OPERATION, MAINTENANCE, AND INSTALLATION MANUAL



GALAXY 2R[®] GRAND FORKS TWO-RAM BALER





Vernon, AL - Yerington, NV 1-800-633-8974 www.nexgenbalers.com

NEXGEN[®] is a Division of Marathon Equipment Company OMI Manual No. 0013-Grand Forks1, Revision Date: Aug 2012 www.marathonequipment.com

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INSTALLATION

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PREVENTATIVE MAINTENANCE SCHEDULE

OPERATION

Introduction

Thank you for purchasing a *NEXGEN*[®] Galaxy2*R*[®] Grand Forks Two-Ram Baler!

This product is designed to give you reliable service and superior performance for years to come. The purpose of this manual is to provide the owner and/or operators with the necessary information to properly and safely install, operate, and maintain the baler. Also included are sections regarding troubleshooting and service procedures. The manual is not intended as a primary training source, but as a reference guide for authorized, trained personnel. Each person involved in the operation, maintenance, and installation of the machine should read and thoroughly understand the instructions in this manual and follow ALL warnings.

Employers involved in the operation, maintenance, and installation of the baler should also read and understand the most current version of the following applicable standards:

ANSI Standard No. Z245.5, "Safety Requirements For Baling Equipment"

A copy of this standard may be obtained from ANSI (www.ansi.org):

25 West 43rd Street New York, NY 10036

OSHA Title 29 CFR, Part 1910.147

"The Control of Hazardous Energy (Lock-Out and Tag-Out)" (www.osha.gov)

Any service or repair instructions contained in this manual should be performed by factory authorized personnel only.

If you should need assistance with your baler, please contact your distributor. When contacting your distributor, you will need to provide:

- Serial Number: _____
- Installation Date: ______
- Electrical Schematic Number: _______

If you have any safety concerns with the equipment, or need further information, please contact us at 1-800-633-8974 or:

Marathon Equipment Company Attn: Field Service Department P.O. Box 1798 Vernon, AL 35592-1798

Pre-Operation Instructions

WARNING: Do not operate baler until operating instructions are thoroughly understood. Wear safety glasses and gloves when operating this equipment.



Stay clear of all internal baler parts and all moving external baler parts when in operation. Failure to do so could result in serious personal injury or death!

Never enter any part of baler unless the disconnect switch has been turned off, padlocked, and all stored energy sources have been removed. See Lock-Out & Tag-Out Instructions on page 2-1.

Before starting baler, be sure no one is inside. Be certain that everyone is clear of all operation points and pinch point areas before starting.

This baler is controlled by photocells and will start automatically when photocells detect ANY OBJECTS in the charge box.

The compression ram in this baler travels at a very fast speed. Stand clear of the baler when in operation.



Employers should allow only authorized and thoroughly trained personnel to operate this baler.

This baler is equipped with a key operated locking system. Keys should be in possession of only authorized personnel. Federal regulation prohibits operation by persons under 18 years of age. Turn OFF and remove the key after use.

The baler hydraulic system operates at high pressures and at high temperatures. If you suspect a leak, **do not check with your hands** and avoid contact with piping, hoses, and cylinders.



ONLY AUTHORIZED PERSONNEL SHOULD BE ALLOWED INSIDE PANEL BOX. The panel box contains high voltage components. See Lock-Out & Tag-Out Instructions on page 2-1.

The Baling Process



Control Panel Diagram



- 1. **Touch Screen** Most of the baler's operations can be controlled from here. The description of touch screen controls begins on page 1-8.
- 2. **Joysticks** Used to manually control both the main ram and the ejection ram. The touch screen controls must be set to "Manual Mode" for these to function.
- 3. **Controls ON/OFF** This key switch turns power to the programmable controller either ON or OFF. The switch must be in the "ON" position for all other controls to function.
- 4. **Power ON** Push and hold this button for 20 seconds to turn the power on to the operator controls.
- 5. **Strap** Push this button to activate the tier and put the preset number of straps on the bale as it is ejected onto the bale table.
- 6. **Emergency Stop** Push this button to stop the machine in the event of an emergency or any time the machine needs to be stopped.

Emergency Stop Control Location

NEXGEN[®] Galaxy2R[®] Grand Forks Two-Ram Balers have four emergency stop buttons mounted at various locations on the machine. Be thoroughly familiar with the location of each button. If a conveyor system is used, the conveyor should have an e-stop button mounted on it.



Standard Operation - Baler Start Up

WARNING: Do NOT operate baler until operating instructions are thoroughly understood.



IN CASE OF EMERGENCY: Push the large RED button to STOP

Prior to start-up of the baler each day, check the items found in the "DAILY" list in Periodic Maintenance on page 2-3.

Standard operation includes baler start-up for Manual and Automatic Operation.

Baler Start Up

- 1. Check work area and make sure all personnel are clear of baler.
- 2. Turn the electrical disconnect to the "ON" position.
- 3. Insert the CONTROLS key and rotate switch to the "ON" position.
- 4. Make sure all "emergency stop buttons" are pulled out.
- 5. Touch the "SAFETY RELAY RESET" button. (Allow for a brief delay for the control processor to initialize).
- 6. Touch "Ack All" (Acknowledge All) and "Reset" on the touch screen to clear the Alarm screen. The screen will change to the Main Menu.
- 7. Touch the "MOTOR START" button and continue to touch for 20 seconds.
 - a. A start-up alarm sounds and the beacon flashes for 5 seconds.
 - b. The alarm silences in five seconds and the beacon continues to flash for 15 more seconds. The beacon continues to flash allowing the operator time to be sure no one is inside the baler or on the feed conveyor at any time.
 - c. The main motor starts after a 20-second delay. At that time, remove your finger from "Start" button.

This completes the Baler Start Up sequence.

The touch screen instructions begin on page 1-8.

Automatic and Manual Operation Modes

Automatic Operation (Auto Mode)

- 1. Start the baler as described in Standard Operation Baler Start Up on page 1-6.
- 2. From the touch screen's Main Menu, press the MANUAL MODE button and the screen advances to the "Manual Menu".
- 3. Move the MAIN RAM joystick to RETRACT until the ram is fully retracted.
- 4. On the touch screen, press the MAIN MENU button.
- 5. Press the AUTO MENU button and the screen advances to the "Auto Menu" screen.
- 6. Press the AUTO MODE START button and the baler automatically cycles when the designated photocell is blocked by an incoming product.
- Press the CONVEYOR AUTO button if you want the baler to control the flow of material. You may control the flow of material manually by toggling the "CONVEYOR ON / CONVEYOR OFF" button as required. (Optional controls)
- 8. Press the MANUAL MODE, MAIN MENU, or CYCLE STOP button to end Auto Mode. To resume Auto Mode, start over from step 1.

Manual Operation (Manual Mode)

- 1. Start the baler as described in Standard Operation Baler Start Up on page 1-6.
- 2. From the touch screen's Main Menu, press the MANUAL MODE button and the screen advances to the "Manual Menu".
- 3. Move the MAIN RAM joystick to COMPRESS or RETRACT for manual ram operation.

NOTE: The manual controls will lock if not moved in 60 seconds. If this happens, press the POWER ON button to reset the timer.

The touch screen instructions begin on page 1-8.

Touch Screen Controls

The following control panel screens are available in English as standard. Spanish and French screens are available as options. Press the required option button onscreen to change the display language.

Start Up Screen

Γ																								
									G	0	Т	0	MA	I	N	ΜE	NU	J						
Į,	Jai	19		PA			NO																	
1	TOL	.15	ľ		113	RE	anci																	

Go To Main Menu - Press to continue to the Main Menu Screen on page 1-9.

Main Menu Screen



Information Boxes - The top left olive-colored window displays general information and the top right window displays the status of the motors.

Go To General Setup - Press to go to the General Setup Screens on page 1-10; a pop-up box will display, login as "manager" to access.

Go To Grade - Press to go to the Grade Setup Screens on page 1-14; a popup box will display, login as "manager" to access.

Go To Diagnostics - Press to go to the Diagnostics Screens on page 1-23.

NOTE: Diagnostics screens are accessible only by Marathon *NEXGEN*[®] personnel. In the event that you need to access these screens, please call our service department at 1-800-633-8974 and proper instructions will be given accordingly.

Go To Data - Press to go to the Data Screens on page 1-28; a pop-up box will display, login as "manager" to access.

Motor Control Screen - Press to go the Motor Control Menu Screen on page 1-32. **Master Start** - Press and hold for 20 seconds to start the motors. The countdown displays in the information window on the top LHS of the screen.

Stop Motors - Press to stop all motors in operation.

Manual Mode - Press to go to the Manual Menu Screen on page 1-33.

Auto Menu - Press to go to the Auto Menu on page 1-34.

Current "Grade" Recipe – Displays the current grade recipe number. Refer to Grade Setup Screens on page 1-14.

Date and Time – Displays the current date and time.

General Setup Screens

NOTE: You must login as the "manager" to access the General Setup screens.

Motor start delay/alarm ON/OFF



Delay Between Main Motor Start - Indicates the delayed time, in seconds, between each motor starting. The range can be set between 1-15 seconds and is recommended to be set at 4 to 5 seconds.

OFF - Press this button to change to "ON", which activates an alarm to sound when a fault occurs.

To General Setup Screen 2 - Press this button to go to the next General Setup screen.

Main Menu - Press to go back to the Main Menu Screen on page 1-9.

GENERAL SETUP

Image: No material detect cycle counts

1234

Image: Image:

Set no material detect cycle count

No Material Detect Cycle Counts - Press this button to display a numeric keypad to select the number of cycles for the ram to complete before it stops because no material is detected by the selected photocells. Displays the fault.

Heat exchanger ON/OFF

GE	NERAL S	ETUP
HEAT	EXCHANGER	OFF
· · · · · · · · ·		
ENGLISH SPANISH FRENC	GENERAL SETUP NEXT SCREEN	BACK

Heat Exchanger - Press this button to switch the heat exchanger (oil cooler) to the "Auto" mode. It is recommended to keep this on "AUTO" during operation, not "OFF".

Motor stop activate/set idle time



Motor Stops When Not Baling - Press this button to switch to the "ON" setting, which programs the baler to stop after a set length of idle time.

Idle Time To Motor Stop Minutes - Press this button to display a numeric keypad which allows you to choose the length of idle time (in minutes) before the motor(s) automatically shut down.

Grade Setup Screens

NOTE: You must login as the "manager" to access the Grade Setup screens.

Grade setup 1

GR	ADE SETUP	
SELEC	T BALE RECIPE	
· · · · · · · · · · · · · ·	12345	
	· · · · · · · · · · · · · · · · · · ·	
	FULL EJECT	
	CHANGE	
	TO GRADE SETUP	
ENGLISH SPANISH FRENCH	SCREEN 2	NAIN NENU

Select Bale Recipe - You must login as the "operator" to change the Bale Recipe.

Plug Bale/ Full Eject - When "Plug Bale" is displayed, the ejector ram does not eject the bale all the way out. Press the "Change" button to select "Full Eject". When "Full Eject" is shown, the ejector ram fully ejects the bale.

To Grade Setup Screen 2 – Press to go to the next Grade Setup screen.

NOTE: You must login as the "manager" to proceed.

Main Menu - Press to go back to the Main Menu Screen on page 1-9.

Grade setup 2

GRADE S	ETUP	2
1234 1234		
BALE MADE POSITION	123.4	· · · · · · · ·
BALING PRESSURE	-1234	
INITIAL HOPPER OPENING	12.3	· · · · · · · · ·
GRADE SETUP 3		MAIN MENU

Bale Made Position - When a set baling pressure is reached at this position or less than, the bale ejects. You can select increments up to one-tenth of an inch. The minimum position is "67.0'' inches.

Baling Pressure - This is the maximum pressure limit while baling before the bale is ejected. There are two ranges for different model numbers:

- 1) 1000 3000 psi Can set at a maximum of 2800 psi.
- 2) 1000 4000 psi Can set at a maximum of 3800 psi.

Initial Hopper Opening - Position of the fully retracted main ram. The range starts at 2.0" and can be programmed within the range of the hopper length. You can increase the ram position when baling material that is difficult to shear, in order to minimize bite.

Grade setup 3



Minimum Hopper Opening - Press the number box to display a numeric keypad where the operator can select the starting position of the main ram within the hopper opening. The range is from 1.0" to 90.0". This setting can be increased to lessen the opening of the charge chamber in order to control the flow of material and prevent over-charging.

Start Proportional - Selects the position (greater than the Bale Made value) at which the ram will start a calculated stroke (not fully retracting) in order to control the flow of material into the charge chamber that will be compacted into a bale.

The "Minimum Hopper Opening" setting and the "Start Proportional" setting work together as a range in which the ram moves to control the flow of material into the charge chamber when getting close to creating a full bale.

Number of Straps (Multi-Strap) - Selects the number of straps to be put on the bale.

Grade setup 4



Ram Photocell Delay - This is the time that the photocell is to be blocked before the ram activates, set within one-tenth of a second.

Plug Mode Door Extended Position - The NexDoor can be used as a "plug" to hold the bale in position. This setting is the scope of penetration by the NexDoor into the bale. The minimum range is 3.0" and can be set up to 46".

Grade setup 5



Use Multi-Gather - When "ON", the ram travels just past the shear blade before it retracts and does not fully extend. This is used to build initial bale density and to speed up bale production. When "OFF" the ram extends fully each cycle.

