Operating Instructions & Parts List

Part No. 77172
Issue / Date: C / 1-2010

HD C Series identifying features:

- 1 Rib across body behind gearbox.
- Cast gearbox with 1.3/4" x 20 spline input shaft.
- **CR** version Body c/w Front & Rear Conveyor Belt Debris Guards.
- **C** version Body c/w Front & Rear Chain Guard as standard.

HD Series Rotaslasher

TRACPOWER N.Q. PTY. LTD.
P.O. BOX 5557 M.C.
TOWNSVILLE Q 4810

HOWARD AUSTRALIA PTY LTD ABN 96 002 960 778
Private Bag 5 SEVEN HILLS NSW 1730 AUSTRALIA
Telephone: (02) 9674 2966 Fax: (02) 9674 6263

THIS EQUIPMENT IS CAPABLE OF CAUSING SERIOUS INJURY OR DEATH IF MISUSED.

READ & FOLLOW ALL INSTRUCTIONS CAREFULLY.

1. SAFETY PRECAUTIONS

This section covers the prime safety issues relevant to the Rotaslasher. More detailed safety instructions and details of your responsibilities are referred to in the Safety Manual P/N 77113. Remember that your safety and the safety of others is at risk. Read the Rotaslasher and tractor operating instructions before using them together for the first time.

- The Rotaslasher has been designed and manufactured in its base configuration as suitable for AGRICULTURAL operation only. Other personnel, bystanders or road traffic are NEVER expected to come within 100m while operating. Operating this machine on, or near roadsides or in built-up areas or anywhere that bystanders or road traffic may occur will require additional guarding and adequate risk minimization measures. Additional guards against High Speed Ejected Debris are available in the form of Chain Curtains and/or Conveyor Belting. Refer to your dealer for assistance with selection of what is suitable.

Methods of minimizing the risks in relation to high speed ejected debris include:

- Additional chain or conveyor belt guards.
- Remove debris from area to be worked.
- Do not operate in excessively undulating areas.
- Work sloping areas in such a way that any debris is thrown below horizontal and away from any likely bystanders or traffic.
- Set high cut heights to avoid debris and adjust skids to suit. (Low cut heights, whilst economical as fewer cuts per year are required, can be dangerous as a consequence of all the debris likely to be picked up and thrown.)
- Reduce input rpm if suitable. Lower tip speeds will cause debris to travel less distances with less energy.
- Work only when, there is no passing traffic nor people around.
- Prevent bystanders or traffic from accessing the working area.
- Position signs and / or warning lights on vehicle or roadways to warn of risks.
- Stop forward travel when passing vehicles come within 100m.

- Be aware that the Rotaslasher is capable of ejecting debris at over 300 km/h and such debris can readily travel up to 200m if guarding has been removed.

- Ensure that all guards are in place before operating. If guards are removed for maintenance work, ensure they are replaced correctly upon completion. Repair or replace any damaged guards. Warning or instruction decals are to be kept in a readable condition; replace unreadable decals immediately.

- Do not allow people to stand directly behind the Rotaslasher or direct the discharge towards persons, animals, buildings or vehicles.

- Be alert for hidden obstructions.

- After striking an obstacle, stop the Rotaslasher completely and inspect it for damage. Ensure that the engine has been shut off, the PTO disengaged and the tractor key removed. Repair as necessary before continuing.

- NEVER place hands or feet under the Rotaslasher, or endeavour to make any repairs or adjustments, while the blades are rotating; this equipment is capable of inflicting serious injury.

- NEVER touch the blades or attempt to free any obstacle jammed by the blade beam while the tractor engine is running. The clutch may be slipping and removal of any obstruction may allow the blades to suddenly begin rotating with serious injuries being a very real possibility. Ensure that the engine has been shut off, the PTO disengaged and the tractor key removed.

- If working on the Rotaslasher whilst it is raised on the tractor's three-point linkage: Ensure that it is properly supported by blocks or stands, DO NOT rely on the tractor's hydraulic system to support the slasher. Ensure that the engine has been shut off, the PTO disengaged and the tractor key removed.

- Maintain the Rotaslasher in accordance with the given schedule and check for any damage after use. Particular attention should be given to blades and securing hardware due to the hazard they may present should any part of them break loose during operation.

- Disengage the PTO when transporting the Rotaslasher or when not in use.

- Park or garage the tractor with the Rotaslasher lowered onto the ground, the PTO disengaged and the tractor key removed.

2. INTENDED APPLICATIONS

The Rotaslasher has been designed and manufactured as a rotary slasher suitable for agricultural, scrub cutting and heavy mowing operations. Typical applications include:

- Topping of pasture.
- Crop residue shredding.
- Scrub clearing and re-growth control in areas such as fire access trails and under power lines.
- Mowing of roadsides, vacant land and parks are permissible applications **provided appropriate methods of minimizing any risks are undertaken.**

TYPICAL MAXIMUM CAPACITY

This is described in terms of green timber. Green implies either un-cut or cut within a few days. (Once timber dries out it generally becomes a lot tougher.)

- NUGGET Series – 22mm or 'Broom handle' diameter.
- HD Series – 32mm or 'Banana' diameter.
- EHD Series – 50mm or 'Coke can' diameter.

Note: As scrub or re-growth size being cut nears the capacity limit for each model, the volume input and forward speed will need to be decreased to suit the power available and extent of cut or mulch required.

Applications outside those listed must be subjected to a full risk assessment and risk minimization procedure including, consultation with both the manufacturer and any relevant authorities.

The Rotaslasher is capable of throwing obstacles and / or debris, large distances at high velocity. To ensure safety, it is the operator's duty to make sure that additional safety precautions are taken when operating this machine where:

- Bystanders or other personnel are within 100m at any time.
- The unit is used on roadsides for control of vegetation.
- The unit is operated within a built-up or municipal environment.

MODIFICATION OF THE ROTASLASHER FOR OTHER APPLICATIONS

The Rotaslasher should not be modified or altered. However, if it is necessary to effect modifications, all such modifications must be done by a competent person and be based on a risk assessment. All modifications must comply with the industry safety standard.

It should be noted that any person who does undertake a modification subsequently assumes the role and responsibilities of the designer and manufacturer. Additionally a review of operating instructions may be necessary following any modifications.

3. TRACTOR

The Rotaslasher must only be attached to and operated on a suitable tractor. The recommended tractor engine power for each model is detailed within SPECIFICATIONS. These are a guide to compatibility, based on field experience and the suitability of the Rotaslashers power transmission capability. Note however due to the wide range of tractor configurations available and variations in terrain to be worked, specific applications may need reviewing to ensure the following:

- ❑ The tractor has adequate power reserves for climbing gradients.
- ❑ Steering and braking control is maintained at all times.

Factors for consideration in relation to tractor compatibility include:

- Tractor power,
- Tractor mass,
- Tractor wheel track width,
- Two wheel drive or four wheel drive / front wheel assist,
- Tractor three point linkage lift capacity,
- Front counterbalance weights.

If you need assistance your dealer will usually be able to advise you if there are compatibility issues in relation to your application and recommend options available.

540 rpm PTO SPEED

The majority of Rotaslashers are manufactured for 540 rpm PTO and they must only be operated in this PTO speed setting. The 540 rpm PTO should be clearly identified by a decal and on the identification plate. (Any units suitable for 1000 rpm operation will be equally clearly identified.)

WARNING Operation at 1000 rpm can impart huge additional velocity into debris or in the worst case cause a blade to be lost. The additional velocity and energy may result in vastly more serious injuries or damage at distances easily up to 300m.

4. SPECIFICATIONS

MODEL	Recommended Tractor Engine Power			Cut Width cm	Cut Offset cm	Cut Height cm	Width Overall cm	Length Overall cm	Standard Weight (i) kg	Wheel Option kg	Chain Guard Option kg
	Min Mowing kW (HP)	Min Slashing kW (HP)	Maximum kW (HP)								
NUG100	15 (20)	20 (27)	34 (45)	100	0 / 7.5L	0 - 7.5 skids	113	118	140	45	N/A
NUG120	18 (25)	24 (32)		120	0 / 18L	0 - 7.5 skids [0 - 25 wheels (iii)]	134	139	171	45	N/A
NUG135	22 (29)	28 (38)		137	0 / 18L		151	152	250	45	N/A
NUG150L	24 (32)	31 (42)		152	0 / 17L		169	169	280	45	N/A
NUG150	24 (32)	31 (42)	56 (75)	152	0 / 17L		169	169	300	45	N/A
NUG180	32 (43)	42 (56)		183	0 / 18L		197	200	375	45	N/A
HD150C	29 (39)	38 (51)	80 (107)	152	0 / 21.5L	0 - 7.5 skids [0 - 25 wheels (iii)]	169	169	360	75	N/A
HD180C	36 (48)	44 (59)		183	0 / 21.5L		197	200	440	75	N/A
HD240	50 (68)	60 (80)		239	-	0 - 25 Wheels only (iii)	250	256 (ii)	900	(Incl. std)	55
EHD180	40 (54)	52 (70)	Unlimited - Provided clutch is set correctly.	183	-	0 - 7.5 skids [0 - 25 wheels (iii)]	200	195	650	75	45
EHD210	44 (59)	56 (75)		213	-	0 - 25 Wheels only (iii)	233	302 (ii)	925	(Incl. std)	50
EHD300	65 (85)	90 (120)		297	-		316	275 (ii)	1240	(Incl. std)	75
EHD360	72 (97)	96 (129)		361	-		380	300 (ii)	1365	(Incl. std)	90

Notes:

(i) Standard Weight includes wheels in some cases. Options fitted such as Height Control Wheels, Chain Guards, Support Stands etc will increase the weight and these may need to be considered as the additional weight is added well to the rear which can reduce the weight on the tractors steering wheels and may compromise the steering control.

(ii) Length overall measured from hitch pin to rear of tyre on height control wheels.

(iii) Nominal cut height only – skid runner will typically not permit true 0 cut height.

5. MODEL & SERIAL NUMBER

For reference record the model, serial number and date of purchase here.

Model: HD18Ø Serial Number: 46ØØ3-2Ø11 Purchase Date: 23 MAR 2Ø12

TRACPOWER N.Q. PTY. LTD.
P.O. BOX 5557 M.C.
TOWNSVILLE Q 4810

6. BEFORE OPERATION

i. **PRE-DELIVERY**
Final assembly and lubrication checks etc. should have been completed by your dealer, prior to you receiving the machine. Mechanically competent owners can carry out this process themselves, however be aware that Howard Australia can not be held responsible for errors and omissions if this process is not performed correctly or completely.
Note: The Pre-delivery process does not include commissioning - refer below.

ii. **COMMISSIONING**
Your dealer is responsible for the installation and explanation of operation, maintenance and safety issues relating to the Rotaslasher.
Ensure this is carried out and the Machine Commissioning and Warranty Registration Form (Form No 1040) is completed, signed and submitted.

iii. **OPERATING INSTRUCTIONS**
Read the "Rotaslasher Operating Instructions" to familiarise yourself all aspects of the Rotaslasher.

iv. **BEFORE USE MAINTENANCE**
Carry out 'Before Use Maintenance' as detailed in the Maintenance Schedule.

v. **ASSESS RISKS**
For new equipment and / or new working environments carry out a risk assessment and implement the appropriate risk minimisation procedures.
Suitable risk minimization procedures in relation to high speed ejected debris are detailed in Section 1. SAFETY PRECAUTIONS.
See also Section 7. RISK ASSESSMENT.

7. RISK ASSESSMENT

Identified Hazard	Existing Safety / Hazard Control Features	Notes
Entanglement in power transmission components. (Drive shaft, splitter shafts and clutches.)	Standard guarded PTO shaft. Clutch cover / guard. Guarded splitter shafts on twin spindle units.	Maintain all transmission guards in working order. DO NOT OPERATE ROTASLASHER unless all guards are fitted and functional.
Entanglement or contact with working blades.	Blades / cutting elements fully guarded from above by body shell and on sides by skids. Front and rear openings to allow material in / out are major hazards. (The extent to which these openings are guarded depends on application and functionality requirements.) Danger decal attached.	Keep operator, all bystanders, maintenance personnel etc. well clear whilst blade beam is rotating – even while slowing down after turning off tractor engine. Keep Rotaslasher on the ground until PTO has stopped before lifting. Stay on tractor and wait until PTO has stopped before getting off tractor.
Ejection of debris causing injury to personnel or damage to property.	Blades guarded to minimize the ejection of debris. Chain guards available for applications requiring higher levels of guarding to reduce ejected debris. Danger decal attached.	**Can not prevent 100% ejected debris!!!** Bystanders must be kept clear while operating. See also 'Methods of minimizing the risks in relation to high speed ejected debris' in Section 1. SAFETY.
Rotaslasher falling onto maintenance personnel.	Maintenance personnel to provide suitable and stable secondary support in addition to tractor linkage or hoist supporting machine. Ensure hoist is attached to suitable (strong) points on Rotaslasher – for example the linkage pins.	Do not overlook gravity, it is often forgotten with many injuries as a consequence.
Injury while attaching machine to tractor.	Governed by tractor operator competence.	Do not allow anyone assisting to stand between the tractor and Rotaslasher and keep all limbs out of this area.
Environmental Issues: Sunburn / Skin cancer Dust inhalation Abrasion injuries Prolonged noise exposure	Use Personal Protective Equipment (PPE) as necessary for specific application and environment.	Consider requirements for; Hat, protective clothing, sun screen cream, sun glasses / safety glasses, dust mask, appropriate foot-ware, hearing protection and gloves for maintenance work.

8. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Whilst operation of the Rotaslasher from the confines of a tractor cab requires minimal PPE, not all applications and tasks are as pleasant and safe. Consideration must be given to PPE suitable for the particular operation and equipment in use. Remember that performing any task whilst uncomfortable is likely to resulting additional haste and omissions that could compromise safety. Typical PPE requirements to be considered are, but not limited to:

- ❑ Hat, appropriate clothing and sun-screen cream may be necessary, should protection from prolonged exposure to the sun be required.
- ❑ Sun Glasses / Safety Glasses should sunlight / dust debris require these.
- ❑ Dust Mask for dry dusty slashing operations.
- ❑ Suitable Clothing.
  For working with and around machinery, avoid loose fitting clothing that could catch on machine elements.
  High visibility clothing may be appropriate if working in the vicinity of other machinery or traffic.
- ❑ Suitable foot-ware. Enclosed foot-ware is a minimum and boots or heavy shoes are recommended.
- ❑ Hearing Protection. These may be necessary if tractor or location is overly noisy.
- ❑ Gloves. For maintenance work.

---

9. GUARDS

Rotaslashers are equipped with a variety of guards designed to:

- Prevent accidental contact with machine elements that could cause entanglement and / or injury.
- Control / prevent debris being ejected from the cutting chamber at high speed.

ALL GUARDS MUST BE FITTED WHILST OPERATING THE ROTASLASHER !

---

10. ATTACHMENT TO TRACTOR

i. Attach the Rotaslasher to the tractor three-point linkage.
[On the NUGGET models, use the upper linkage slot when working and hole when transporting the machine.]

	WARNING. The tractor driver must be competent with respect to manoeuvring the tractor back up to Rotaslasher to connect the linkage and be able to clearly and safely instruct any assistant when to stand clear or engage the linkage pins.

ii. Connect the drive shaft and attach safety chain to prevent covers rotating.
(Refer Section 11. DRIVE SHAFT INITIAL FITTING if required.)

	WARNING. Before attempting to connect the drive shaft, disengage the PTO drive, turn off the tractor and remove the key.

iii. Level the tractor's lower linkage arms, such that the Rotaslasher is horizontal left to right.

iv. Tension both stabiliser chains to limit lateral movement. Limit movement to 25mm in good conditions, however in conditions with obstacles it is advisable to allow more lateral movement as this permits the Rotalasher to 'swing' sideways and pass around obstacles. Note that the maximum lateral movement permitted must not allow the linkage arms or the Rotaslasher to come in contact with the tractor tyres.

v. Raise the three point linkage slowly to full height and check;
a. the Rotaslasher or tractor linkage arms do not foul the tractor tyres,
b. drive shaft does not foul on any member of tractor or Rotaslasher,
c. drive shaft angles do not become excessive, (Greater than 35 degrees.)
d. drive shaft halves do not separate,
e. drive shaft sliding sections do not "bottom out".
If any of these are a problem, it may be necessary to limit the maximum lift on the tractor lift lever quadrant and / or adjust the lengths of the drive shaft sliding members.
(Refer also Section 11. DRIVE SHAFT INITIAL FITTING.)

	WARNING. Ensure PTO drive is disengaged and is not rotating before raising the three-point linkage. Raise the linkage from the drivers seat. An assistant or observer if required, must be sufficiently clear so as not to become entangled or trapped between the Rotaslasher and tractor wheels or any other adjacent obstacle.

vi. Set the three-point linkage draft control on the tractor to 'float'. This will ensure that the slasher can float over ground undulations.
Note that a chain top link is desirable if working conditions have severe undulations.

vii. Set Rotaslasher cutting height to that required.
(Refer Section 12. ADJUSTMENTS - CUTTING HEIGHT.)

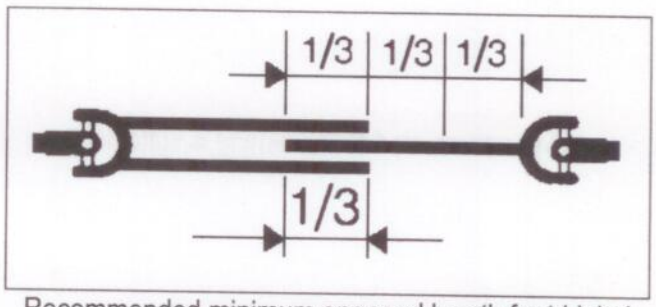
11. DRIVE SHAFT INITIAL FITTING

If the tractor and Rotaslasher have never been used together before, proceed as follows:

i. Separate the inner and outer halves of the drive shaft.

ii. Attach the tractor half of the drive shaft to the tractor PTO output shaft and the Rotaslasher half to the gearbox input shaft.

iii. With the Rotaslasher in the working position hold the shaft halves parallel to each other to check that the two sections of the drive shaft neither close right up nor extend such that less than 1/3 of the sliding section engaged.

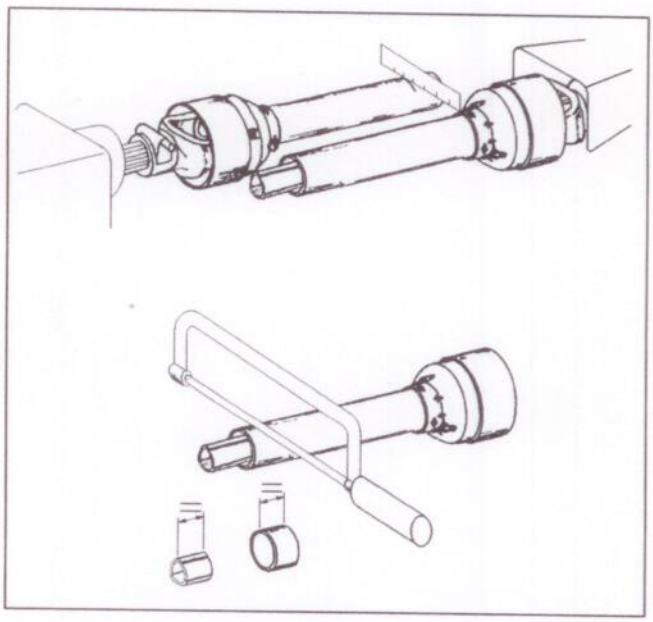


Recommended minimum engaged length for tri-lobal or 4-tooth style drive shafts.
(Note: Shown unguarded schematic style for clarity of information.)

iv. Repeat step iii. with Rotaslasher in:
Fully raised position.
Half raised position.

WARNING! Refer to Safety Precautions with regard to working on Rotaslasher when raised on tractor three point linkage.

v. If the drive shaft is too long, cut equal amounts off both inner and outer half shafts (including guards) using a hacksaw or drop saw. De-burr and clean shafts of any filings then apply grease to steel sliding contact areas of shafts.



vi. If the drive shaft is too short, contact your dealer, as it will be necessary to replace some drive-shaft components with suitably longer parts.

vii. Follow step 10.v.

12. ADJUSTMENTS

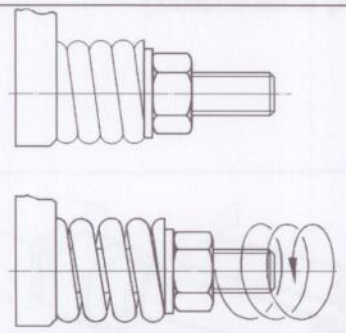
CLUTCH SETTING

The friction plate clutch is to be set such that it will not slip in normal working conditions, but will slip should any significant obstacle be struck. The initial clutch setting given is a guide only and may need to be varied, depending on local conditions. NOTE: DURING INITIAL USE, CHECK CLUTCH REGULARLY FOR OVERHEATING OF THE CLUTCH. The clutch will 'bed in' and require re-setting after a short period of use. Failure to do this may result in excessive wear of the clutch components - see UNDER-TIGHTENING.

UNDER-TIGHTENING of the clutch springs will cause unnecessary slippage of the clutch which will result in excessive wear of plates and eventually complete failure of clutch components due to overheating. In normal obstacle free operation the clutch should be no hotter than the gearbox. If the clutch overheats, increase clutch spring compression by 1/4 turn on each nut and re-check clutch temperature after a short period of work and re-adjust if necessary. [Note: In light conditions it may be necessary to continue working for 15-30 minutes to determine if clutch setting is suitable, however in heavy conditions 25 meters of distance should be sufficient work to check clutch setting.] WARNING - Do not over-tighten clutch.

OVER-TIGHTENING of the clutch springs will not allow the clutch to function correctly, possibly resulting in torque induced shear failure of drive line components, should an obstacle be encountered.

INITIAL CLUTCH SETTING



Model	PTO rpm	Tighten nuts to coil bind springs then back off nuts as shown below.	
EHD	1000	4 turns	If clutch overheats in normal operation tighten each nut 1/4 turn and re-check after further work. **Re-adjust if necessary**
EHD210 @ 95hp+	540	1 turn	
EHD	540	3 turns	
HDC & HD240	540	3 turns	
NUG	540	2 turns	

NOTE: Failures of UNIVERSAL DRIVE-SHAFT, CLUTCH, or GEARBOX that are attributable to incorrect clutch setting, ARE NOT COVERED BY WARRANTY.

ADJUSTING CLUTCH SETTING TO SUIT WORKING CONDITIONS

The recommended procedure to 'fine tune' the clutch setting to suit the tractor and working conditions is as follows:

i. Set the clutch to the recommended initial setting – err on the low side.

ii. Work the Rotaslasher in normal to heavy conditions for 10 – 20 meters.

iii. Shut down tractor and wait until the PTO stops turning, then get off tractor and check the clutch temperature.

iv. If it is heating up due to slippage, tighten adjusting nuts ¼ turn.

v. Repeat steps ii – iv until no further heating occurs.

CLUTCH SETTING & ADJUSTMENT continued.

SEIZURE of the clutch can be caused by rusting of the steel clutch plate facings due to atmospheric moisture and/or rain. Seizure of the clutch may cause it to function incorrectly, possibly resulting in torque induced shear failure of drive line components, should an obstacle be struck. To prevent this occurring it is necessary to periodically 'free the clutch' and ensure that it slips, then reset it. To 'free the clutch' follow steps below:

i. Slacken off the clutch springs until compression in springs is almost nil.

ii. Connect the slasher to the tractor and engage the PTO drive and ensure clutch spins freely (does not drive the blade beam). This will also polish any rust from clutch plate facings.
WARNING! Refer to SAFETY PRECAUTIONS in relation to performing this maintenance work.

iii. If the clutch will not disengage it may be necessary to remove it from the slasher and clean or repair as required.

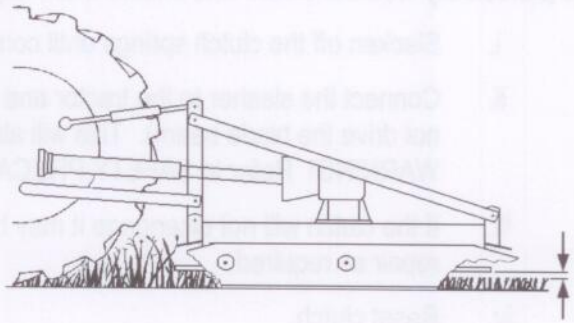
iv. Reset clutch.

ADJUSTMENTS continued.

CUTTING HEIGHT – BLADE CLEARANCE

Adjust the Rotaslasher skids and tractor three-point linkage so that the required cutting height is achieved. The following 2 points should however be considered:

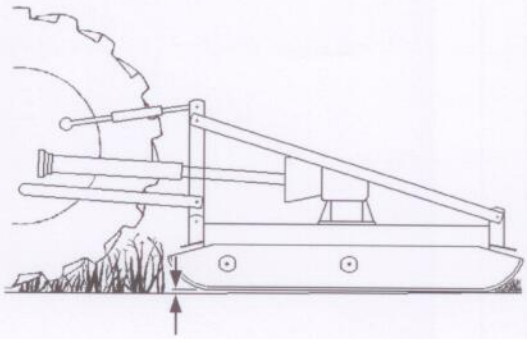
i. **FORWARD CUTTING** For predominantly forward cutting the blades should cut 1-2cm lower at the front of the slasher than the rear. This will prevent blades back cutting, reduce blade wear and 'dust' and lower the power required. (See figure to right.)



ii. **FORWARD & REAR CUTTING**
It is advisable to adjust the linkage and slasher so that the blade beam is cutting horizontally.

CUTTING HEIGHT - ADJUSTMENT WHEN USING SKIDS

On level ground set the slasher to the required cutting height taking into account points i & ii above plus give the leading edge of the skid approximately 5-7mm of clearance as shown in figure. This clearance will reduce drag of Rotaslasher and reduce skid wear and turf damage. Note: Lift the Rotaslasher just clear of the ground when turning in a tight radius to prevent damage to the skids and/or turf.



NOTE:

- ❑ When slashing level ground it is possible to support the slasher almost fully on the tractor three-point linkage thus minimising skid wear and turf damage. However on undulating ground where an even cut height is required the backstay chains or chain top link (if used) must have sufficient slack to permit the rear of the slasher to follow the ground contours.
- ❑ When cutting height adjustments are set up correctly the top of the skids may not be parallel to the top of the slasher body.

CUTTING HEIGHT - ADJUSTMENT WHEN USING WHEELS

On level ground adjust the Rotaslasher height control wheels and tractor lower linkage arms to give the required cutting height taking into account points i & ii above. Then extend the three-point linkage top link such that there is sufficient slack in the Rotaslasher chain backstays to allow the Rotaslasher to follow the ground contours. Adjust the skids to give suitable clearance between the underside of the skid and the ground. (Typical clearances are: front - 5-7mm, rear - 10mm. Excessive clearance will allow potentially dangerous ejection of material from under the Rotaslasher.)

