Blue cells indicate post-accident changes

Mach. Serial #		Customer		Engine Hours		Sales Order	
Engine Mfg		Eng S/N		Engine Model #			
Pump #		GUI Rev		MCC Rev			
Tested By		Pre-test Oil Sample		Post-test Oil Sample			
Engine Family		Engine Manufacture Date					
Code: A = Assembly, E = Engineering, V = Vendor, O = Other		Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic					
T		Start Date		End Date		Total Test Time/Hrs	

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Code: A=Assembly, E= Engineering, V= Vendor O = Other	Serial #	0
Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic		

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Code: A=Assembly, E= Engineering, V= Vendor O = Other Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic	Serial #	0

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Code: A=Assembly, E= Engineering, V= Vendor O = Other	Serial #	0
Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic		

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Code: A=Assembly, E= Engineering, V= Vendor O = Other	Serial #	**0**
Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic		

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Code: A=Assembly, E= Engineering, V= Vendor O = Other	Serial #	**0**
Type: E=Electrical, H=Hydraulic, M=Mechanical, P=Pneumatic		

Date Found	Code	Type	Drawing #	Page #	Revision #	Sub Description	Corrected by	Correction Time	Reviewed By
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		
Long description							**Part number**		

Rev: 3.3

SE SPIKER

Machine #		0
1		Check the engine oil level.
2		Check engine coolant level.
3		Check hydraulic oil level: proper level is 6" below top of tank
4		Verify the propulsion planetary motors are filled to the proper level.
5		Make sure cab heater valves are opened.
6		45 gallons of fuel added to tank.
7		Add 4 gallons of DEF.
8		MAKE SURE SUCTION LINE VALVE IS OPEN
9		PRIME IMPLEMENT AND HYDROSTATIC PUMPS
10		Back out Pump Compensator screw (3) turns & turn in Main Relief Valve
11		Verify the valve sequence in the main manifold is set for normal operation
12		Set hammer counter balance valves to 2 3/4 turns clockwise from fully counter clockwise (port 5A and 5B in the workhead manifold)
13		Make sure all the cylinders in the up position are locked up.
14		Check that the correct size Circuit Breakers have been installed
15		Check for correct Battery Cable connections (in series) & check Main Circuit Breaker (on engine) is *RESET*.
16		Turn all the Toggle switches & Ignition switch to the *OFF* position.
17		Check resistance (w/Main Circuit Breaker *RESET*) between wire #2(gnd) & wire #3(pwr)
18		Check voltage directly at Batteries. (Min. = 24VDC)
19		Check voltage at wire #3 w/Battery switch *ON*. (Should be same value)
20		Check that all Emergency Stop buttons (red) & Electrical Interlock/Warm up button (yellow) are pulled out.
21		Verify Hydraulic Oil Cooler Fan rotation (air is pulled through the core) Adjust pressure reducing valve by turning completely in clockwise, and backing out 1 complete turn for proper fan RPM
22		Pressure Filter indicator shows clean on the GUI
23		Return Filter indicator shows clean on the GUI
24		Case Drain Filter indicator shows clean on the GUI
25		Enter the diagnostics screen on the GUI and select all travel pedals and brake pedals then perfom the following fuctions check.
26		Press the **left forward** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
27		Press the **left reverse** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
28		Press the **left brake** pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
29		Press the **right forward** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics

SE SPIKER

30		Press the right reverse travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
31		Press the right brake pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
32		Press the center forward travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
33		Press the center reverse travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
34		Press the **center brake** pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
35		Check strobe light
36		Cab fans
37		Trouble light in the MCC and the PDC control panel
38		Dome lights
39		Windshield wipers
40		Check the working lights.
41		Check the travel & marker lights, both directions. (travel opposite marker)
42		Check brake lights work and that they are to customer spec (flashing/non flashing)
43		Check all the horn buttons.
44		Check the controls on/off switch: on position; engine does not crank
45		Check the Pump on/off switch: on position; engine does not crank.
46		Check the throttle override switch: high position; engine does not crank.
47		Engine does crank with controls position off & pump position off and throttle override low
48		*START* Engine & check for hydraulic oil leaks or any other problems.
49		Check all Emergency Stop buttons w/Engine idling: pushed in shuts down all power, kills Engine & will not restart.
50		Check Engine Fuel Gauge on GUI.
51		Verify throttle override puts the engine into high idle
52		Set addres for Murphy displays to (Front by windshield) 84 and (Rear in control panel) 43. Password for Murphy is 3482.
53		Set Low speed (idle) at 1100 RPM DEERE @ 1200 RPM
54		Set High speed (work) at 2250 RPM
55		Check the Engine Oil Pressure gauge on the GUI (High speed)
56		Check the Engine Temperature gauge on the GUI.
57		Check the Engine Voltage gauge on the GUI. (High speed)
58		Remove the oil pressure display from the 4-up display and add engine hours in its place on all Cummins 4.5 engines (For older T3 Murphy panel only)
59		Check operation of Electrical Interlock/Warm up switch: Pushed in; No power to all outputs but Nodes remain powered up. Pull out for power.

SE SPIKER

60		Check the Standby/Work/Travel button: *STANDBY* position; no Hand Controller or foot pedal function. Throttle up/down and work/travel buttons are only two buttons that function
61		*START* Engine: select *HIGH* speed & Pump *ON*. (Check again for hyd. leaks)
62		Select *TRAVEL* mode & set Main Pump Compensator to 2900 PSI.
63		Set the Main Relief Valve (in main manifold position 3) to 2900 PSI & then set Main Pump Compensator to 2250 PSI (operating pressure).
64		Set manual valve PRV at port 2 on main manifold to 250 PSI (PP on main manifold)
65		Set gager buggy manifold pressure to 1500 psi
66		Set the guide roller PRV to 1000 PSI for both LH and RH work heads at GWG on the workhead manifold and verify gauge drops to zero when pressure is released.
67		Verify spike feed cylinder pressure is at 1000 PSI at FCG on the workhead manifolds
68		Press the work/travel button to enter work mode
69		Check the joystick pattern adjust for LH Carriage in independent mode.
70		Check the joystick pattern adjust for LH Carriage in standard mode.
71		With workheads inline; measure the distance between the guide rod blocks: Min. = 5¾" (+/ 1/2") Max. = 14½" (+/ 1/2")
72		Verify carriage spotting corresponds with joystick direction
73		Verify there is no hammer operation unless brake pedal is pressed
74		Verify joystick #1 buttons in independent mode
75		Verify joystick #1 buttons in standard mode
76		Verify joystick #2 buttons in independent mode
77		Verify joystick # 2 buttons in standard mode
78		Verify key pad buttons
79		Check the joystick pattern adjust for RH Carriage in independent mode.
80		Check the joystick pattern adjust for RH Carriage in standard mode.
81		With workheads inline; measure the distance between the guide rod blocks: Min. = 5¾" (+/ 1/2") Max. = 14½" (+/ 1/2")
82		Verify carriage spotting corresponds with joystick direction
83		Verify joystick #3 buttons in independent mode
84		Verify joystick #3 buttons in standard mode
85		Verify joystick #4 buttons in independent mode
86		Verify joystick #4 buttons in standard mode
87		Verify key pad buttons
88		Verify the travel override enables left pedals only (turn off override)
89		Select left travel pedals and verify all other pedals are disabled. (repeat with center and right pedals selected) All brake pedals are enabled at all times.
90		Check that the back up/travel alarms works. Use back up alarm chart tab for proper fuction per customer options/machine layout.