Grade setup 6



Auto Cycle Eye - This setting is changed according to the baling material size. For example, when baling larger material, such as corrugated cardboard, select the "Upper" photocell. When baling smaller material, such as office paper, select "Either Lower" or "Both Lower" photocells, depending on material density.

Press the required photocell to highlight and activate setting.

Grade setup 7



Conveyor Feed Eye - The selection in this list determines which photocell stops the conveyor for the duration of the ram cycle.

Press the required photocell to highlight and activate setting.

Conveyor Feed Eye Delay - Press to display a numeric keypad and select the length of time (in seconds) the photocell is blocked before the conveyor stops.

Grade setup 8



Alarm When Bale Made - Press the "Change" button on the right to activate an alarm to sound once a bale is made. Alarm status is indicated by either "OFF" or "ON" to the far right. This is used in the event of a material change once the bale is made.

Use No Material Detected Alarm - When "ON", an alarm sounds if no material is detected in the charge chamber once the ram completes the set number of cycles. If "OFF" no alarm sounds and no fault is given and this cancels the automatic number of cycles setting.

Use Check Photoeye Alarm - When "ON", an alarm sounds if the upper photocell is blocked, but the bottom photocell is clear. If "OFF", no alarm sounds and no fault is given.

Grade setup 9

G	RADE	SET	UP	9
PLUG BALE	STRAP	POSITI	ON F	ULL EJECT
123. 4		1		123. 4
123. 4		2		123. 4
123. 4		3-		123. 4
123. 4		4		123. 4
123. 4		5		123. 4
			· · · · · ·	
ENGLISH SPANISH FREN		GRADE SETUP 10		GRADE SETUP 8

Press the number boxes to display a numeric keypad where you can select the bale positions at which you want straps to be placed around the bale. The range for both "Plug Bale" and "Full Eject" are 2.0 - 99.0 inches. Although "99" exceeds the maximum position, it can be selected for straps that will not be used. For example, if you only want to use two straps on the bale, then select "99" as the position for straps 3-20.

The position at which strap 1 is placed on the bale can be determined in Manual Mode by recording the ejector ram position shown from the first ejected bale.

Input this number in the associated number box and the strap will be placed when the bale reaches that position.

NOTE: Grade Setup Screen 10 is the same as the one shown above, but with "Strap Positions" 6 through 10 shown instead.

NOTE: Grade Setup Screen 11 is the same as the one shown above, but with "Strap Positions" 11 through 15 shown instead.

NOTE: Grade Setup Screen 12 is the same as the one shown above, but with "Strap Positions" 16 through 20 shown instead.

Diagnostics Screens

NOTE: You must login as the "manager" to access the Diagnostics – data screen.

NOTE: All other diagnostics screens (refer to pages 1-24 to 1-25) are accessible only by Marathon $NEXGEN^{\$}$ personnel. In the event that you need to access these screens, please call our service department at 1-800-633-8974 and proper instructions will be given accordingly.

Diagnostics – data



Diagnostics – model status



Diagnostics – ram position



Diagnostics – cylinder position



Diagnostics – options



Input/Output Screens

NOTE: Input / Output screens coincide with the PLC and electrical schematic to show which components have power to them by illuminating red. If there is no power to the specific input/output, the indicator remains red. The indicator turns green if the input/output is energized.

OUTPUT STATUS GO TO INPUT / GO TO DIAGNOSTICS OUTPUT SCREEN 2 I:0/0 1:0/7I:1/0 I:1/8 I:0/1 1:0/8 I:1/1 I:1/9 1:0/2 1:0/9 I:1/2 I:1/10 1:0/3 I:0/10 I:1/3 I:1/11 I:0/4 I:0/11 I:1/4 I:1/12 1:0/5 I:1/5I:1/13 1:0/6 I:1/6 I:1/14 1:1/7 I:1/15 ENGLISH SPANISH FRENCH

Input/output status 1

Input/output status 2



Input/output status 3

INPUT	OUTPUT STATUS	
GO TO INPUT / DUTPUT SCREEN 1	GO TO INPUT / DUTPUT SCREEN	2
· · · · · · · · ·	0:3/8	
	0:3/1 0:3/9	
	0:3/2 0:3/10	
	0:3/3 0:3/11	
	0:3/4 0:3/12	
	0:3/5 0:3/13	
	0:3/6 0:3/14	
ENGLISH SPANISH FRENCH	0:3/7 0:3/15	

Data Screens

NOTE: You must login as the "manager" to access the data screens.

Data cumulative



Bale Counts Life Time - Indicates the number of total bales made during the life of the baler.

Motor Hours - Indicates the total number of hours the motor(s) have been in operation.

Bale Time - Indicates the number of hours the main ram or ejector ram has been in motion.

Main Ram Cycle Count - Indicates the total number of cycles the main ram has completed.

Bales Per Hour - Indicates the number of bales made per hour.

Strokes Per Bale - Indicates the number of strokes made per bale.

Data bales/day



This screen displays a graph showing the number of bales made per day for the past seven days.

Date/message

Date	Message
ENGLISH SPANISH FRENCH	TO DATA Screen 1

This screen displays a list of fault messages the baler has encountered.

Reset



Reset - Press this button to clear the display message.

The two screens shown on page 1-30 indicate that the machine has encountered a problem and operation cannot continue until the fault is corrected. The date and time of the fault are also recorded here.

Refer to the Fault List below for a complete listing of possible faults.

Fault List

The following faults must be cleared before the baler can continue operation.

- Check main Motor #1 starter, output fuse and auxiliary contact.
- Check main Motor #2 starter, output fuse and auxiliary contact.
- Check circulating pump motor starter, output fuse, and auxiliary contact.
- Check fan motor starter, output fuse, and auxiliary contact.
- Ram jammed. Ram could not reach home position.
- Ram could not retract or ram position sensor failure.
- Auto bale eject stopped, Tier not ready!
- Change hydraulic filter.
- No change in bale size. No material detected. Check photoeye.
- Ejector cannot retract; possible jam.
- "Warning! More than one ejector limit switch input is on!"
- Check photoeyes. Upper eye is blocked. Lower eye is clear.
- Ejector ram jammed or no signal from ejector position sensor.
- Too cold to move the ram, let oil heat up.
- Cannot start auto bale eject, Tier not ready!
- Cannot throw strap, Tier not ready.
- Time-out waiting for ram movement.
- Bale made.
- Low oil level.
- High oil temperature.
- An E-Stop is pressed.
- Time-out waiting for door to open.
- Time-out waiting for door to close.
- Check conveyor motor starter or relay, output fuse, and aux contact.
- Check door position sensor.
- Main ram moved forward, ejector not retracted.
- Ejector not retracted, baler in auto.
- Check ejector position sensor and limit switch.
- Suction valve closed or proximity switch failure.
- Feed door open.

Motor Control Menu Screen



Information Boxes - The top left olive-colored window displays general information and the top right window displays the status of the motors.

Circulation Pump Start - Press this button to start the circulation pump.

Circulation Pump Stop - Press this button to stop the circulation pump.

Motor 1 Start - Press this button to start Motor #1.

Motor 1 Stop - Press this button to stop Motor #1.

Motor 2 Start - Press this button to start Motor #2.

Motor 2 Stop - Press this button to stop Motor #2.

Dust System Start - Press this button to start the dust extraction system.

Dust System Stop - Press this button to stop the dust extraction system.

Go To Main Menu - Press to go back to the Main Menu Screen on page 1-9.
Manual Menu Screen



Information Box - The top left olive-colored window displays general information.

Conveyor On – Press to start the conveyor.

Conveyor Stop - Press to stop the conveyor.

Main Menu - Press to go back to the Main Menu Screen on page 1-9.

Home - This indicator illuminates green when the ram is in the home position (it is not a button).

Slow - Press this button to slow down the movement of the ram. This allows for easier Home placement.

System Pressure – Displays the oil pressure level at the hydraulic pumps.

12 GPM Pressure – Displays the 12 GPM pump pressure level.

Oil Temperature – Displays the oil temperature level within the system.

Main Ram Position - Shows the position of the main ram. As the ram extends the number increases and decreases as the ram retracts. The graphic indicator for the main ram moves proportionally to indicate the main ram position.

Eject Position - Shows the position of the ejector ram. As the ram extends the number increases and decreases as the ram retracts. The graphic indicator for the main ram moves proportionally to indicate the ejector ram position.

Door Position - Shows the position of the NexDoor.

NOTE: If the manual controls are not moved in 60 seconds, the controls will lock. Press the "Power On" button to reset the timer.

Auto Menu Screen



Information Box - The top left olive-colored window displays general information. **Data** - Press to access the Data screens. See **Data Screens on page 1-28**.

Main Menu - Press to go back to the Main Menu Screen on page 1-9.

 ${\bf Conveyor} \ {\bf On}$ - Press to start the conveyor. The conveyor defaults to stop once the upper photocell is blocked.

Conveyor Stop - Press to stop the conveyor.

Conveyor Auto - Conveyor starts and will continue until the selected photocell is blocked. Refer to Grade setup 6 on page 1-19.

System Pressure – Displays the oil pressure level at the hydraulic pumps.

12 GPM Pressure – Displays the 12 GPM pump pressure level.

Oil Temperature – Displays the oil temperature level within the system.

Single Cycle - Press to cycle the main ram once.

Main Ram Position - Shows the position of the main ram. As the ram extends the number increases and decreases as the ram retracts. The graphic indicator for the main ram moves proportionally to indicate the main ram position.

Eject Position - Shows the position of the ejector ram. As the ram extends the number increases and decreases as the ram retracts. The graphic indicator for the main ram moves proportionally to indicate the ejector ram position.

Strokes Per Bale - Indicates the number of strokes to complete each bale.

Manual Mode - Press to switch to the Manual Menu Screen on page 1-33.

Auto Mode Start - Starts the automatic cycling of the machine once the selected photocell is blocked for the selected delay time. Refer to Grade setup 4 on page 1-17. The amber "stack" light illuminates.

Door Position - Shows the position of the NexDoor.

Cycle Stop - Press this button to stop the cycle.

Access System Setup Screen



System Setup Screen - Press the upper right and lower left corners of the screen to access the System Setup screen.

NOTE: This should only be used to change the time and date for date stamping.

Main Menu - Press to go back to the Main Menu Screen on page 1-9.

Control Panel Layout



Control Panel Layout (cont.)

Reference numbers given below refer to the control panel layout drawing on page 1-36.

Ref #	Part #	Description	Qty
3	030757	DINRAIL MOUNTING CHANNEL AB#19	10
10	033645	PLC AB 1764 LRP ML 232 PROCESS	1
10	034258	PLC AB MICRO LOGIC 1500 BASE 2	1
14	034172	TERMINAL BLOCK #24-10 35MM DIN	7
20	034470	RECEPTACLE SINGLE 120V 15A DIN	1
29	034323	POWER SUPPLY 24VDC 5 AMP AB	1
31	034442	WIRE DUCT WHITE 1 IN X 2 1/4 I	17
32	034348	ENCLOSURE CONSOLET 18 x 24 x 3	1
33	034441	TERMINAL BLOCK END STOP 35MM D	8
33	034437	TERMINAL BLOCK #22-10 35MM DIN	65
35	034175	TERMINAL BLOCK FUSED 5 X 20 M	29
35	034448	FUSE 2 AMP 5MM X 20MM	28
37	030842	NOISE SUPPRESSOR CORCOM 3VV1	1
38	034328	PLC AB POWER SUPPLY 1769-PA2	1
39	034131	PLC AB MICRO LOGIC 1500 INPUT	1
40	033849	PLC AB 1769 OW16 OUTPUT MODULE	2
41	034375	PLC AB 1769 CRR3 EXPANSION CAB	1
42	033648	PLC AB 1769 IF4 ANALOG CARD	2
43	034338	TERMINAL BLOCK #24-12 35MM DIN	6
44	034967	RELAY 1 POLE 120V 12A 5 PIN	2
44	034968	RELAY BASE 1 POLE DIN RAIL F/	2
44	034969	RELAY HOLD DOWN CLIP F/03-4968	2
45	034374	PLC AB 1769 ECL END CAP	1
-	030043	WIRE 16 GA WHITE CSA UL	12
-	030049	WIRE 16 GA RED MTW CSA UL	100
-	050239	SCREW 10-32 X 3/8 SELF TAPPING	42
-	030041	WIRE 16 GA BLUE MIW CSA UL	100
-	030446	WIRE 16 GA BLUE W/STRIPE	20
-	034169	TERMINAL BLOCK END BARRIER F/	3
-	034440	TERMINAL BLOCK MARKING TABS	22
-	034877	PLC AB MICRO LOGIC 1500 MM-2 E	1
-	034438	TERMINAL BLOCK JUMPER 3 POLE I	5
-	050221	SCREW 10-32 X 3/4 ROUND	2
-	030681	OPERATOR 30 JOYSTICK RIGHT-LEFT	1
-	030682	OPERATOR 30 JOYSTICK UP-DOWN	1

Ref #	Part #	Description	Qty
-	035053	LEGEND 3/4 X 2 'MAIN RAM' TOP	1
-	035054	LEGEND 3/4 X 2 'EJECTOR RAM' TO	1
-	035055	LEGEND 3/4 X 2 'COMPRESS' TOP	1
-	035056	LEGEND 3/4 X 2 'RETRACT' TOP	2
-	035057	LEGEND 3/4 X 2 'EJECT' TOP	1
-	060120	DECAL DANGER DISCONNECT & LOCKEA	1
-	060129	DECAL MONTHLY MAINTENANCE	1
-	060121	DECAL NOTICE FEDERAL REGULATION	1
-	034453	FUSE 5 AMP 5MM X 20MM	1
-	063374	DECAL MAESTRO TRADEMARK	1
-	030076	CONTACT BLOCK 1NO	1
-	030063	CONTACT BLOCK NC	1
-	030858	CONNECTOR 9 PIN SUB D FEMALE 4	2
-	030859	CONNECTOR 9 PIN SUB D COVER 40	2
-	035852	OPERATOR INTERFACE PROFACE	1
-	030848	CORD 5 PAIR SHIELDED BELDEN	3
-	050316	SCREW 8-32 X 1/2 MACH SLOT	5
-	035051	LEGEND 30 'EMERGENCY STOP' TOP	1
-	030201	OPERATOR 30 PUSH/PULL MHD RED	1
-	030269	OPERATOR 30 SELECTOR 2 KEYED M	1
-	030687	OPERATOR 30 PUSHBUTTON ILL GRE	2
-	035052	LEGEND 30 'ON OFF' TOP	1
-	035049	LEGEND 30 'POWER ON' TOP	1
-	035050	LEGEND 30 'STRAP' TOP 'CORREA'	1

NexDoor[®] Diagram



Oversized Bale Release - Device allows you to eject an oversized bale (up to 9") from standard size.



