearbox is at 30 degrees. Remove the dipstick in the top of the gearbox, and check the level with the marks on the stick. Use oil type (synthetic) MOBILUBE S.H.C. or equivalent.

The gearbox capacity 1.5 litre (2.64 pints)

***Note* - all gearboxes**
After the first 20 hours of use the oil should be drained from all gearboxes and replaced with the recommended type.

Oil should then be changed annually.

Only the recommended lubricant oils should be used.

Grease the following points at 10 hour intervals;

1. Universal joints.

Grease the following at 50 hour intervals;

1. Torque limiter.
2. Rotor end bearings.
3. Adjustable deflector pivot arm bushes.
4. Top cowl pivot bushes.

NOTE:- Grade of grease to be used - Mobilux EP3 or equivalent.

SECTION 9 STORAGE OF THE HEADER

The following procedure should be followed prior to off-season storage of your *Shelbourne* Header to preserve and protect your machine.

1. If removing the *Shelbourne* Header from the combine, support on the trailer, or on the back of the skids and the front stands provided to prevent header damage.

2. Thoroughly clean the interior and exterior of the header, as any chaff, straw and dirt left on the machine will draw moisture and cause corrosion.

3. Clean and lubricate all chains with oil.

4. Dismantle the auger slip clutch, check and lubricate before reassembly. When assembling leave the springs slack for storage, See Section 7.1.

5. Lubricate the machine thoroughly as described in the lubrication section of this manual.

6. Coat all the bright parts with paint or anti-rust preservative to protect them.

IMPORTANT:

Do not put any oil, paint, preservative etc on the plastic stripping fingers as it may damage them.

7. Retract the hydraulic rams of the front deflector.

8. Store the header in a dry place protected from the weather and rodents.

9. Use the combine operators manual for storage procedure of your combine.

SECTION 10

SHELBOURNE HEADER MONITOR INSTRUCTION

RDS

Shelbourne REYNOLDS

Header Monitor
Operation and Installation

Date: 18/01/96

Issue: 01c

Software Issue: ..... UDM 353-3

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Our policy is one of continuous improvement. The information in this document is subject to change without notice.

Conventions

This document uses the following conventions:

This typeface relates to an **operator action**.

LCd and *this typeface* relates to an **instrument response.**

NOTE Highlights additional information.

⚠ Highlights information which if disregarded, may increase the risk of data loss or damage to equipment.

WARNING! Highlights information which if disregarded, may increase the risk of personal injury.

ELECTROMAGNETIC COMPATIBILITY (EMC)

CE

This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.

The *Shelbourne Header Monitor* monitors and displays the running speeds of the Stripping Rotor Shaft and the Auger Shaft of the combine header. The speed of either shaft can be displayed at any time.

A suitable running speed under full load, should initially be determined for optimum performance in various crop conditions.

The instrument may be programmed to give an audible and visual warning, if either shaft speed drops below a preset value. The alarm speed may be set either manually or by auto-calibration.

System Components

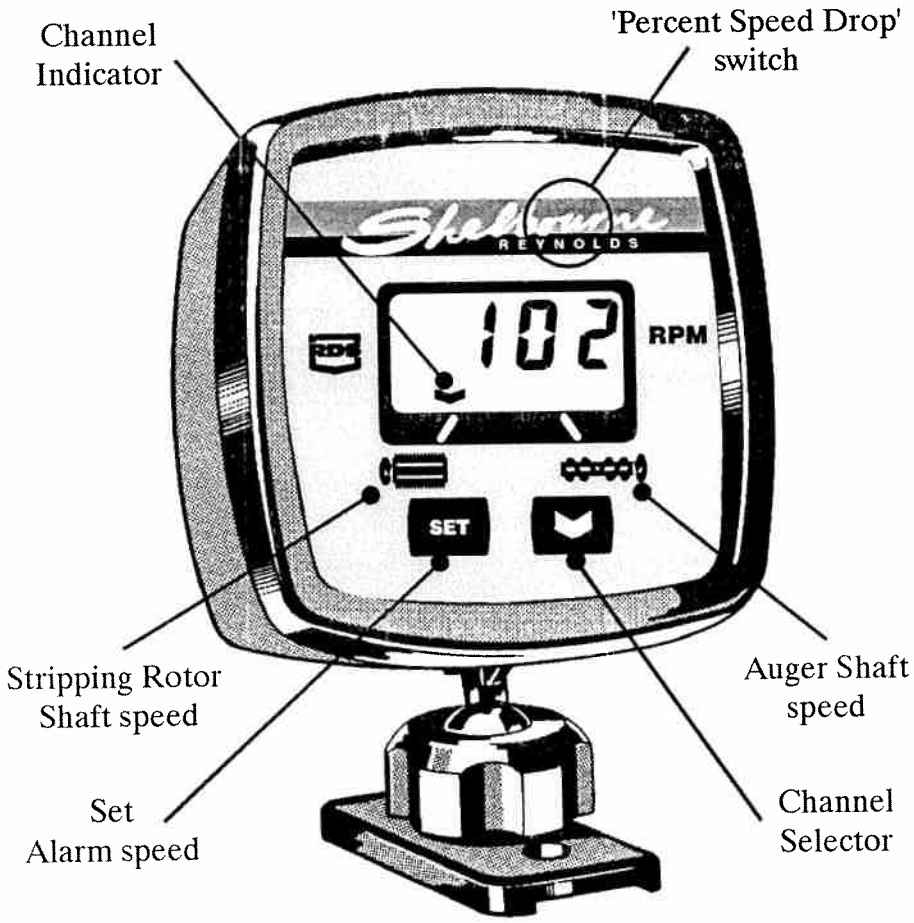
On the combine:

