# Diamond Chain Harrow 

Assembly and Parts Manual

## Model 40

Revision J March 2019

## Australia

Kelly Engineering
PO Box 100
Booleroo Centre SA 5482
Phone: + 61886672253
Fax: + 61886672250
Email: sales@kellyengineering.com.au
Website (Australia):
www.kellyengineering.com.au

## United States

Email: sales@kellyharrows.com
Website (US): www.kellyharrows.com

## Thank you for choosing a Kelly Engineering product

We trust that you find the following manual clear and easy to follow. If you should require additional customer support or assistance, please do not hesitate to contact us.

Spare parts can be purchased, as required, through your local dealer or by contacting Kelly Engineering Australia or in the United States, Hood \& Company.

Kelly Engineering welcomes feedback. Should you have any difficulties that you wish to raise, suggestions for improvement or modifications that you feel would enhance our products we look forward to hearing from you.

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Kelly Engineering
PO Box 100
Booleroo Centre SA 5482
Phone: + 61886672253
Fax: + 61886672250
Email: sales@kellyengineering.com.au
Spare Parts: parts@kellyengineering.com.au
Website: www.kellyengineering.com.au
United States
Kelly Engineering
Website: www.kellyharrows.com

## Spare Parts

Hood \& Company Inc
Springfield MO
Phone: 4178652100
Fax: 4178652105
Email: hoodco@hoodco.com

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## Section 1 Unpacking

# Unpacking 

## We recommend that a crane and forklift truck be

 available for unloading and assembly
## $\triangle$

- Before opening shipping container inspect exterior for any damage. Remove seal and open container doors.


## CAUTION

Take care when opening doors as load may have shifted or restraints may have broken.

- Remove boxes from doorway of container one at a time using a forklift truck. Each box weighs approximately 2600 lbs (1200kg)
- Check strapping on each bundle before attempting to remove
- Attach chains to the packing frame using shackles and using suitable equipment (eg. fork-lift or tractor) drag framework bundles out of container. To move bundles away from front of container lift from side with forklift. Do not lift under angle iron frame, lift only under centre frame. Each bundle weighs approximately 7000 lb ( 3200 kg ).




## CAUTION

Before cutting straps attach slings or chains and take the weight of the frames to avoid them slipping or falling and causing injury.


## CAUTION

Wear eye and hand protection when cutting straps. Sharp edges are exposed as straps separate and may cause injury.

## CAUTION

To avoid falling or moving components, before cutting straps attach slings or chains to individual pieces and only cut the straps holding the piece to be lifted.

- Remove boxes from rear of container one at a time using a forklift truck. Each box weighs approximately 2600 lbs ( 1200 kg )
- Cut straps holding bundles and separate parts and place in assembly area
- Identify parts for each machine by serial no. or description and separate. Open parts box and check that all parts are accounted for against checklist
- Once all parts have been identified machines are ready for assembly
- Read assembly instructions before proceeding.


## Section 2 Parts

| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0840-01$ | 40' Centre Frame | 1 |
| $0733-$ SH275966205 | 2.75 "R 6 Tonne on 205mm PCD Hub Complete | 2 |
| $0211-20150$ | M20 $\times 1508.8$ zp Bolt | 2 |
| $0221-$ NYL20 | M20 Nyloc Nut | 2 |




| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0181-G N 1-845$ | Grease Nipple 1/8" BSP 45 Deg | 2 |
| $0113-\mathrm{MB} 3550 \mathrm{DX}$ | 35 ID $\times 50 \mathrm{~mm}$ DX Bush | 4 |
| $0801-10-08-235$ | PCH Wing Pivot Pin | 2 |
| $0840-05$ | $40^{\prime}$ LH Inner Wing Frame | 1 |
| $0211-1265$ | M12 $\times 658.8$ zp Bolt | 2 |
| $0221-$ NYL12 | M12 Nyloc Nut | 2 |
| $0261-$ PINC1363 | Cotter Pin M13 X 63mm | 2 |








