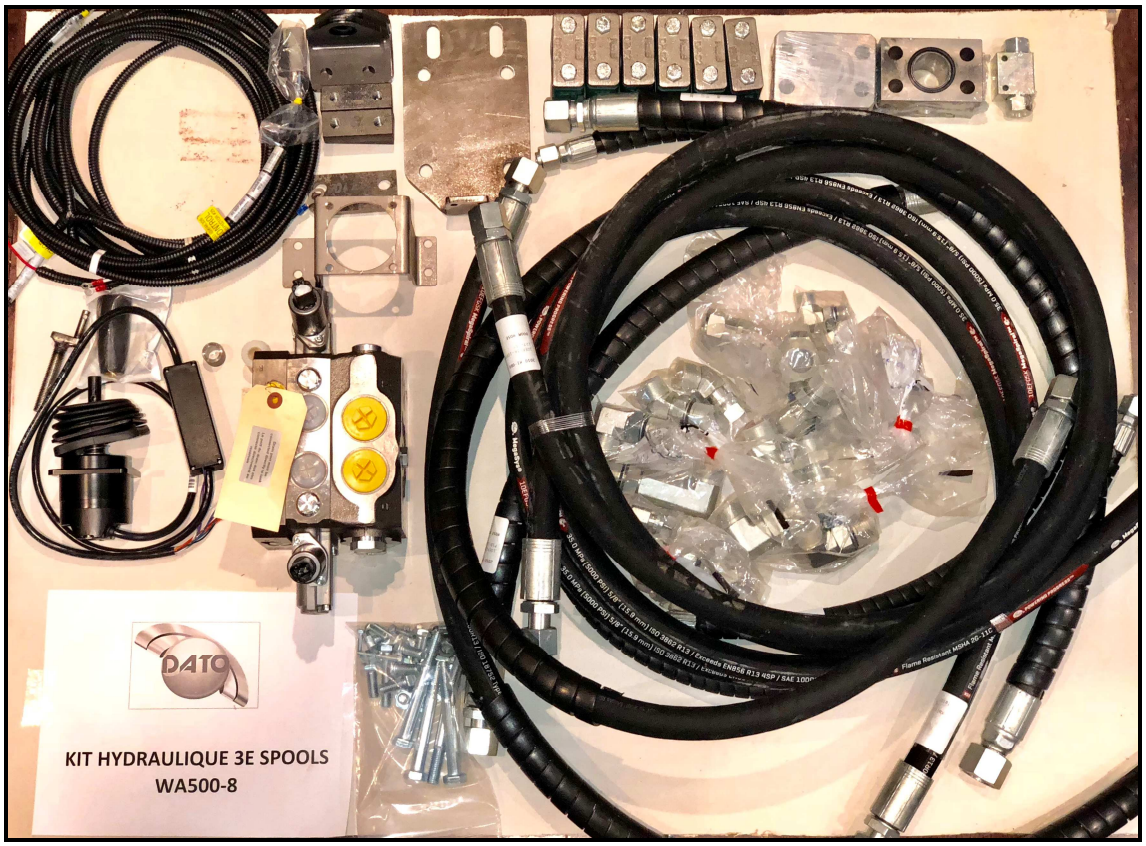
DATO CORPORATION INC.

MANUEL D'INSTALLATION
KIT HYDRAULIQUE POUR LE 3 IÈME FONCTION (3RD SPOOL)



MODÈLES:
-WA500-8 CHARGEUR SUR ROUE

TABLE DES MATIÈRES

ANNEXE :

- Electric circuit diagram of 3rd spool valve.

1. OBJET

Ce manuel fournit des informations générales et des recommandations nécessaires avant d'installation le kit hydraulique pour le 3rd spool.

2. PRÉPARATION DE LA MACHINE (SI APPLICABLE)

2.1. Stationner la machine sur un sol plat et baisser l'outil de travail complètement sur le sol.

2.2. Arrêter le moteur et enlever la pression résiduelle dans le circuit hydraulique.

2.3. Appliquer le frein de stationnement et bloquez les roues.

2.4. Retirer la clé de l'interrupteur d'allumage jusqu'à ce que le travail est terminé

2.5. Attacher toujours l'étiquette d'avertissement "NE PAS UTILISER" au levier de commande de l'outil de travail dans la cabine quand vous procédez à l'entretien ou installer les options spéciales. N'enlevez pas l'étiquette aussi longtemps que le travail n'est pas encore terminé, Étiquette d'avertissement, n° de référence 2010-D1-0002, voir la Fig. 1.

Fig. 1

2.6. Les opérateurs et le personnel d'entretien doivent lire attentivement le manuel d'utilisation et d'entretien Komatsu avant d'entretenir ou modifier la machine, consulter SMS / Komatsu district Manager avec toutes les questions de sécurité.

2.7. Si vous prévoyez travailler sous le bras de levage, assurez-vous que celui–ci doit être appuyé sur les supports conçus pour votre application dans le but d'éviter les blessures graves.

2.8. L'installation kit hydraulique pour 3rd spool doit être effectuée par un technicien compétent.

3. LE COUPE DE SERRAGE

TIGHTENING TORQUE CHART - BOLTS AND SCREWS

Bolt Dia.	Wrench Size	Hexagon Wrench Size	Socket Bolt (10.9 T) Nm	Socket Bolt (10.9 T) kgf m	Socket Bolt (10.9 T) lbf ft	(3.5 H) Nm	(3.5 H) kgf m	(3.5 H) lbf ft	(7 M) Nm	(7 M) kgf m	(7 M) lbf ft
M8	13	6	29.5	3	22	19.5	2	14.5	9.8	1	7.2
M10	17	8	64	6.5	47	49	5	36	19.5	2	14.5
M12	19	10	108	11	80	88	9	65	34	3.5	25.2
M14	22	12	175	18	130	137	14	101	54	5.5	40
M16	24	14	265	27	195	205	21	152	78	8	58
M18	27	14	390	40	290	295	30	220	118	12	87
M20	30	17	540	55	400	390	40	290	167	17	123

The required torque is shown as kgf-m.

NOTICE

Ensure bolt and nut threads are clean before installation. Apply lubricate to bolts and nuts, to stabilize their friction coefficient, unless locktite is being applied.

TIGHTENING TORQUE CHART - TUBE / MANIFOLD AND ADAPTER FITTINGS

❑ ENSURE THAT THE CORRECT O-RING IS PROPERLY PLACED ON THE FITTING, FLUSH AGAINST THE MAIN (HEX) BODY OF FITTING. THREAD THE FITTING BY HAND, THEN TIGHTEN IT TO THE RECOMMENDED TORQUE SPECIFICATIONS FROM THE TABLES BELOW.