SE SPIKER

91		Adjust Hammer Flow Control Valves on each Hammer to 1 turns out from all the way in.
92		Check operation of **Gun** 1 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
93		Check operation of **Gun** 2 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
94		Check operation of **Gun** 3 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
95		Check operation of **Gun** 4 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
96		Check Nipper Auto/Manual button: *MANUAL* position; only the Hand Controller *SET* Button starts the cycle.
97		*SET* the Nippers in Manual Mode 10 times, Reset Nippers by releasing the brake pedal. If necessary adjust hooks close and down duration timers on the GUI.
98		SET the Nippers in Manual Mode 10 times, Reset Nippers by using the nipper reset button on the joystick.
99		Put Nipper in AUTO; start nipper cycle with Gun #1 through #4; Nippers are automatically SET when the Gun is SET. Reset the Nippers.
100		Select jointed on the keypad
101		Verify gager buggy up/down switch
102		Verify gager buggy extend/retract switch
103		Adjust gager buggy offset to match gauge
104		Set target gage to 56.25 on the GUI
105		Set gauger pulse timer to 1.5 seconds on the GUI
106		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.25
107		Verify gage with a tape measure
108		Set target gage to 56.5 on the GUI
109		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.5
110		Verify gage with a tape measure
111		Set target gage to 56.75 on the GUI
112		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.75
113		Verify gage with a tape measure
114		If necessary, adjust pulse time duration on GUI to clear joint bar
115		Select Welded mode on the keypad and verify the gager cylinders relieve pressure but do not pulse off
116		Set RAIL IN PRV at port 6 on main manifold to 500 PSI (G1 on main manifold)
117		Verify Pneumatic System turns on
118		Set kick off to 120 PSI
119		Set kick on to 80 PSI

SE SPIKER

120		Check Hydraulic Winch operation. Handle up; cable up & vice versa, while setting the Flow Control for an adequate speed.
121		Check Bulk Loader operation. Adjust kick down relief so vibrator only vibrates when the ram is fully retracted.
122		Check Dump Bin operation. Handle forward; bin up & vice versa. And speed 5 to 3 sec. up.
123		Feed a full tray of spikes through all the trays. Only 1 misfeed per tray!!!
124		Top off Hydraulic Tank last time & attach filter buggy: proper level now is 6" below top of tank.
125		Take oil sample to reach a specification for customer or an ISO of 17/14/11 or less.
126		Check the Set Off cylinder & balance of the machine.
127		Check Propulsion chain, adjust to proper tension if necessary. (1/4" slack/foot) and lock nuts are tight.
128		Verify the operation of Emergency pump. Hand/Electric (circle) NOTE: Brakes must release to fully insert lock pins.
129		Check the operation of the top off pump. (Circle) Hand/Electric
130		Double check **ALL** Locknuts on relief valves, pressure reducing valves, and flow control valves. **Make sure they are secure.**
131		Turntable lock up/Detent operation
132		Hydraulic temperature gauge
133		Hydraulic Lockups
134		Joystick Disable
135		Turntable up/down indicator & warning buzzer
136		Cab pressurizer
137		Heater (verify fan speeds)
138		24v/12v Converter
139		Radio turns on and speaker works. Check weather channel.
140		Simulate actual production; i.e., operate at production pressures, flows, and cycle times. Complete a minimum of 3 full heat cycles.

FIND THE MACHINE THAT IS APPLICABLE TO THE MACHINE TESTED. IF IT DOES NOT MATCH ONE ON THE CHART USE THE "STANDARD" OPERATION

INITIALS	Switch Position	Pedal Pushed	STANDARD	CSX
130				

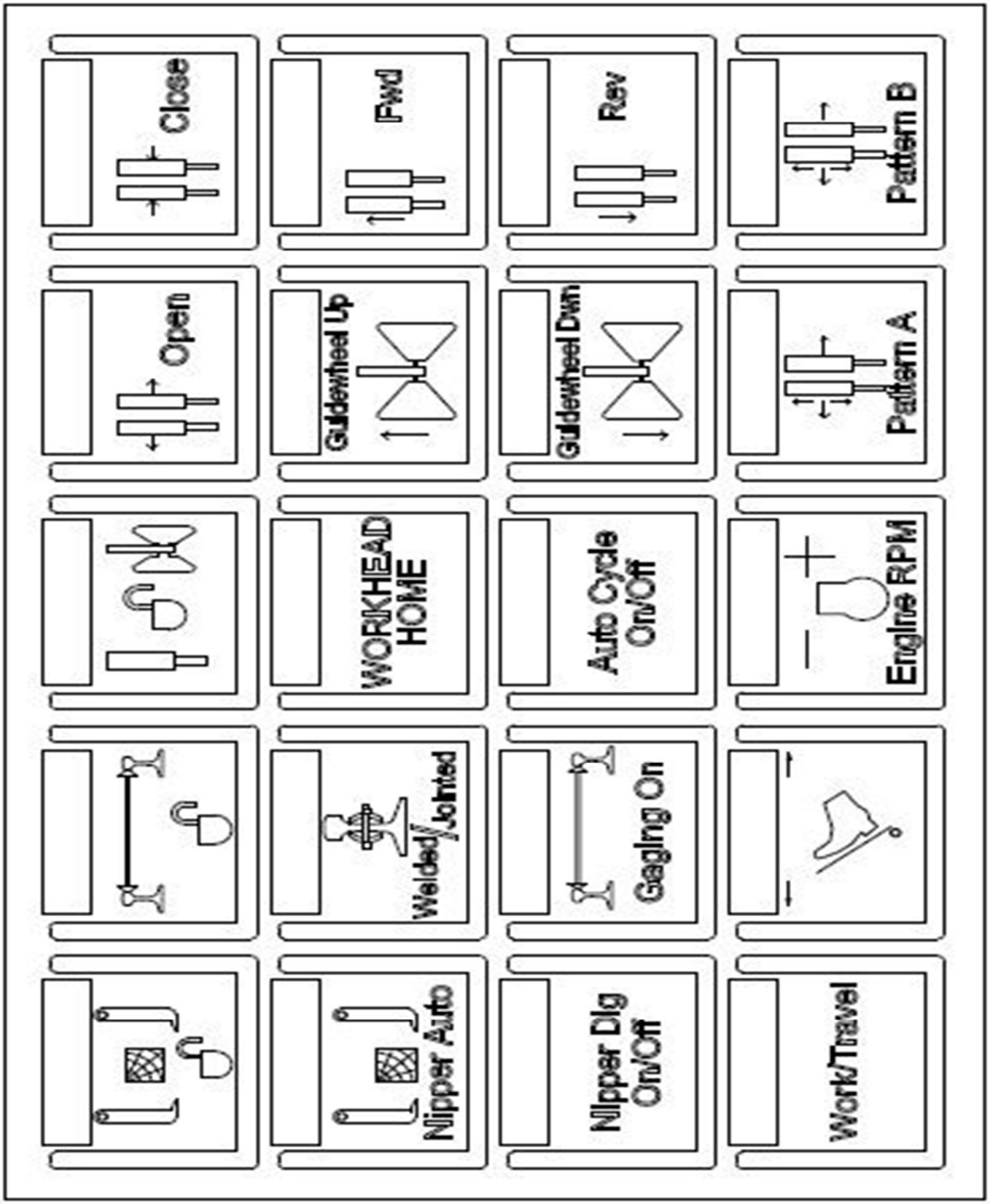
Rev: 3.3

SE SPIKER

	FORWARD	FORWARD	NONE	F&R ALARM (5 sec)
	FORWARD	REVERSE	REAR ALARM (3 sec)	F&R ALARM (5 sec)
	CENTER	FORWARD	F&R ALARM (3 sec)	F&R ALARM (5 sec)
	CENTER	REVERSE	F&R ALARM (3 sec)	F&R ALARM (5 sec)
	REVERSE	FORWARD	FRONT ALARM (3 sec)	F&R ALARM (5 sec)
	REVERSE	REVERSE	NONE	F&R ALARM (5 sec)