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| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| 0511-RCLIP4 | R Clip 4mm | 4 |
| $0311-2957$ | $3^{\prime \prime} \times 24^{\prime \prime}$ Hydraulic Cylinder | 2 |
| $0801-44082938$ | Clevis Pin 1" $\times 75 \mathrm{~mm}$ | 4 |




| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0211-2475$ | $M 24 \times 758.8 \mathrm{zp}$ Bolt | 12 |
| $0221-$ NYL24 | $M 24$ Nyloc Nut | 12 |
| $0211-1650$ | $M 16 \times 508.8$ zp Bolt | 8 |
| $0221-$ NYL16 | $M 16$ Nyloc Nut | 8 |
| $0840-02$ | 40 Front A-Frame | 1 |

## Clos





| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $0211-12110$ SHSCREW | A | Shoulder Screw M12 $\times 16 \times 110$ | 2 |
| 2 | $0231-$ SPRINGCUP | A | Compression Cup Washer | 7 |
| 3 | $0800-278$ | A | Cylinder Depth Stop Plate | 10 |



| Part Number | Description | Qty |
| :--- | :--- | :--- |
| $0172-$ D1400-0820 | Criclip External 82mm | 1 |
| $0211-1275$ | M12 $\times 75$ grade 8.8 ZP Bolt | 1 |
| 0221-NYL.12 | Nyloc Nut M12 | 1 |
| $0231-$ F24 | Washer Flat M24 | 2 |
| $0261-$ PINC1363 | Cotter Pin M13 $\times 63$ | 1 |
| 0261-PINC650 | Catter Pin M6 $\times 50 \mathrm{~mm}$ | 2 |
| 0801-KE-0905-1-B | Hardened Tow Hitch Bush 2 1/4" | 1 |
| $0801-$ KE0307-1 | Clevis Pin 25mm $\times 75 \mathrm{~mm}$ | 2 |
| $0810-09$ | Tow Hitch | 1 |
| $0810-16$ | Safety Chain Assembly | 1 |
| $0810-22$ | Parallel Arm | 1 |
| $1601-$ P35-370 | Drawbar Tow Hitch Pin | 1 |



| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0810-29-40 \& 45$ | $40 \& 45^{\prime}$ Rear Module | 1 |



|  | Inscrap Ion |  |
| :---: | :---: | :---: |
|  |  |  |
|  |  |  |
|  |  |  |



| Item No. | Part Number | Description | Qty |
| :--- | :--- | :--- | :--- |
| 1 | $0810-11-70$ | 70 mm Jockey Wheel | 1 |
| 2 | $0216-$ WB1224 | M12 $\times 24$ Wheel Bolt | 3 |
| 3 | $1600-405$ | Brake Disc | 1 |
| 4 | 1601 -DC7013535 | Bolt on Brake Disc Dust Cap 70 ID $\times 135$ OD $\times 35$ | 1 |
| 5 | $0113-G E 70$ DO-2RS | Plain Spherical Bearing 70mm | 2 |
| 6 | 0172 -D1400-70 | Circlip External 70mm | 1 |
| 7 | $0171-J 105$ | Circlip Internal 105mm | 2 |



| Item No. | Part Number | Description | Qty |
| :--- | :--- | :--- | :--- |
| 1 | 0810-12CAL | Jockey Wheel Brake Caliper | 1 |
| 2 | $0801-$ KE009 | Brake Compression Spring | 1 |
| 3 | $0231-$ SQ16505 | Washer Square M16 $\times 50 \times 5$ | 1 |
| 4 | $0211-16150$ | M16 $\times 150$ grade 8.8 zp Bolt | 2 |
| 5 | 0221 -NYL16 | Nyloc Nut M16 | 1 |