- The Instrument Head Unit
- A connection cable terminating at the header mounting point.

On the header:

- A connection cable from the header mounting point to the right-hand (non-driven) end of the header.
- Two shaft speed sensors and appropriate magnets.

Fig. 1 Shelbourne Header Monitor



Controls

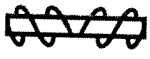
The instrument will normally be powered through the vehicle ignition circuit and will be on whenever the ignition is on. The display is permanently illuminated.

There are three push button switches on the front panel.

Channel Select

Press to select either channel. The channel is indicated by a chevron on the LCD display.

indicates Stripping Rotor shaft speed.



indicates Auger shaft speed.

Set

Press to display the alarm speed set on each channel

Press and hold in combination with  to programme the alarm speed.

'Percent Speed Drop' switch

The third switch is located beneath the '***our***' of the '***Shelbourne***' logo.

Press to display the % speed drop. This is the percentage below the stripping rotor 'no-load' speed at which the alarm sounds.

Normal Operation

Select and display Speed

Select either Auger shaft speed or Stripping Rotor shaft speed.

Shaft speed is displayed continuously.

Speed alarm

If the speed of either shaft drops below the programmed alarm speed, an alarm will sound and the display will default to the appropriate channel and flash.

The alarm will continue until either,

- the correct shaft speed is reached.
- Any switch is pressed to cancel the alarm.

Instrument settings

The alarm speeds are factory-set to 450 r.p.m. for the stripping rotor and 100 r.p.m. for the auger. The alarm speed for either shaft may be adjusted manually and for the stripping rotor, with an 'Auto-cal' procedure.

Manually setting alarm speed (either shaft)

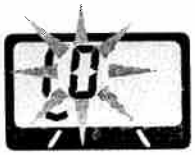
NOTE The shafts must be stopped.

1 Select the relevant channel.

2 Hold continuously. *The lefthand digit will flash.*

3 Hold to cycle to the desired digit, then release, otherwise press once.

The second digit will now flash.



4 Repeat Step 3 for the remaining digits.

'Auto-calibrate' alarm speed (Stripping rotor)

Initially, set a value for the '% speed drop under load'. The value is factory-set to 8(%) and may be adjusted within the range 0- 30(%).

1 Press and hold the 'Percent speed drop' switch (ref. Fig. 1)

Display shows the percentage below the stripping rotor 'no-load' speed at which the alarm sounds.

2 Adjust the value.

NOTE Run the stripping rotor at normal 'no-load' speed.

3 Hold until display changes, then release. *Auto-calibration start.*

Auto-calibration finished.

NOTE It is not necessary to repeat the 'auto-cal' procedure if the speed drop percentage is subsequently re-adjusted. The instrument will automatically re-calculate the new alarm speed, however it will need repeating if the stripping rotor speed is adjusted.

Total reset

If for some reason the data in the instrument is corrupted or the display shows 'PrOG' then the instrument must be totally reset.

1 Switch power off.

2 Press and hold all three control switches.

3 Switch power on.

4 Release all switches.

All instrument settings should be returned to the factory-set values. If the display shows 'PrOG' again, the instrument may be faulty and must be returned to the manufacturer for inspection and repair.

Head Unit

Location in cab

The instrument should be situated in the combine cab in any position convenient to the operator, such as in front of the driver, on the dashboard or suspended from the cab roof or corner pillar.

WARNING! **Do not position the instrument where it may obstruct the operators view or use of existing controls.**

Fixing the instrument pod

The pod foot can be positioned below, on top of, or on either side of the instrument.