13. OPERATION

i. Before proceeding further, refer to 1. SAFETY PRECAUTIONS and 6. BEFORE OPERATION.

ii. Attach the Rotaslasher to the tractor (Refer Section 10. ATTACHMENT TO TRACTOR), then make adjustments as required (Refer Section 12. ADJUSTMENTS).

iii. Prior to commencing work, carry out a Pre-Operation Inspection to ensure the safety of both the operator and any bystanders or other nearby personnel. A record of this inspection should be maintained and a suitable form can be found on the following page.
This form can be modified to suit individual operations and is available from Howard Australia in a word or doc format for editing as required.

iv. Lower the Rotaslasher, **engage PTO drive with tractor at idle,** then bring tractor up to operating rpm with the hand throttle (**500-540** rpm on the PTO) then move off in a gear to give a travel speed to suit the conditions.

NOTES:

Do not use the foot throttle.

Ensure that PTO rpm is in the 500-540 rpm range either by ensuring that the 540 rpm PTO gearing is engaged or engine speed is adjusted to produce 540 rpm PTO maximum. Excessive PTO rpm (for example 1000 rpm) significantly increases the forces on blades, blade beam and all fixings and could contribute a component failure with consequential risks associated with any ejected component. Excessive PTO rpm also significantly increases the energy of any ejected debris which could cause additional injury, damage or travel further. (At 1000 rpm PTO the energy of any ejected debris is approximately 240% more than at 540 rpm.)

Operation with PTO rpm below 475 can result in Rotaslasher blades 'lagging' in heavy conditions or being flung back against the beam centre leaf. (Refer to Section 15. PROBLEM SOLVING.)

Rotaslasher PRE-OPERATION Inspection

Date: _____ Model: HD180 Serial No. ~~or Plant no.~~ 46003-2011

Before conducting the inspection:

- Make sure the tractor engine is off, the key is removed, the tractor is in park with parking brake engaged.
- Ensure all PTO rotation has stopped.
- Make sure the Rotaslasher is resting on the ground or securely blocked up and any hydraulic pressure in auxiliaries has been relieved.

Item	✓	Comments / rectification requirements.
Drive-shaft securely attached to PTO & Rotaslasher.		
Drive-shaft sliding members & joints are lubricated.		
Clutches are in good condition; not frozen.		
Drive-shaft /gearbox guards are in good condition.		
Gearbox mounting bolts are tight.		
Gearbox oil is at the proper level.		
Blade carrier retaining nut is tight.		
Blades are not chipped, cracked or bent.		
Blade bolts are tight.		
The Operator's Manual is in the canister on the Rotaslasher.		
All safety decals are in place and legible.		
The hitch pins are all secure.		
The deck is clear of excessive cut grass and debris.		
Chain guards/deflectors are in place & in good condition.		
NOTES: _____		

DO NOT OPERATE an UNSAFE ROTASLASHER or TRACTOR.

Operator's Signature: _____

14. MAINTENANCE

- The Rotaslasher must be inspected and maintained in accordance with the following maintenance schedule and instructions. All problems identified must be rectified prior to use.

- Replacement parts must be to Howard's specifications, or equivalent. Alternative suppliers components void warranty and any injury or consequential damage are entirely the responsibility of the person approving the use of non genuine components.

- Maintenance and any necessary repairs must be carried out by a suitably competent person.

MAINTENANCE SCHEDULE	Before Use/ Every 8hrs	First 50hrs	Every 50hrs	800 hrs or Yearly
PRE-OPERATION INSPECTION Carry out Pre-Operation inspection. (Refer Form on previous page.)	☑			
BOLTS Check fasteners for tightness. (Refer BOLT TIGHTENING TORQUES)	☑			
PTO SHAFT Clean & regrease sliding members. (a) Grease universal joints, 2 points. (a) Grease guard slipper bearings. Oil lock pins - 2 points. Check for excessive wear.	☑ ☑		☑ ☑ ☑	
CLUTCH (Refer 12. ADJUSTMENTS) Check setting & operational temperature. Check for worn friction plates. (b) Free clutch. (c)	☑		☑	☑
GEARBOX Check oil level. (d) Change oil. (d, e, f)	☑	☑(e)		☑(e)
BLADE BEAM Check fasteners are tight. Check for wear on blades & beams – replace as required. (g) (h)	☑ ☑			
EJECTED DEBRIS GUARDING Check for flap wear / broken guard chains.	☑			

MAINTENANCE NOTES:

(a) Grease Type MP (Multipurpose) grease is satisfactory, unless it is a very tacky variety, which may inhibit the free movement of the sliding members.
Grease containing solid lubricant particles such as molybdenum disulphide is recommended for use on the sliding members however it is not recommended for use in the drive-shaft universal joints.

(b) Friction Discs. Replace discs if badly scored, worn or cracked. On HD's or EHD's replace sintered bronze discs if sintered bronze facings are less than 0.4mm (0.015") thick.

(c) Free Clutch. Release tension on springs and rotate clutch to remove rust etc - refer adjustments.

(d) Gear Oil	NUG100, 120, 135, 150L.	NUG150,'180 HD240 Spindle G'Boxes	HD C Series	HD240 Splitter G'Box (Twin Spindle)	EHD Series	EHD Series Splitter G'Box (Twin Spindle)
Gear Oil Spec.	SAE 85W140 EP					
Oil level Indicator (Note 1)	Level Plug on rear of gearbox.	Level Plug on rear of gearbox.	Level Plug on rear of gearbox.	Level Plug on rear of gearbox.	Dipstick on filler / breather.	Level Plug on rear of gearbox.
Fill Qty (Approx.)	0.77 litres	1.12 litres	1.4 litres	1.1 litres	4.1 litres	2.5 litres

Notes
1. To correctly identify the correct 'Oil Level Plug' these typically indicate the oil level in line with the input shaft axis or near the bottom of the input shaft.

(e) Oil Change Interval. For low to moderate use (up to 250 hrs per year) and provided the slasher has been stored out of the weather, any of the following oils can be expected to last 5 years before changing is necessary. AMPOL AP 85-140, **CASTROL EPX 85W-140 factory fitted lubricant to HD's & EHD's**, CASTROL HSR460 U/L or Alpha SP320, CALTEX Thuban EP 85W-140, MOBIL Multilube HD 85W-140, SHELL Omala 320.
The most likely causes of oil breakdown, which will necessitate more regular oil changes, are:

- Moisture ingested into the gearbox, usually by condensation.
- Excessive oil temp (over 90°C) for an extended period.

Note: Regular checks of the oil level as indicated in the maintenance schedule are essential.

(f) Changing Oil. Drain oil from gearbox while still warm after work. WARNING! If gear-case is too hot to hold hand against oil may burn unprotected skin. Allow to cool or use appropriate gloves / clothing.
NUGGET & HD C Series. Lift the front of the Rotaslasher using a suitable crane or hoist attached to the lower link pins to stand body vertically and drain oil from gearbox via the level plug.
EHD Series. Drain plug is on the spindle housing underneath the Rotaslasher.

(g) Blade Fasteners. If checking or replacing blades whilst Rotaslasher is supported on the tractor linkage ensure appropriate secondary or backup support is used should tractor linkage fail or slowly drop.
For safety reasons, blade bolts, nuts and journals be replaced as a kit. Ensure rust or debris is removed from blade and journal fixing seat areas before fitting and tightening fasteners – failure to do this can cause material to eventually fall out with subsequent loss of fastener tightening torque.

MAINTENANCE NOTES (cont.)

(h) Replacement parts. These must be to Howard's specifications. Alternative suppliers components void warranty and any injury or consequential damage are entirely the responsibility of the person approving the use of non genuine components.

BOLT TIGHTENING TORQUES

Bolt Size	Nm	ftlb
M10	44	32
M12	77	57
M16	200	150
M16 (HD & EHD Blade Beam/Spindle, Gearbox/Body)	260	195
M20 (Excluding EHD210, 300, 360 Headstock Pivot Bolt)	370	275
1/2" UNF (MD B Series clutch fixing)	100	75
3/4" UNF (Blade Bolt x 2)	200	150
7/8" UNF (EHD Clutch Plate Fixing - P/N 610408 x 1)	400	300
(Clutch Adjusting Nut x 6)	Refer CLUTCH SETTING	

15. STORAGE & TRANSPORT

Storage recommendations for the Rotaslasher are:

- Store under cover to limit; corrosion, UV degradation of drive-shaft guards and moisture ingestion into gearbox.
- Store in a location which allows suitable access when attaching and detaching the Rotaslasher from the tractor.

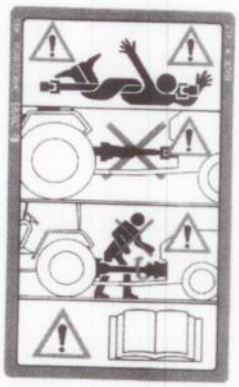
When transporting the Rotaslasher ensure that it is securely tied down. Note that if carried on a metal truck or trailer deck the metal skids on the Rotaslasher provide negligible frictional restraint in transit.

16. PROBLEM SOLVING

PROBLEM	CAUSE	SOLUTION
Vibration	Damaged blades. Damaged beam. Bent spindle. Worn spindle bearings. Twisted PTO Shaft. PTO shaft crosses worn. Lifting too high with PTO engaged.	Replace. Replace. Replace. Replace. Replace Shaft Section. Replace. Disengage/Reduce Lift.
Drive Shaft Failures	Inadequate lubrication of sliding members. Incorrect lengths of sliding members. Incorrect clutch setting. Over lifting Rotaslasher while drive shaft rotating. Working Rotaslasher using tractor foot throttle.	Clean and lubricate as per maintenance schedule. Shorten or replace as required. Adjust correctly. Allow PTO drive to stop prior to high lifts. Work all implements with hand throttle and select gear to give required travel speed. (Use foot throttle only for road transport.)
Clutch Overheating	Incorrect setting. Friction discs worn. Machine overworked.	Reset. Replace. Reduce work rate or use a smaller tractor.
Gearbox Noisy	Worn bearings in gearbox. Backlash not correct.	Dismantle gearbox & replace. Dismantle gearbox & adjust.
Gearbox Leaking Oil	Damaged seals or gaskets. Bent output spindle.	Replace seals/gaskets. Replace spindle.
Blade Wedges	Low operating RPM.	Increase PTO to 540 rpm.
Blade Bolts Wearing	Journals worn. Blade bolts not tight.	Replace journals, bolts and nuts. Tighten.
Excessive Blade Wear	Excessive blade speed. Cutting height too low. Sandy or stony conditions.	Check PTO rpm is 540 rpm max. Raise cutting height. Accept wear or raise cutting height.
Scalping	Cutting height too low. Linkage pins worn.	Raise cutting height. Replace.
Excessive Skid Damage to Turf &/or Skid Wear	Too much reliance on skids for support of slasher. Linkage pins worn.	Increase support of Rotaslasher on the tractor linkage, fit a rear height control wheel or rollers. Replace.

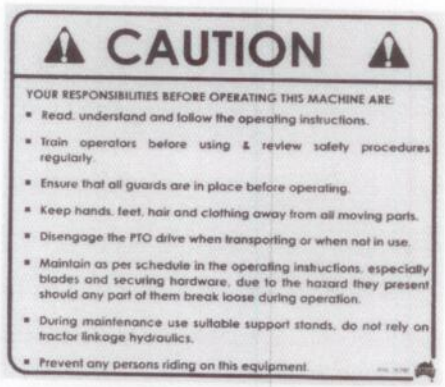
17. SAFETY DECALS

The following Safety Decals provide basic safety instructions for this equipment and must be maintained in legible condition. Decals may vary from image shown, however general warning intent should be the same.



DRIVE SHAFT ENTANGLEMENT

Part No: 70781
Location: Driveshaft outer plastic cover.

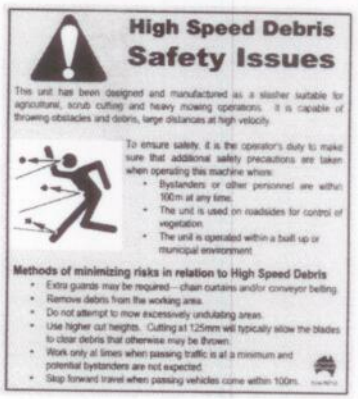


CAUTION

Part No: 70780
Location: Body.

DANGER

Part No: 70699
Location: Rear of body.



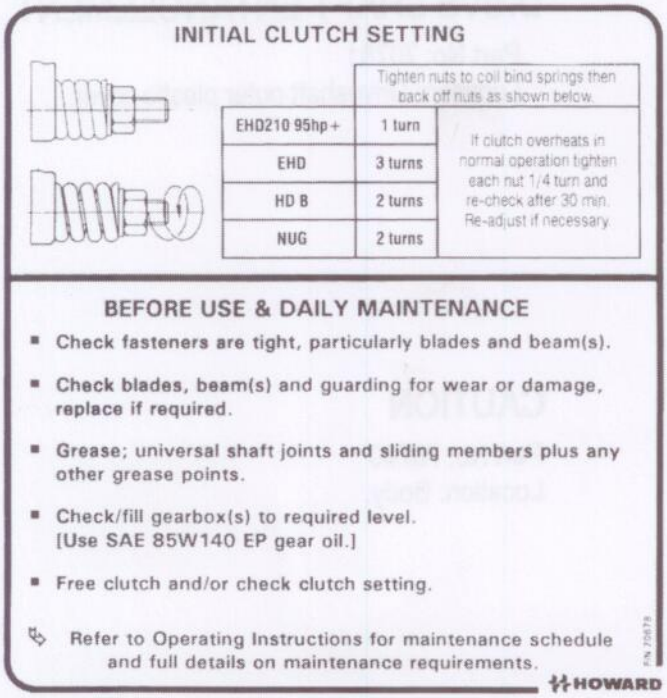
HIGH SPEED DEBRIS

Part No: 70715
Location: Rear of body.

18. OPERATIONAL INSTRUCTIONAL DECALS

Max. PTO 540 rpm

Part No: 70680
Location: Front left side of body.