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: | :---: |
| 1 | $0211-1690$ | M16 $\times 90$ grade 8.8 zp Bolt | 2 |
| 2 | $0221-$ NYL16 | Nyloc Nut M16 | 2 |
| 3 | $0733-$ K5083T66S | Axle 2"R 3T 6 on 6" PCD 330 OHF | 2 |
| 4 | $0751-11$ L15 | 11 L15 F3 Tyre on 6 on 6" Stud Rim | 2 |



|  | ${ }^{\text {Paprit }}$ |  |  |
| :---: | :---: | :---: | :---: |
|  | O221-NT12 | YYoc NutM12 |  |
|  |  | Cotere PinM3 ${ }^{\text {a }}$ |  |
|  |  |  |  |



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: | :---: |
| 1 | $0311-3524 S P$ | $3.5^{\prime \prime}$ Bore 24" Stroke 1.75" Rod Hydraulic Cylinder | 2 |



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: | :---: |
| 1 | $0211-1650$ | $M 16 \times 50$ grade 8.8 zp Bolt | 8 |
| 2 | $0221-$ NYL16 | Nyloc Nut M16 | 8 |
| 3 | $0231-\mathrm{F} 16$ | Washer Flat M16 | 16 |
| 4 | $0810-10 E T$ | Extended Tip Tail Bolt On Tip | 1 |



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: | :---: |
| 1 | $0221-$ NYL12 | Nyloc Nut M12 | 16 |
| 2 | $0231-$ F12 | Washer Flat M12 | 16 |
| 3 | $0271-1215577$ | U-Bolt M12 155 Deep $\times 77$ Wide | 8 |
| 4 | $0800-220.1$ | Tail Chain Stop Guard | 1 |
| 5 | $0800-235$ | Rear Tail Guard | 2 |
| 6 | $0800-498$ | Angled Chain Gaurd | 1 |

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| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0511-$ RCLIP4 | R Clip 4mm | 2 |
| $0801-44082938$ | Clevis Pin 1 " $\times 75 \mathrm{~mm}$ | 2 |
| $0801-$ KE-0307-1 | Clevis Pin 25mm $\times 75 \mathrm{~mm}$ | 1 |
| $0311-5041$ | $21 / 2^{\prime \prime} \times 6$ " Hydraulic Cylinder Side Port | 1 |
| $0211-1250$ | $M 12 \times 508.8$ zp Bolt | 2 |
| $0221-$ MYL12 | M12 Nyloc Nut | 2 |
| $0231-$ M24 | M24 zp Flat Washer | 1 |
| $0261-$ Cotter Pin M5 55050 | 1 |  |
| $0800-120.3$ | Module Lift Plate | 1 |
| $0800-167.3$ | Module Cylinder Guard | 1 |


| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0511-$ RCLIP4 | R Clip 4mm | 2 |
| $0801-44082938$ | Clevis Pin 1" $\times 75 \mathrm{~mm}$ | 2 |
| $0801-$ KE-0307-1 | Clevis Pin 25mm $\times 75 \mathrm{~mm}$ | 1 |
| $0311-5041$ | $21 / 2^{\prime \prime} \times 6^{\prime \prime}$ Hydraulic Cylinder Side Port | 1 |
| $0231-$ M24 | M24 zp Flat Washer | 1 |
| $0261-$ PINC550 | Cotter Pin M5 $\times 50$ | 1 |
| $0800-120.3$ | Module Lift Plate | 1 |




| PART NUMBER 0511-RCLIP4 | $\frac{\text { DESCRIPTION }}{\text { RCIIp }}$ (mmm | QTY. |
| :---: | :---: | :---: |
| 0801-44082938 | Clevis Pin $\mathrm{l}^{1 \times} \times 75 \mathrm{~mm}$ | 2 |
| 0801-KE-0307-1 | Clevis Pin $25 \mathrm{~mm} \times 75 \mathrm{~mm}$ |  |
| ${ }^{0311-5041}$ | $\frac{21 / 2^{\prime \prime} \times 6^{6} \text { Hy Hrausic Cylinder S Side Port }}{\text { M24zp Fat Washer }}$ | $\frac{1}{1}$ |
| 0261-PINC550 | Cotter Pin M5 $\times 50$ |  |
| 0800-120.3 | Module Lift Plate |  |
| $\square$ |  |  |