Bale Clamp - Holds on to ejected bale to help form a square end on the next bale.



Bale Wall - Closes off the ejector nozzle of compression chamber to allow for making a square bale. **Separation Door** - Separates commodities to avoid contamination.



Bale Sizer - Allows you to program a bale width of 37" to 46" on a narrow model or 51" to 60" on a wide model.

Jam Prevention

Warning: Do not enter the baler for any reason until the baler has been locked-out and tagged-out per Lock-Out & Tag-Out Instructions on page 2-1.

There are two types of jams which could occur with a two-ram baler; a jam at the shear blades or an oversize bale which is difficult to eject. The following steps may be taken to prevent the likelihood of a jam:

- 1. Pre-sort the material. Remove any questionable objects or material. Make sure the material is all the same general type and composition.
- 2. Regulate the material flow into the baler feed hopper. Keep the flow even. Do not overfill the feed hopper.
- 3. Properly maintain the shear bar and compression ram holddown bars. A good cutting edge on the shear bar reduces the possibility of jamming.

The best prevention of baler jams is good judgment. An operator's familiarity with the material variances, baler limitations, and close attention to material flow reduces the possibility of a jam. It is much easier to make a couple of extra strokes with the compression ram than it is to clear out a jam.

Shear Blade Jam



If the shear blade fails to cut the material in the automatic mode, turn off the feed conveyors and switch the baler to Manual Mode. Retract the compression ram a short distance to allow material to fall away from the shear bar on the baler body. Use the MAIN RAM - COMPRESS/RETRACT control lever to cycle the ram forward. Watch the ram to see if it moves forward and shears the jam. This procedure may have to be repeated a couple of times to clear the jam. If the jam fails to clear:

- 1. Retract the compression ram to the full retract position.
- 2. Shut down the machine and follow the instructions on page 2-1. Never enter the baler for any reason until the baler has been Locked-out and Tagged-out.
- 3. Remove material from the feed hopper and clear the obstruction.

Over-Sized Bale Jam

Warning: Do not enter the baler for any reason unless the baler has been lockedout and tagged-out per Lock-Out & Tag-Out Instructions on page 2-1.

The following instructions explain how to remove a jammed bale.



- 1. If the bale fails to eject in Automatic Mode, set the baler to Manual Mode.
- 2. Retract the compression ram to the full retract position to relieve pressure on the bale.
- 3. Use the EJECTOR EXTEND button to eject the bale, and use the STRAP BUTTON to apply wire tie straps manually as the bale is ejected.
- 4. In the unlikely event that the bale does not eject using the EJECTOR EXTEND button, shut the baler down.
- 5. Lock-out and Tag-out the baler per the instructions on page 2-1. Never enter the baler for any reason until the baler has been Locked-out and Tagged-out.
- 6. Remove the excess material.

Changing Materials and Baler Shutdown

Changing Materials

• To prevent contamination between bales, stop the supply of the present material to the feed conveyor. Run the conveyor empty into the baler feed hopper. Make sure the conveyor is cleared of all material. Turn the conveyor off.

NOTE: If enough material remains to complete one bale, finish that bale.

- Make sure the feed hopper is cleared of all material by manually cycling the compression ram. Place the compression ram in the HOME position and then eject and tie off the bale.
- Change the material. Re-start the feed conveyor and resume baling with the next material.

Baler Shutdown

- 1. Eject the bale.
- 2. Stop the conveyors feeding the baler.
- 3. Position the ejector ram in the retract position.
- 4. Position the compression ram in the full extend position.
- 5. Rotate the CONTROLS key switch to the OFF position and remove the key.
- 6. Turn the main disconnect switch to the OFF position and lock as shown in the Lock-Out & Tag-Out Instructions on page 2-1.

NOTE: If any maintenance or service is to be performed on the baler, complete Lock-out and Tag-out is required.

- 7. Clean up around the bale exit and automatic wire tier. Perform any other necessary clean up, such as behind the main ram (requires complete Lock-out and Tag-out), around the baler, and the feed conveyor.
- 8. Turn the main disconnect switch back ON so that the oil heaters may function, if required.

Decals

Warning Decal Requirements

When your baler leaves the factory, several WARNING DECALS are installed for your protection. These labels are subject to wear and abuse due to the nature of the baling operation. **The following decals must be maintained.** Additional decals may be purchased through your distributor or from Marathon Equipment Company by either calling the service department at **1-800-633-8974** or going online to **www.parts1stop.com**.

Ref #	Part #	Description	Qty
1	06-2751	NEXGEN BALING SYSTEMS	8
2	06-1839	AMERICAN FLAG	4
3	06-2750	NEXGEN SERIAL# PLATE 4 X 6	5
4	06-0120	DANGER DISCONNECT & LOCK	4
5	06-0249	DANGER HAZARDOUS VOLTAGE	6
6	06-0121	NOTICE FEDERAL REGULATIONS	2
7	06-0117	CAUTION STAND CLEAR WHEN BALE	1
8	06-0039	DANGER DO NOT ENTER	4
9	06-0133	DANGER STAY OFFDO NOT CLIMB	4
10	06-0052	WARNING GATE MUST BE CLOSED	1
11	06-0041	WARNING THIS MACHINE STARTS	5
12	06-0116	DANGER KEEP HANDS OUT	2
13	06-0250	LOCK OUT POINT DANGER	1
14	06-0129	MONTHLY MAINTENANCE	1
15	06-3053	DANGER VOLTS 2" X 4"	4
16	06-0038	WARNING DO NOT REMOVE ACCESS	5
17	06-3044	DANGER VOLTS (W/BLANKS)	1
18	06-3051	GALAXY 2R	2
19	06-3050	NEXDOOR	1
20	06-3123	CONFINED SPACE	5
21	06-2684	208	6
22	06-2686	230	6
23	06-2690	460	6
24	06-3274	"FLASH HAZARD" BILINGUAL	1

Refer to the page 1-44 for decal placement (match the reference numbers). Refer to the page 1-45 for decal images.

Decal Placement

Refer to the page 1-45 for decal images.



Decal Images













06-0120



06-0121 CAUTION ATENCION Federal Los reglamentos regulation federales prohiben el prohibits manejo del operation of equipo a equipment by personas persons under menores de 18 18 years of age. años de edad.

06-0129



06-0133











Layout Diagrams

North Baler





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South Baler

Loading/Weight Diagram



PARTS & MAINTENANCE

Lock-Out & Tag-Out Instructions



Before entering any part of the baler, be sure that all sources of energy have been shut off, all potential hazards have been eliminated, and the baler is locked-out and tagged-out in accordance with OSHA and ANSI requirements.

If the ram is pressing against a load, move the ram rearward before shutting the baler down. Specific lock-out and tag-out instructions may vary from company to company (multiple locks may be required, or other machinery may need to be locked-out and tagged- out). The following instructions are provided as minimum guidelines.

INSTRUCTIONS:

- 1. Move the main disconnect lever to the OFF position.
- 2. Padlock the disconnect lever with a keyed padlock and take the key with you.
- 3. Along with the padlock, place an appropriate, highly visible warning tag on the disconnect lever. The tag should provide a warning such as: "Danger: Do not operate equipment. Person working on equipment. Warning: Do not energize without permission of ______."
- 4. After locking and tagging the baler, try to start and operate the baler (as outlined in the Operating Instructions) to make sure that the lock-out and tag-out is effective. If so, remove the key from the key switch and take it with you.



ELECTRICAL: The motor control panel contains high voltage components. Only authorized service personnel should be allowed inside the box. Authorized service personnel should be allowed inside the box only after the baler has been locked-out and tagged-out.

HYDRAULIC: Stored hydraulic energy must be removed from the baler hydraulic circuit for complete lock-out and tag-out. Make sure that all personnel are clear of the compaction and ejection areas. To remove pressure from system, make sure the ram is not pressing against a load. Manually depress the solenoid valve pin located in the center of each solenoid valve on each manifold and hold the pin for a couple of seconds. See the power unit layouts for solenoid and manifold location starting on page 2-16.

Service Call Center Information

During normal business hours, please call:

1-800-633-8974

ATTN: NEXGEN[®] Service Department

or log on to: www.parts1stop.com

Normal Business Hours:

Monuay - Inuisuay 7.00ani - 5.50

Friday 7:00am - 4:30pm

Saturday 7:00am - 12:00pm

(Central Standard Time)

Periodic Maintenance

DANGER: Only authorized and trained personnel should perform the following procedures. Lock-Out and Tag-Out the baler per as specified in Lock-Out & Tag-Out Instructions on page 2-1.

After Start-Up

Replace the return line filter after the start-up technician has completed the initial startup of the machine.

Daily (or every 8 hours of operation)

- 1. Check for any oil leaks. Keep all hydraulic fittings tight. Check the oil level and temperature in the hydraulic reservoir. Maintain oil level above 3/4 full in the sight gauge. Oil level should be checked with Main Ram and Ejector Ram in retracted position. The temperature should be below 160° F.
- 2. Check all remote emergency stop locations. Make sure that each emergency stop button is not obstructed, damaged, or depressed.
- 3. If fitted, make sure the (optional) operator's platform and access steps are free from hazards that could cause a slip, trip, or fall.
- 4. Make sure that there is an adequate supply of wire in the wire tie strapper.
- 5. Clean the lenses of photocells. In a dusty application, it may be necessary to clean the photocells and reflector several times a day.
- 6. Check the reflector plates of the laser positioners for particulate accumulation.
- 7. The positioners/plates are located behind each ram and on the NexDoor. Wipe clean with a cloth or soft brush if needed. This procedure may be done more or less often, depending on application and environment.
- 8. Clean the radiator of the oil cooler.

Weekly (or every 40 hours of operation)

- 1. Clean around the power unit and machine to remove any operator hazards.
- 2. Check the function of all emergency stop buttons and interlock switches.
- 3. Check the start-up alarm and flashing beacon. Clean the light as required.

Monthly (or every 160 hours of operation)

- 1. Check the function of all controls (lights, switches, etc.).
- 2. Check all hoses for chaffing, rubbing, or other deterioration and damage.
- 3. Inspect the breather cap on hydraulic reservoir. Clean or replace as necessary.
- 4. Check the cylinder pins and make sure they are secure.
- 5. Check the shear blade on the compression ram and baler body for sharpness, clearance (not to exceed .015), and overall wear. Shim, rotate, or replace as necessary.
- 6. Check the holddown bars for wear and adjust if necessary. Tighten the holddown bolts. Rotate or replace the holddown bars as necessary.
- 7. Apply a light coating of all-purpose grease on the holddown bars to prevent excessive wear.
- 8. Check the seals on all cylinders for leaks.

9. After the first 160 hours of operation, the return line filter should be replaced. After this replacement, the return line filter maintenance/replacement schedule is extended to every 600-1000 hours of operation.

Quarterly (or every 500 hours of operation)

- 1. Change the return line oil filter element in the oil filter housing (filter/housing is located on the side of reservoir at the end of oil return line from oil cooler).
- 2. Inspect the cylinder rods of compression and ejection ram cylinders for nicks and abrasions. Check cylinder rod seals for damage. Inspect cylinder pins for movement or missing cotter pins. Lubricate cylinder pinning sleeves and pins.

Semi-Annually (or every 1000 hours of operation)

- 1. Send an oil sample for evaluation.
- 2. Check the baler structure for any signs of any problems, such as cracked welds, bending, etc.
- 3. Rotate the main ram cylinder rod 180°.