CLUTCH SETTING

Part No: 70678
Location: Clutch Cover

PARTS LIST

HD CR Series identifying features:

- Body c/w Front & Rear Conveyor Belt Debris Guard as standard.
- 1 Rib across body behind gearbox.
- Cast gearbox with 1.3/4" x 20 spline input shaft.

HD C Series
Rotaslasher

HOWARD AUSTRALIA PTY LTD ABN 96 002 960 778
Private Bag 5 SEVEN HILLS NSW 1730 AUSTRALIA
Telephone: (02) 9674 2966 Fax: (02) 9674 6263

HD Series MODEL IDENTIFICATION

File Ref: HD C Parts List.doc

HD Series (1985 – 1995)

- Original RP or HS20 fabricated gearbox.
- Square metal clutch cover secure to top of gear-case lid.
- 1.3/8 x 6 input shaft to gearbox.
- 2 Fibre plate clutch integral with drive-shaft.
- Blade Beams 100mm wide with M12 fixings to gearbox output spindle flange.

HD B Series (1995 – 2007)

- Fabricated Gearbox upgraded to heavier output spindle.
- Square metal clutch cover secure to top of gear-case lid and sides of gear-case.
- 1.3/8 x 6 input shaft to gearbox.
- 2 sintered bronze Howard clutch plate – manufactured separate to drive-shaft.
- Blade Beams 130mm wide with M16 fixings to gearbox output spindle flange.

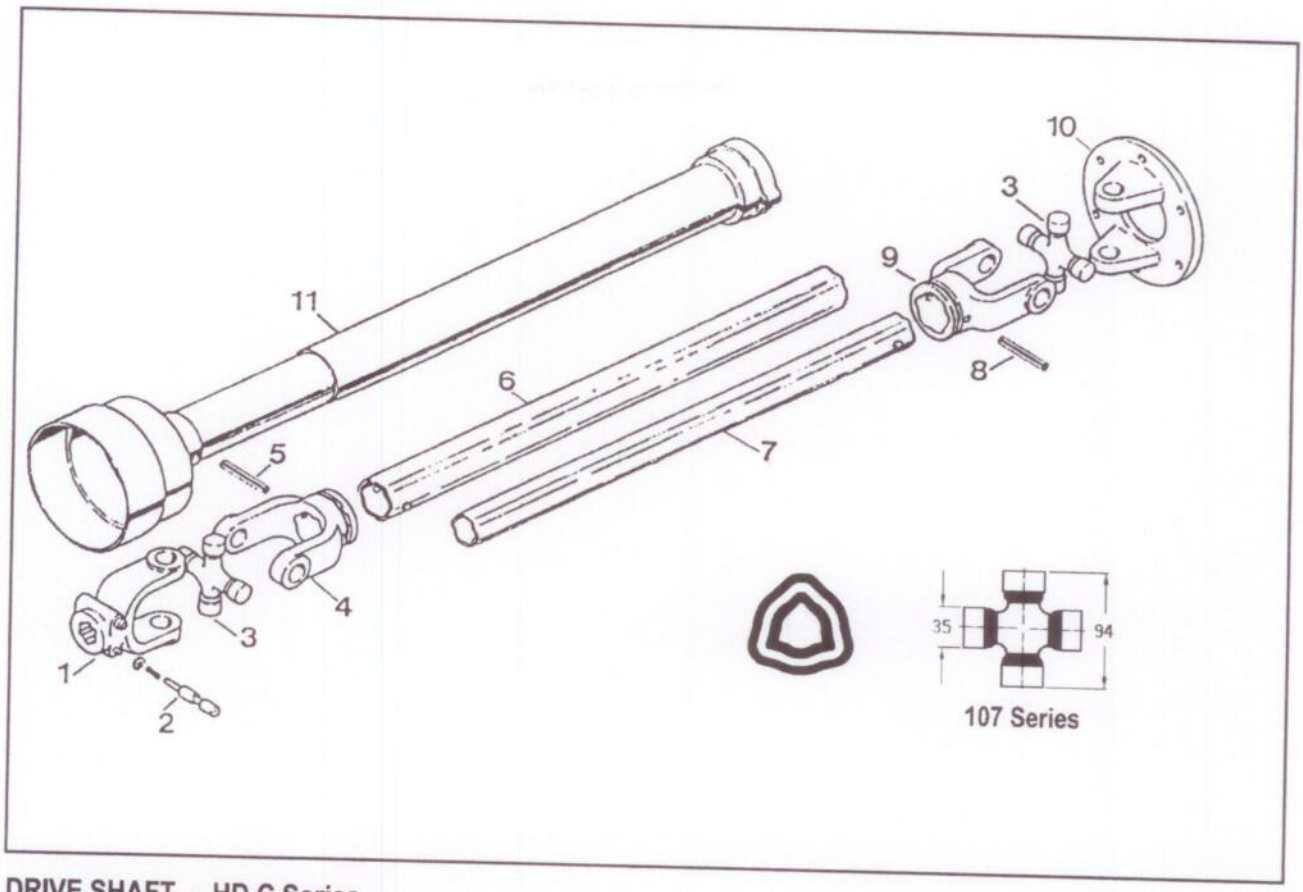
HD B Series Body fitted with HD C Series Transmission (Drive Kit)

5 machines only early 2008 plus
Allows retro-fit of HD C Series transmission to HD B Series as required for spares.

Refer HD B Series for Body components.
Refer HD C Series for Transmission components.
Refer also to Drg 614952-614660 shows Gearbox / Body adaptor and fasteners.

HD C Series (2008 on)

- Cast gearbox – round mounting plate. 4 x M20 fixings on 203 PCD. Fixing bolts on centre lines.
- Round plastic clutch cover secured to front of gear-case via diecast metal mounting plate.
- 1.3/4 x 20 input shaft to gearbox.
- 3 sintered bronze Howard clutch plate – manufactured separate to drive-shaft.
- Blade beam assembly 130mm wide, secured to gearbox output spindle via an adaptor block
- **C** - Version - Body front and rear aprons with safety chain guards as standard.
- **CR** - Version - Body front and rear aprons with conveyor belt debris guards as standard.

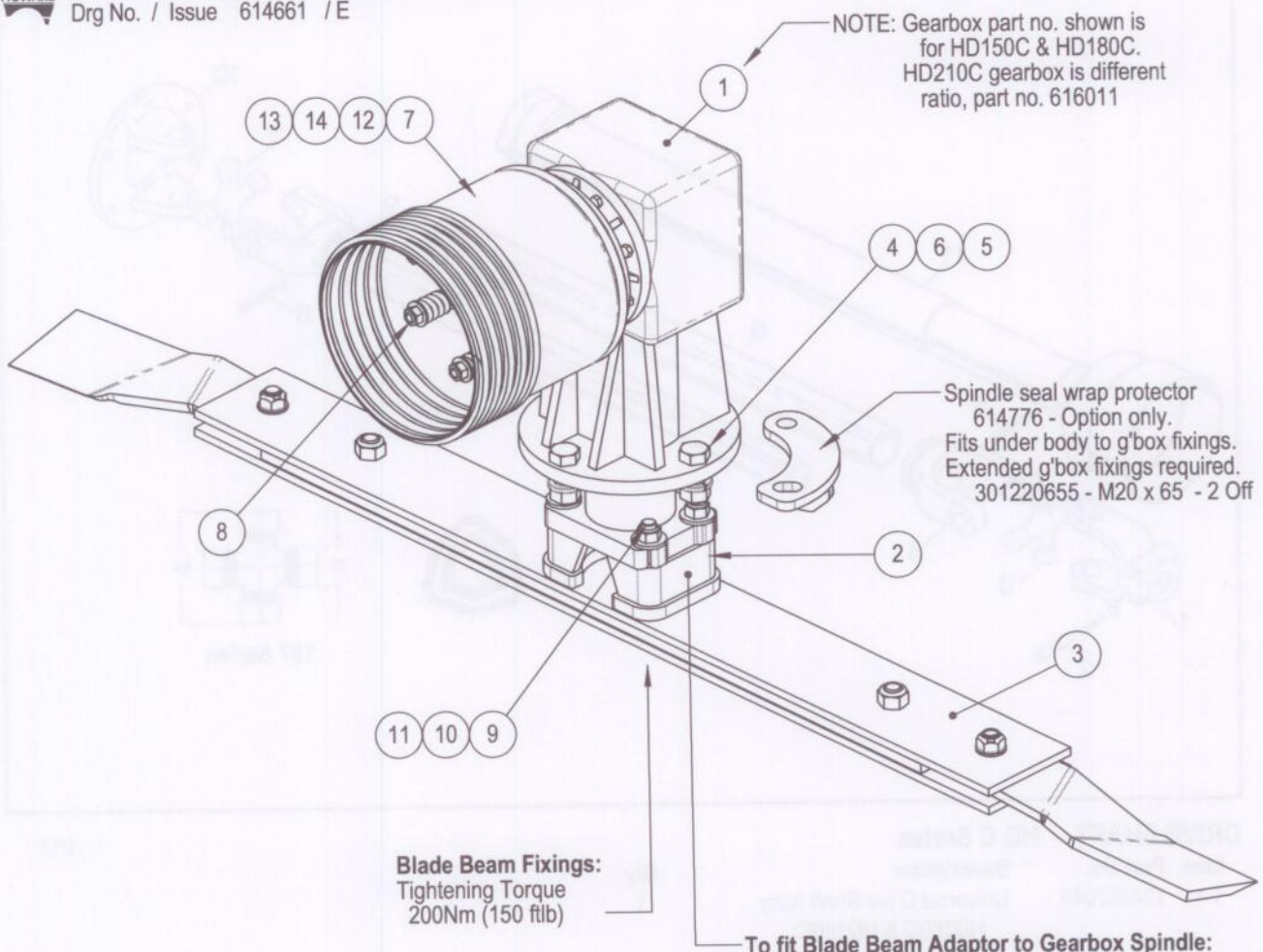


DRIVE SHAFT - HD C Series

Item	Part No.	Description	Qty
1-11	20405704A	Universal Drive Shaft Assy HD150C & HD180C. 87cm cross / cross closed.	1
	20405704L	Universal Drive Shaft Assy HD210C. 101cm cross / cross closed.	1
1	204051450	PTO Yoke 1.3/8 x 6	1
	204051460	PTO Yoke Option 1.3/8 x 21	1
2	204056911	Lock Pin Kit	2
3	204056913	Universal Joint	2
4	204051530	Yoke - Outer	1
5	204056280	Pin - Outer	1
6	204054085	Outer Tube	1
7	204054450	Inner Tube	1
8	204056400	Pin - Inner	1
9	204051540	Yoke - Inner	1
10	204056915	Clutch yoke	1
11	204055280	Cover Assembly	1

TRANSMISSION ASSEMBLY - HD C Series

Drg No. / Issue 614661 / E

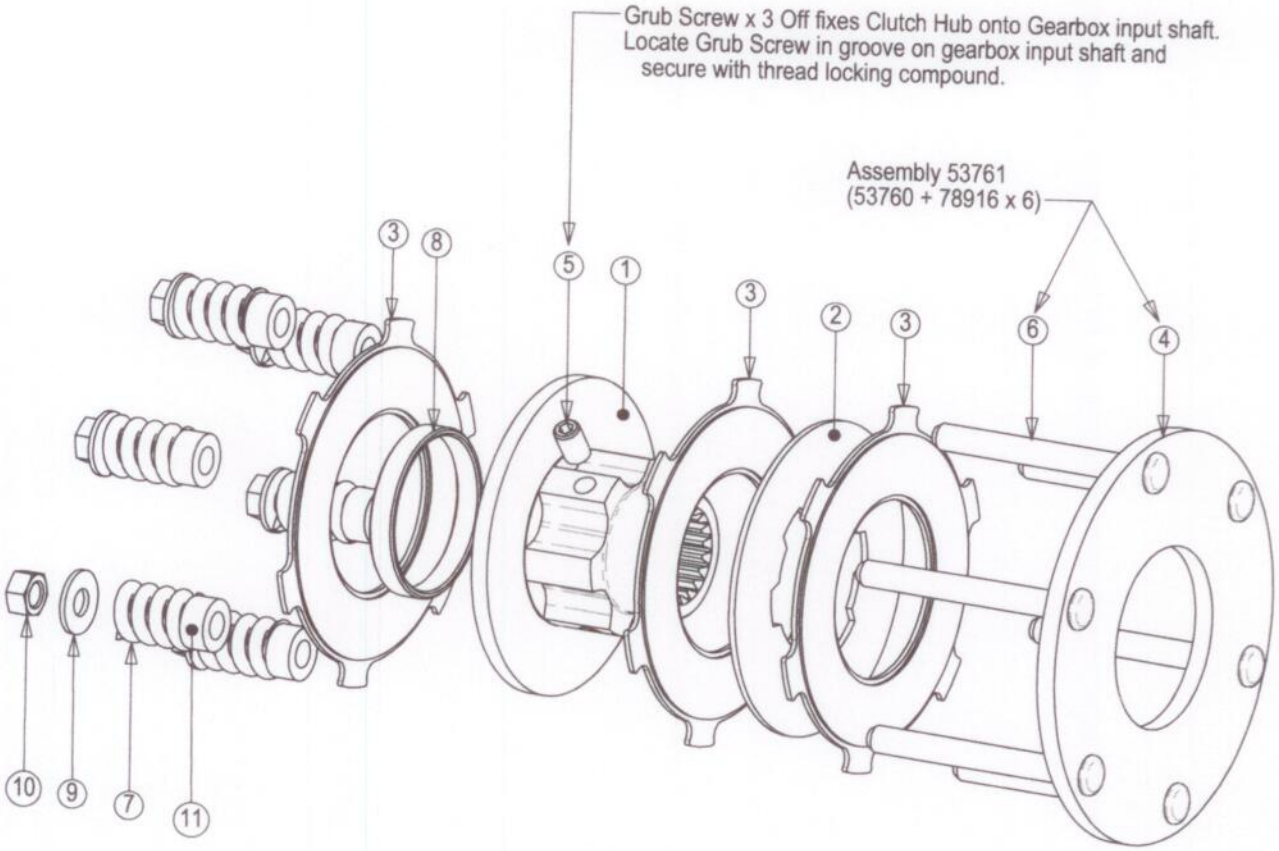


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614663	Gearbox Assy - Refer Parts Listing
2	1	614664	Adaptor WA
3	1	614975	Blade Beam Assy - Refer Parts Listing
4	4	301220555	Bolt M20 x 55
5	4	307220015	Nut M20
6	4	308220045	Spr Washer M20 Heavy Duty
7	1	614665	Guard / Clutch Cover
8	1	614662	Clutch Assy - Refer Parts Listing
9	4	301616155	Bolt M16 x 150
10	4	20302626A	Bellville Washer 39x17x4
11	4	307216115	Conloc Nut M16
12	4	101205055	Setscrew 5/16 UNC x 5/8
13	4	308100065	Flat Washer M10
14	4	209019370	Bellville Washer M8