SAE O-ring Boss Port
(tube fitting - installed into **Aluminum**)

SAE Dash Size	Torque	SAE Dash Size	Torque
-4	11 ft-lbs / 14.9 Nm	-12	93 ft-lbs / 126.1 Nm
-6	23 ft-lbs / 31.2 Nm	-16	139 ft-lbs / 188.5 Nm
-8	40 ft-lbs / 54.2 Nm	-20	172 ft-lbs / 233.2 Nm
-10	69 ft-lbs / 93.6 Nm	-24	208 ft-lbs / 282 Nm

SAE O-ring Boss Port
(tube fitting - installed into **Steel**)

SAE Dash Size	Torque	SAE Dash Size	Torque
-4	16 ft-lbs / 21.7 Nm	-12	140 ft-lbs / 190 Nm
-6	35 ft-lbs / 47.5 Nm	-16	210 ft-lbs / 284.7 Nm
-8	60 ft-lbs / 81.3 Nm	-20	260 ft-lbs / 352.5 Nm
-10	105 ft-lbs / 142.4 Nm	-24	315 ft-lbs / 427.1 Nm

SAE O-ring Boss Port
(Adapter Fittings)

SAE Dash Size	Torque	SAE Dash Size	Torque
-4	18 ft-lbs / 24.4 Nm	-12	90 ft-lbs / 122 Nm
-6	27 ft-lbs / 36.6 Nm	-16	120 ft-lbs / 162.7 Nm
-8	40 ft-lbs / 54.2 Nm	-20	140 ft-lbs / 190 Nm
-10	63 ft-lbs / 85.4 Nm	-24	165 ft-lbs / 223.7 Nm

■ CONTINUED

TORQUE VALUES

O-RING FACE SEAL (ORFS)

SAE Dash Size	Tube Side Thread Size	Tube Side Assembly Torque- Lubricated (+10%, -0%) [ft-lb]	Flats From Wrench Resistance – Lubricated (F.F.W.R)
-4	9/16 - 18	20	1/2
-6	11/16 - 16	33	1/2
-8	13/16 - 16	44	1/2
-10	1 - 14	72	1/2
-12	1-3/16 - 12	102	1/2
-14	1-5/16 - 12	114	1/2
-16	1-7/16 - 12	132	1/2
-20	1-11/16 - 12	168	1/2
-24	2 - 12	216	1/2

Fastener installation

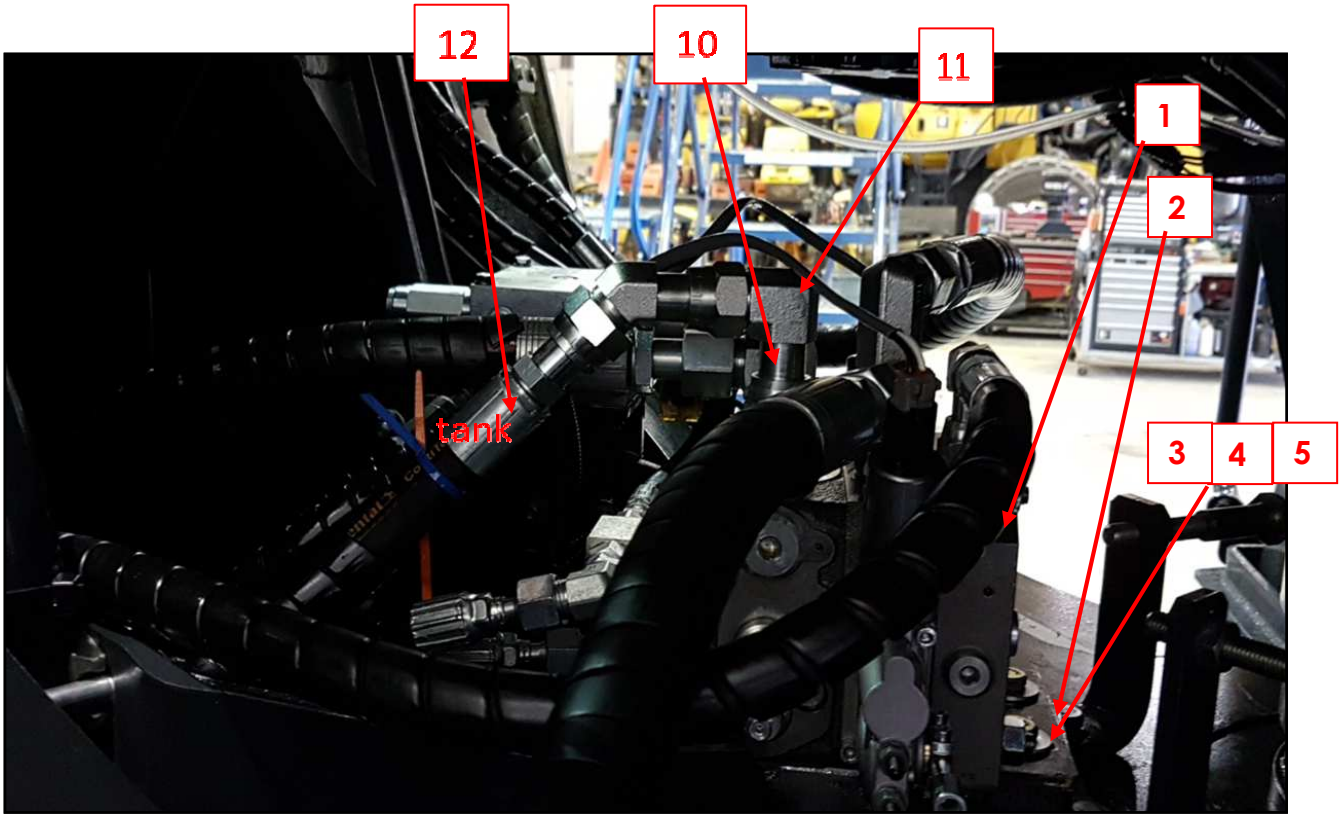
It is recommended that all bracket and clamp fasteners be installed with a light application of Loctite Blue 243 or 242 to eliminate any chance of the fasteners backing off due to excessive vibration. Alternatively, a light application of oil prior to installation in order to eliminate any thread friction prior to tightening is acceptable in most instances.