Annually (or every 2000 hours of operation)

- 1. Change the hydraulic fluid in the entire system. If existing oil is reused, it should be tested by a laboratory to ensure it meets necessary specifications. Additives can be added to bring oil back to standards. Before returning oil to the tank, it should be filtered through a minimum 6 micron filter. The hydraulic tank should be cleaned inside with a nonflammable solvent and thoroughly dried before replacing the oil.
- 2. Lubricate the electric motor bearings as recommended by the manufacturer.
- 3. Filter maintenance:
 - a. Hydraulic suction filters should be cleaned at yearly intervals.
 - b. Filters may be removed from unit by disconnecting the union on the suction side of pump (circulating pump for oil cooler), or by removing four bolts that retain suction flange to main pump, and lifting the filter from reservoir.
 - c. Care should be exercised in cleaning the filter to ensure that the element is not torn. Clean the filter with a soft brush and standard industrial solvent.
 - d. Replace the filter after cleaning. Securely tighten the union or bolts. Pump noise and a "crackle" sound are most often caused by air entering the pump suction line. Tightening the suction fittings will usually eliminate problem.

Recommended Oils

Union-UNAX-46, UNAX-AW46 Gulf-Harmony 47, Harmony 48-AW Exxon-Teresstic 46, NUTO 46 Texaco-Rando 46 Chevron-AW 46 Shell-Turbo 46, Tellus 46 Citgo-Pacemaker 46, Tellus-AW46 Conoco-Super Hydraulic Oil 46 Quaker State-Dextron II (ATF) Automatic Transmission Fluid Amoco-Rycon MV Cold Weather Fluid

Holddown Bar Maintenance

DANGER: Only authorized and trained personnel should perform the following procedures. Lock-out and tag-out baler per instructions specified on page 2-1.

HOLDDOWN BARS prevent the ram from "Riding Up" over material in the charge chamber. They also prevent the ram shear blade from coming in contact with the body shear blade. Maintenance on holddown bars should be performed when doing maintenance on shear blades.

Holddown bars can be adjusted by loosening the Holddown Bolts (which run the length of the holddown bar) on the outside walls of the baler and allowing the holddown bar to rest on top of the ram. The slot for the holddown bolts allows for 7/16" total adjustment.

Adjust each holddown bar down so that it contacts the top of the ram through the complete ram travel path. From that position, the body shear blade should be adjusted (per the procedure described in Body Shear Blade Adjustment on page 2-7) so that it is 0.015" above the ram shear blade (0.015" above the bottom of the holddown bar). This prevents the ram shear blade from coming in contact with the body shear blade. After adjusting the holddown bars to the proper contact position on top of the ram, torque all holddown bolts to 250 ft/lb, lubricated*.

Holddown bars are considered a wear item for this machine. They are manufactured so that when wear does occur, the holddown bar can be turned over and the other side used.

*Torque values differ between dry and lubricated hardware. Lubricated implies that bolts are delivered with a light coat of oil. No further lubrication is required during adjustment.



Main Ram Body - Ejector Side View



Main Ram Body - Opposite Side View



Close Up (Inside Charge Chamber) View

Shear Blade Maintenance

DANGER: Do not perform any maintenance to the ram shear blade or body shear blade until the disconnect switch has been locked-out and tagged-out per Lock-Out & Tag-Out Instructions on page 2-1.

CAUTION: Shear blades are sharp. Wear leather gloves and safety glasses when handling blades.

Body Shear Blade - As time passes, it is normal for the body shear blades and ram shear blades to need sharpening. Due to the hardness of the blades, it may be necessary to have them sharpened at a machine shop. During sharpening, remove only the least amount of material required to sharpen the cutting edges. All cutting edge faces should be flat and perpendicular to the top or bottom surface of the blades. For body shear blades, it is very important to maintain the original rake angle of the blades. When installing blades, all bolts should be coated with "Never-Seize" and torque-tightened to 250 ft. lb.



Refer to Body Shear Blade Adjustment on page 2-7.

Body Shear Blade Adjustment

DANGER: Do not perform any maintenance to the ram shear blade or body shear blade until the disconnect switch has been locked-out and tagged-out per Lock-Out & Tag-Out Instructions on page 2-1.

It is necessary to periodically adjust the Body Shear Blade in order to maintain the 0.015" clearance between it and the Ram Shear Blade (see drawing on previous page). Before adjustment, loosen the Lateral Bolt Locknuts on the front of the shear header and then loosen the Lateral Bolts (detail view A).

The number of Lateral Bolts and Shear Bolts vary by model. Use the procedures outlined on the next two pages to complete the shear blade adjustment process, according to model.

To adjust the body shear blade up or down, first loosen the Locknuts and Body Shear Blade Locking Bolts (detail view B).

Next adjust the Body Shear Blade Adjustment Bolts by loosening them to lower the Body Shear Blade, or tightening them to raise it. Once proper adjustment is achieved, retighten all bolts and nuts using the torque sequence procedure on page 2-8.

When the shear blade has been adjusted and all adjustment and locking bolts/nuts have been torquetightened according to procedure, re-tighten the Lateral Bolts and Lateral Bolt Locknuts, in that order.

Torque bolts to 250 ft/lb lubricated.

Elevated Front View (Shear Header)



Torque Sequence

The following torque sequence must be used as part of the Body Shear Blade Adjustment procedure described on page 2-7.

NOTE: This procedure assumes that the body shear is in the full up position. The Lateral Bolts on the front face of the shear header need to be backed off prior to shear adjustment.

Before starting the following procedure, adjust the holddown bars as described on page 2-5 (so that they contact the ram throughout the entire ram cycle). Once the holddown bars have been adjusted properly, position the main ram so that the ram shear blade is located 2" past (under) the cutting points of the body shear blade.

1. Starting with bolts 4, 6, 2, and 8 (in that order), lower the body shear blade until the bottom of it is 0.015" from the top of the ram shear blade (use shim stock or feeler gauge to set gap). Turn each bolt (4, 6, 2, and 8) only one-half turn at a time to lower the shear blade into position.

NOTE: Turning bolts more than one-half turn at a time may cause the shear structure to jam.

- 2. When the shear gap is 0.015", turn bolts 1 and 9 (in that order) down until they contact the adjustable shear structure. Then turn bolts 3, 7, and 5 down until they contact.
- 3. Torque bolts 4, 6, 2, and 8 (in that order) to 50 ft. lb.
- 4. Torque bolts 1, 9, 3, 7, and 5 (in that order) to 50 ft. lb.
- 5. Torque bolts 4, 6, 2, and 8 (in that order) to 550 ft. lb.
- 6. Torque each Lateral Bolt to 250 ft. lb. Start in the center of the pattern and work outwards so that the outside bolts are tightened last. Tighten all locknuts (front & top).

Torque Sequence Reference Numbers



Bale Door Holddown Bar

The bale door utilizes a top holddown bar assembly (shown on right) that is designed to guide and hold the bale door when it is retracted.

This holddown bar assembly contains a shim plate (lower picture) that is sometimes shipped loose with the baler and may need to be installed when the gap between the upper contact surface of the holddown bar assembly and the top of the bale door is loose enough so that the bale door floats up and down as it opens and closes.

To install the shim plate, loosen the bolts on the top of the holddown bar assembly and slide under the top plate (refer to top diagram). Re-tighten bolts.

BALE DOOR HOLDDOWN BAR



Shim plate installed under top plate.

Holddown Bar Assembly



Troubleshooting

ONLY thoroughly trained and experienced service personnel should perform trouble- shooting and maintenance on this baler. Do NOT enter the baler for any reason until it has been locked-out and tagged-out per the Lock-Out & Tag-Out Instructions on page 2-1.

Problem	Possible Cause	Solution
MAIN MOTOR WILL NOT START/ RUN	 No incoming power. No control circuit power. Safety interlock switch. Emergency stop button depressed. Motor overload tripped. Electrical system malfunction. Programmable controller fault. 	 Check main disconnect switch. Check primary and secondary fuses in motor control panel. Check for open hopper door. Check E-Stop buttons. Reset overload on motor starter. Check current load amps. Check fault lights on P.C. Make sure PLC is in RUN mode.
PUMP NOISE	 1) Oil level low. 2) Air leakage in suction line. 3) Worn pump. 	 Check oil level in tank. Add if necessary. Check suction line for leaks. Check the pump shaft seal. Repair or replace hydraulic pump.
MAXIMUM HYDRAULIC PRESSURE NOT OBTAINABLE	 Pressure relief set too low. Cylinder bypass. Worn pump. Check valve on unloading valve. Machine not shifting out of regen. 	 Check relief valve pressure setting. Check for internal cylinder leak. Repair or replace hydraulic pump. Repair or replace. Cylinder rod relief set too low. Pressure switch or transducer malfunction.
COMPRESSION RAM WILL NOT MOVE FORWARD	 Photocell malfunction. Ejector not fully retracted. 	 1) Replace photocell. 2) Retract ejector.
COMPRESSION RAM WILL NOT RETRACT (AUTO/ MANUAL)	 Foreign material jamming ram. Compression cylinder rod poppet malfunction. Compression cylinder rod end pressure poppet not opening. Compression cylinder rod relief pressure set too low 	 Check for material wedging between ram and shear bar. Check solenoid valve. Check for plugged orifice. Check solenoid valve. Make sure valve spool is shifting. Reset pressure to correct setting.

Problem	Possible Cause	Solution
EJECTOR WILL NOT MOVE	1) Compression ram not in HOME position.	1) Move to HOME position.
FORWARD	2) Compression ram HOME position photocell malfunction.	2) Check for false signal. Replace photocell.
	3) Bale length counter malfunction.	 Check for wheel rotation. Adjust proximity switch. Replace switch.
	4) Wire tie selector set on MANUAL.	4) Check controls.
	5) Ejector out limit switch malfunction.	5) Check limit switch arm adjustment. Replace limit switch.
	6) Ejector valve malfunction.	6) Check solenoid valve.
EJECTOR WILL NOT MOVE	1) Compression ram out of position.	1) Move ram to home or retracted position.
FORWARD (MANUAL)	 Wire tie mechanism out of sequence. 	2) Feed wire to Home position.
	3) Ejector valve malfunction.	 Check solenoid valve. Make sure valve spool is shifting.
	4) Control lever malfunction.	4) Repair or replace control lever.
EJECTOR WILL NOT RETRACT	1) Ejector retracted limit switch malfunction.	1) Check limit switch arm adjustment. Replace limit switch.
(AUTO/MANUAL)	2) Ejector valve malfunction.	 Check solenoid valve. Make sure valve spool is shifting.
	3) Control lever malfunction.	3) Repair or replace control lever.
BALE FULLY EJECTS IN AUTOMATIC CYCLE	Ejector out limit switch malfunction	Check limit switch arm adjustment. Replace limit switch.
COOLER/FILTER PUMP WILL NOT	1) Motor overload tripped.	1) Reset overload on motor starter. Check current load amps.
START/RUN	2) Cooler/filter pump fuses.	2) Replace blown fuses.
	3) Electrical circuit malfunction.	 Perform electrical system check.

NOTE: In all events, check output fuses.

Pressure Settings for 2 x 100 Power Unit



Pump Relief Valve Settings

- 1. Install the 5000 psi pressure gauge in port MP1.
- Lower pressure to the minimum settings on all relief valves on Motor #1 and Motor #2 pumps SV6, SV7, SV8, SV9, SV10, and SV11 by turning the adjustment screws counter-clockwise.
- 3. Loosen the locknut on relief valves RV1 and RV2. Set RV1 and RV2 to the maximum setting by turning the adjustment screw clockwise. Tighten the locknut on the adjustment screw.
- 4. Start all motors.
- 5. With the motors running, press in the manual actuator on Motor #1 low pressure pump solenoid valve SV6. Turn the relief valve adjustment screw on SV6 clockwise until the pressure reads 1000 psi on the gauge in port MP1. Tighten the locknut on the adjustment screw.
- 6. Push in the manual actuator on Motor #1 medium pressure pump solenoid SV7. Turn the relief valve adjustment screw on pump SV7 clockwise until the pressure reads 3000 psi on the gauge in port MP1. Tighten the locknut on the adjustment screw.
- 7. Push in the manual actuator on Motor #1 high pressure pump SV8. Turn the relief valve adjustment screw on SV8 clockwise until the pressure reads 4000 psi on the gauge in port MP1. Tighten the locknut on the adjustment screw.
- 8. Repeat steps 5 through 7 for Motor #2 low pressure pump SV9, medium pressure pump SV10, and high pressure pump SV11.
- 9. Lock-out power and remove the pressure gauge. Replace the plug in the pressure gauge port.

Main Manifold Rod Relief Pressure Setting

NOTE: This process requires TWO people.

- 1. Install the 5000 psi pressure gauge in port MP1.
- 2. Start Motor #1.
- 3. Retract the main ram fully.
- 4. Loosen the adjustment screw locknut on the rod relief valve and turn the adjustment screw counter-clockwise to lower the pressure setting.
- 5. Press in and hold the manual actuators on the rod pressure poppet valve SV3 and the rod tank poppet valve SV4.
- 6. Press in and hold the manual actuator on the Motor #1 high pressure pump SV8.
- 7. Turn the rod relief valve adjustment screw clockwise until the pressure on the gauge in port MP1 reads 3000psi. Tighten the adjustment screw locknut.
- 8. Lock-out power and remove the pressure gauge. Replace the plug in the pressure gauge port.

Door Relief Pressure Setting

NOTE: This process requires TWO people.