Rev: 3.3

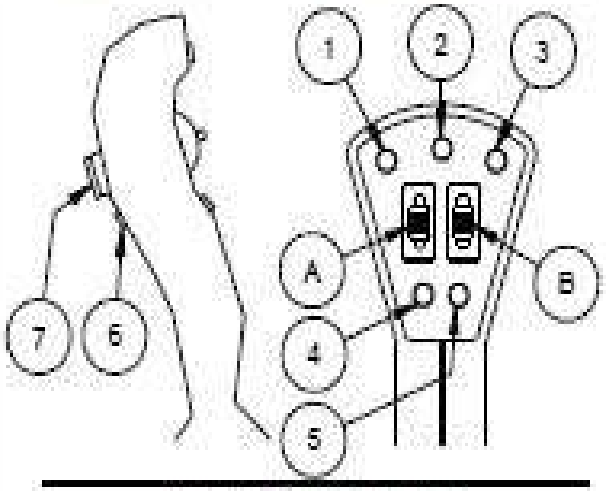
SE SPIKER



Rev: 3.3

SE SPIKER

GUN 1 JOYSTICK FUNCTIONS



INDEPENDENT MODE

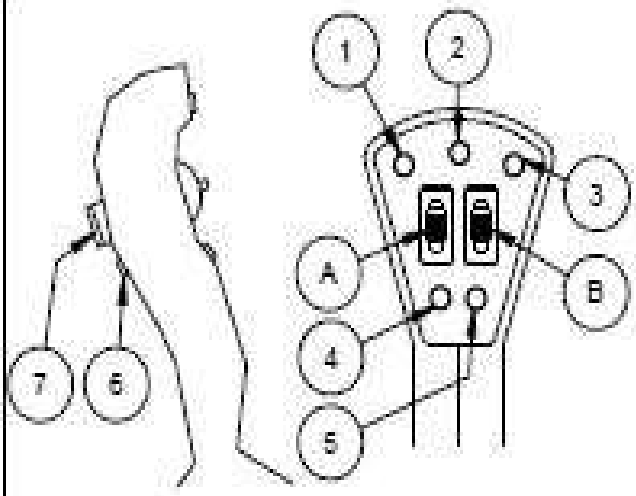
1	ENABLE/SET READY HEIGHT ADJUST
2	OVERRIDE (DRIVE)
3	AUTO FEED CYCLE-ON/OFF
4	NIPPER RESET
5	FEED
6	FEED
7	READY (IN), DRIVE (OUT)
A	DEACTIVATED
B	DEACTIVATED

STANDARD MODE

A	PATTERN FWD/BCK
B	PATTERN OPEN/CLOSE

P/N 58415006

GUN 2 JOYSTICK FUNCTIONS



1	MODE SET INDEPENDENT/STANDARD
2	OVERRIDE (DRIVE)
3	ENABLE/SET READY HEIGHT ADJUST
4	FEED
5	NIPPER SET
6	FEED
7	READY (IN), DRIVE (OUT)
A	READY HEIGHT ADJUST
B	GUIDEWHEEL UP/DWN

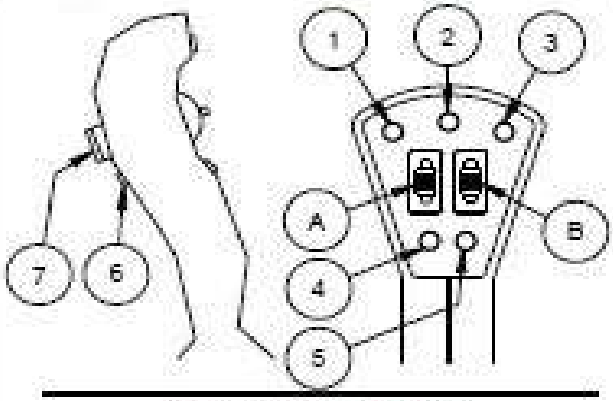
ALL BUTTON FUNCTIONS COMMON BETWEEN MODES
FWD,BCK,LFT,RHT DEACTIVATED IN STANDARD MODE

P/N 58415007

Rev: 3.3

SE SPIKER

GUN 3 JOYSTICK FUNCTIONS



INDEPENDENT MODE

1	ENABLE/SET READY HEIGHT ADJUST
2	OVERRIDE (DRIVE)
3	AUTO FEED CYCLE-ON/OFF
4	NIPPER RESET
5	FEED
6	FEED
7	READY (IN), DRIVE (OUT)
A	DEACTIVATED
B	DEACTIVATED

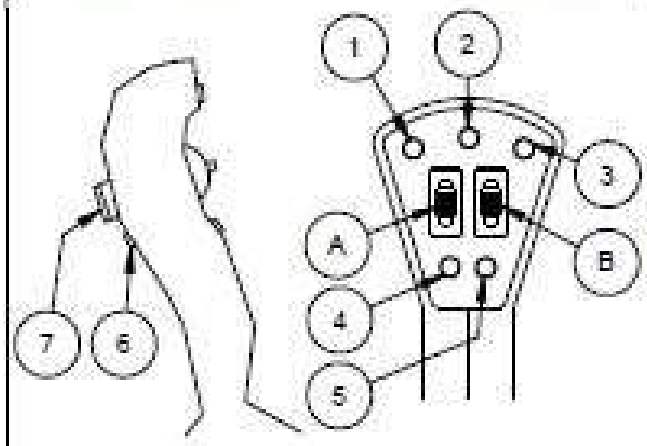
STANDARD MODE

A	PATTERN FWD/BCK
B	PATTERN OPEN/CLOSE

ALL OTHER BUTTON FUNCTIONS REMAIN THE SAME.
FWD,BCK,LFT,RHT DEACTIVATED IN STANDARD MODE.

P/N 564-5504

GUN 4 JOYSTICK FUNCTIONS



1	MODE SET INDEPENDENT/STANDARD
2	OVERRIDE (DRIVE)
3	ENABLE/SET READY HEIGHT ADJUST
4	FEED
5	NIPPER SET
6	FEED
7	READY (IN), DRIVE (OUT)
A	READY HEIGHT ADJUST
B	GUIDEWHEEL UP/DWN