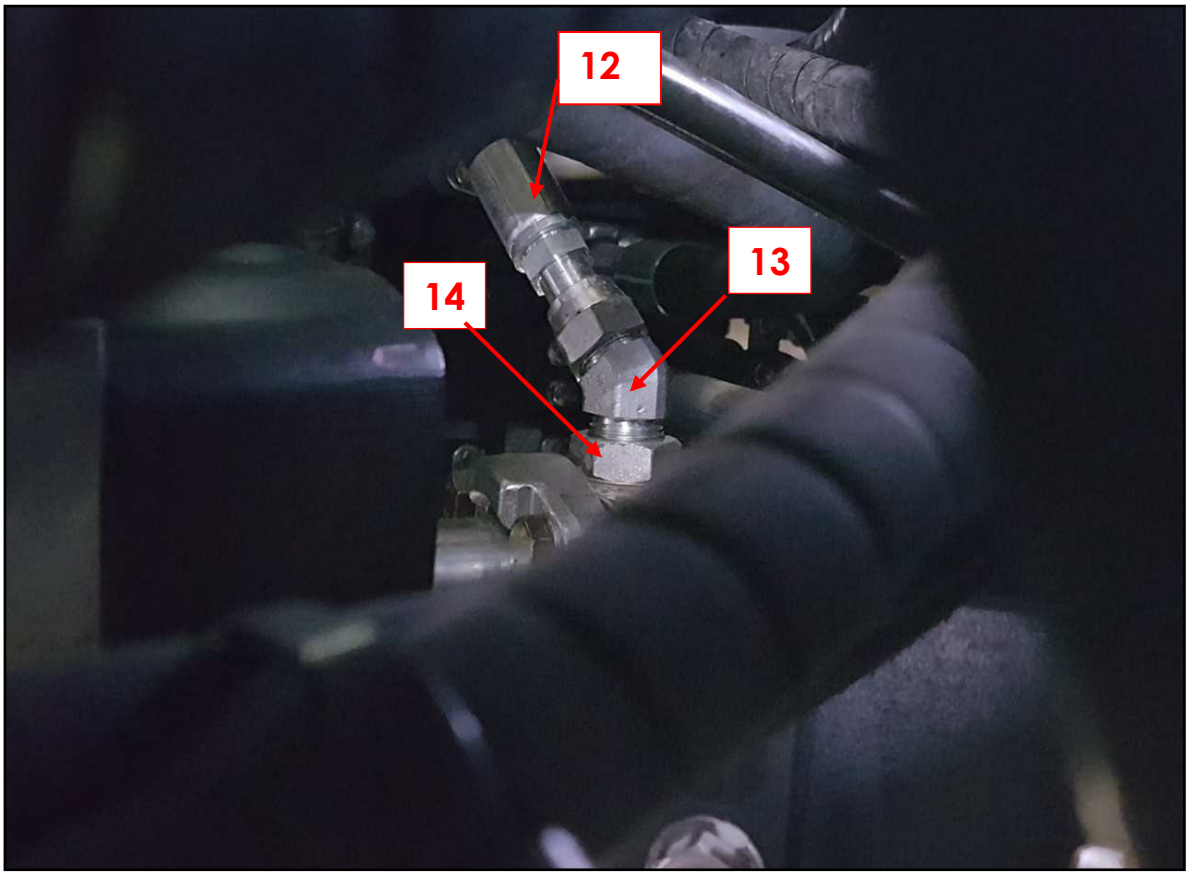
4. LISTE DES PIÈCES

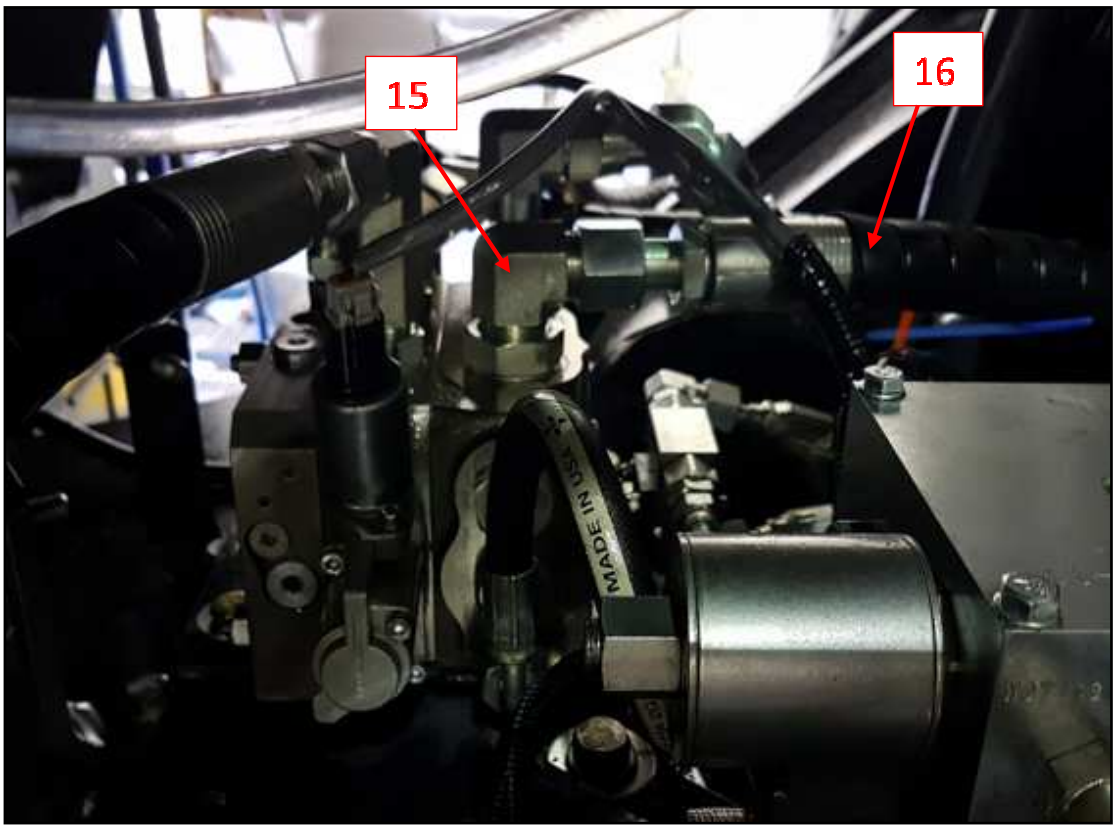
No.	Qty	P/N	Description
1	1	1000460	Valve Valvoil 3 spools proportionnel (included 0,5mm orifice)
2	1	2010-M1-0481	Bracket Ass'y + stud
3	1	2010-M1-0370	Spacer
4	2	01010-81050	Bolt M10 x 1.5 - 50 mm Lg
5	2	01643-81032	Washer for Bolt M10
6	1	VUSHF015S	Shuttle Valve SAE06& 7250 PSI, Steel
7	12	161862	M5 X 10mm OD DIN 125 Low Carbon yellow zinc finish steel Type A General purpose flat washer
8	2	38549	Hex cap screw M5-0,8 x 40mm LG, DIN931 Class 8,8 or SAE grade 5, steel zinc plating
9	6	40151	M5-0.8 DIN 985 Class 8 Zinc finish steel Nylon insert Lock nut
10	1	12F5OLO-S	Straight Tread Connector ORFS-12/SAE-ORB-12
11	1	12C6LO-S	Swivel nut elbow ORFS-12/SAE-ORFS swivel 12
12	1	2010-H1-0102	Hose (Close center valve to hyd. tank T)
13	1	10V5OLO-S	45° Straight Tread Elbow ORFS-10 / SAE-ORB -10
14	1	2010-M1-0486	Adaptor (Tank port for 3rd valve)
15	2	10-12C5OLO-S	Straight Thread Elbow ORFS -10/SAE ORB -12
16	1	2010-H1-084	Hose (Close center valve to Pressure P)
17	1	SB6220-12SAE	Adaptor for pressure Port to work equipment valve
18	4	01011-81200	Bolt M12 x 1.75 - 100 mm Lg
19	1	10V6LO-S	45° Swivel Nut Elbow ORFS-10 / ORFS Swivel -10
20	1	10 CC5OLO-S	Long Straight Thread Elbow ORFS -10/SAE ORB -10
21	2	2010-H1-085	Hose (Front Frame LH & RH)
22	1	10C5OLO-S	Straight Thread Elbow ORFS -10/SAE ORB -10
23	1	6C4OMLO-S	Male Elbow ORFS-6/BSPP-4
24	1	2010-H1-0103	Hose (3rd valve to drain)
25	1	6R6LO-S	Swivel Nut run tee ORFS-6/ORFS swivel-6/ORFS-6
26	2	6F5OLO-S	Straight Thread Connector ORFS/SAE-ORB -6
27	1	2010-H1-0104	Hose (shuttle valve to close center valve LS)
28	3	6C5OLO-S	Straight Thread Elbow ORFS/SAE-ORB -6
29	1	2010-H1-0081	Hose (shuttle valve to Komatsu valve LS)
30	1	2010-H1-0082	Hose (shuttle valve to Komatsu pump LS)
31	2	6C6LO-S	Swivel Nut elbow ORFS-6/ORFS-6
32	1	6HLO-S	Union ORFS/ORFS -6
33	6	HRS2S26.7PPUNC	HRS Heavy duty single clamp (pipe 3/4") or equivalent
34	4	2010-M1-0173-01	Rectangular Seat M10 x 1.5
35	4	2010-M1-0372	Bracket
36	8	01010-81020	Bolt M10 x 1.5 - 20 mm LG
37	8	01643-31032	Washer for Bolt M10
38	2	10WLO-S	Bulkhead Union ORFS -10 (All ends)
39	4	FF306-LN-10	Bulkhead lock nut for fitting ORFS -10
40	2	2010-H1-086	Boom Hose
41	2	FF2702-LN-10 45°	45° Bulkhead union ORFS/ORFS -10 (All ends)
42	1	2010-E1-0104	Jostick 24vdc @ 5 Amps
43	1	2010-M1-0483	Bracket joystick
44	4	1038545	M5-0.8 X20 DIN 933 Class 8,8 Zinc finish hex cap screw
45	4	38616	M8-1.25 X25 DIN 933 Class 8,8 Zinc finish hex cap screw
46	4	1140357	M8-16mm OD DIN 125 Low carbon Zinc finish steel Type A General flat washer
47	1	2010-M1-0484	Bracket for handle