PLEASE REFER TO
CHAIN CARRIER LOCATIONS IN THE BACK OF THE MANUAL


| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| O800-139.1 | Chain Carrier Mount Plate | 2 |
| $0271-16112104$ | U-Bolt M16 x $112 \times 104$ | 4 |
| $0271-16160127$ | U-Bolt M16 $160 \times 127$ | 4 |
| $0231-$-F12 | M12 zp Flat Washer | 16 |
| $0221-$ NYL16 | M16 Nyloc Nut | 16 |

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| PAET NUMBER | DESCCRPITION | OTY. |
| :---: | :---: | :---: |
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| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0800-230$ | Rear A-Frame Chain Shield | 1 |
| PC10-19 | Rear Frame $M$ | 1 |
| $0271-1215577$ | U-Bolt M12 $\times 155 \times 77$ | 4 |
| $0221-$ NYL12 | M12 Nyloc Nut | 16 |
| $0231-$ F12 | M12 zp Flat Washer | 16 |
| $0810-19 L$ | Left Hand M | 1 |
| $0810-18 R$ | Right Hand M | 1 |
| $0271-128077$ | U-Bolt M12 $\times 80 \times 77$ | 4 |


| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0810-109 R$ | RH Outrigger With OS Sign Frame | 1 |
| $0810-109 L$ | LH Outrigger With OS Sign Frame | 1 |
| $0231-\mathrm{F} 12$ | M12 Flat Washer | 8 |
| $0810-17 \mathrm{~L}$ | Chain Carrier Bolt on End | 2 |
| $0211-1650$ | $M 16 \times 508.8$ zp Bolt | 8 |
| $0221-$ NYL16 | M16 Nyloc Nut | 8 |
| $0215-\mathrm{CH1240}$ | $M 12 \times 40$ Coach Head Bolt | 8 |
| $0221-$ NYL12 | M12 Nyloc Nut | 8 |



## Rear Light Bracket



Please ensure to bend tabs up and feed
wire through, so the light cable is secure

Mount to chain carrier with $2 \times \mathrm{M} 8 \times 20$ cup head bolts, Flat washer and Nylon nut


| Number | Description | Qty |
| :--- | :--- | :--- |
| 0211-36105 | M36 Grade 8.8 ZP Bolt | 2 |
| 0801-FC21 | Forged Clevis 21mm Bolt Hole | 2 |
| 0810-24 | LH Dropleg No Clevis | 1 |
| $0810-25$ | RH Dropleg No Clevis | 1 |
| $1501-365033-S S$ | Stainless Steel Wear Bush | 2 |




| Number | Description | Qty |
| :--- | :--- | :--- |
| 0211-36105 | M36 Grade 8.8 ZP Bolt | 2 |
| $0801-$ FC21 | Forged Clevis 21mm Bolt Hole | 2 |
| $0810-24$ | LH Dropleg No Clevis | 1 |
| $0810-25$ | RH Dropleg No Clevis | 1 |
| $1501-365033-$ SS | Stainless Steel Wear Bush | 2 |



| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0801-K E-0307-1$ | Clevis Pin 25mm $\times 75 \mathrm{~mm}$ | 2 |
| $0801-$ XK9261S | 20mm Compression Spring | 2 |
| $0801-$ KE0805-3 | Tensioner Cup Male | 2 |
| $0801-$ KE0805-4 | Tensioner Cup Female | 2 |
| $0801-$ PCHTA-B6 | 6tpi 1.25" Tension Bolt | 2 |
| $0801-$ PCHTA-BC | Tension Assembly Body | 2 |
| $0801-$ PCHTA-SB | Steel Spring Retaining Bush | 2 |
| $0801-$ PCHTA-N6 | 6tpi Lock Nut | 6 |
| $0261-$ PINC550 | Cotter Pin M5 $\times 50$ | 2 |




| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| $0802-$ DCTP-20 | Disc Chain Tie Plate Link 20mm | 1 |
| $0802-$ PCHB55 | 20mm Bolt Swivel Unit | 1 |
| $0801-$ PCDCS55 | Disc Chain Spacer | 1 |
| $0810-20$ | Chain Mount Arm | 1 |
| $0232-H T 13-8$ | Washer High Tensile 1 3/8" | 1 |
| $0801-10-51$ | Chain Mount Pin | 1 |
| $0801-$ PCH24MCA | Height Adjusting Chain | 1 |
| $0211-1265$ | $M 12 \times 658.8 \mathrm{zp}$ Bolt | 1 |
| $0221-$ NYL12 | M12 Nyloc Nut | 1 |
| $0211-20110$ ST | $M 20 \times 110 \mathrm{~mm} 10.9 \mathrm{~g} \mathrm{Short} \mathrm{Thread}$ | 3 |
| $0221-$ NYL20 | $M 20$ Nyloc Nut | 3 |
| $0231-S 20$ | $M 20 \mathrm{zp} \mathrm{Spring} \mathrm{Washer}$ | 1 |
| $0211-2050$ | $M 20 \times 508.8$ zp Bolt | 1 |



## Front Module Change

## Front Module


$30^{\prime}$ Module Lift Plate (0810-106)
replaces Module Lift Plate (0800-
120.3)

Shortened beam with lift plate set on


Rear Module Tension Body (0810103R) replaces Chain Mount Arm (0810-20)


## Rear Module Change



Shortened beam with two lift plates set on an angle to SHS.

30' Module Lift Plate (0810-106) replaces Module Lift Plate (0800-


30-45' Extended Chain Mount Plate (0810-21) replaces Rear Module

Tension Body (0810-103R)

| PART NUMBER | DESCRIPTION | QTY. |
| :---: | :---: | :---: |
| 0802-PCHB55 | 20mm Bolt Swivel Unit | 2 |
| 0802-DCTP-20 | Disc Chain Tie Plate Link 20mm | 2 |
| $0801-$ PCDCS55 | Disc Chain Spacer | 2 |
| $0810-20$ | Chain Mount Arm | 1 |
| $0810-21$ | 30-45' Extended Chain Mount Plate | 1 |
| $0801-10-51$ | Chain Mount Pin | 2 |
| $0801-P C H 24 M C A$ | Height Adjusting Chain | 2 |
| $0232-H T 13-8$ | Washer High Tensile 1 3/8" | 2 |
| $0231-S 20$ | $M 20$ zp Spring Washer | 2 |
| $0211-2050$ | $M 20 \times 508.8$ zp Bolt | 2 |
| $0211-1265$ | $M 12 \times 658.8$ zp Bolt | 2 |
| $0221-N Y L 12$ | $M 12$ Nyloc Nut | 2 |
| $0211-20110$ ST | $M 20 \times 110 m m$ 10.9g Short Thread | 6 |
| $0221-N Y L 20$ | $M 20$ Nyloc Nut | 6 |


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## Section 3 Chain Assembly



$55 \mathrm{~kg} / \mathrm{m}$


| Item No. | Description | Number | Qty |
| :--- | :--- | :--- | :--- |
| 1 | Nyloc Nut M20/24 | 0221 -NYL20/24 | 4 |
| 2 | M20 $\times 110 / \mathrm{M} 24 \times 120$ grade 10.9 ZP Short Thread Bolt | $0211-20110$ ST/0211-24120ST | 4 |
| 3 | $20 / 24 \mathrm{~mm}$ Bolt Swivel Unit | 0802 -PCHB55 / 0802-PCHB553 | 2 |
| 4 | Disc Chain Tie Plate Link 20mm /24mm | 0802 -DCTP-20/0802-DCTP-24 | 2 |
| 5 | Tie Plate Bush | 0801 -PCDCS55 | 2 |
| 6 | Roll Pin Zinc Plated 3/8" $\times 3^{n \prime}$ | $0262-3-8 \times 3$ | 1 |
| 7 | CL1-B Chain Disc Link | $0803-C L 1$ | 1 |





| Item No. | Description | Number | Qty |
| :--- | :--- | :--- | :--- |
| 1 | 10 Spike Disc Chain 49/27/5 | $0803-$ SD49 | 1 |
| 2 | Tie Plate For 20mm Bolt/Tie Plate For 24mm Bolt | $0800-83.2 / 0800-83.3$ | 4 |