P/N 564-5505

Rev: 3.3

NS SE SPIKER

Machine #		0
1		Check the engine oil level.
2		Check engine coolant level.
3		Check hydraulic oil level: proper level is 6" below top of tank
4		Verify the propulsion planetary motors are filled to the proper level.
5		Make sure cab heater valves are opened.
6		45 gallons of fuel added to tank.
7		Add 4 gallons of DEF.
8		MAKE SURE SUCTION LINE VALVE IS OPEN
9		PRIME IMPLEMENT AND HYDROSTATIC PUMPS
10		Back out Pump Compensator screw (3) turns & turn in Main Relief Valve
11		Verify the valve sequence in the main manifold is set for normal operation
12		Set hammer counter balance valves to 2 3/4 turns clockwise from fully counter clockwise (port 5A and 5B in the workhead manifold)
13		Make sure all the cylinders in the up position are locked up.
14		Check that the correct size Circuit Breakers have been installed
15		Check for correct Battery Cable connections (in series) & check Main Circuit Breaker (on engine) is *RESET*.
16		Turn all the Toggle switches & Ignition switch to the *OFF* position.
17		Check resistance (w/Main Circuit Breaker *RESET*) between wire #2(gnd) & wire #3(pwr)
18		Check voltage directly at Batteries. (Min. = 24VDC)
19		Check voltage at wire #3 w/Battery switch *ON*. (Should be same value)
20		Check that all Emergency Stop buttons (red) & Electrical Interlock/Warm up button (yellow) are pulled out.
21		Check resistance of each can bus channel. Resistance should be 60 OHM's across CAN High and CAN low on each channel.
22		Verify Hydraulic Oil Cooler Fan rotation (air is pulled through the core) Adjust pressure reducing valve by turning completely in clockwise, and backing out 1 complete turn for proper fan RPM. Check for correct manifold. Manifold should have 6 ports on block instead of 8.
23		Pressure Filter indicator shows clean on the GUI
24		Return Filter indicator shows clean on the GUI
25		Case Drain Filter indicator shows clean on the GUI
26		Enter the diagnostics screen on the GUI and select all travel pedals and brake pedals then perfom the following fuctions check.
27		Press the **left forward** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
28		Press the **left reverse** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics

NS SE SPIKER

29		Press the **left brake** pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
30		Press the **right forward** travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
31		Press the right reverse travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
32		Press the right brake pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
33		Press the center forward travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
34		Press the center reverse travel pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics
35		Press the **center brake** pedal to the floor and ensure there is a value of approximately 18000 for the pedal read in diagnostics if equipped with a proportional pedal or a 1 if equipped with an on/off pedal
36		Check strobe light
37		Cab fans
38		Trouble light in the MCC and the PDC control panel
39		Dome lights
40		Windshield wipers
41		Check windshield washer pump. Adjust washer nozzles to spray windshield.
42		Check the working lights.
43		Check the travel & marker lights, both directions. (travel opposite marker)
44		Check brake lights work and that they are to customer spec (flashing/non flashing)
45		Check all the horn buttons.
46		Check the controls on/off switch: on position; engine does not crank
47		Check the Pump on/off switch: on position; engine does not crank.
48		Check the throttle override switch: high position; engine does not crank.
49		Engine does crank with controls position off & pump position off and throttle override low
50		*START* Engine & check for hydraulic oil leaks or any other problems.
51		Check all Emergency Stop buttons w/Engine idling: pushed in shuts down all power, kills Engine & will not restart.
52		Check Engine Fuel Gauge on GUI.
53		Verify throttle override puts the engine into high idle
54		Set addres for Murphy displays to (Front by windshield) 84 and (Rear in control panel) 43. Password for Murphy is 3482.
55		Set Low speed (idle) at 1100 RPM DEERE @ 1200 RPM
56		Set High speed (work) at 2250 RPM
57		Check the Engine Oil Pressure gauge on the GUI (High speed)
58		Check the Engine Temperature gauge on the GUI.

NS SE SPIKER

59		Check the Engine Voltage gauge on the GUI. (High speed)
60		Remove the oil pressure display from the 4-up display and add engine hours in its place on all Cummins 4.5 engines (For older T3 Murphy panel only)
61		Check operation of Electrical Interlock/Warm up switch: Pushed in; No power to all outputs but Nodes remain powered up. Pull out for power.
62		Check the Standby/Work/Travel button: *STANDBY* position; no Hand Controller or foot pedal function. Throttle up/down and work/travel buttons are only two buttons that function
63		*START* Engine: select *HIGH* speed & Pump *ON*. (Check again for hyd. leaks)
64		Select *TRAVEL* mode & set Main Pump Compensator to 2900 PSI.
65		Set the Main Relief Valve (in main manifold position 3) to 2900 PSI & then set Main Pump Compensator to 2250 PSI (operating pressure).
66		Set manual valve PRV at port 2 on main manifold to 250 PSI (PP on main manifold)
67		Set gager buggy manifold pressure to 1500 psi (RDV1 on gager manifold)
68		Set gager buggy raise/lower pressure to 1000 psi (RV1 on gager manifold)
69		Set the guide roller PRV to 1000 PSI for both LH and RH work heads at GWG on the workhead manifold and verify gauge drops to zero when pressure is released.
70		Verify spike feed cylinder pressure is at 1000 PSI at FCG on the workhead manifolds
71		Adjust CBV to full CCW position for pattern adjust forward/back. Counter Balance valve is located at each front/back cylinder.
72		Press the work/travel button to enter work mode
73		Check the joystick pattern adjust for LH Carriage in independent mode.
74		Check the joystick pattern adjust for LH Carriage in standard mode.
75		With workheads inline; measure the distance between the guide rod blocks: Min. = 5¾" (+/ 1/2") Max. = 14½" (+/ 1/2")
76		Verify carriage spotting corresponds with joystick direction
77		Verify there is no hammer operation unless brake pedal is pressed
78		Verify joystick #1 buttons in independent mode
79		Verify joystick #1 buttons in standard mode
80		Verify joystick #2 buttons in independent mode
81		Verify joystick # 2 buttons in standard mode
82		Verify key pad buttons
83		Check the joystick pattern adjust for RH Carriage in independent mode.
84		Check the joystick pattern adjust for RH Carriage in standard mode.
85		With workheads inline; measure the distance between the guide rod blocks: Min. = 5¾" (+/ 1/2") Max. = 14½" (+/ 1/2")
86		Verify carriage spotting corresponds with joystick direction
87		Verify joystick #3 buttons in independent mode
88		Verify joystick #3 buttons in standard mode
89		Verify joystick #4 buttons in independent mode
90		Verify joystick #4 buttons in standard mode