To change the pod orientation,

1 Remove the large 'pozi-drive' 'screw from the rear of the pod.

2 Withdraw the inner head unit and turn through 90° or 180°. It may be necessary to re-route the cable underneath the fixing strap.

3 Re-assemble the pod and head unit, taking care to locate the cable grommet in the cable slot.

To fix the pod foot,

1 Remove the instrument pod completely from the pod foot, by undoing the large nut at the base of the instrument.

2 Fix the foot using two No. 8 x 5/8" countersunk self-tapping screws. These require two 3.5mm (9/64") holes.

⚠ Do not overtighten the fixing screws.

3 Re-mount the instrument pod to the foot.

⚠ Do not overtighten the fixing nut.

'Harting' Connector

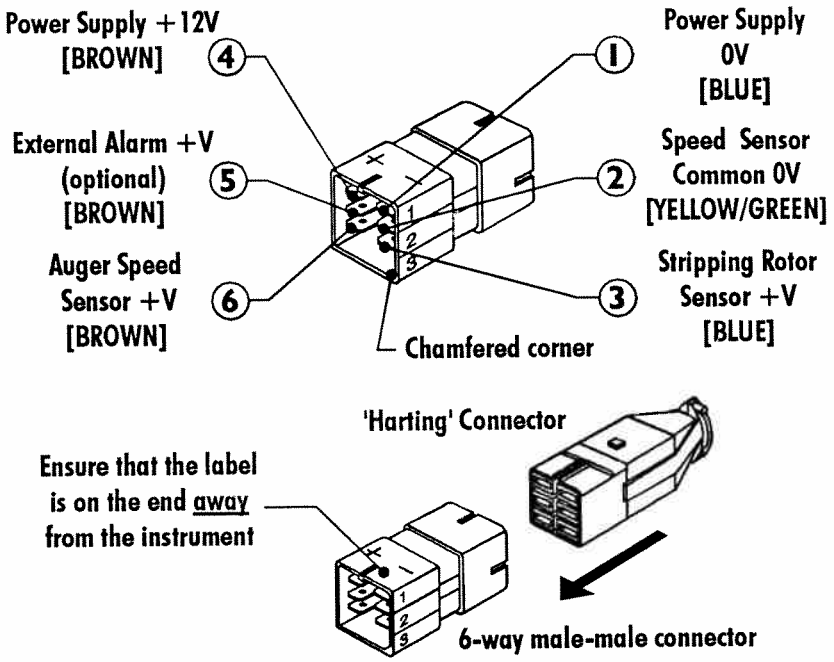
The head unit is supplied with a flying lead terminating in a 6-way connector plug.

Cables are connected to a mating 6-way male-male connector **shell**, to create a quick release connection between the instrument and the vehicle. This allows the head unit to be easily transferred to another vehicle.

A label on the connector identifies each terminal. Orientation is identified by a **chamfered corner** and a groove.

NOTE It will be easier to identify the connections by fitting the connector shell onto the flying lead before installation. The labelled end is fitted **furthest away** from the the flying lead.

Fig. 2 Instrument connections



Power supply

Use the two-core cable supplied with female push-on connectors at one end, a ring and a piggyback at the other end.

1 **Connect the blue wire to terminal 1 and the brown wire to terminal 4 of the shell connector.**

2 **Connect the piggyback connector to a +12v terminal at a switched, fused point on the vehicle electrical system. This may be at the fuse box or on the back of the ignition switch.**

⚠ **5 amp maximum fuse rating.**

3 **Fix the ring terminal under any convenient bolt head.**

NOTE Ensure a good earth connection. Check the bolt is fixed to an integral part of the vehicle chassis, free of paint, rust, grease etc.

External Alarm (optional)

This can be sited anywhere convenient to the operator, but must be protected from direct rain or hosing. It is secured by a single self-tapping screw.

Connect the brown wire to terminal 5 of the shell connector, and the blue wire, ring terminal under any convenient bolt head.

NOTE

Ensure a good earth connection. Check the bolt is fixed to an integral part of the vehicle chassis, free of paint, rust, grease etc.

Shaft speed Sensors

The two shaft speed sensors are identical. They are the black threaded-bodied, cylindrical devices.

They are each operated by a magnet fixed on the rotational part of the machine.

Stripping Rotor Speed Sensor

The Speed Sensor assembly (Fig. 3) is located on the **righthand** end of the header, when viewed from the cab.

Mounting the magnet

The magnet mounts in a *'End-mounted Magnet Carrier'* supplied.