## $\stackrel{\square}{\square}$




## Section 4 <br> Diagrams and charts



Before folding the machine for the first time, ensure all hydraulic cylinders are charged with oil.
To do this, run the hydraulics through the unfold sequence until the outer wings are straight and the centre cylinders are centred in the slots. (It may take a few minutes for the cylinders to charge completely).

Failure to do this could result in severe personal injury and/or damage to the machine.




Correct layout of hoses


## Wiring Diagram



Fixed housing end of swivel
should always face forward

Rotating seal end of swivel should always face rearward

Mounting like this prevents dirt getting forced into the seals of the swivel increasing longevity of the swivel

## For Example

Swivels attached to the leading ends of the chains should have the rotating seal


Fitting Cast Link Retaining Pins

Please install cast link retaining Pins ( $3 / 8^{\prime \prime} \times 3^{\prime \prime}$ Roll Pin, part number 0262-3-8X3) on all cast disc links.
Failure to do this could lead to the discs becoming dislodged during transport causing severe damage or injury


## Operating speeds

| Operating speeds for normal conditions |  |
| :--- | :--- |
| Chain type | Speed |
| Prickle Chain | $6-10 \mathrm{Mph} / 10-16 \mathrm{kmph}$ |
| Disc Mulch Chain | $6-8 \mathrm{Mph} / 10-12 \mathrm{kmph}$ |
| Transport / towing on roads | $15 \mathrm{Mph} / 25 \mathrm{kmph}$ |

## Tire pressure

| Tire size | Ply | PSI | KPA |
| :--- | :---: | :---: | :---: |
| $16.5 \mathrm{~L} \times 16.1$ | 14 | 36 | 250 |
| H40 $\times 14.5-19$ | 26 | 60 | 410 |
| $11 \mathrm{~L}-15$ | 10 | 44 | 300 |
| $15.5 / 80 / 24$ | 16 | 58 | 400 |
| $16.5 / 85 / 24$ | 16 | 55 | 380 |
| $550 / 60 / 22.5$ | 16 | 40 | 280 |
| $400 / 60 / 22.5$ | 16 | 50 | 350 |
| $12.5 / 80 / 18$ | 14 | 85 | 590 |
| $15.0 / 70 / 18$ | 14 | 71 | 490 |

## Chain Harrow specifications

| Model | $\mathbf{4 0 ^ { \prime }} / \mathbf{1 2 m}$ |
| :--- | :---: |
| Working width | $43^{\prime} 4^{\prime \prime} / 13.2 \mathrm{~m}$ |
| Transport width | $11^{\prime} 6^{\prime \prime} / 3.5 \mathrm{~m}$ |
| Transport height | $12^{\prime} 2^{\prime \prime} / 3.7 \mathrm{~m}$ |
| Transport length | $52^{\prime} 6^{\prime \prime} / 14.3 \mathrm{~m}$ |

## Bolt Torque Settings

| Bolt Type | Wheel nut |  |  |  | U Bolt |  |  |  | Grade 8.8 Bolt |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Grade <br> 10.9 Bolt |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bolt Size | M18 | M20 | $1 / 2^{\prime \prime}$ | $9 / 16^{\prime \prime}$ | M10 | M12 | M16 | M10 | M12 | M16 | M20 | M24 | M20 | M24 | Ft lb | 255 | 265 | 90 | 100 | 22 | 36 | 55 | 32 | 48 | 140 | 190 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Nm | 345 | 360 | 125 | 140 | 30 | 50 | 75 | 44 | 65 | 190 | 260 |

[1] When fitting a wheel \& tire to a hub, do the wheel nuts up in rotation to the correct tension. To achieve this choose a wheel nut \& tighten, then go clockwise to the next wheel nut \& tighten \& so on until all wheel nuts are tight. Then repeat the procedure to check that all nuts are tight. Do not use impact tools to tighten wheel nuts. For a guide to the correct tension of the wheel nuts please use the appropriate tension for your size wheel nuts from the Bolt Torque Settings table.