NS SE SPIKER

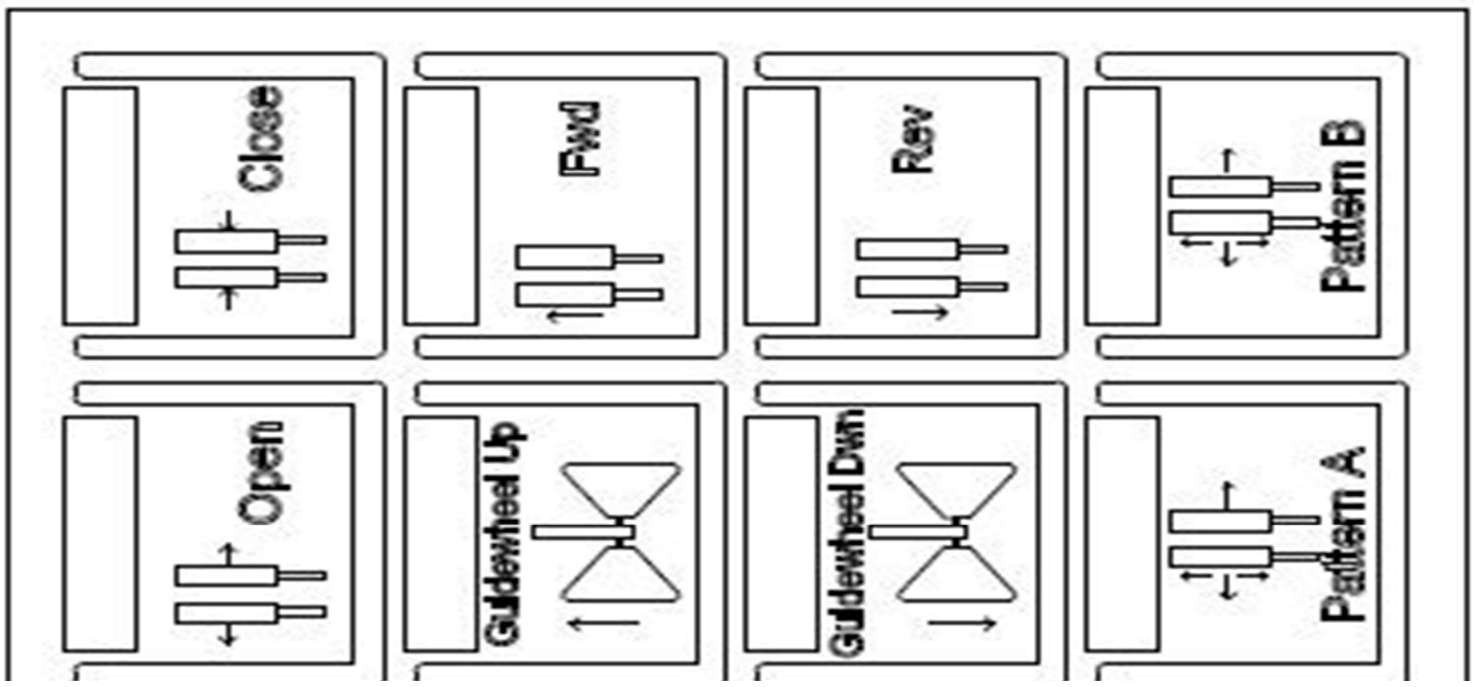
91		Verify key pad buttons
92		Verify the travel override enables left pedals only (turn off override)
93		Select left travel pedals and verify all other pedals are disabled. (repeat with center and right pedals selected) All brake pedals are enabled at all times.
94		Check that the back up/travel alarms works. Use back up alarm chart tab for proper fuction per customer options/machine layout.
95		Adjust Hammer Flow Control Valves on each Hammer to 2 turns out from closed position. (Per print # 28560619)
96		Check operation of **Gun** 1 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
97		Check operation of **Gun** 2 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
98		Check operation of **Gun** 3 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
99		Check operation of **Gun** 4 on top of a plate [*SET* , *DRIVE* , *HAMMER* , *UP* , *LOAD* , 20 times] (Note: check each hammer individually).
100		Verify guige rollers are adjusted to extend to max length.
101		Check Nipper Auto/Manual button: *MANUAL* position; only the Hand Controller *SET* Button starts the cycle.
102		*SET* the Nippers in Manual Mode 10 times, Reset Nippers by releasing the brake pedal. If necessary adjust hooks close and down duration timers on the GUI.
103		SET the Nippers in Manual Mode 10 times, Reset Nippers by using the nipper reset button on the joystick.
104		Put Nipper in AUTO; start nipper cycle with Gun #1 through #4; Nippers are automatically SET when the Gun is SET. Reset the Nippers.
105		Select jointed on the keypad
106		Verify gager buggy up/down switch
107		Verify gager buggy extend/retract switch
108		Adjust gager buggy offset to match gauge
109		Set target gage to 56.25 on the GUI
110		Set gauger pulse timer to 1.5 seconds on the GUI
111		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.25
112		Verify gage with a tape measure
113		Set target gage to 56.5 on the GUI
114		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.5
115		Verify gage with a tape measure
116		Set target gage to 56.75 on the GUI
117		Cycle the Gager 3 times & verify the target gage is green indicating "at gage" and reads 56.75
118		Verify gage with a tape measure
119		If necessary, adjust pulse time duration on GUI to clear joint bar

NS SE SPIKER

120		Select Welded mode on the keypad and verify the gager cylinders relieve pressure but do not pulse off
121		Set RAIL IN PRV at port 6 on main manifold to 500 PSI (G1 on main manifold)
122		Verify Pneumatic System turns on
123		Set kick off to 120 PSI
124		Set kick on to 80 PSI
125		Check the operation of the trailer brakes using the test gauges and the standard work as reference.
126		Check Hydraulic Winch operation. Handle up; cable up & vice versa, while setting the Flow Control for an adequate speed.
127		Check Bulk Loader operation. Adjust kick down relief so vibrator only vibrates when the ram is fully retracted.
128		After set-up and test of the bulk bin vibrator, verify mounting bolts are tight and vibrator is tight against spacer block.
129		Check Dump Bin operation. Handle forward; bin up & vice versa. And speed 5 to 3 sec. up.
130		Feed a full tray of spikes through all the trays. Only 1 misfeed per tray!!!
131		Top off Hydraulic Tank last time & attach filter buggy: proper level now is 6" below top of tank.
132		Take oil sample to reach a specification for customer or an ISO of 17/14/11 or less.
133		Check the Set Off cylinder & balance of the machine.
134		Check Propulsion chain, adjust to proper tension if necessary. (1/4" slack/foot) and lock nuts are tight.
135		Verify the operation of Emergency pump. Hand/Electric (circle) NOTE: Brakes must release to fully insert lock pins.
136		Check the operation of the top off pump. (Circle) Hand/Electric
137		Double check **ALL** Locknuts on relief valves, pressure reducing valves, and flow control valves. **Make sure they are secure.**
138		Turntable lock up/Detent operation
139		Hydraulic temperature gauge
140		Hydraulic Lockups
141		Joystick Disable
142		Turntable up/down indicator & warning buzzer
143		Cab pressurizer
144		Verify both heating and cooling on the HVAC system. (verify fan speeds) Verify AC drain hose is routed to the rear of the cab.
145		24v/12v Converter
146		Radio turns on and speaker works. Check weather channel.
147		Simulate actual production; i.e., operate at production pressures, flows, and cycle times. Complete a minimum of 3 full heat cycles.