- 1. Install the 5000 psi pressure gauge in port MP1.
- 2. Start Motor #1.
- 3. Retract the main ram and the ejector ram fully.
- 4. Loosen the adjustment screw locknuts on the door relief valves and turn the adjustment screws counter-clockwise to lower the pressure setting.
- 5. Make sure the area near the door is clear of all personnel. Close the door completely.
- 6. Press in and hold the manual actuator on the door close valve SV18A.
- 7. Press in and hold the manual actuator on the Motor #1 high pressure pump SV8.
- 8. Turn the open door relief valve adjustment screw clockwise until the pressure on the gauge in port MP1 reads 4000 psi. Release the solenoid manual actuators. Tighten the adjustment screw locknut.
- 9. Make sure the area near the door is clear of all personnel. Open the door completely.
- 10. Press in and hold the manual actuator on the door open valve SV18B.
- 11. Press in and hold the manual actuator on the Motor #1 high pressure pump SV8.
- 12. Turn the close door relief valve adjustment screw clockwise until the pressure on the gauge in port MP1 reads 4000 psi. Release the solenoid manual actuators. Tighten the adjustment screw locknut.
- 13. Lock-out power and remove the pressure gauge. Replace the plug in the pressure gauge port.

Tie System 12 GPM Pump Pressure Setting

NOTE: This process requires TWO people.

- 1. Lock out power and install a 5000 psi pressure gauge in the port provided at the 12 gpm tie system pump.
- 2. Install the four tie test pins into the tie system mounting plate.
- 3. Turn on power and the start motors.
- 4. Loosen the locknut on the tie system pump relief adjustment screw. Turn the adjustment screw on the tie system pump relief valve counter-clockwise to lower the pressure setting.
- 5. Have someone place the tie system in manual and press and hold the tension button.
- 6. Turn the 12 gpm pump relief valve adjustment screw clockwise until the pressure on the gauge reads 1800 psi.
- 7. Tighten the locknut on the relief valve adjustment screw and release the tension button.
- 8. Lock-out power and remove the pressure gauge. Replace the plug in the pressure gauge port.

Laser Setting

- 1. With the ram retracted in Manual Mode, hold the red analog button until the Teach light illuminates.
- 2. Press the red analog button again and the Teach light should start blinking.
- 3. Fully extend the ram then press the red analog button once or until the Teach light goes off.
- 4. The full stroke measurement should then register on the touch screen.
- 5. The yellow speed button (on the laser position sensor) should be set to "Fast".
- 6. Fully retract the ram. The measurement should be ".6" or less.

NOTE: Be sure the laser beam hits the reflector all the way out and back.

Hydraulic Schematic (2 x 100)



Power Unit Drawing (2 x 100 HP)

(1 of 3)



Power Unit Drawing (2 x 100 HP)

(2 of 3)



Power Unit Drawing (2 x 100 HP)

(3 of 3)



Power Unit Parts List (2 x 100 HP)

Reference numbers given below refer to Power Unit Drawings starting on page 2-16.

Part #	Ref #	Description	Qty
02-1025		FLANGE C61 1 1/2 SPLIT W/BOLTS	1
99-7622		FILTER ELEMENT F/997166	5
05-3199		BOLT 1/2- 13 X 3 1/2 SHCS GR 8	6
03-1071	1MOTOR	MOTOR 20HP 208-230/460 256TC T	1
03-5733	2MOTOR1	MOTOR 100HP 230/460VOLT 405TC	2
03-0833	2MOTOR2	MOTOR 100HP 230/460VOLT 405TC	2
02-4398	3	MANIFOLD 425 GPM F/TR-12 REXRO	1
02-1016	4	PUMP 36 71 105 GPM VANE DENISO	1
02-1017	4	PUMP 36 71 105 GPM VANE DENISO	1
99-7069	5	PUMP 12 108 GPM VANE DENISON	1
30-0757	6	3/4 PL X 10 X 24	1
99-7103	7	ADAPTER PUMP/MTR SAE E 4B X 40	2
99-7105	8	ADAPTER PUMP/MTR SAE C 2B X 25	1
99-7106	9	FLANGE C61 5 WELD	2
99-7107	10	FLANGE C61 5 COMP	1
99-7108	11	BOLT KIT F/ 5 C61 FLANGE	2
99-7109	12	FLANGE SQ6000 4 WELD	1
99-7111	13	BOLT KIT F/ 4 SQ6000 FLANGE	1
99-7121	14	HUB COUPLING 45MM-14MM X 2 7/8	2
99-7123	15	HUB COUPLING 1 1/2-3/8 X 1 5/8	1
99-7144	16	VALVE BALL 4 ORM 300PSI	2
99-7145	17	ELL 64 ORM X F61 SPL 90	2
99-7146	18	FLANGE C61 4 SPLIT W/ BOLT KIT	2
99-7147	19	ADAPTER 4 WELD X 64 ORM	2
99-7152	20	COUPLING 4 DRESSER 4 BOLT X 5	1
99-7166	21	FILTER RETURN 120 GPM 10 MICRO	1
99-7170	22	ADAPTER 3 WELDM XXS X 4 WELDM	1
99-7171	23	ELL 5 WELDM SCH 40	1
99-7179	24	COVER CLEAN OUT NEOPRENE 1/4 X	3
02-1053	25	FILTER SUCTION 4 200GPM	3
02-1054	26	FLANGE SUCTION 4	1
02-1055	27	FLANGE SUCTION RISER 4	1
02-0880	28	HOSE 1 WB 4000PSI	15
99-7257	29	TEE 1 1/2 WELDF SCH 40	3
99-7218	30	ELL 1 1/2 NPTF 90 SCH 40	4
02-0912	31	HOSE 2 HYDRAULIC 5000 PSI	9
99-7168	32	CAP 3 WELD XXS	1
14-2238	33	1 X 4 X 4	8
99-7214	34	ADAPTER 3 1/2 X 4 WELDB SCH 40	1
02-1062	35	FLANGE C61 1 1/4 WELD COMP	2
02-0877	36	FLANGE C61 1 WELD COMP	3
02-0571	37	ADAPTER 1 1/4 WELDF X 1 1/2 WE	2
99-7223	38	ADAPTER 1 WELDF X 1 1/2 WELDM	3
99-7224	39	PIPE 1 1/2 SCH 40 X 8	4
99-7225	40	PIPE 1 1/2 SCH 40 X 30	4
99-7226	41	PIPE 4 XXS X 8 SQ CUT	1

Power Unit Reference Numbers (cont.)