1 Drill and tap a hole M6 x 20mm minimum depth in the end of the shaft.

2 Secure the End-mounted Magnet Carrier to the end of the Stripping Rotor shaft.

Mounting the sensor

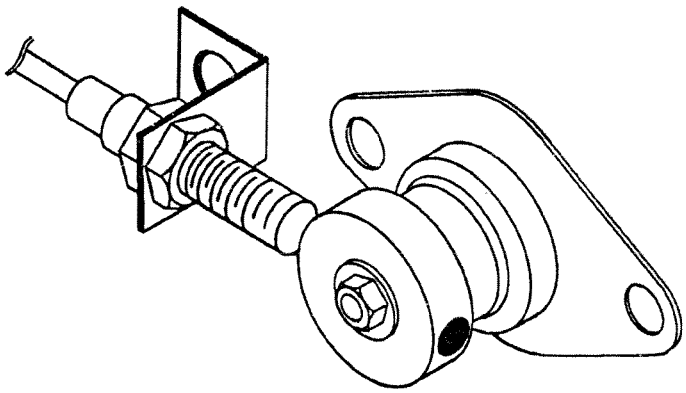
The sensor mounts in a special bracket supplied.

1 Secure and tighten the special bracket in position by fitting behind one of the shaft bearing-housing bolts.

2 Mount the sensor to the special bracket.

3 Adjust the sensor position so that there is a gap of 6 to 10 mm between the magnet carrier and the end face of the sensor.

Fig. 3 Stripping Rotor Sensor assembly



Auger Speed Sensor

The Speed Sensor is mounted on the **righthand** end of the auger shaft when viewed from the cab.

Mounting the magnet

The magnet is mounted in the end plate of the auger so as to pass the ends of the sensor.

If the magnet is positioned on a 67 mm radius it will sit snugly against the bearing flange plate on the end of the auger.

1 **Drill a hole 5.5 mm diameter in the auger end-plate.**

2 **Fit an M6 fibre washer between the magnet and the end plate.**

3 **Secure the magnet using an M6 Taptite bolt.**

⚠ Do not overtighten the fixing bolt.

Mounting the sensor

The sensor mounts directly in the auger bearing mounting plate.

1 **Drill a hole 12.5 mm diameter in the auger bearing mounting-plate. This hole should be 55 mm forward of the centre line of the auger.**

2 **Mount the sensor to the end plate.**

3 **Adjust the sensor position so that there is a gap of 10 to 20 mm between the magnet and the end face of the sensor.**

Sensor cable connection

Sensors are connected using three cable sections,

- A **combine** cable with three shrouded female terminals at one end. Routed from the instrument 'Harting' connector to the combine-header coupling point.
- A **header** cable with four shrouded male terminals at one end. Routed from the combine-header coupling point to the sensor cable terminals.
- **Sensor** cables supplied with the sensor units.

⚠ Ensure cables are fixed with adequate clearance from moving parts. Secure both cables to the header with cable ties and self-adhesive clips.

Fixing header cable

1 **Drill a hole 16mm diameter into the box section at the rear of the header.**

2 **Feed a length of stiff fencing or welding wire along the box section, to emerge with the hydraulic pipe at the right-hand end of the header.**

3 **Attach the wire to the end of the cable with the four male terminals.**

4 Feed the four male terminals into the box section towards the righthand end of the header and pull the cable through, using the wire.

5 Connect the sensor cables to the four male terminals.

Stripping Rotor Sensor	Blue	to Header cable	Yellow/Green
" " "	Brown	" " "	Blue
Auger Sensor	Blue	to Header cable	Yellow/Green
" "	Brown	" " "	Brown

6 Loop the three cables into an 'S' shape and secure with a cable tie to act as a strain relief.

7 Feed the connections back into the box section and ensure the cables are secured and tidy.

8 Fit a length of 'Spiroband' to the header cable to protect it from chafing where it passes through the hole in the box section.

9 Ensure the header-combine weatherproof cable connector is positioned adjacent to the other combine-header electrical/hydraulic coupling points.

Fixing combine cable

1 Route the combine lead tidily up the header trunking and into the combine cab, together with existing cables/hydraulic lines.

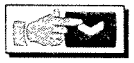
2 Connect the three female push-on terminals to the 'Harting' connector, following the connection diagram in Fig. 2.

Testing the system

1 Ensure that all wiring connections are firmly made.

2 Switch on. The display comes on and the alarm will sound a short single pulse.

3 Run the header mechanism. As soon as the shafts turn, the display will show a shaft speed.



4 Ensure that the speed is displayed correctly.

The instrument is factory set with alarm speeds of 450 r.p.m. for the header and 100 r.p.m. for the auger.

5 Run the machine up to full speed and ensure that both alarm speeds are exceeded.

6 Slow down the machine. As the speed drops below the alarm speed, the audible alarm will sound 6 times and the display will flash.