Torque values are for dry threads and surfaces however it is permissible to apply a small amount of anti corrosive oil to the threads.

## Specifications

## Disc Chain lengths

| Model 40ft |  | Length | $\begin{array}{\|c\|c\|} \hline \text { CL2 } \\ \hline \begin{array}{c} \text { ch2 disc } \\ \text { chainalso } \\ \text { requiresci1 } \\ \text { disc chain } \end{array} \\ \hline \end{array}$ |  | W36 | R300 | SD49 | Prickle chain |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |
| $40^{\prime}$ | Front right | 25'/7.6m | $\begin{gathered} \mathrm{CL2}-32 \\ \mathrm{CL1}-2 \end{gathered}$ | 46 | 46 | 60 | 60 | 84 |
|  | Front left | 25'/7.6m | $\begin{gathered} C L 2-32 \\ C L 1-2 \end{gathered}$ | 46 | 46 | 60 | 60 | 84 |
|  | Rear right | 29.8'/9.1m | $\begin{aligned} & \mathrm{CL2}-32 \\ & \mathrm{CL1}-14 \end{aligned}$ | 57 | 60 | 79 | 79 | 109 |
|  | Rear left | 25'/7.6m | $\begin{gathered} \hline \mathrm{CL2}-33 \\ \mathrm{CL1}-2 \end{gathered}$ | 45 | 47 | 62 | 62 | 87 |
|  | Modules front | 8.9'/2.7m | $\begin{gathered} \mathrm{CL2}-10 \\ \mathrm{CL1}-2 \end{gathered}$ | 17 | 17 | 22 | 22 | 31 |
|  | Modules rear | 8.9'/2.7m | $\begin{gathered} C L 2-11 \\ C L 1-2 \end{gathered}$ | 16 | 17 | 22 | 22 | 31 |

## Section 5 Operation

## Basic Operating \& Chain Tension

## Basic Operation

## Unfolding:

1. Walk around and inspect the machine.
a. Check that chains are not hooked on framework
b. Check swivel bolts are in place and not broken
c. Check that height adjusting chains have not fallen out of their slotted plates during transport.
2. Lower front A frame to working height.
3. Unfold wings holding the hydraulic lever until the tail is in working position and the main center cylinder pins have centerd in their slots.
4. Walk around and check that all chain links are straight and that working height of all swivels is correct for field conditions. Adjust if neccessary.
5. Move off with all chains in working position. If neccessary it is acceptabe to raise front A pull to transport height. This will lift the front chains off the ground and reduce the load on the tractor. Lower the front A pull once moving satisfactorily.

## Folding:

1. Lower the front A frame to working height. (This is important to ensure that all chains locate correctly in their transport rests).
2. Fold the wings. They should move as follows; modules will raise, tail will raise, main center cylinders will retract, one or both, until the wings stand vertically. The left outer wing then the right outer wing will fold down.
3. Raise front A frame to transport height.
4. Walk around and check that chains have located correctly in transport rests.
( $30^{\prime}$ only, install wing transport lock pins).