48	1	39903	M4-0.7 x 20mm ISO 7380 Hex Drive Class 10.9 Black Oxide Finish Alloy Steel Button Socket Cap Screw
49	1	01580-11206	Nut M12 x 1,5 steel zinc plating
50	1		Spacer ID 12,5mm X OD 19mm X 20mm LG
50	1	94639A885	White nylon unthreaded, OD 1" X 1 1/2" Lg for 1/2" screw size (ASTM D4066/D6779 & UL 94V2
51	1	421-43-38332	Handle Komatsu
52	1	2010-E1-0106	Wiring Harness
53	1	2010-E1-0107	Wiring Harness
54	4	0137496	Bolt 5/16-18UNC - 3/4" Lg, steel zinc plated, Grade 5
55	4	1133006	Washer for Bolt M8 or 5/16"
56	4	07372-21280	Bolt M12X1,75 - 80mm LG, steel zinc plating, grade 10.9
57	2	11103704	M4 x 9mm OD DIN 125 Grade HV200 Yellow Zinc Finish Steel Type A General Purpose Flat Washer
58	1	40147	M4-0.7 DIN 985 Class 8 Zinc Finish Steel Nylon Insert Lock Nut

5. INSTALLATION DE L'ENSEMBLE DE VALVE HYDRAULIQUE



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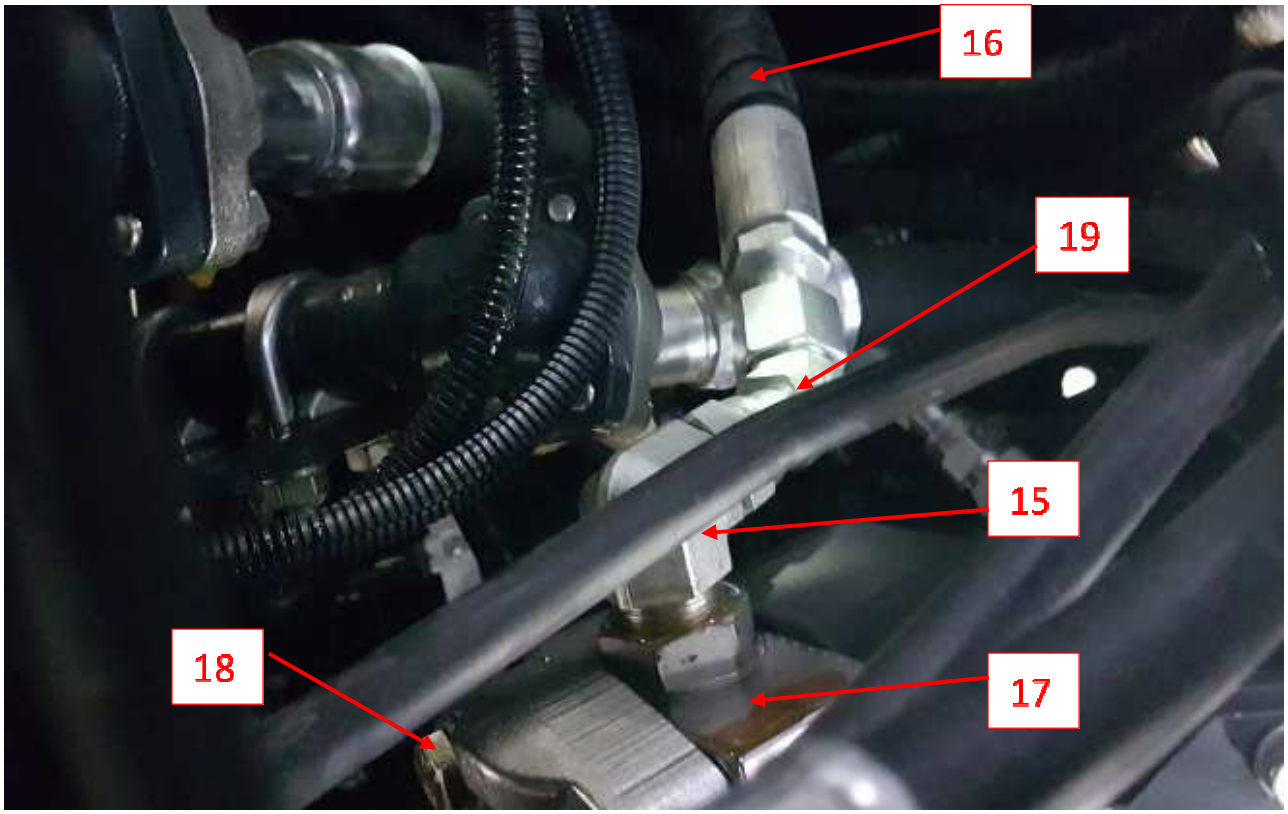
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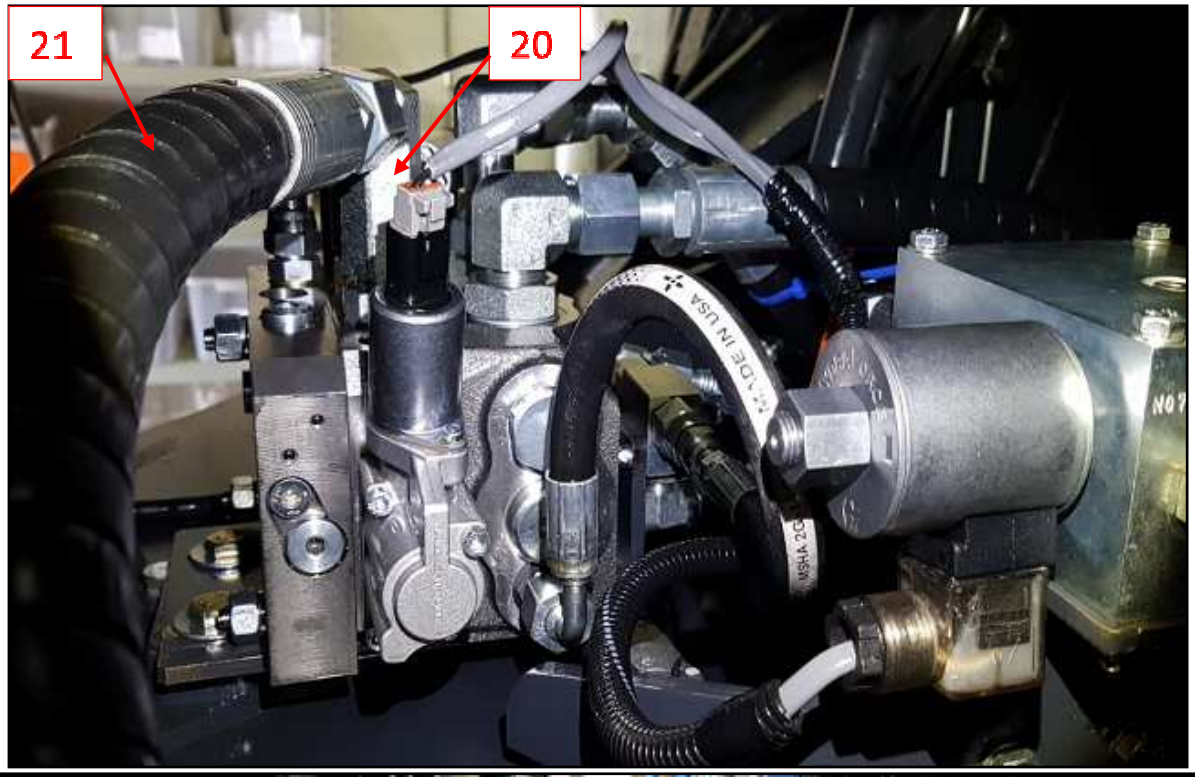
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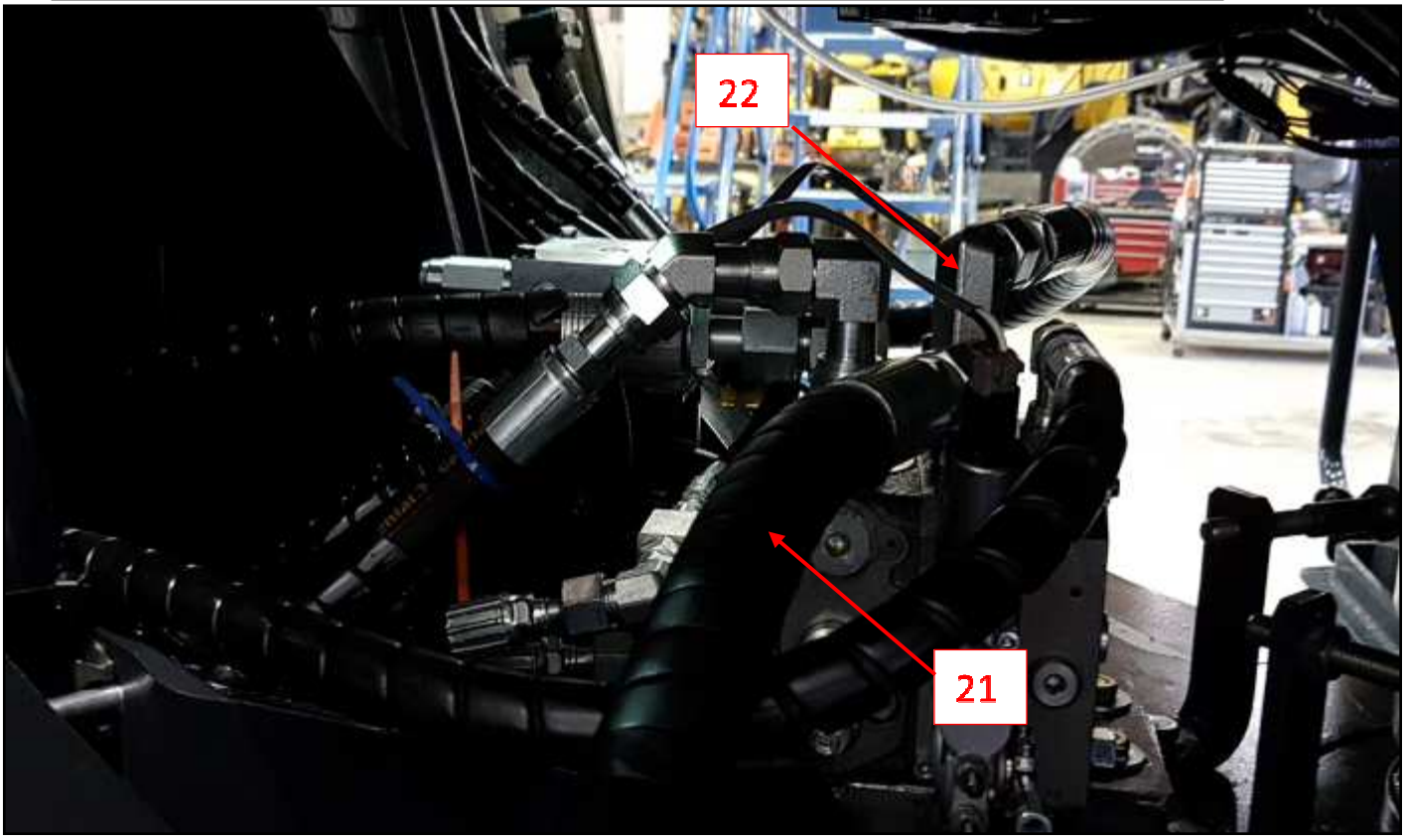