99-722742PIPE 3 SCH 160 X 11 1/2 SQ CUT199-729943SOCKOLET 1 1/2 X 3-5 6000 PSI299-718144FLANGE SADDLE C61 1 1/4 X 3 WELD C299-718245FLANGE SADDLE C61 1 1/4 X 3 WELD C202-107146FLANGE C62 2 WELD COMP102-0087347FLANGE C61 1 1/2 WELD102-005648PLUG 1/4 NPT SOCKET HEAD102-005653GAUGE SIGHT 18 OLG-18202-038454GAUGE TEMP 3205-014856BOLT 1/2- 13 X 14802-105257ELL 4 NPTM X 4 NPTF 90199-723158PIPE 4 SCH 40 X 34 THD ONE END199-723259PIPE 4 SCH 40 X 14 THD ONE END202-087561FLANGE C61 2 NPT COMP302-087561FLANGE C61 2 SPLIT402-087663ELL 2 WELDF 90 SCH 160202-056064TEE 2 WELD FSCH 160102-065765FLANGE C61 32-24 O-RING105-024368WASHER LOCK 5/8 GRADE 8899-722970BOLT 1/8 X 2 1/2 HHCS405-056071WASHER 1 LOCK405-056071WASHER 1 LOCK405-056071WASHER 1 LOCK405-026073BOLT 1/2-13 X 1 ¾ HHCS GR 5432-5396751/4 PL X 2 X 7299-729676BREATHER 2 1/2199-723076COUP	Part #	Ref #	Description	Qty
99-7299 43 SOCKOLET 1 1/2 X 3-5 6000 PSI 2 99-7181 44 FLANGE SADDLE C61 1 1/4 X 3 WE 2 99-7182 45 FLANGE SADDLE C61 1 1/3 WELD C 2 02-1071 46 FLANGE C62 2 WELD COMP 1 02-06873 47 FLANGE C62 2 SPLIT WBUD 1 02-069 52 FLANGE C62 2 SPLIT WBUTS 2 99-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 199-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 2 02-1070 60 FLANGE C61 2 WELD W/O-RING & B 2 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF SCH 160 1 02-0876 65 FLANGE C61 2 SPLIT 4 02-0876 65 FLANGE C61 2 SPLIT 4 02-0876 63 <t< td=""><td>99-7227</td><td>42</td><td>PIPE 3 SCH 160 X 11 1/2 SQ CUT</td><td>1</td></t<>	99-7227	42	PIPE 3 SCH 160 X 11 1/2 SQ CUT	1
99-7181 44 FLANGE SADDLE C61 1 1/4 X 3 WE 2 99-7182 45 FLANGE SADDLE C61 1 X 3 WELD C 2 02-1071 46 FLANGE C62 2 WELD COMP 1 02-0873 47 FLANGE C61 1 1/2 WELD 1 02-0873 47 FLANGE C62 2 SPLIT W/BOLTS 2 99-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 WELD W/O-RING & B 2 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 1 02-0860 64 TEE 2 WELDF SCH 160 1 02-0550 64 TEL 2 WELDF SCH 160 1 05-0260 71 WASHER LOCK	99-7299	43	SOCKOLET 1 1/2 X 3-5 6000 PSI	2
99-7182 45 FLANGE SADDLE C61 1 X 3 WELD C 2 02-1071 46 FLANGE C62 2 WELD COMP 1 02-0873 47 FLANGE C61 1 1/2 WELD 1 02-0055 48 PLUG 1/4 NPT SOCKET HEAD 1 02-0055 53 GAUGE SIGHT 18 OLG-18 2 99-0566 53 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 WELD W/O-RING & B 2 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 1 02-0656 64 TEE 2 WELDF SCH 160 1 02-0550 64 TEE 2 WELDF SCH 160 1 02-0550 64 TEE 2 WELDF SCH 160 1 02-0550 71 NUT 5/	99-7181	44	FLANGE SADDLE C61 1 1/4 X 3 WE	2
02-1071 46 FLANGE C62 2 WELD COMP 1 02-0873 47 FLANGE C61 1 1/2 WELD 1 02-0065 48 PLUG 1/4 NPT SOCKET HEAD 1 02-1069 52 FLANGE C62 2 SPLIT WBOLTS 2 99-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2-13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 199-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 WELD W/O-RING & B 2 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 3 2-24 O-RING 1 02-0650 71 WASHER LOCK 5/8 GRADE 8 8 99-7229 70 BO	99-7182	45	FLANGE SADDLE C61 1 X 3 WELD C	2
02-0873 47 FLANGE C61 1 1/2 WELD 1 02-0065 48 PLUG 1/4 NPT SOCKET HEAD 1 02-1069 52 FLANGE C62 2 SPLIT W/BOLTS 2 09-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0876 63 ELL 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7236 70 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 05-0018 72 NUT 1/2	02-1071	46	FLANGE C62 2 WELD COMP	1
02-0065 48 PLUG 1/4 NPT SOCKET HEAD 1 02-1069 52 FLANGE C62 2 SPLIT W/BOLTS 2 99-0566 53 GAUGE SIGHT 18 0LG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 19-7231 58 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF SCH 160 1 02-0876 63 ELL 2 WELDF SCH 160 1 02-0850 64 TEE 2 WELDF SCH 160 1 02-0856 63 WASHER LOCK 5/8 GRADE 8 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 05-0243 68 WASHER 1 LOCK 4 05-0500 71 WASHER 1 LOCK 4 05-0226 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 <	02-0873	47	FLANGE C61 1 1/2 WELD	1
02-1069 52 FLANGE C62 2 SPLIT W/BOLTS 2 99-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2-13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0876 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 02-0657 65 FLANGE C61 32-24 O-RING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7229 70 BOLT 1/8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0266 73 BOLT 1/2-13 X	02-0065	48	PLUG 1/4 NPT SOCKET HEAD	1
99-0566 53 GAUGE SIGHT 18 OLG-18 2 02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2-13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 199-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 199-7232 59 PIPE 4 SCH 40 X 34 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 09-7229 70 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1/2-13 X 1 3/4 HHCS GR 5 4 05-0560 71 WASHER 1 LOCK 4 05-0266 73 BOLT 1/2-13 X 1 3/4 HHCS GR 5 4 32-5396 75 1/4	02-1069	52	FLANGE C62 2 SPLIT W/BOLTS	2
02-0384 54 GAUGE TEMP 3 2 05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 199-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 199-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 1 02-0876 63 ELL 2 WELDF SCH 160 1 02-0650 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7229 70 BOLT 1/8 X 2 1/2 HHCS 4 05-0018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-0226 73 BOLT 1/2-13 X 1 3/4 HHCS GR 5 4 32-5397 75 1/4 PL X 12 X 7 2 99-7230 77 WASHER SEAL	99-0566	53	GAUGE SIGHT 18 OLG-18	2
05-0148 56 BOLT 1/2- 13 X 1 48 02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-2030 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7229 70 BOLT 1/8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-026 73 BOLT 1/2-13 X 1 ³ / ₄ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14 X 20	02-0384	54	GAUGE TEMP 3	2
02-1052 57 ELL 4 NPTM X 4 NPTF 90 1 99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 05-201 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1/2-13 HEX SELF-LOCKING 16 05-026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14X 29 1 132-5397 75 1/4 PL X 14X 29 1 99-7230 77	05-0148	56	BOLT 1/2- 13 X 1	48
99-7231 58 PIPE 4 SCH 40 X 34 THD ONE END 1 99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0560 71 WASHER 1 LOCK 4 05-0266 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7230 77 WASHER SEALING 1/2	02-1052	57	ELL 4 NPTM X 4 NPTF 90	1
99-7232 59 PIPE 4 SCH 40 X 14 THD ONE END 2 02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0876 64 TEE 2 WELDF SCH 160 1 02-0850 64 TEE 2 WELDF SCH 160 1 02-0560 64 TEE 2 WELDF SCH 160 1 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1/8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0226 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14 X 29 1 99-7240 79 PIPE 1 1/2 SCH 40 X 4 S	99-7231	58	PIPE 4 SCH 40 X 34 THD ONE END	1
02-1070 60 FLANGE C61 2 NPT COMP 3 02-0875 61 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 05-026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 2 X 7 2 9 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 7	99-7232	59	PIPE 4 SCH 40 X 14 THD ONE END	2
02-0875 61 FLANGE C61 2 WELD W/O-RING & B 2 02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1/-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0266 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5396 75 1/4 PL X 2 X 7 2 99-7230 76 BREATHER 2 1/2 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40	02-1070	60	FLANGE C61 2 NPT COMP	3
02-0901 62 FLANGE C61 2 SPLIT 4 02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-0657 65 FLANGE C61 32-24 O-RING 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7230 76 BREATHER 2 1/2 1 99-7230 76 BREATHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 78 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 S	02-0875	61	FLANGE C61 2 WELD W/O-RING & B	2
02-0876 63 ELL 2 WELDF 90 SCH 160 2 02-0560 64 TEE 2 WELDF SCH 160 1 02-057 65 FLANGE C61 32-24 O-RING 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 199-7300 76 COUPLING HALF 2 1/2 NPT 1 199-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7241 80 <td< td=""><td>02-0901</td><td>62</td><td>FLANGE C61 2 SPLIT</td><td>4</td></td<>	02-0901	62	FLANGE C61 2 SPLIT	4
02-0560 64 TEE 2 WELDF SCH 160 1 02-0560 64 TEE 2 WELDF SCH 160 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0560 71 WASHER 1 LOCK 4 05-018 72 NUT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SAUNG X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 2 99-7238 81 L4 X 4 X	02-0876	63	FU 2 WELDE 90 SCH 160	2
02-0657 65 FLANGE C61 32-24 O-RING 1 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7200 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 78 PIPE 1 SCH 40 X 3 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT	02-0560	64	TEE 2 WELDE SCH 160	1
05 05 15 16 16 17 05-2301 67 NUT 5/8-11 SELF LOCKING 8 05-0243 68 WASHER LOCK 5/8 GRADE 8 8 99-7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ³ / ₄ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7241 80 </td <td>02-0657</td> <td>65</td> <td>FLANGE C61 32-24 O-RING</td> <td>1</td>	02-0657	65	FLANGE C61 32-24 O-RING	1
05 10<	05-2301	67		8
09 0249 00 00 01 01 99 7235 69 BOLT 5/8-11 X 4 1/2 HHCS GR 5 8 99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-0018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7200 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85<	05-0243	68	WASHER LOCK 5/8 GRADE 8	8
99-7229 70 BOLT 1-8 X 2 1/2 HHCS 4 05-0560 71 WASHER 1 LOCK 4 05-018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-018 72 NUT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 2 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5	99-7235	69	BOLT 5/8-11 X 4 1/2 HHCS GR 5	8
05-0560 71 WASHER 1 LOCK 4 05-0560 71 WASHER 1 LOCK 4 05-0018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7251 86 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7247 88 BOLT KIT F/ 99-7	99-7229	70	BOLT 1-8 X 2 1/2 HHCS	4
05-0018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-0018 72 NUT 1/2-13 HEX SELF-LOCKING 16 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88	05-0560	70	WASHER 1 LOCK	4
05 0510 72 HOT 1/2 13 HEX SEEF ESCRING 10 05-2026 73 BOLT 1/2-13 X 1 ¾ HHCS GR 5 4 32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 22 3/4 STR 1 99-7251	05-0018	72	NUT 1/2-13 HEX SELE-LOCKING	16
32-5396 75 1/4 PL X 14 X 29 1 32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 4 SQ CUT 2 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 199-7247 88 BOLT KIT F/ 99-7246 1 199-7247 89 7 GA X 4 1/	05-2026	73	BOLT 1/2-13 X 1 3/4 HHCS GR 5	4
32-5397 75 1/4 PL X 2 X 7 2 99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7251 86 PIPE 5 SCH 40 WA X 21 1/8 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 99-7247 89 7	32-5396	75	1/4 PL X 14 X 29	1
99-7296 76 BREATHER 2 1/2 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 21 3/4 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2	32-5397	75	1/4 PL X 2 X 7	2
99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7300 76 COUPLING HALF 2 1/2 NPT 1 99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93<	99-7296	76	BRFATHER 2 1/2	1
99-7230 77 WASHER SEALING 1/2 NEOPRENE 48 99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2 <td>99-7300</td> <td>76</td> <td>COUPLING HALE 2 1/2 NPT</td> <td>1</td>	99-7300	76	COUPLING HALE 2 1/2 NPT	1
99-7239 78 PIPE 1 1/4 SCH 40 X 4 SQ CUT 2 99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7230	77	WASHER SEALING 1/2 NEOPRENE	48
99-7240 79 PIPE 1 SCH 40 X 3 SQ CUT 3 99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7250 85 PIPE 5 SCH 40 X 25 1 99-7251 86 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6	99-7239	78	PIPE 1 1/4 SCH 40 X 4 SO CUT	2
99-7241 80 PIPE 1 1/2 SCH 40 X 4 SQ CUT 2 99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 9	99-7240	79	PIPE 1 SCH 40 X 3 SO CUT	3
99-7238 81 L4 X 4 X 1/2 X 23 3/4 SQ CUT 4 05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-7247 88 BOLT KIT F/ 99-7246 1 99-7247 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7241	80	PIPE 1 1/2 SCH 40 X 4 SO CUT	2
05-0102 82 BOLT 3/4-10 X 2 1/2 HHCS 8 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7238	81	14 X 4 X 1/2 X 23 3/4 SO CUT	4
05 0102 02 05 0102 02 05 0102 02 05-0226 83 WASHER 3/4 LOCK 12 99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	05-0102	82	BOLT 3/4-10 X 2 1/2 HHCS	8
99-7249 84 PIPE 5 SCH 40 X 25 1 99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6	05-0226	83	WASHER 3/4 LOCK	12
99-7250 85 PIPE 5 SCH 40 40 X 41 1/8 STR 1 99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7249	84	PIPE 5 SCH 40 X 25	1
99-7251 86 PIPE 5 SCH 40 40 X 22 3/4 STR 1 99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7250	85	PIPE 5 SCH 40 40 X 41 1/8 STR	1
99-6722 87 FLANGE C61 3 1/2 SAE WELD 1 99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7251	86	PIPE 5 SCH 40 40 X 22 3/4 STR	1
99-7247 88 BOLT KIT F/ 99-7246 1 27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-6722	87	FLANGE C61 3 1/2 SAF WELD	1
27-9407 89 7 GA X 4 1/2 X 20 1/2 1 27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	99-7247	88	BOIT KIT F/ 99-7246	1
27-9408 89 7 GA X 4 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	27-9407	89	7 GA X 4 1/2 X 20 1/2	1
27 5100 05 7 GR X + 1/2 X 20 1/2 1 05-0522 92 BOLT 3/4-10 X 3 SHCS 6 99-7293 93 1/2 PL X 7 X 7 2	27-9408	89	7 GA X 4 1/2 X 20 1/2	1
QQ-72Q3 Q3 1/2 PI X 7 X 7 2	05-0522	92	BOIT 3/4-10 X 3 SHCS	6
	99-7293	92	1/2 PL X 7 X 7	2
Power Unit Reference Numbers (cont.)

Part #	Ref #	Description	Qty
99-7292	94	1 1/2 PL X 9 1/2 X 9 1/2	2
99-0853	95	FLANGE C62 1 1/2 SPLIT	4
02-0878	96	FLANGE C61 1 SPLIT W/BOLTS	9
02-0663	97	FLANGE C61 1 1/4 SPLIT W/BOLT	8
99-7311	98	2 SCH 160 X 21 5/8 STR CUT	1
99-7312	99	2 SCH 160 X 4 STR CUT	5
02-2326	101	HOSE END 2 WB X 2 C62 SF 90	2
99-7277	102	SOCKOLET 2 X 3-5 6000PSI	1
99-7332	103	2 SCH 160 PIPE X 3 1/2 STR CUT	1
05-2557	104	BOLT 3/4-10 X 1 3/4 HHCS GR 5	4
05-0049	105	WASHER 3/4 FLAT	4
99-7331	107	PIPE 1 1/2 SCH 160 X 4 SQ CUT	2
02-3018	108	HOSE END 1 1/2 WB X 1 1/2 C61	3
02-1090	109	HOSE END 1 1/2 WB X 24 JICF	1
99-7640	111	HOSE END 1 1/2 WB X 1 1/2 F62S	2
02-1089	112	HOSE END 1 1/2 WB X 1 1/2 C61	2
02-1098	113	HOSE END 1 1/4 WB X 1 1/4 C61	7
02-0908	114	HOSE END 1 WB X 1 C61 SPT	3
02-0879	115	HOSE END 1 WB X 1 C61 SPT 90	6
02-0914	116	HOSE END 2 WB X 2 C61 SPT	3
02-0913	117	HOSE END 2 WB X 2 C61 90 SF	3
99-5952	119	FLANGE C61 1 1/2 WELD COMPANIO	3
02-3076	120	HOSE END 1 WB X 1 NPTM	2
02-0970	121	VALVE CHECK 1 NPTF 65PSI CRACK	1
02-0958	122	ELL 1 NPTM 90 SCH 80	1
99-7339	123	PIPE 1 SCH 40 X 28	4
02-0238	124	ELL 1 NPTM X 1 NPTF 90 SCH 40	1
02-0656	126	ELL 24 ORM X 24 JICM 90	1
02-1045	127	FLANGE C61 2 WELD COMP	2
02-0335	129	HOSE 1 1/4 WIRE BRAID 5000	12
02-1091	130	HOSE 1 1/2 WB 5000PSI	3
99-7219	131	FLANGE C62 1 1/2 WELD COMP	2
99-7349	133	2 SCH 160 PIPE X 8	1
99-7338	134	VALVE CHECK 2 NPTF	1
02-0933	135	NIPPLE 2 NPT CLOSE SCH 40	1
02-0801	136	ELL 2 NPTF SCH 40	1
99-7177	137	3/4 PL X 18 X 27	1
05-0034	139	BOLT 3/4-10 X 2 HHCS GR 5	8
99-7254	142	C6 X 8.2 X 30 STR CUT	2
99-7576	143	PIPE 3 1/2 SCH 40 X 2 SQ CUT	1

Motor Specifications

03-0833 & 03-5753

REL. S.O.	FR	AME		НР	ТҮ	TYPE PHASE/ HERTZ RI		E PHASE/ HERTZ		RPM		VOLTS		
	40)5TC	-	100 P		5		3/60		1785		230/460		
								L						
AMPS	D	UTY	AM IN	B°C / SUL.	S.	F.	NEMA DESIGN		1	CODE LETTER		ENCL.		
224-112	C	ONT	4	0/F	1.	15		В		G		TEFC		
E/S		RC	OTOR	TEST S.O.		TI		TEST DATE		R (STATOR ES.@25 °C OHMS BETWEEN LINES)			
596830		41814	2-33	-RE	-					-	.0)123/.0492		
					PERFO	RMAN	ICE							
LOAD		НР		AMPERES		AMPE		RES RPM		IPERES RPM % POV FACTO		% POWEF FACTOR	2	% EFFICIENCY
NO LOAD		0			28.6		18	1800		5.49		0		
1/4		25.0	25.0 39.2 1796		64.3		93.0							
2/4		50.0		59.5		59.			17	92		82.5		95.4
3/4		75.0		84.6			17	88		86.7		95.7		
4/4		100			112		1783 87.4		87.4		95.4			
5/4		125			141		17	78	87.3		.3 94.9			
					SPEED	TORQ	QUE							
					RPM	TO FUI	RQ LL	UE % LOAD		TORQUE LBFT.		AMPERES		
LOCKED MO	OCKED MOTOR		R		0		15	51		445		725		
PULL UP			360 136		86	400			706					
BREAKDOW	VN				1721 250 73		735		382					
FULL LOAD			1783		10	00		295		112				
AMPERES SHOWN FOR 460. VOLT CONNECTION. IF OTHER VOLTAGE CONNECTIONS ARE AVAILABLE, THE AMPERES WILL VARY INVERSELY WITH THE RATED VOLTAGE.														
REMARKS: TYPICAL DATA XE MOTOR-DATA-NEMA NOM. EFF. 95.4 PCT GUARANTEED MIN EFF. 95.0 PCT														

03-1071

PERFORMANCE DATA AT 460V, 60HZ, 20.0HP (TYPICAL PERFORMANCE – NOT GUARANTEED VALUES)										
GENERAL CHAR	ACTE	RIST	īcs							
FULL LOAD TORQUE:		59.0 LB-FT			START CONFIGURATION:			DOL		
NO-LOAD CURRENT: 9.41 AMPS			BREAK-DOWN TORQUE: 213.0 LB-FT							
LINE-LINE RES 25 °C.:	0	0.42 0.0 (0.426 OHMS A PH / 0.0 OHMS B PH PULL-UP TORQUE:			RQUE:	85.4 LB-FT			
TEMP. RISE @ RATED LOAD:		60°0	C		LOCKED-ROTOR TORQUE:			121.0 LB-FT		
TEMP. RISE @ S LOAD:	6.F.	74°C STARTING CURRENT:			175.0 AMPS					
LOAD CHARACT	ERIS	TICS								
% OF RATED LOAD	2	5	50	75		100	125	150	S.F.	
POWER FACTOR	46	.0	69.0 80.0			84.0	86.0	87.0	85.0	
EFFICIENCY	89	.0	92.8	93.1	93.1 93.0 92.2		92.2	91.1	92.5	
SPEED	179	1.0	1783.0	1770.0 176		1766.0	1756.0	1745.0	1760.0	
LINE AMPERES	10	.7	14.0	19.1		23.7	29.1	35.4	26.94	

Replacement Parts Lists

The *NEXGEN*[®] Galaxy2R[®] Grand Forks Two-Ram Baler contains parts that will require replacement during the life of the baler. On the following pages are parts lists categorized by baler model and replacement part. The part number and quantity are listed for each part. To place an order, please call **1-800-633-8974** and ask for the **NEXGEN[®]** Parts Department.