NOTE: Gearbox part no. shown is for HD150C & HD180C. HD210C gearbox is different ratio, part no. 616011

CLUTCH ASSY - HD C Series - 3 Plate - 1.3/4" x 20

Drg No. / Issue 614662 / C

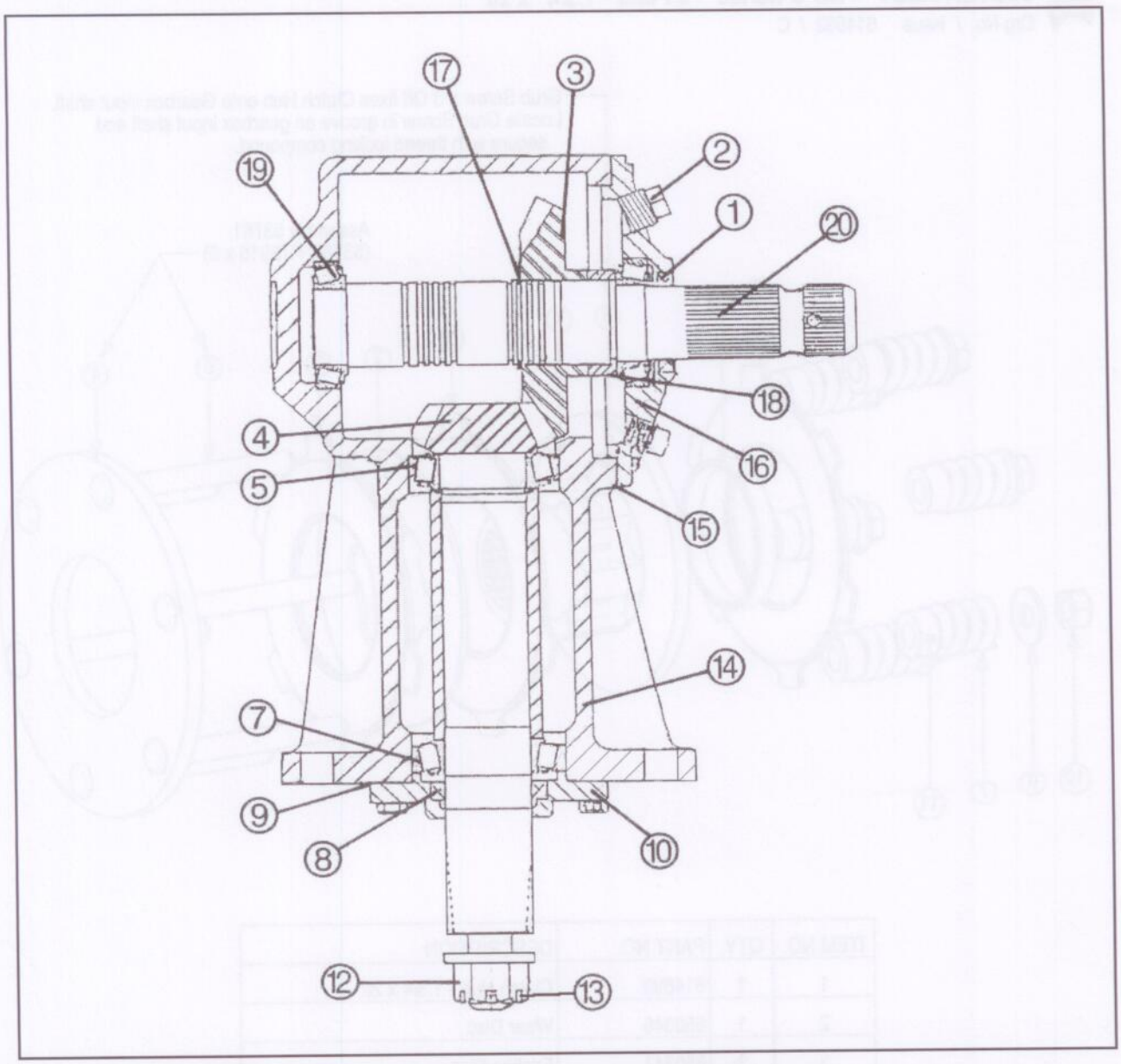


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614690	Clutch Hub - 1.3/4 x 20
2	1	650346	Wear Disc
3	3	650347	Friction Disc
4	1	53760	Clamp Plate
5	3	312212200	Grub Screw M12 x 20 -Stainless
6	6	79816	Stud 1/2" UNF x 112mm
7	6	610401	Spring
8	1	650345	Sleeve
9	6	209025495	Flat Washer
10	6	107108015	Nut 1/2" UNF Grade 5 Zinc Plate
11	6	614771	Bush

NOTES:

Can be increased from 3 Sintered Bronze Friction Discs (P/N 650347) to 5 off.
Add also 2 off Wear Disc 650346
Replace spacers at front of springs with Washer 209029495.

Suits standard 1.3/4" x 20 spline PTO or gearbox input shaft.



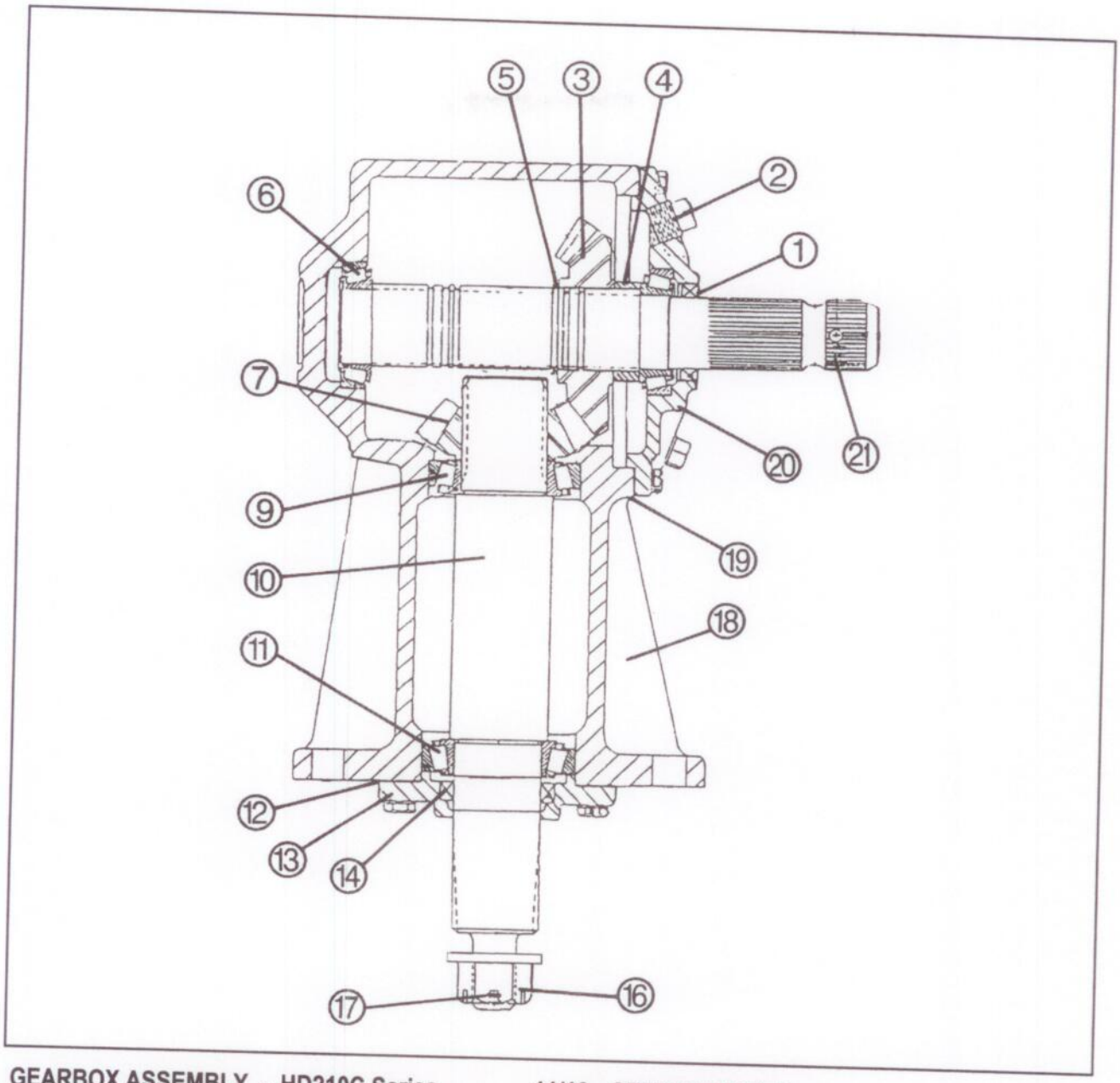
GEARBOX ASSEMBLY - HD150C & HD180C 11/10

Ratio 1 : 1.92

Item	Part No.	Description	Qty
1-20	614663	Gearbox Assembly	1
1	262418051	Seal	1
2	B7687	Breather	1
3	B1492	Crown-wheel 25T	1
4	B1493	Shaft & Pinion 13T	1
5	252035081	Bearing 368 / 362A (89mm)	1
7	252035072	Bearing 368 / 362 (90mm)	1
8	262720040	Seal	1
9	B6837	Gasket	As Req
10	B79	Housing	1
12	B7388	Castle Nut	1
13	208010860	Split Pin 5 x 60	1
14	B92	Case	1
15	B6675	Gasket	As Req
16	B6918	Housing	1
17	B7389	Retaining Ring	1
18	B7390	Spacer	1
19	251831072	Bearing	2
20	B6672	Input Shaft	1

SERVICE NOTES

Item Ref.	
4	Output shaft bearing preload - slight preload. 0.05 - 0.075 (.002-3") Preload.
3,4	Gearing backlash 0.2 - 0.5 mm (.008" - .020")
20	Input shaft bearing preload. 0.05 (.002") Preload (No end-float.)
1,8	Seals - sprung lip towards gearbox.



GEARBOX ASSEMBLY - HD210C Series

Ratio 1 : 1.46

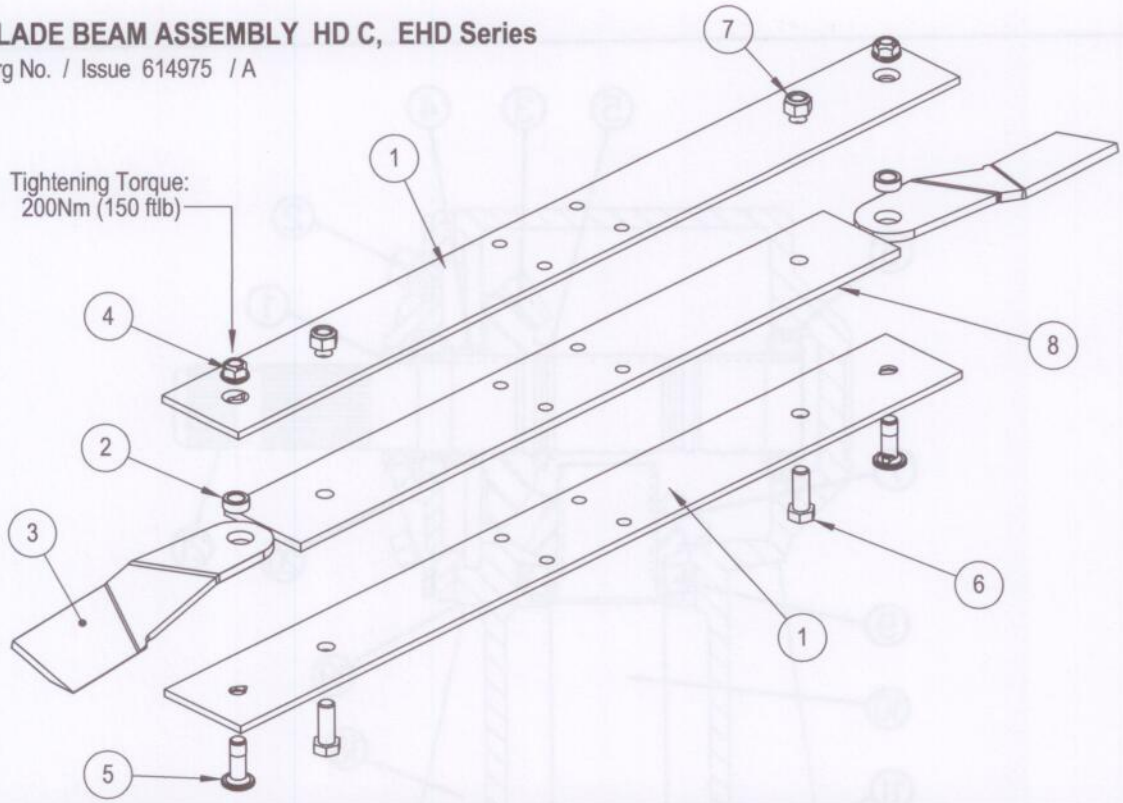
Item	Part No.	Description	Qty
1-21	616011	Gearbox Assembly	1
1	262418051	Seal	1
2	B7687	Breather	1
3	B59	Crown-wheel 19T	1
4	B97	Spacer	1
5	B7389	Retaining Ring	1
6	251831072	Bearing	1
7	B6677	Pinion 13T	1
9	252035081	Bearing 368 / 362A (89mm)	1
10	B6676	Output Shaft	1
11	252035072	Bearing 368 / 362 (90mm)	1
12	B6837	Gasket	As Req
13	B79	Housing	1
14	262720040	Seal	1
16	B7388	Castle Nut	1
17	208010860	Split Pin 5 x 50	1
18	B92	Case	1
19	B6675	Gasket	As Req
20	B6918	Input Housing	1
21	B6672	Input Shaft	1

11/10 SERVICE NOTES

Item Ref.	
10	Output shaft bearing preload - slight preload. 0.05 - 0.075 (.002-3") Preload.
3,7	Gearing backlash 0.2 - 0.5 mm (.008" - .020")
21	Input shaft bearing preload. 0.05 (.002") Preload (No end-float.)
1,14	Seals - sprung lip towards gearbox.