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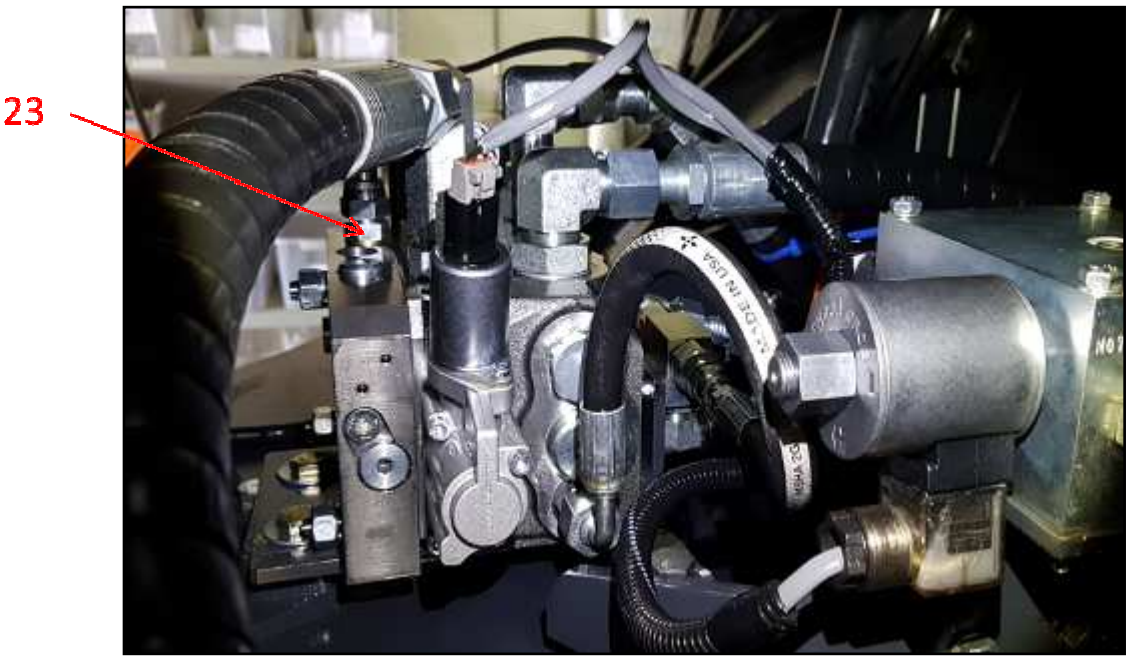
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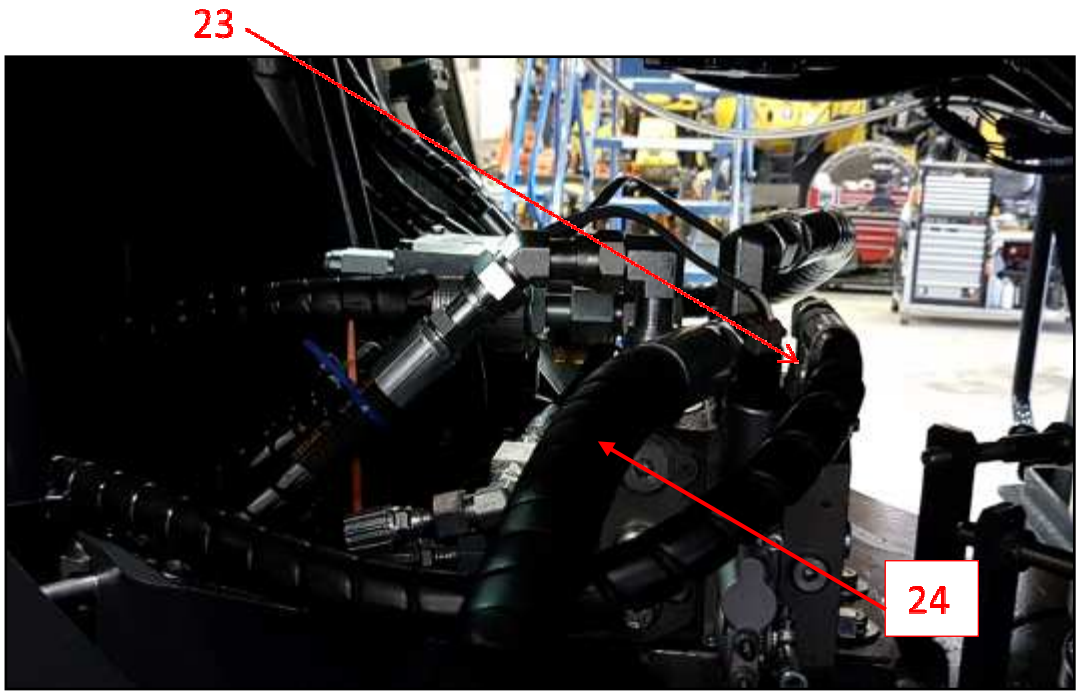
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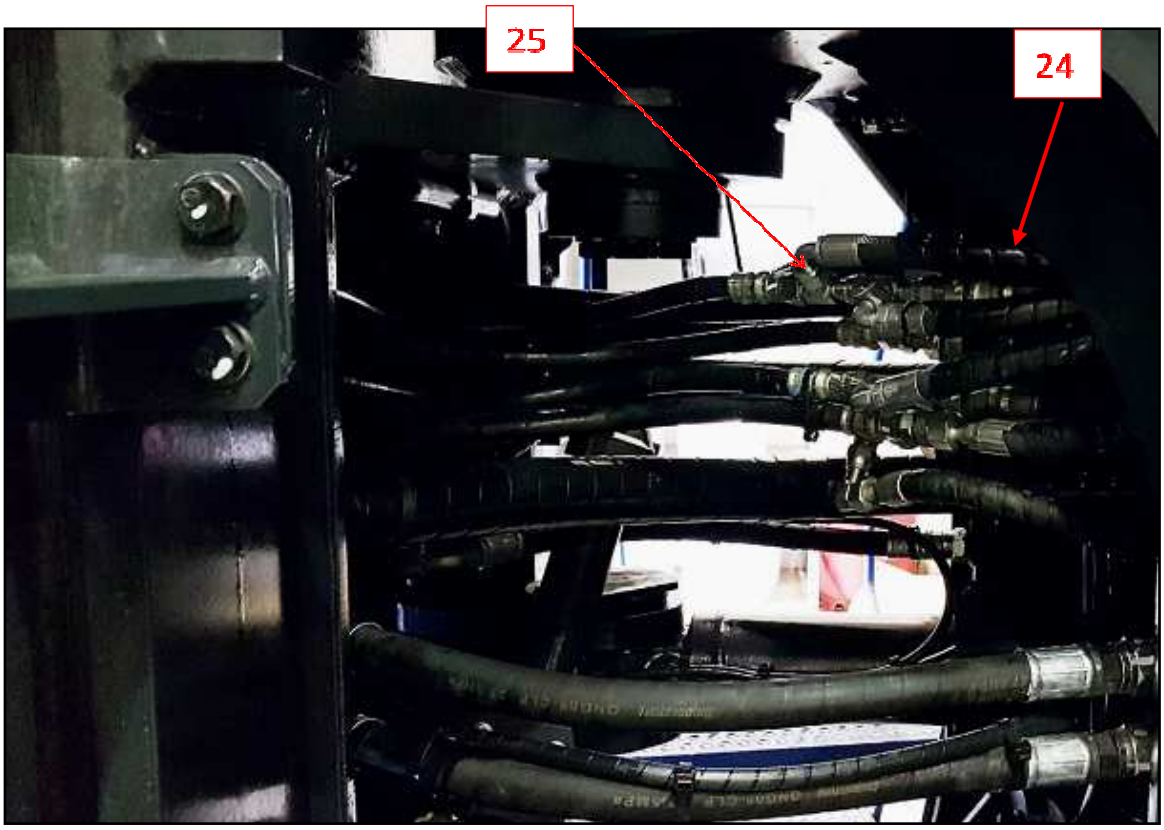
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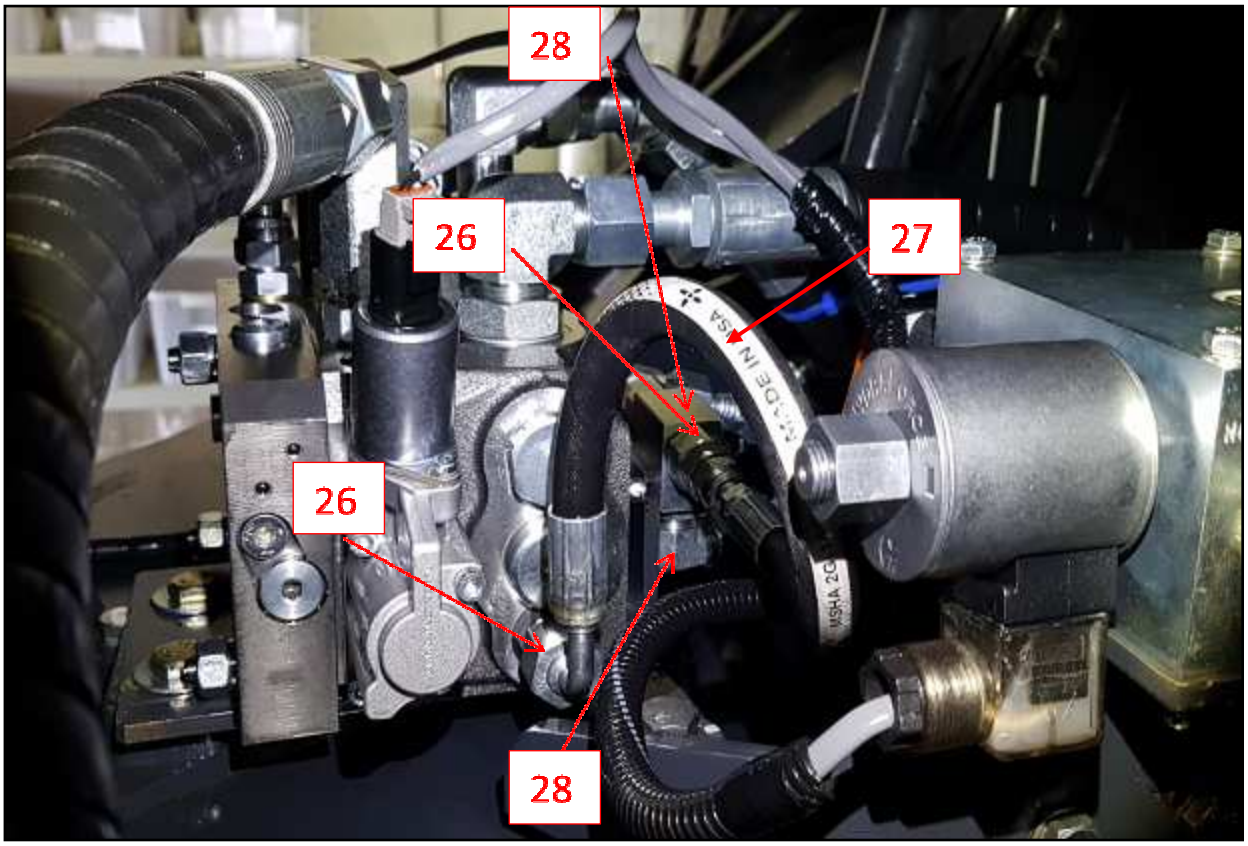