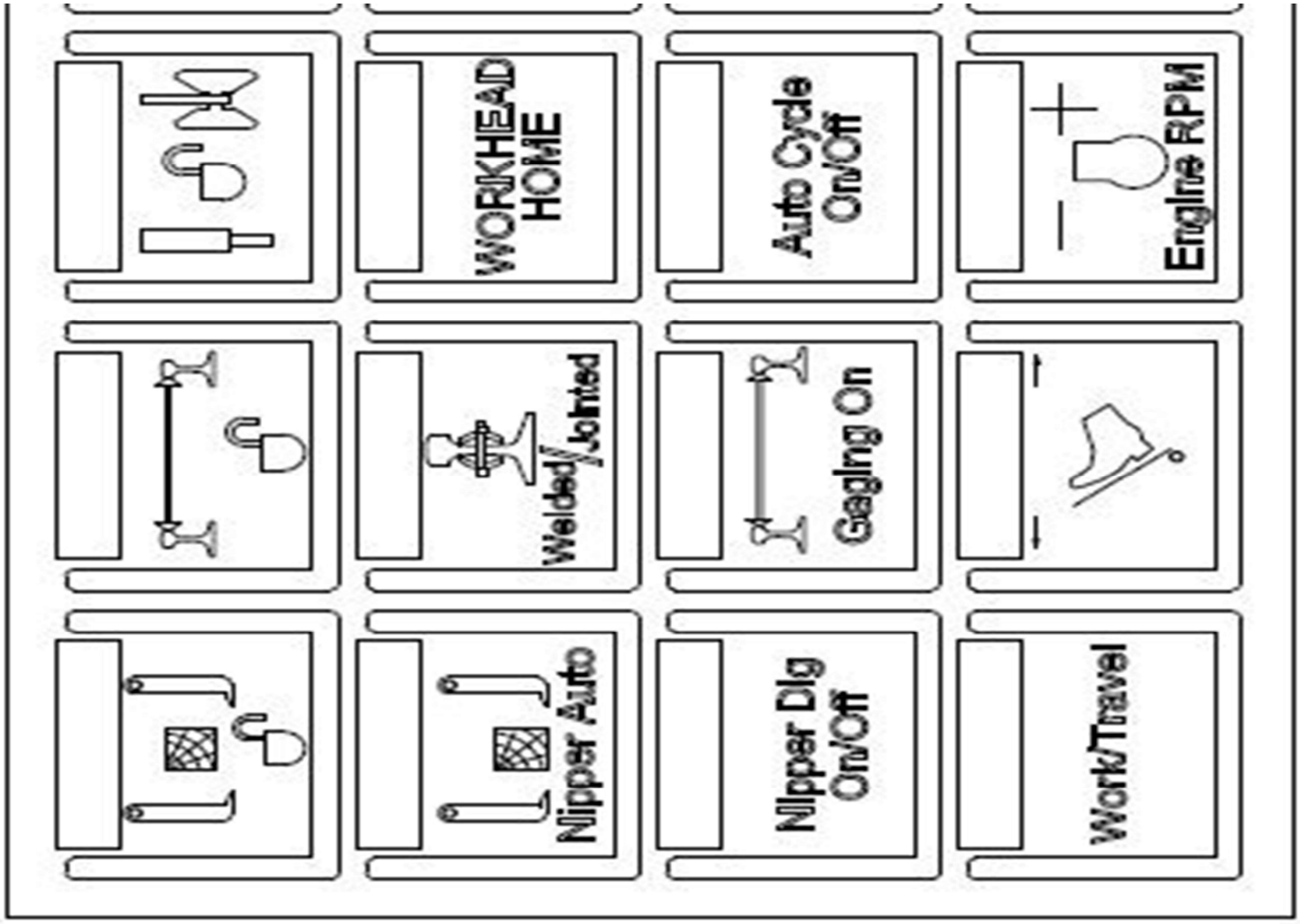
NS SE SPIKER

137



Rev: 3.3

NS SE SPIKER



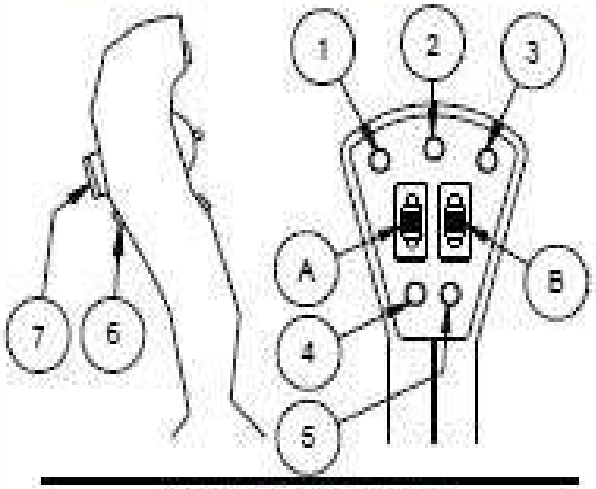
Rev: 3.3

NS SE SPIKER

Rev: 3.3

NS SE SPIKER

GUN 1 JOYSTICK FUNCTIONS



INDEPENDENT MODE

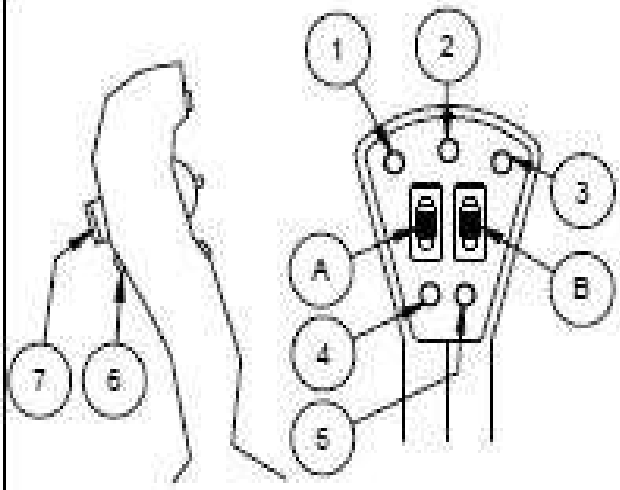
1	ENABLE/SET READY HEIGHT ADJUST
2	OVERRIDE (DRIVE)
3	AUTO FEED CYCLE-ON/OFF
4	NIPPER RESET
5	FEED
6	FEED
7	READY (IN), DRIVE (OUT)
A	DEACTIVATED
B	DEACTIVATED

STANDARD MODE

A	PATTERN FWD/BCK
B	PATTERN OPEN/CLOSE

P/N 58415206

GUN 2 JOYSTICK FUNCTIONS



1	MODE SET INDEPENDENT/STANDARD
2	OVERRIDE (DRIVE)
3	ENABLE/SET READY HEIGHT ADJUST
4	FEED
5	NIPPER SET
6	FEED
7	READY (IN), DRIVE (OUT)
A	READY HEIGHT ADJUST
B	GUIDEWHEEL UP/DWN

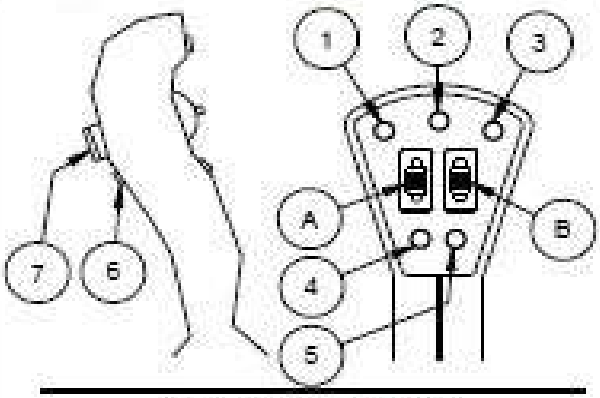
ALL BUTTON FUNCTIONS COMMON BETWEEN MODES
FWD,BCK,LFT,RHT DEACTIVATED IN STANDARD MODE

P/N 58415207

Rev: 3.3

NS SE SPIKER

GUN 3 JOYSTICK FUNCTIONS



INDEPENDENT MODE

1	ENABLE/SET READY HEIGHT ADJUST
2	OVERRIDE (DRIVE)
3	AUTO FEED CYCLE-ON/OFF
4	NIPPER RESET
5	FEED
6	FEED
7	READY (IN), DRIVE (OUT)
A	DEACTIVATED
B	DEACTIVATED

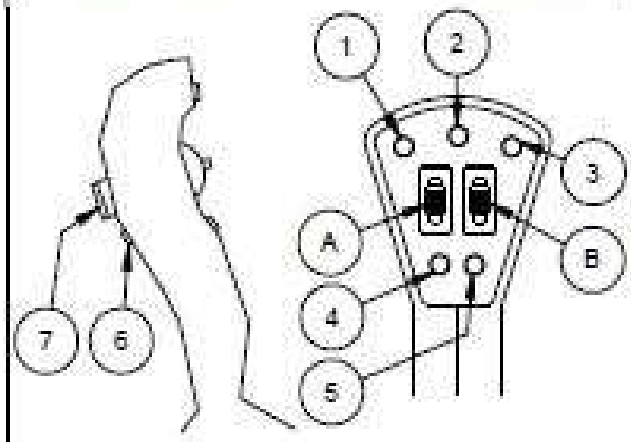
STANDARD MODE

A	PATTERN FWD/BCK
B	PATTERN OPEN/CLOSE

ALL OTHER BUTTON FUNCTIONS REMAIN THE SAME.
FWD,BCK,LFT,RHT DEACTIVATED IN STANDARD MODE.