## Setting for correct chain tension

## Wings

Use the spanner supplied. Loosen the lock nut adjacent to the tensioner assembly body.
Turn the tension bolt clockwise to compress the coil spring. Correct tension is acheived when spring retains its set length when operator rolls the chain fore and aft on the ground.
Retighten the lock nut.
See table below

Spring Compression Length

| Model | inches | mm |
| :---: | :---: | :---: |
| 40 | 12.4 | 315 |

When less than $4^{\prime \prime}$ ( 100 mm ) of thread remains visible on the adjustor bolt then a link must be removed from the chain


## Modules

Loosen the lock nut on the draw bolt.
Tighten the adjusting nut clockwise until the outer face of the spring retaining washer is flush with the body of the module tensioning unit.
Retighten the lock nut.
If more than $8^{\prime \prime}(200 \mathrm{~mm})$ of thread is exposed then a link should be removed to maintain correct adjustment.


## Importance of chain tension

## Operational

It is imperative that the correct adjustment be maintained. Only through correct adjustment can a smooth and level finish be achieved in field working.
Loose chains lead to :

- Uneven performance across the width of the machine
- Uneven weed control
- Unsatisfactory incorporation
- Ineffective levelling
- Accelerated or premature chain wear
- Chains failing to engage with transport locators when folded
- Machine damage when folding or unfolding
- Uneven field surface with ridges and furrows being created. The leading $1 / 3$ rd of a loose chain is much more aggressive than the trailing $1 / 3$ rd and the center. This will mean that middle of the machine's front pair of chains will aggressively move soil outwards. The machine's rear pair of chains, if loose, have their aggressive 1/3rd near the wing extremity. It follows then that as the front discs push soil outwards, the least aggressive portion of the rear chain follows them and does not balance the soil movement. This is exacerbated at the wings, effectively creating a about halfway out each wing. It won't be evident in one pass, but is possible if care broad ridge is not taken over time.


## A correctly adjusted machine will not cause this phenomenon.

## Correct Working Height

## Settings for correct working height

To adjust the swivel height at the wings, relocate one of the polyurethane spacers either above or below the fixed mounting tube.

## Adjustment

| 1 | Loosen chain tension completely |
| :--- | :--- |
| 2 | Undo self tapping screw from corresponding spacer then prise open the spacer and <br> spring it off of the drop leg tube |
| 3 | Replace it in the selected position after raising or lowering the drop leg |
| 4 | Reinstall the self tapping screw and re-tension the chain |

It is possible to install all spacers either above or below the mounting tube giving a maximum of 4" ( 100 mm ) of adjustment.


## Correct Hose Attachment

Please note that when attaching hoses to sequence valve block to check that hoses are connected to the correct port.

Ports with CE, LE or RE are extend ports (the E denotes Extend) and hoses connected to these must go to the rear end of the cylinder.

Ports with CR, LR or RR are retract ports (the R denotes Retract) and hoses connected to these must go to the rod end of the cylinder.


## Assembly Update 048

## V12 Hydraulic Valve Fitting

This assembly update shows the correct connection of the hydraulic hoses to the new Version 12 Hydraulic sequence valve manifold.

All Machines 4 x hose no -01


## V12 Hydraulic Valve Fitting



## Assembly Update 048

## V12 Hydraulic Valve Fitting



Front Chain Carrier \& M Locations


Rear Chain Carrier \& M Locations


## Section 6 Pre-Delivery Check List

| Pre-delivery check list | Checked |
| :--- | :--- |
| Check tyre pressure (As per manual) |  |
| Check wheel nuts are tight |  |
| Hydraulic rams \& hoses are sound |  |
| Grease caster wheel kingpin bearing |  |
| All bolts and nuts are tightened to the correct torque values |  |
| All safety decals are on the machine in the correct locations as per the <br> operator's manual |  |
| Check the chain tension as per the operator's manual |  |
| Assembly and operating manuals are in the manual canister |  |
| Brake disc tension spring is tensioned for road transport (50-63mm) |  |
| Roll pins are installed in the CL Discs (CL2 \& CL1) |  |
| Charope Only |  |
| Checcumulator charged to 70bar with Argon (6m Only) |  |
| Machine is registered |  |
| Check air brake relay valve is correctly set for the load |  |
|  |  |

Notes

Notes