Body Ram Liner



Maintenance 2-24

Ref	Description	Qty	Part Number
	Liner Package - Body		
1	Body Side Liner-Discharge Side (under holddown bar)	2	32-7758
2	Body Side Liner-Ejector Side (under holddown bar)	2	32-7759
3	Body Floor Liner - Main	1	32-5796
4	Body Floor Liner - Rear	1	32-4107
5	Body End Wall Liner	1	32-3541
6	Floor Liner - BLDR	1	33-6865
7	Roof Liner - BLDR	1	33-5795
8	Body T & G Bar - Middle	5	32-7763
9	Body T & G Bar - Outer	2	32-7764
10	Rear Ejector Wall Liner	1	33-3542
11	Roof Liner	1	33-5789
12	Bottom Door Track - Inner	1	32-4110
13	Bottom Door Track - Outer	1	33-6866
14	Upper Door Track - Inner	1	33-5790
15	Upper Door Track - Outer	1	33-5788
16	Holddown Bar Package	1	446976
	Liner Package - Main Ram		
17	Ram Bottom Liner	1	31-7480
18	Ram Face Liner	1	31-9466
19	Ram T & G Bar	6	31-7886
20	Ram Tail Bottom Liner	2	29-0311
	Cylinders		
-	Main Body Cylinder	1	04-3493
	- Main Cylinder Pin - Rear	1	33-0815
	- Main Cylinder Pin - Front	1	33-3563
-	Ejector Cylinder	1	04-3425
	- Ejector Cylinder Pin - Rear	1	29-7689
	- Ejector Cylinder Pin - Front	1	29-7690
-	Door Cylinder	1	04-3414

Reference numbers given below refer to Body Ram Liner drawing on page 2-24.

Baler

Description	Qty	Part Number
Relay Safety Monitoring 3 Output 24V	1	03-4152
Transducer Position 164 FT	1	03-3440
Reflector for Position Transducer	2	03-4939
PLC AB Micro Logic 1500	1	03-4877
PLC AB Power Supply	1	03-4328
Power Supply 24VDC 5 AMP (Panel View Plus)	1	03-4323
Operator Interface PROFACE	1	03-5852
Operator Joystick Right-Left	1	03-0681
Operator Joystick Up-Down	1	03-0682
Operator 30 Pushbutton Ill Green W/Guard	1	03-0687
Transducer Pressure (Turk)	1	03-5308
Photocell Harsh Duty Emitter	1	99-8222
Photocell Harsh Duty Receiver	1	03-4216
Pressure Switch	1	03-0772
Limit Switch Roller Arm	1	03-0010
Limit Switch	1	03-0012
Light Strobe Module Red LED 120V	1	03-3638
Light Stack Module Blue 12-230V	1	03-4285
Alarm Stack Module 120V 100db	1	03-4283
Light Stack Module Amber 12-230V	1	03-4284
Bulb for Stack Light Amber 120V	1	03-4286
Bulb for Stack Light Blue 120V	1	03-4287
Relay 1 Pole 120V 12 AMP 5 Pin	4	03-4967
Pressure Gauge 0-5000PSI	2	02-0700
Relief Valve 50 GPM Cartridge	1	02-0645
Relief Valve Cartridge F/02-4398	1	02-4883
Relief Valve Cartridge	1	02-0214
Valve 4-Way 08 C 3-Pos	1	02-3051
Valve 4-Way 03 C 2-Pos	1	02-0297
Return Line Filter Element	4	99-7622
Breather Filter	1	99-7756
Motor 100HP 230/460 Volt 405TC TEFC	1	03-0833
Pump 36, 71, 105GPM Vane with Reliefs (LH)	1	02-1016
Pump 36, 71, 105GPM Vane with Reliefs (RH)	1	02-1017
Pump Cartridge 36 GPM	1	02-4239
Pump Cartridge 105 GPM	1	02-4448
Pump Cartridge 71 GPM	1	02-4521
Seal Kit for 02-1016 & 02-1017	1	02-4240
Cylinder 12B 9R 160S	1	04-3493
Cylinder 8B 6R 90S	1	04-3425
Cylinder 7B 4 1/2R 46S	1	04-3414
Shear Blade Mtl Pkg 2R-450-W	1	583900

Conveyer

Description	Qty	Part Number
Relay Safety Monitoring 3 Output 24V	1	03-4152
Transducer Position 164 FT	1	03-3440
Reflector for Position Transducer	2	03-4939
PLC AB Micro Logic 1500	1	03-4877
PLC AB Power Supply	1	03-4328
Power Supply 24VDC 5 AMP (Panel View Plus)	1	03-4323
Operator Interface PROFACE	1	03-5852
Operator Joystick Right-Left	1	03-0681
Operator Joystick Up-Down	1	03-0682
Operator 30 Pushbutton Ill Green W/Guard	1	03-0687
Transducer Pressure (Turk)	1	03-5308
Photocell Harsh Duty Emitter	1	99-8222
Photocell Harsh Duty Receiver	1	03-4216
Pressure Switch	1	03-0772
Limit Switch Roller Arm	1	03-0010
Limit Switch	1	03-0012
Light Strobe Module Red LED 120V	1	03-3638
Light Stack Module Blue 12-230V	1	03-4285
Alarm Stack Module 120V 100db	1	03-4283
Light Stack Module Amber 12-230V	1	03-4284
Bulb for Stack Light Amber 120V	1	03-4286
Brush for Multi-feed Oiler	4	05-3495
Compression Fittings F/Conv Oiler Brushes	4	02-4084
Hose 1/4 OD Oiler Tube	25'	02-4279
Oiler Multi-feed Solenoid Controlled 1 Gal 4 FD	1	05-4390

Power Units

Refer to page 2-19 for a list of power unit part numbers.

Decals

When your baler leaves the factory, several WARNING DECALS are installed for your protection. These labels are subject to wear and abuse due to the nature of the baling operation. Additional decals may be purchased through your distributor or from Marathon Equipment Company by either calling the service department at **1-800-633-8974** or going online to **www.parts1stop.com**.

Refer to page 1-43 for a list of decal part numbers.

INSTALLATION

General Requirements

CAUTION: Review this manual before beginning installation. Study the jobsite and installation requirements carefully to be certain all necessary safeguards and/or safety devices are provided to protect all personnel and equipment during installation and as a completed system. This baler should be installed in accordance with the most current version of ANSI standard Z245.5 at the time of manufacture.

Operating instructions in the first section of this manual are not intended as a substitute for training and experience in the proper use and safety procedures in operating this equipment.

This baler is designed for indoor use ONLY.

Marathon does not assume responsibility for installation procedures of this equipment. Conformance to applicable local, state, and federal laws concerning installation is the customer responsibility.

This section of the manual covers the assembly and installation of the *NEXGEN*[®] Galaxy2R[®] Grand Forks Two-Ram Baler. The following pages cover general installation, plumbing installation, plumbing installation.

Concrete Pad or Floor

The baler foundation should be a minimum of 6" thick, 3000 psi steel reinforced concrete. It is recommended that the baler be positioned on a 3/4" steel foundation plate to prevent possible floor damage. Marathon is not responsible for floor damage if a foundation plate is not used. It is recommended that the pad or floor be flush with the surrounding area.

Anchoring

If using the steel foundation plate, it should be secured to your pad or floor.

- 1. Allow enough clearance for the panel box door to swing completely open and it must comply with state and local building codes.
- 2. Allow enough space in front of the bale exit for a bale-handling vehicle.
- 3. Allow enough space for installation and safe operation of the auto-tie mechanism.
- 4. Allow enough space around the baler for any maintenance or service (including cylinder removal and liner replacement).

Decals

Installation of the baler is not complete until an inspection of warning decals has been made. All warning decals must be in place prior to operating the baler. Decals should be clearly visible, legible, securely applied, and in the proper location. Refer to Decal Placement on page 1-44. Notify your distributor or Marathon Equipment Company if any warning decals are missing or become damaged and need replacing.

Foundation Plate Dimensions

Baler Foundation Requirements: A minimum 6" steel reinforced 3000 psi concrete slab with a minimum 3/4" steel foundation plate per foundation detail. The 3/4" steel foundation plate is recommended to prevent possible floor damage to the concrete slab. Marathon Equipment Company is not responsible for any floor damage if the recommended 3/4" minimum steel foundation plate is not used.



NOTE: Marathon Equipment Company is not responsible for providing this steel foundation plate. The recommended foundation plate is the responsibility of the customer. It is also the customer's responsibility to anchor the foundation plate to the concrete floor.

Foundation Plate Dimensions						
	А	В	С	D		
2R-450-102-W	452″	96″	115″	66″		

Typical 2R Layout

(Typical Left Hand shown, Right Hand opposite)



NOTE: Anchor pads must be anchored to the floor using 1 \times 6" anchor bolts. Do NOT anchor the ejector housing.

Machine Assembly

(Connecting Ejector Ram to Main Body)

- 1. Using a crane, fork lift, or machine roller, position the Main Ram body into the desired location (do not drag the body into place).
- Assemble the Ejector Ram body to the Main Ram body. Slide the Ejector Ram into the Main Ram body until the facing surface of the Ejector Body contacts the Main Ram body facing surface. Bolt the Ejector Ram body to the Main Ram body with the provided bolts and nuts. A reference chart and diagram are shown below for bolt size and quantity.

Model	Bolt Size	Qty	Part #
2R-450-102-W	1 1/4 x 3 1/2	18	052160

NOTE: For Electrical and Hydraulic connections, see Electrical and Hydraulic Installation on page 3-7.



Machine Assembly (cont.)

- 3. Level the machine. Use shims under the main ram body and the ejector ram body to compensate for any unevenness in the floor or pad.
- 4. Place the Bale Table on the floor or pad in front of the ejector opening. Center the bale table to the bale eject opening. Allow a minimum of 6" between the bale table and the deflector of the wire tier. Anchor the bale table to the floor or pad.



Machine Assembly (cont.)

5. Set the accumulator for the wire tier in an out-of-way, but convenient location. Allow enough space for handling equipment for the purpose of changing wire spools. Anchor the accumulator to the floor or pad.

NOTE: A typical layout is shown below, your installation may differ. For more information on the wire tie system, see the Wire Tie manual.



Electrical and Hydraulic Installation



The motor control panel contains high voltage components. Only authorized service personnel should be allowed inside. See Lock-Out & Tag-Out Instructions on page 2-1.

WARNING: Before making any electrical connection, be sure that the disconnect switch has been locked-out and tagged-out.

CAUTION: All equipment should be grounded per National Electric Code.

- 1. Before connecting power to the baler, check the incoming line voltage with a voltmeter. Also, check voltage wiring in the baler panel box. If the baler is not wired to proper voltage, make necessary corrections before proceeding.
- 2. A lockable disconnect switch is provided in the baler motor control panel and is sized in accordance with the baler. Three-phase power should be connected to the top of this disconnect switch. Be careful not to let the incoming wires touch each other. A properly sized equipment ground should be connected to the enclosure ground lug.
- 3. Reconnect all sealtite connections on the baler and power unit. Also reconnect all electrical wires in sealtite to terminals indicated by the wire numbers on wires. If the wire numbers are missing, or are not readable, refer to the electrical schematic shipped with the baler.
- 4. If the baler is supplied with a conveyor, it can be supplied with a wiring disconnect in the baler panel box. When the conveyor is anchored into place, connect sealtite from the conveyor to the baler panel box. Next, connect the wires per the electrical schematic shipped with the baler.
- 5. Connect all hydraulic hoses. Refer to Hydraulic Schematic (2 x 100) on page 2-15 to ensure proper connections.
 - Install 2" Main Ram hoses as shown.
 - Install 1-1/4" Ejector Ram hoses. The "A" port hose (from the power unit) connects to the base end port of the Ejector cylinder. The "B" port hose (from the power unit) connects to the rod end port of the Ejector cylinder. Connect hoses between hard piping on the Ejector Ram body and the Main Ram body to complete the Ejector Ram plumbing. (Top to top, bottom to bottom.)
 - Install Wire Tier hoses. A 3/4" hose from the pressure port on the pump connects to tubing to the pressure port on the Wire Tier manifold. A 3/4" hose from the reservoir connects to tubing from the return port of the Wire Tier manifold. A 3/8" hose from the reservoir connects to 3/8" tubing from the drain on the Wire Tier.
- 6. Fill the reservoir with hydraulic oil. See Recommended Oils on page 2-4. Fill until oil is 3/4 up in the sight gauge. After start-up, it may be necessary to add more oil to the reservoir. Maintain oil level to 3/4 in the sight gauge with the main ram retracted.