BLADE BEAM ASSEMBLY HD C, EHD Series

Drg No. / Issue 614975 / A



ITEM	QTY	HD, EHD150	HD, EHD180	HD, EHD210	EHD300	EHD360	DESCRIPTION
1	2/4	78818	78816	78814	78818	78816	Beam - Outer
2	2/4	72919	72919	72919	72919	72919	Journal
3	2/4	78787	78787	78787	74598A	74598A	Blade Std - Leading Edge / Flat Stepped
3	2/4	78663	78663	78663	78663 / 78663R		Blade Options
4	2/4	74221	74221	74221	74221	74221	Nut - Blade Bolt
5	2/4	78299	78299	78299	78299	78299	Blade Bolt - Nib Csk
6	2/4	301220555	301220555	301220555	301220555	301220555	Bolt M20 x 55
7	2/4	307220055	307220055	307220055	307220055	307220055	Nylock Nut M20
8	1/2	78734	78732	78693	78734	78732	Beam - Centre

NOTES: The Blade and Blade Beam Fasteners include a prevailing torque locknut to ensure their security.
Both the Blade Beam and Blade Fasteners, must remain secure at all times and not permit either blade beam or blade to come loose and potentially become dangerous projectiles.

DO NOT REUSE; BLADE BEAM BOLT, BLADE BOLT or ASSOCIATED NUTS.
Re-use may compromise the fastener security. Replace Blade Bolt and Nut when replacing blades.
Blade Bolt & Nut supplied only as Kit. (Blade Bolt alone is not available.)

Failure Reporting
Blade Beams, Blades and fixings should not come loose or fail and potentially become projectiles. (Wear is expected.)
Report any failures in these components to Howard Australia immediately.

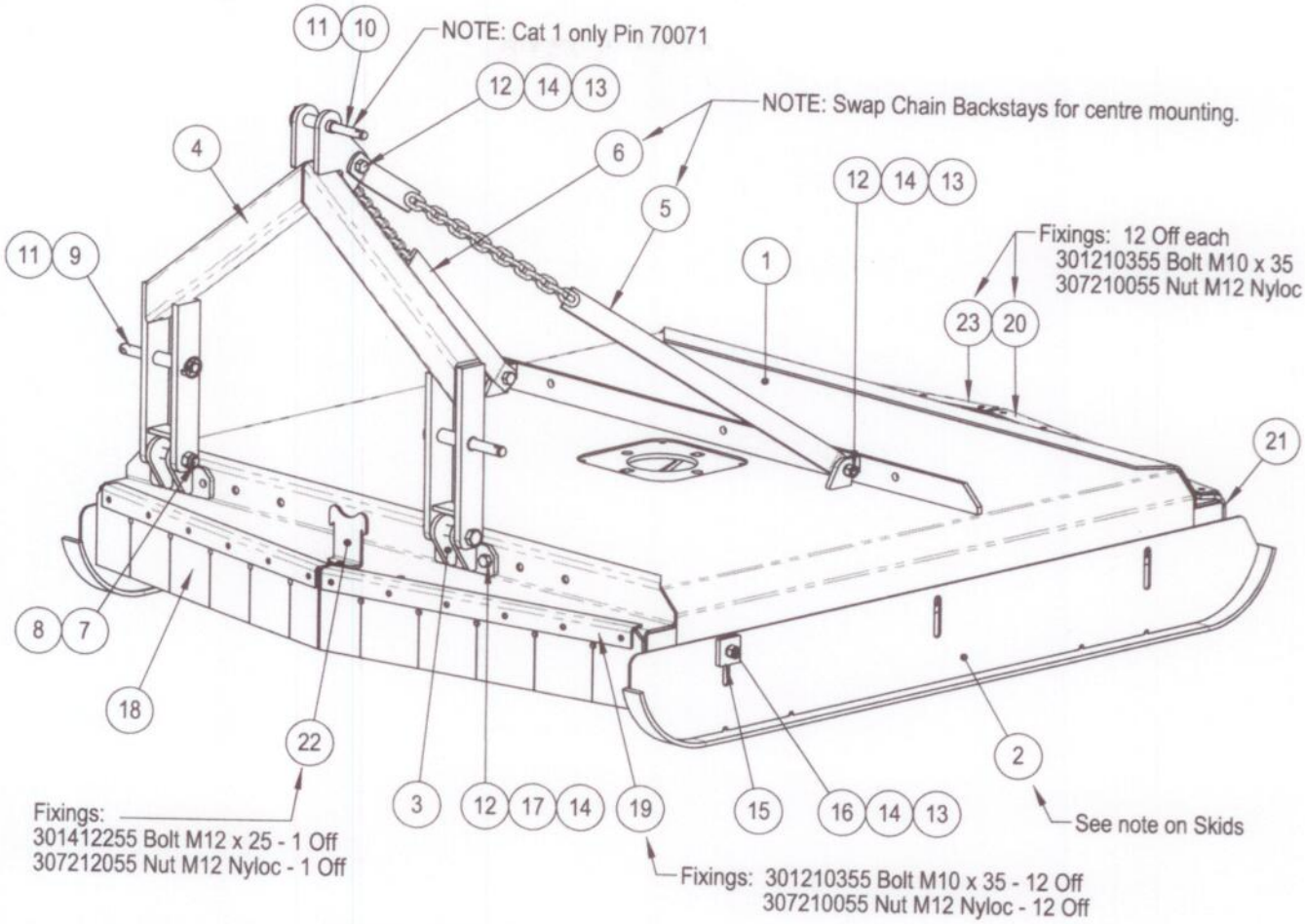
Blade Options & Spares

ITEMS	QUANTITIES	PART No.	DESCRIPTION & NOTES
3*	1	78663	Blade - Stepped Lift (75 x 12) See Note 1.
3*	1	78663R	Blade - Stepped Lift, Left Hand / Anticlockwise Rotation. (75 x 12) See Note 1.
3*	1	74598A	Blade - Stepped (75 x 12) (No lift) Standard blade on HD240, EHD300 & EHD360.
3*	1	74598F	Blade - Flat (75 x 12) (No step, No lift)
2+4+5	1+1+1	78299K	Fastener Kit
2+3+4+5	2+2+2+2	78787KN	Leading Edge Blade Kit
2+3+4+5	2+2+2+2	78663KN	Stepped Lift Blade Kit
2+3+4*+5*	2+2+2+2	78663KH	Stepped Lift Blade Kit - Hex Bolt blade fastener - suits earlier EHD's, HS30's & HS40's.
2+3+4*+5*	2+2+2+2	78663K	Stepped Lift Blade Kit - Sq Neck Csk Bolt blade fastener - suits earlier EHD's.

Notes: 1. If fitting 78663 & 78663R blades to EHD300 or EHD360, additional tilt of gearboxes may be required to prevent excessive blade clash should friction clutches slip. Damage due to blade clash is not coverred by Warranty.

BODY ASSEMBLY - HD150 C R Series (R indicates Rubber debris guard.)

Drg No. / Issue 614673R / C



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614675R	Body WA HD150CR
2	2	614679	Skid - HD150C
3	2	614682	Mounting WA
4	1	614681	Topmast WA
5	1	614677L	Backstay HD150C - Long - 1238 crs.
6	1	614677S	Backstay HD150C - Short - 1160 crs
7	2	301620135	Bolt M20 x 130
8	2	307220055	Nyloc Nut M20
9	2	616332	Pin Lower Cat 1 - 2
10	1	616333	Pin Upper Cat 1 - 2
11	3	610661	Lynch Pin
12	8	301216405	Setscrew M16 x 40
13	10	308160045	Spring Washer M16
14	14	307216015	Nut M16
15	6	73098HD	Special Washer
16	6	321216505	Special Bolt
17	4	20302626A	Bellville Washer 39x17x4
18	2	614763	Front Guard HD150CR
19	2	614767	Clamp Strip HD150CR
20	1	72669L	Clamp Strip HD150CR
21	2	72665	Rear Guard HD150CR
22	1	78436	Drive Shaft Support
23	1	72669R	Clamp Strip HD150CR

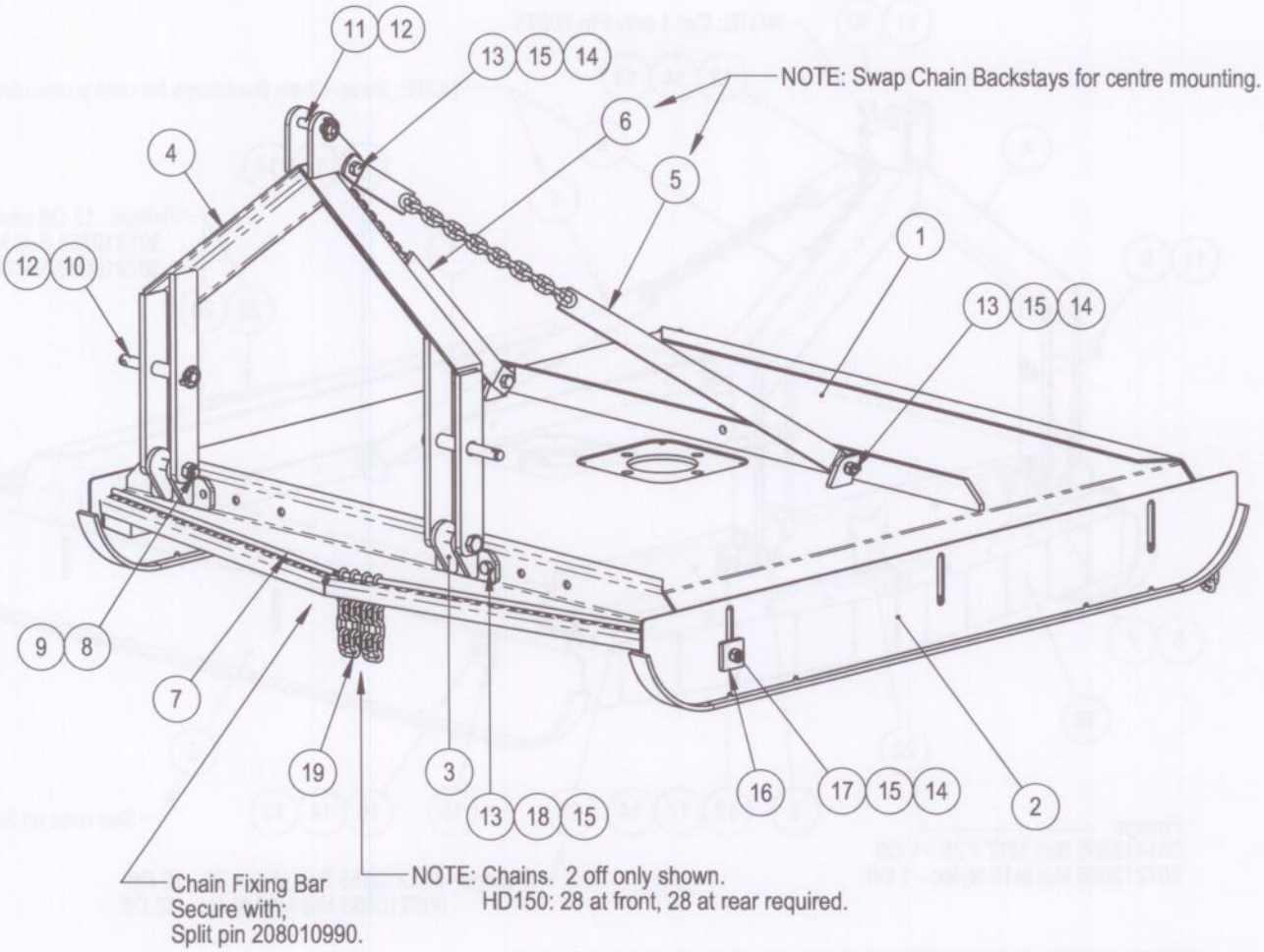
NOTES

Skids - Extended 25mm at front + 75mm at rear to improve debris guarding 10/2010.

Rear Debris Guards and Clamp Strips (72665 & 72669L, 'R) replace earlier versions 614765 & 614769.