P/N 5641/5504

GUN 4 JOYSTICK FUNCTIONS



1	MODE SET INDEPENDENT/STANDARD
2	OVERRIDE (DRIVE)
3	ENABLE/SET READY HEIGHT ADJUST
4	FEED
5	NIPPER SET
6	FEED
7	READY (IN), DRIVE (OUT)
A	READY HEIGHT ADJUST
B	GUIDEWHEEL UP/DWN

P/N 5641/5505

USING THE QUOTE AND THE LOGIC BOX CONFIG DRAWING FOR THE MACHINE SELECT THE CHANGE OF QUESTIONS TO THE CORRECT FUNCTIONALITY CONTACT PRODUCTION ENGINEERING. CIRCLE OR HIGH NOTE AS NOT AVAILABLE)

INITIALS	Switch Position	Pedal Pushed	Option 1	Option 2
	FORWARD	FORWARD	NONE	NONE
	FORWARD	REVERSE	REAR ALARM (Cont)	F&R ALARM (Cont)
	CENTER	FORWARD	F&R ALARM (Cont)	F&R ALARM (Cont)
	CENTER	REVERSE	F&R ALARM (Cont)	F&R ALARM (Cont)
	REVERSE	FORWARD	FRONT ALARM (Cont)	F&R ALARM (Cont)
	REVERSE	REVERSE	NONE	NONE

USING THE QUOTE AND THE LOGIC BOX CONFIG DRAWING FOR THE MACHINE SELECT THE CHANGE OF QUESTIONS TO THE CORRECT FUNCTIONALITY CONTACT PRODUCTION ENGINEERI

INITIALS	Switch Position	Pedal Pushed	Option 1	Option 2
	FORWARD	FORWARD	NONE	NONE
	FORWARD	REVERSE	REAR ALARM (Cont)	F&R ALARM (Cont)
	REVERSE	FORWARD	FRONT ALARM (Cont)	F&R ALARM (Cont)
	REVERSE	REVERSE	NONE	NONE

DIRECTION ALARM FUNCTIONALITY FOR THIS MACHINE. IF THERE ARE
LIGHT THE OPTION AS TESTED. (IF CENTER POSITION DOES NOT EXIST,

Option 3	Option 4	Option 5
NONE	F&R ALARM (5 sec)	F&R ALARM (3 sec)
REAR ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
F&R ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
F&R ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
FRONT ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
NONE	F&R ALARM (5 sec)	F&R ALARM (3 sec)

DIRECTION ALARM FUNCTIONALITY FOR THIS MACHINE. IF THERE ARE
NG. CIRCLE OR HIGHLIGHT THE OPTION AS TESTED.

Option 3	Option 4	Option 5
NONE	F&R ALARM (5 sec)	F&R ALARM (3 sec)
REAR ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
FRONT ALARM (3 sec)	F&R ALARM (5 sec)	F&R ALARM (3 sec)
NONE	F&R ALARM (5 sec)	F&R ALARM (3 sec)

Machine controls- operator interface panel complete with onboard diagnostics and printed logic diagrams
NS Boom & Winch with pendant controls
Engine to utlize Controls Inc C4-F10130 control panel
Machine Controls to have a momentary position Engine Shutdown Override switch
Controls to include operator selectable spiking pattern change (minimum two patterns).
Swivel spike loader seat with reverse travel controls
Macbone air conditioner
Operators & Spike feeder fans (min 3) mounted in the cab
Proportional Braking
Equipped with spare hose tree & hoses
Attach all shunting wire between wheel & axle to provide Non-insulated (shunting) axles
Service points should be easily accessible (to include access steps/grab rails as previous NS SEs)
Oil dipstick to have easy access, from the ground if possible
Engine enclosure to have decals applied indicating engine distributor, model number, maintenance information including air/oil/coolant/fuel filter numbers, fluid types & capacities, fan/alternator/accessory belts, etc
Master disconnect switch, Littlelfuse PN 880175, located in a NS lockable box, as before. Note: Both positive & negative (all) leads to be routed through the disconnect switch contacts. No direct feeds off the battery
Electrical cabinet terminal strip wire number marker to be pre-printed
Large electrical cabinets equipped with LED interior lights.
Electrical boxes & control panels to be lockable
The hydraulic fluid to be ATF Dexron III
Low hydraulic oil level & High oil temperature warning alarm
All hydraulic systems must be equipped with Webtec flow indicators with selectable test stations teed from pressure line with 3,000 psi (or suitably rated) Apollo ball valve with 3,000 psi (or suitably rated) test relief. Each pump circuit is to have a line teed to a Webtec flow indicator. Indicator is not to be positioned in-line with constant exposure to fluid flow. Webtec indicators are model number FL750-180-ASOT (4-48 gpm) or FL1500-300-ASOT (4-80 gpm).
Hydraulic Hose assemblies to have straight fittings only. 37 degree JIC female x female swivel
Hydraulic system to achieve ISO cleanliness 16/14/11
Change hydraulic filter elements after testing
Testing - simulate actual production. Complete a minimum of 3 full heat cycles.
Supply two each spare pressure & return filter elements shipped with the machine
Hydraulic fill system to be hand operated diaphram pump. The system fill point shall be through a JIC #12 male capped connection upstream of return filter
Hydraulic filtration 4” x 9” Shroeder KZ-3, 3 micron
Hydraulic Reservoir 3 micron rated ventilation filters (Schroeder ABF-3/10 or equal)
Detroit Diesel (Davco) DVC382950DDC07 Fuel Pro 382 fuel filter assy., with 23538657 element, shall be used as a primary or pre-filter
Cab Interior lighting is to be on a fused/circuit breaker circuit and capable of illumination anytime that battery disconnect switch is in the “on” position
Wipers front & rear (4 total), washer on front only
Cab Window Shades (6)
Travel lights- 4 LED
Small work lights: LED
General Work Lights: LED
Strobe - LED on a fused circuit and illuminated anytime that battery disconnect switch is in the “on” position

Change of direction alarm Federal Mogul part number 210504 12/24 volt.
Amerex 599 13LB (80 BC) “Purple K” fire extinguisher (NS #615225-0) installed with padlock lockable bracket smaller 2.5 LB is to be mounted in the cab near the operator station
Radio circuit -separate 12 volt DC, 20 AMP circuit with switch type circuit breaker
All padlock hasps, lockable valves, pins, etc. are to be equipped with NS standard locks.
Hydraulic, fuel, and engine oil drains to be extended via a 3/4" ID hose (minimum) to the side of the machine so as to allow draining from outside of machine perimeter. Hoses to be terminated with lockable ball type valve and pipe plug.
Apply NS supplied decals
Permenant NS machine number plate & weight plate to be welded to frame
Install maintenance diagram (showing daily, weekly and monthly).
Install NS supplied lockout/tagout box with locks & instructions
Cab mounted box for storing parts/operator manual
Deflector Mats
Paint Norfolk Southern Low VOC-Orange, product number 019443404
Additional Cab Mounted Book Storage Box - 12
Low Hydraulic Oil - High Hydraulic Oil Temp Alarm
West Coast Heated Outside Mirrors
Dust Collection System For Bulk Spiker Loader
UPGRADE to Push-Style Bulkloader with Cluster Buster