Installation Start-Up

- 1. Check to make sure that all electrical and hydraulic connections have been made.
- 2. Turn the disconnect switch to the ON position.
- 3. Check the rotation of the motor. This will require TWO people.
 - a. Remove the cover on the pump.
 - b. Insert the CONTROLS key into the key switch and turn it to the ON position.
 - c. Press the POWER ON switch.
 - d. Press and hold the MAIN MOTOR START switch until the motor starts (20 seconds).
 - e. Allow the motor to run for one (1) second and press the STOP button.
 - f. Looking at the HUB COUPLING from the motor end, the rotation should be clockwise. If the motor turns in the wrong direction, turn the main disconnect switch to the OFF position. Lock-out and Tag-out power and reverse any two incoming power wires in the motor control panel.
 - g. Replace the cover on the pump.
- 4. Re-start the machine.
- 5. Manually operate the main ram and the ejector ram in the forward and reverse directions several times to fill the cylinders and hydraulic lines with oil.
- 6. Check the function of all interlock switches and stop switches. Check the reflectors and operation of photocells.
- 7. Make sure that operators are trained in proper use of this equipment.

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PREVENTATIVE MAINTENANCE SCHEDULE FOR NEXGEN 2R HORIZONTAL BALER

The following items are part of a preventative maintenance schedule that the factory mandates be used to maintain this baler at factory specifications. If this schedule is not kept, any damage done to the baler or its components will not be covered under warranty. Failure to provide an up to date copy of the maintenance record with each warranty claim will void the warranty. Please contact the Nexgen Service Department if you have any questions about these procedures.

The times given to complete the items are an approximation. Items beyond our control could cause these times to be inaccurate, but they will provide a very manageable guideline to use. The Operation, Maintenance, and Installation Manual should also be referred to.

SAFETY NOTICE

- 1. During maintenance procedures it is necessary to perform lock out/tag out before starting, unless the maintenance requires the baler to be running. Before entering any part of the baler, all precautions must be taken to ensure that all electrical and hydraulic energy is removed from the baler and that it is locked and tagged out. Different companies vary on their lock out/tag out policies, but at a minimum, ANSI and OSHA standards must be met along with the guidelines presented here.
- 2. To begin the lock out/tag out process, make sure that no ram is against a load. Retract them to the rear positions. Then proceed to move the main disconnect lever to OFF position. Padlock the lever with a keyed padlock and take the key with you. Also, provide a tag on the lock with a warning such as: "Danger, do not operate equipment. Person working on equipment." or "Warning, do not energize without permission of (your name)."
- 3. After locking out baler, try to start the baler up and operate it. Make sure that the lock out/tag out procedure you completed was effective before continuing.
- 4. Hydraulic energy: After removing the electrical energy from the baler, hydraulic energy still exists. This energy must also be removed. Ensure that all personnel are clear from the compaction and ejection areas of the baler. Also check to be sure that the ram isn't against a load. Once you have checked these two items, depress the solenoid valve pin located in the center of each solenoid valve on each manifold and hold the pin in for three seconds.



5. The preceding and following items should be completed by certified mechanics only, and then only after all safety precautions have been taken and baler is locked out and tagged out.

EVERY 10 HOURS OF OPERATION

- 1. Inspect the baler and power pack for hydraulic leaks.
- 2. Check the level of hydraulic fluid in reservoir. With all cylinders retracted, the level of fluid in the sight gauge should be above the ³/₄ full mark. The sight gauge is located on the side of the reservoir.
- 3. Check the temperature of the hydraulic fluid in the system. The temperature should be below 160° F.
- 4. Check all Emergency Stops to ensure that they are unobstructed, and that they can be easily accessed by operators or other workers.
- 5. Ensure that the operator's platform, stairway, and other areas are free of obstructions that could cause a fall, slip, or other accident.
- 6. Check the amount of wire in the wire tier's accumulator. Ensure that there is a sufficient amount of wire for the day's use.
- 7. Clean the lenses of the photo eyes, sonic sensors, and laser positioning devices. Also clean all reflectors. In very dusty applications, this may be necessary multiple times throughout the day.
- 8. Clean the radiator for the oil cooler of any debris and dust that would prohibit free air flow.
- 9. The drains included in the Solid Waste Package both in the baler and on the exit end should be checked for clearance and to ensure that all liquids are capable of exiting the area behind the ram.

Time to complete: The 10 hour maintenance procedure will take approximately one hour to complete.

EVERY 50 HOURS OF OPERATION

- 1. The power pack and surrounding areas should be cleaned. Remove all debris and dust using compressed air or other means. Any hydraulic fluid should be removed using oil absorbent materials, and properly disposed of. The power pack should then be blown off with compressed air, and if appropriate, cleaned with industrial solvent and a low pressure washer.
- 2. The area behind the main and ejection rams should be cleaned out with a pressure washer. The track of the NexDoor should also be cleaned. Ensure that



material is not building up profusely behind the ram. The wiper blade should be checked to ensure that it is working properly.

- 3. All Emergency Stops and safety interlocks should be checked for functionality. With the baler on, engage or disengage each emergency stop and interlock individually to ensure that all baler functions cease immediately once the switch is activated.
- 4. Test the Start Up Alarm and Beacon. With the baler off, turn on the power and start the motors. The beacon should flash for 20 seconds, and the alarm should sound for 15 seconds. The beacon lenses should be wiped free of debris and dust.

Time to complete: The 50 hour maintenance procedure will take approximately two to three hours to complete.

EVERY 200 HOURS OF OPERATION

- 1. Test all control functions of the baler. Each operational button or joystick on the control panel should be tested for functionality.
- 2. Check all hydraulic hoses for wear. Look for slight chafing, cuts, or abrasions. These should be inspected further to assess damage, and replace if necessary.
- 3. The drain system on the Solid Waste package should be flushed completely.
- 4. Check the breather cap on the reservoir for cleanliness. Clean or replace as necessary.
- 5. Check the pins on each cylinder, rod and base end, for free movement, wear, and structural integrity.
- 6. Inspect the ram and body shear blades for wear, sharpness, and clearance. Each leading edge should have a sharp, keen angle. Clearance between the ram and body shear blades at approach should be no greater than .015 of an inch. Clearance should be checked and adjusted accordingly. Please see section below on hold down and shear bar adjustment.
- 7. Inspect the hold down bars for wear. Adjust as necessary. The hold down bars should also be coated with a light coating of grease to reduce wear. Please see section below on hold down and shear bar adjustment.
- 8. Check the rod seals of each cylinder for signs of leakage or wear.
- 9. The return line filter should be changed after the first 200 hours of operation, and then changed every 600 hours.
- 10. Check torque on all hoses and pipe fittings per manufacturer's recommendations. After the 200 hour check this should be preformed after every 600 hours of operation.



Time to complete: The 200 hour maintenance procedure will take approximately two to three hours to complete. If hold down or shear beam adjustments need to be made, it could take longer. Please note the section on shear beam and hold down maintenance below.

EVERY 600 HOURS OF OPERATION

- 1. Change the return line filter.
- 2. Inspect all cylinder rods for nicks, scoring, or abrasions.
- 3. Check torque on all hoses and pipe fittings per manufacturer's recommendations.

Time to complete: The 600 hour maintenance procedure will take approximately one hour to complete.

EVERY 1000 HOURS OF OPERATION

- 1. Take an oil sample from the hydraulic system to be sampled. Nexgen can provide you with oil sample kits that you can use and then send back to us. We will send the oil to be analyzed and provide you with a report of cleanliness. This is a very important maintenance item. If the hydraulic fluid becomes contaminated, it will cause problems with the hydraulic system. If the necessary precautions are not taken, this can lead to damage of components.
- 2. Check the structure of the baler including the pinning points of all cylinders for signs of problems. The welds should be checked for cracks, and all structural components should be checked for alignment, stress fractures, etc. The area behind all rams should be checked carefully to ensure that excessive rust buildup is not occurring. If any problems are found, you must report these immediately so that the cause of the problem can be determined and the necessary steps taken to correct the problem before any damage occurs.
- 3. The main cylinder rod will need to be rotated 180°. You will need to unpin the rod end of the cylinder from the ram pinning system and turn the rod. Before you begin this project, consult with the factory to advise them that you are performing this maintenance item so that they can provide assistance if necessary.

Time to complete: The 1000 hour maintenance procedure will take approximately two to three hours to complete.



EVERY 2000 HOURS OF OPERATION

- 1. The hydraulic fluid in the system must be changed at this point. The existing oil may be reused, but a sample of the fluid must be analyzed in a laboratory to determine the state of the fluid, and if any additives should be put in to return the fluid to manufacturer's standards before doing so. All of the fluid in the system must be replaced, so you will need to fully retract all cylinders in the system in order to capture the most amount of oil possible. Once you have removed the fluid, the reservoir must be cleaned inside with a nonflammable solvent and thoroughly dried. When pumping the oil back into the reservoir, a minimum of a 5 micron filter must be used. If you are using new oil, please view the chart in the manual to ensure that the oil you use is recommended.
- 2. Lubricate all electric motor bearings as recommended by the manufacturer.
- 3. The hydraulic suction filters should be cleaned at this point. Remove the filters from the baler and clean with a soft brush and standard industrial solvent. Extreme care should be taken to make sure that the filter element is not torn. If a crackling sound or pump noise is experienced after replacing the filters, tightening the suction fittings will eliminate the noise. This is caused by air entering the system.

Time to complete: The 2000 hour maintenance procedure will take approximately six to eight hours to complete.

SHEAR BLADE AND HOLD DOWN MAINTENANCE

The body and ram shear blades and hold downs work together to provide smooth operation of the ram and to assist in cutting material so as to bale more easily. These need to be adjusted, shimmed, rotated, or replaced per the following instructions as necessary. These items should be adjusted along with each other so as to provide the best operation of your baler.

1. The hold down bars are adjusted by loosening the lock nuts associated with hold down bars on the exterior of the baler. Begin by running the ram out even with the rear of the charge chamber or slightly forward so that you can view the ram top. Loosen the lock nuts, and this will allow the hold down bars to slide down to the necessary position. It might be necessary to tap them with a hammer to move them. The hold down bar should be as close to the top of the ram as possible without binding it; approximately 1/32"-1/16". A thin layer of grease should be applied to the bottom of the hold down bars to aid in travel. The hold down bars



are designed so that once one side wears, the bar can be flipped over and the other side used. To do this, the bolts must be completely removed, the bar pulled out, flipped, and reinstalled.

Time to complete: The hold down maintenance will take approximately one to two hours to complete. If the bars need to be flipped, it will take approximately four hours.

2. The shear beam on this baler consists of a ram shear blade and a body shear blade. The body shear blades are the ones that you will be adjusting. To begin, run the ram out until the shear blades meet. Make sure the baler is then locked out. In front of the hopper, there is the shear beam header. On the 2R450 balers it consists of seven bolts; four are for adjustments, three are for support and pressure. The three bolts that hold the beam up have a lock nut on them. Loosen the three lock nuts. Loosen the three bolts evenly in a counterclockwise motion to release the pressure off of the shear beam. You will be able to tell by the bolts when the pressure is released. Be careful not to totally release the bolts. Once you have relieved the pressure, begin lowering the shear beam by backing out on the four adjustment bolts evenly in a counterclockwise motion. As you back out on the bolts, the shear beam will lower. Lower the blade until there is a .015" gap between the shear blades. Then you will need to tighten the three pressure bolts down until you feel them tighten up with pressure against the shear beam. Ensure that they are tightened, and then tighten down on the lock nuts to complete the process.

Time to complete: The shear beam maintenance will take approximately two hours to complete.

3. The shear blades must retain sharpness. The ram shear blade has four edges that can be used before sharpening. To swap, remove the bolts, pull the shear blade off, and flip or turn 180°. The body shear blades must be sharpened on site by a grinder or taken to a machine shop to sharpen. Ensure that the same angle of the blade is kept during sharpening.

Time to complete: Swapping around of the ram shear blade will take approximately two hours to complete. Sharpening of the body blades on site will take approximately two hours. The complete removal of blades will take approximately two to three hours. The factory should be notified of this to provide technical support.

10 HOUR MAINTENANCE SCHEDULE		
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50 HOUR MAINTENANCE SCHEDULE		
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200 HOUR MAINTENANCE SCHEDULE		
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