BODY ASSEMBLY - HD150 C Series SPECIAL - Chain Guarded

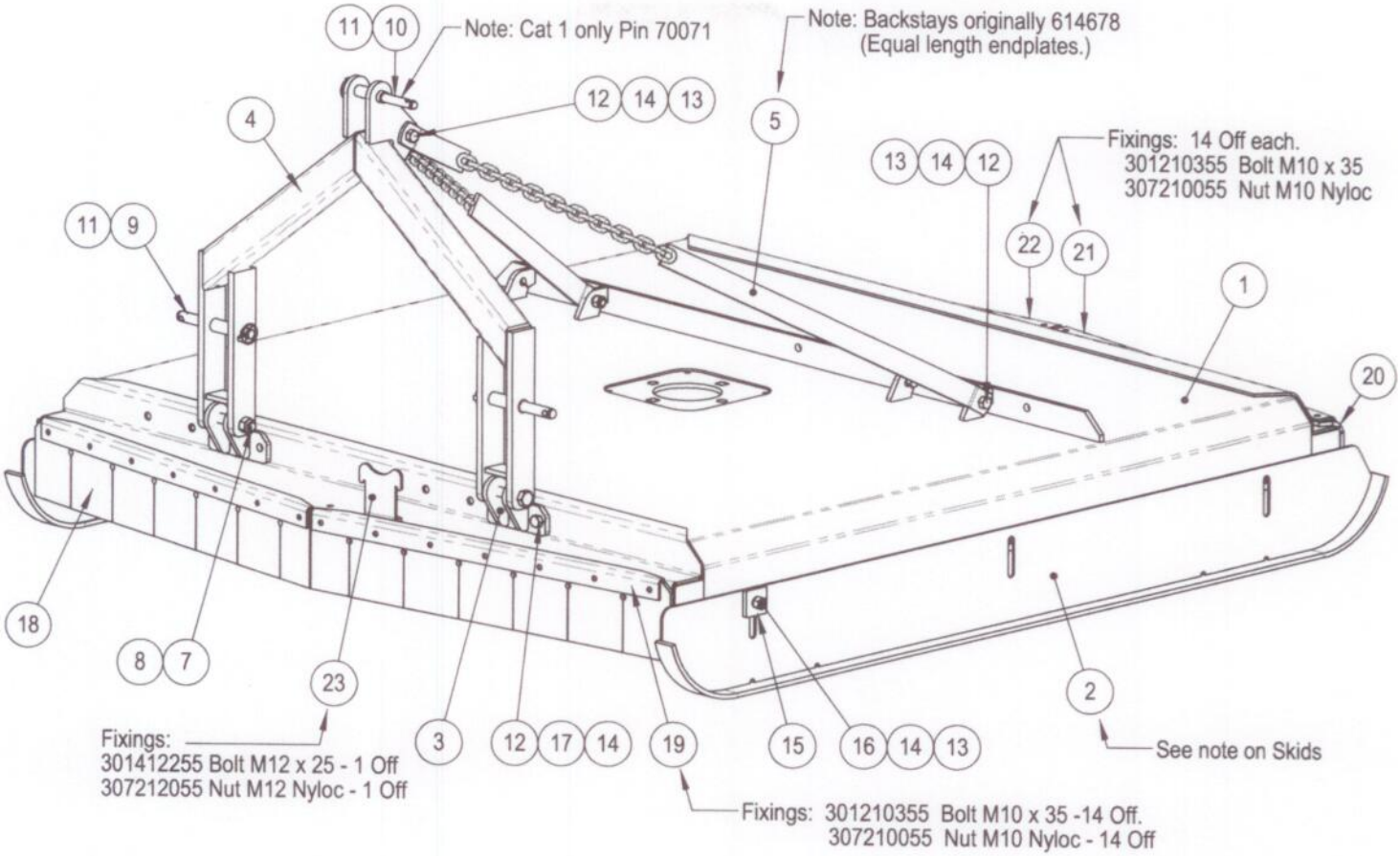
Drg No. / Issue 614673 / A



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614675	Body WA HD150C
2	2	614679	Skid - HD150C
3	2	614682	Mounting WA
4	1	614681	Topmast WA
5	1	614677L	Backstay HD150C - Long - 1238 crs.
6	1	614677S	Backstay HD150C - Short - 1160 crs
7	4	614685	Bar - Chain Fixing
8	2	301620135	Bolt M20 x 130
9	2	307220055	Nyloc Nut M20
10	2	616332	Pin Lower Cat 1 - 2
11	1	70071	Pin Cat 1 Upper
12	3	610661	Lynch Pin
13	8	301216405	Setscrew M16 x 40
14	10	308160045	Spring Washer M16
15	14	307216015	Nut M16
16	6	73098HD	Special Washer
17	6	321216505	Special Bolt
18	4	20302626A	Bellville Washer 39x17x4
19	5	614687	Chain - 11 Links - Refer Note

BODY ASSEMBLY - HD180 C R Series (R indicates Rubber debris guard.)

Drg No. / Issue 614674R / C



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614676R	Body WA HD180CR
2	2	614680	Skid - HD180C
3	2	614682	Mounting WA
4	1	614681	Topmast WA
5	2	614978	Backstay WA HD180C
6	2	614694	Transport Bracket - HD180C
7	2	301620135	Bolt M20 x 130
8	2	307220055	Nyloc Nut M20
9	2	616332	Pin Lower Cat 1 - 2
10	1	616333	Pin Upper Cat 1 - 2
11	3	610661	Lynch Pin
12	8	301216405	Setscrew M16 x 40
13	10	308160045	Spring Washer M16
14	14	307216015	Nut M16
15	6	73098HD	Special Washer
16	6	321216505	Special Bolt
17	4	20302626A	Bellville Washer 39x17x4
18	2	614764	Front Guard HD180CR
19	2	614768	Clamp Strip HD180CR
20	2	72666	Rear Guard HD180CR
21	1	72670L	Clamp Strip HD180CR
22	1	72670R	Clamp Strip HD180CR
23	1	78436	Drive Shaft Support

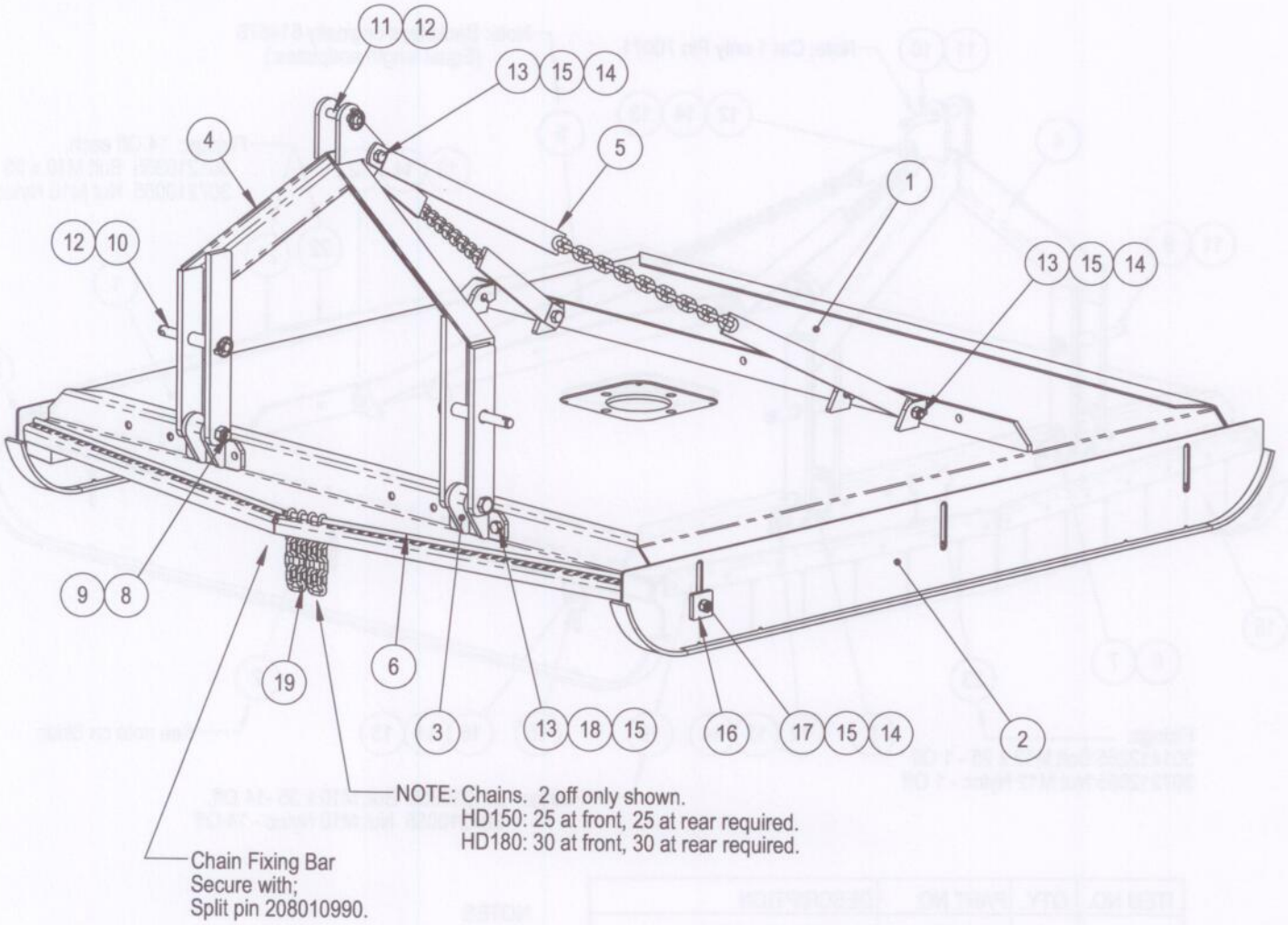
NOTES

Skids - Extended 25mm at front + 75mm at rear
to improve debris guarding 10/2010.

Rear Debris Guards and Clamp Strips (72666 & 72670L, 'R)
replace earlier versions 614766 & 614770.

BODY ASSEMBLY - HD180 C Series SPECIAL - Chain Guarded

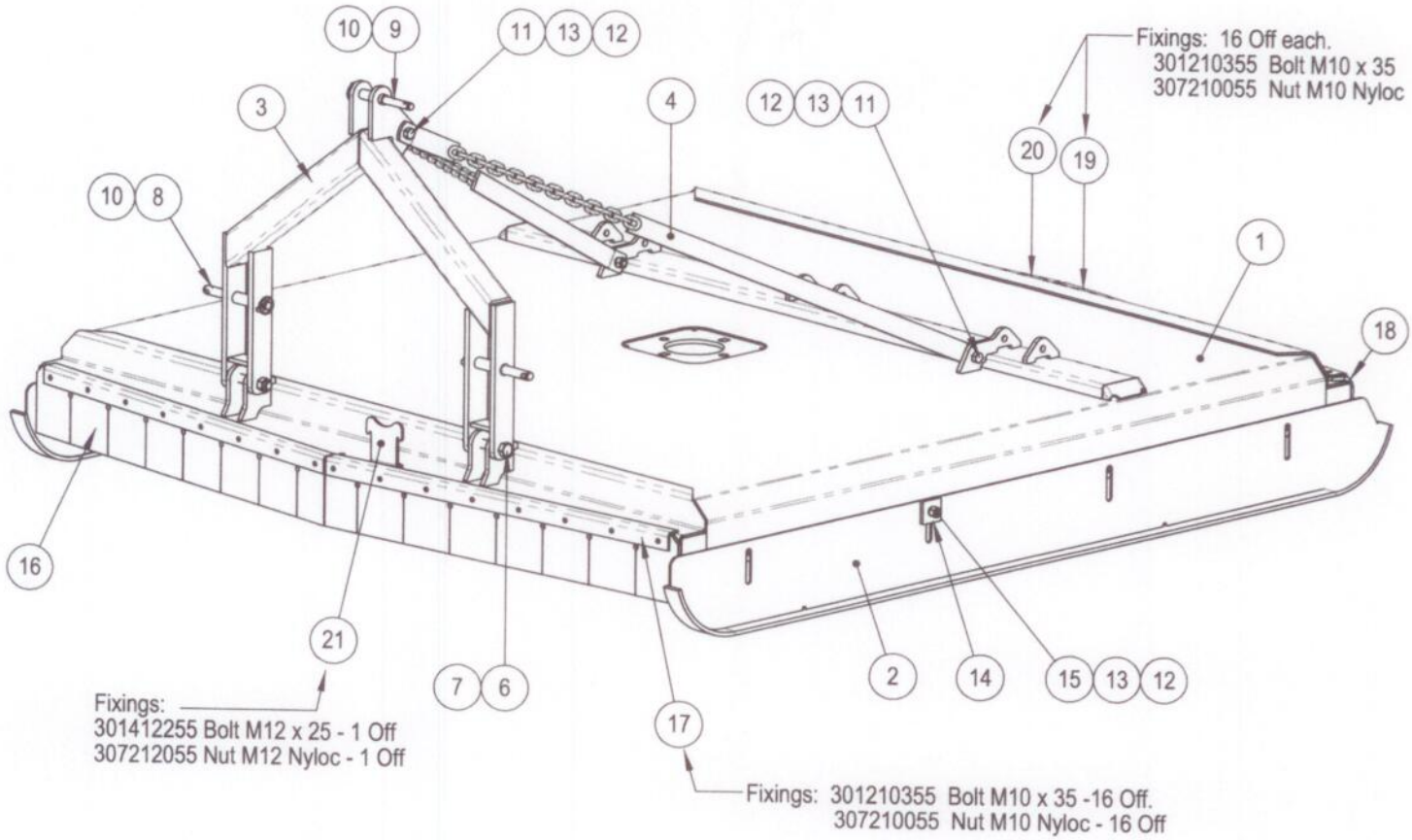
Drg No. / Issue 614674 / A



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	614676	Body WA HD180C
2	2	614680	Skid - HD180C
3	2	614682	Mounting WA
4	1	614681	Topmast WA
5	2	614678	Backstay WA HD180C
6	4	614686	Bar - Chain Fixing
7	2	614694	Transport Bracket - EHD180
8	2	301620135	Bolt M20 x 130
9	2	307220055	Nyloc Nut M20
10	2	616332	Pin Lower Cat 1 - 2
11	1	70071	Pin Cat 1 Upper
12	3	610661	Lynch Pin
13	8	301216405	Setscrew M16 x 40
14	10	308160045	Spring Washer M16
15	14	307216015	Nut M16
16	6	73098HD	Special Washer
17	6	321216505	Special Bolt
18	4	20302600A	Bellville Washer 39x17x4
19	4	614687	Chain - 11 Links - Refer Note

BODY ASSEMBLY - HD210 C R Series (R indicates Rubber debris guard.)