Corner Mounted Machine Jackstands
Rail Sweeps (Ahead of front/behind rear wheels) - Vertical Rubber Flap
Additional Cab Mounted Book Storage Box - 12
Low Hydraulic Oil - High Hydraulic Oil Temp Alarm
Rearview Mirrors (2)
Windshield Washer Fluid Tank & Nozzles (front only)
Dedicated Cab Fan for Operator
Cab Controlled Power Workhead Locks
SE Spiker Spare Parts Bin
SE Spiker Spare Parts Package
Spike Over Drive Protection
Bulkloader Maintenance Steps & Grab Irons (both sides)
Spike Feeder Swivel Seat Pedestal
UPGRADE to Push-Style Bulkloader with Cluster Buster
Dust Collection System For Bulk Spiker Loader
LED Cab Entry Lighting (Boarding)
LED Light in Electric Cabinet
UPGRADE Perimeter Lighting Package to LED
UPGRADE Strobe Light to LED
UPGRADE Travel & Work Light to LED
Electric Filtered Hydraulic Tank Fill/Top Off System
Hose Tree - (Storage For Spare Hoses - No Hoses Incl.)
Hose Tree Spare Hoses Only (Does NOT include Hose Tree)
Box For Operator Belongings
Engine Belt Container and Plaque
Deflector Mat
include node enclosures
include node decals
include 3rd operator pedals
propel hoses to have swivel JIC fittings (like NS, instead of Code 62 flange)
include engine access steps, grab handles, platforms (no need for remote dipstick or remote oil fill)
include Macbone A/C diverter
include System controls diagnostics and a screen that offers operator adjustable parameters (like joystick/gun speed sensitivity, etc.).
Use Rexnord Axle bearings
CSX Anti -collision lights
include power retract and lock up on gager buggy
add hard hat hook and cup holder
E-stop & horn at all 4 corners
add step material on fuel tank & hydraulic
add heat shield over muffler
weld on top of the rear bumper extension, the CSX supplied non-combustible (aerosol) box
relocate the current battery switch box more toward the front of the engine to open the area where currently the switch and fire extinguisher sit. Weld on a CSX supplied Fire box mount that will house the
add "hear protection required decal"
stencil or label torque value for wheel fasteners

Turntable – check the spike bin capacity required for balance. Add machine decal and warning message in the operator's manual
add placard for lockup devices
on the front, use the longer bumper extension, same as on the rear
add lock collars/spacers to axles at pillow blocks
add in-cab ducting to the A/C toward operators
cab window Shades (8)
add 3/8" grade 8 bolts for seat mounting
extend top level tint around the other cab windows the (top 10") like the front windshield
add optional aluminum doors for the engine enclosure
add the FLOCS fittings (Oil, Fuel, Hydraulic) to side drains and recess mount to prevent excessive overhang (fittings flush with frame if functional)
add Starter & Alternator part number to engine decal
add fuel warning decal
use Detroit Diesel 235231140 Fuel Pro fuel/water separator pre-filter with 23521528 element instead of RACOR unit as in specification
exhaust discharge end with 90 degree bend and 60 degree cut (from vertical plane, 30 degree from horizontal plane), instead of current rain cap
dedicated & label 12VDC radio circuit in cab electrical box
Electrical cabinet terminal strip wire number marker to be pre-printed
Activate all 4 corner brake lights when brakes applied
Nordco to provide mount/wiring and install CSX anti-collision lights
tank breather to be desiccant type filter
move lower and rearward the hydraulic cooler and associated manifold for improved left side operator line of sight
Provide ISO 16/14/11 test data per each machine
Use minimum 5 Micron hydraulic filter instead of specifications 10 micron
provide Schroeder HP filter with indicator
Provide sound level diagram data for each machine
Paint Change- Federal Yellow Paint Spec 535C-13591 Standard Paint

0	Machine Serial #

Date	Start Time	Stop Time	Leaks Yes or NO	Remarks

Author	Description of Change/s	Aprv. Date	Aprv. By
Associated hard copy and electronic copies retained for year of creation plus one year.			
Dave K	Original	1/7/2015	Dave K
Dave K	Added change sheet	3/16/2015	Dave K
Dave K	Divided hammer check into separate steps	3/18/2015	Dave K
Dave K	Check Set Screws on Prox Switches	4/8/2015	Dave K
Dave K	Removed RR form and RR walkaround	5/8/2015	Dave K
Bryan B	changed Cell heights	7/31/2015	Dave K
Bryan B	Added Blue/Cover Sheet	9/4/2015	Dave K
Dave K	Delete unused worksheets/new Blue sht w/time/pneumatic	9/15/2015	Dave K
Bryan B	Added Revised Blue/Cover Sheet	2/25/2016	Bryan B
Bryan B	Updated blue sheet with engine hours / corrected by / pre-test and post-test fields	4/6/2016	Bryan B
Bryan B	Added step 44: Remove the oil pressure display from the 4-up display and add engine hours in its place on all Cummins 4.5 engines	8/24/2016	Bryan B
Bryan B	Updated blue sheet with "ASSEMBLY BUILD TEAM" field	10/20/2016	Bryan B
Bryan B	Removed "ASSEMBLY BLUE SHEET"	10/20/2016	Bryan B
Bryan B	Removed "assembly build team" and replaced it with "engine family"	7/11/2017	Bryan B
Bryan B	Added NS options sheet	7/1/2617	Bryan B
Bryan B	Added CSX options sheet	7/26/2017	Bryan B
Bryan B	Added line #4 "Verify the propulsion planetary motors are filled to the proper level."	1/18/2018	Bryan B
Fil R.	Added "Radio turns on and speaker works" to check sheet.	4/8/2019	Fil R.
Dan G	Added separate check sheet for NS to address in-service issues from field tech	6/1/2021	Dan G
Dan G	Added line item for addressing both Murphy Displayes	1/10/2022	Dan G
Dan G	Added line item chart for different back-up alarm set-up	1/10/2022	Dan G
Dan G	Updated line item to reference back up alarm chart tab for correct function	2/16/2022	Dan G
Dan G	Added tab for back up alarm fuction chart	2/16/2022	Dan G
Dan G	Added line item for checking the brake light function	3/31/2022	Dan G
Dan G	Added several line items for checking the propel/brake values in the diagnostic screen	4/8/2022	Dan G

Open check sheet file that is appropriate for the machine to be tested.

"SAVE AS" the opened file by the serial number of the machine to be tested. Save to the "Working Test Procedures" folder.

Fill out Cover Page

Perform checks as noted on check sheet.

Performs Extended testing and documents date/s and time/s of extended testing.

Any non-conformances found during the time a machine is received at test track and until it ships must be noted as "blue sheet issues" on the test track blue sheet.

Test track blue sheet (TT blue sheet) may be filled out electronically or manually.

Test track blue sheet (TT blue sheet) is to be printed and stays with machine until all blue sheet issues have been resolved.

When all issues on the Test track blue sheet (TT blue sheet) have been resolved a test track technician will produce a

yellow sheet that stays with the machine and gives completed Test track blue sheet (TT blue sheet) to the person that enters the information into the Machine DB.