Drg No. / Issue 616012R / -

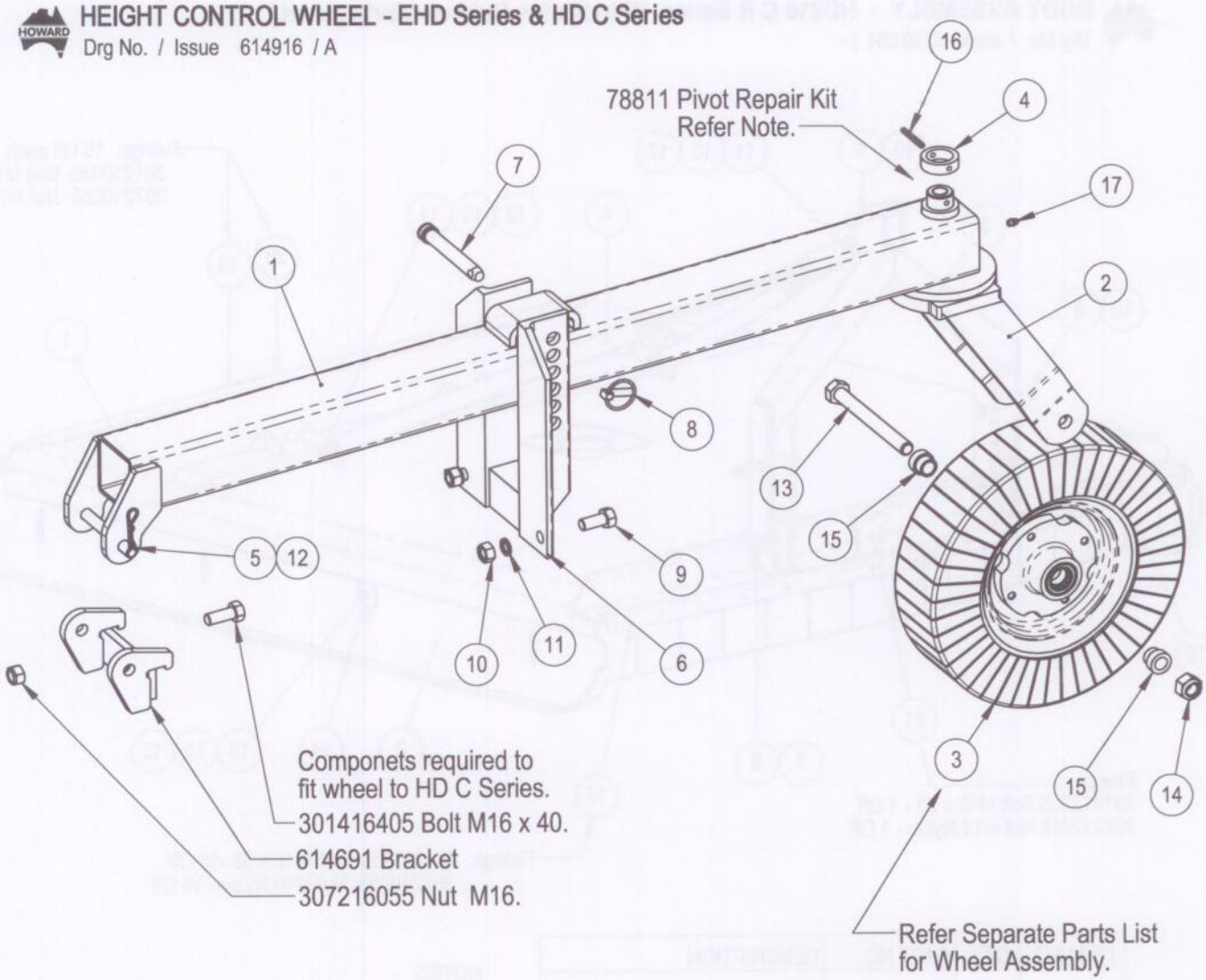


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	616013R	Body WA HD210CR
2	2	616014	Skid - HD180C
3	1	614681	Topmast WA
4	2	616015	Backstay HD210C
5	2	614693	Transport Bracket - EHD180
6	2	301620135	Bolt M20 x 130
7	2	307220055	Nyloc Nut M20
8	2	616332	Pin Lower Cat 1 - 2
9	1	616333	Pin Upper Cat 1 - 2
10	3	610661	Lynch Pin
11	4	301216405	Setscrew M16 x 40
12	12	308160045	Spring Washer M16
13	12	307216015	Nut M16
14	8	73098HD	Special Washer
15	8	321216505	Special Bolt
16	2	616016	Front Guard HD210CR
17	2	616017	Clamp Strip HD210CR
18	2	72667	Rear Guard HD210CR
19	1	72668L	Clamp Strip HD210CR
20	1	72668R	Clamp Strip HD210CR
21	1	78436	Drive Shaft Support

NOTES: -

HEIGHT CONTROL WHEEL - EHD Series & HD C Series

Drg No. / Issue 614916 / A

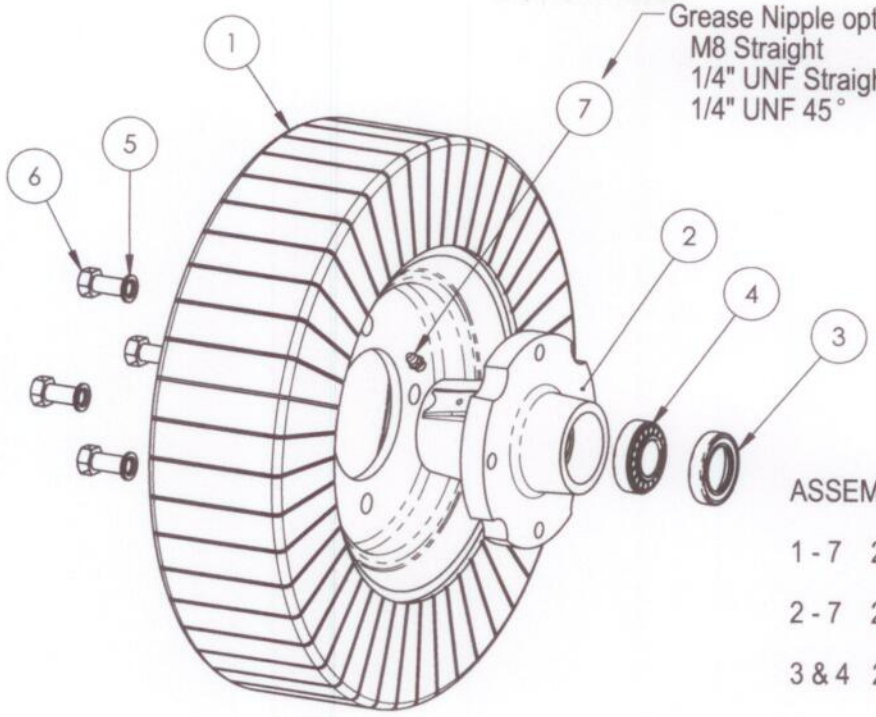


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	78827	Wheel Arm
2	1	74892	Saddle Bracket
3	1	209029400	Laminated Wheel Assy
4	1	74899	Collar
5	1	78828	Pin
6	1	74886	Height Bracket
7	1	74876	Pin
8	1	610661	Lynch Pin
9	2	301416355	Setscrew M16 x 35
10	2	307216015	Nut M16
11	2	308160045	Spring Washer M16
12	2	208014030	R Clip
13	1	101212565	Bolt 3/4 UNC x 7
14	1	107212175	Nyloc Nut 3/4 UNC
15	2	74933	Sleeve
16	1	208012090	Tension pin 1/4" x 2"
17	1	202030860	Grease Nipple M8

78811 Pivot Repair Kit - Weld-in.
Comprises following components:
- Pivot Shaft for Saddle Bracket
- Housing / Tube for Wheel Arm
- Collar
- Tension Pin.

LAMINATED WHEEL ASSEMBLY - EHD Series

Drg No. / Issue 209029400-PL / B



Grease Nipple options:

M8 Straight	Part No. 202030860
1/4" UNF Straight	Part No. 202030030
1/4" UNF 45°	Part No. 202030060.

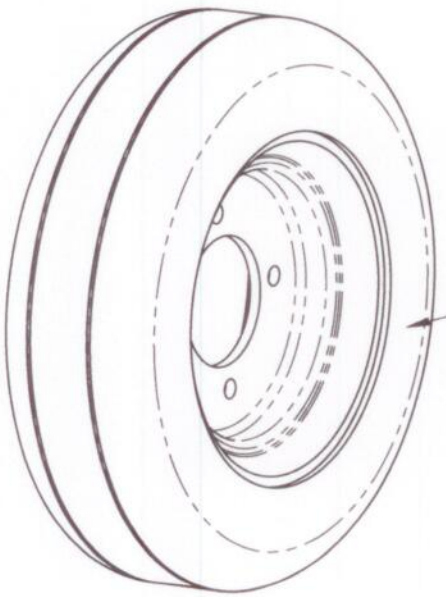
ASSEMBLIES & KITS

1 - 7 209029400 Wheel Assembly

2 - 7 209029430 Hub Assembly

3 & 4 20902943K Seal & Brg Kit (2 Off Each)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	209029415	Laminated Tyre & Rim Assy
2	1	20902943A	Hub (Refer 209029430)
3	2	262012031	Seal 1.25" x 1.976" x .31"
4	2	251020067	Bearing L44610 / L44643
5	4	108081445	Spring Washer 1/2" Med Zinc Plate
6	4	101308085	Setscrew 1/2 UNF x 1
7	1	202030860	Grease Nipple M8



OPTIONAL SOLID RUBBER TYRE & RIM ASSEMBLY

20902941B Tyre & Rim

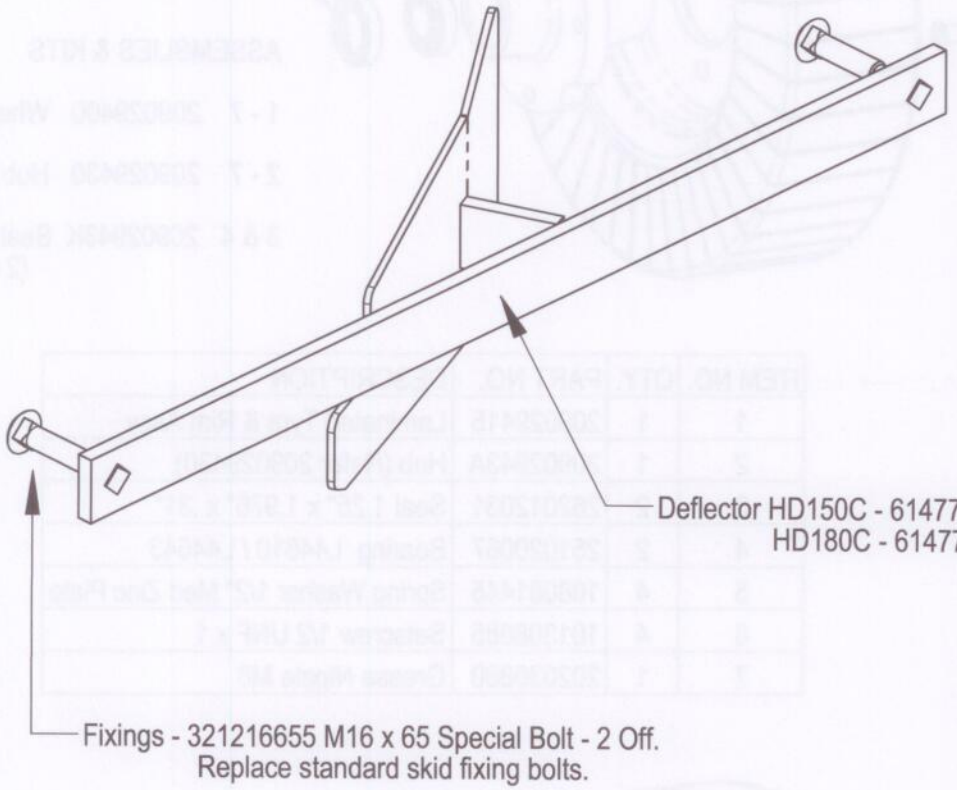
(Option / Replaces standard Laminated Tyre and Rim Assembly Part No. 209029415)

WINDROW DEFLECTOR HD C Series - Option - see NOTE below.

Drg No. / Issue 614777 / -

Affixes inside cutting chamber on rear left hand side.
[Between rear two skid fixing bolts.]

NOTE: Design and drawings completed 6/2008. No prototypes manufactured or tested.
Demand expected is minimal and drawings will be available for dealers or end users to make if required.



ROTASLASHER DECALS 12/2008

DRIVE SHAFT ENTANGLEMENT Part No: 70781

CAUTION Part No: 70780

DANGER Part No: 70699

HIGH SPEED DEBRIS Part No: 70715

CLUTCH SETTING Part No: 70678

EASY PARTS Part No: 70783

Max. PTO 540 rpm Part No: 70680

NAME PLATE Part No: 70732

HOWARD AUSTRALIA Part No: 70685S

EHD SERIES Part No: 70729

HD SERIES Part No: 70728

NUGGET Part No: 70767

LUBRICATION Part No: 70788

Note: Images are indicative at time of listing,
decals supplied may vary slightly from image shown.