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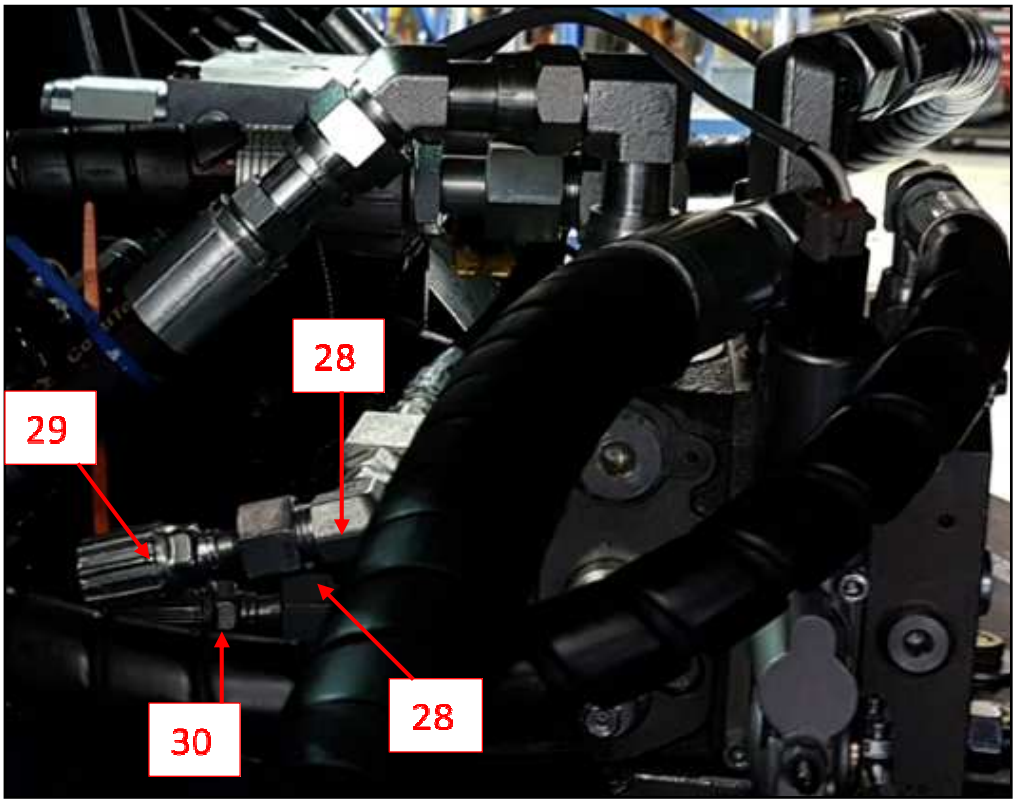
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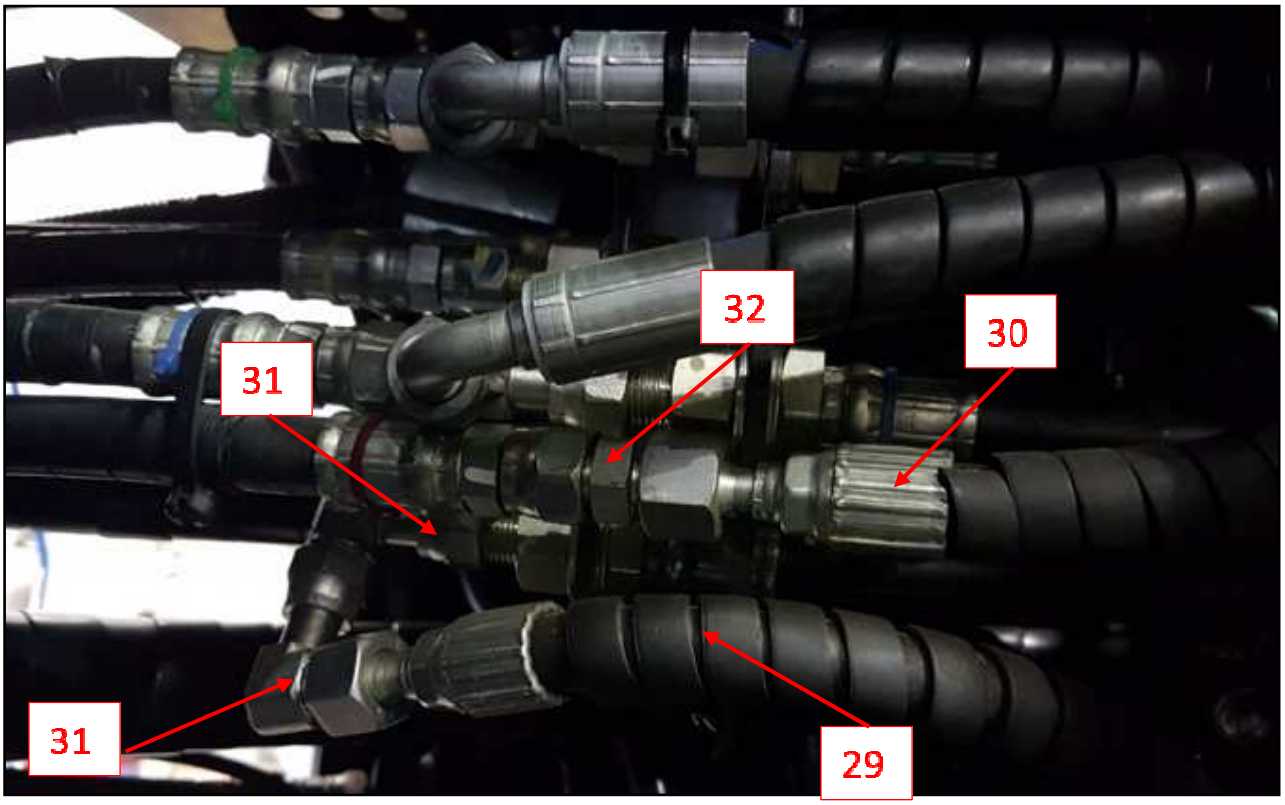
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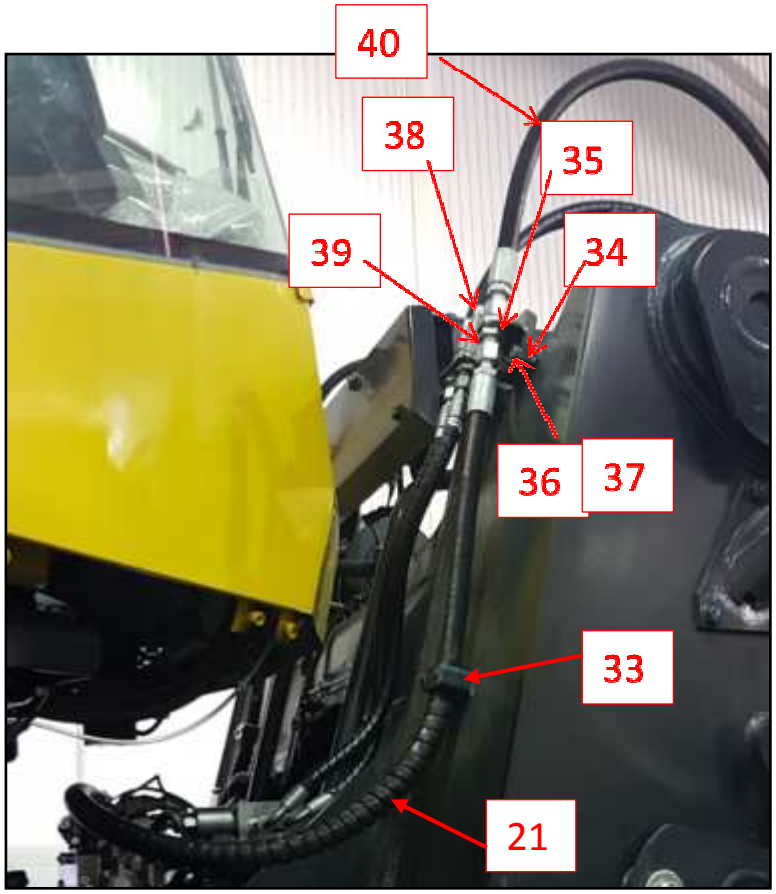
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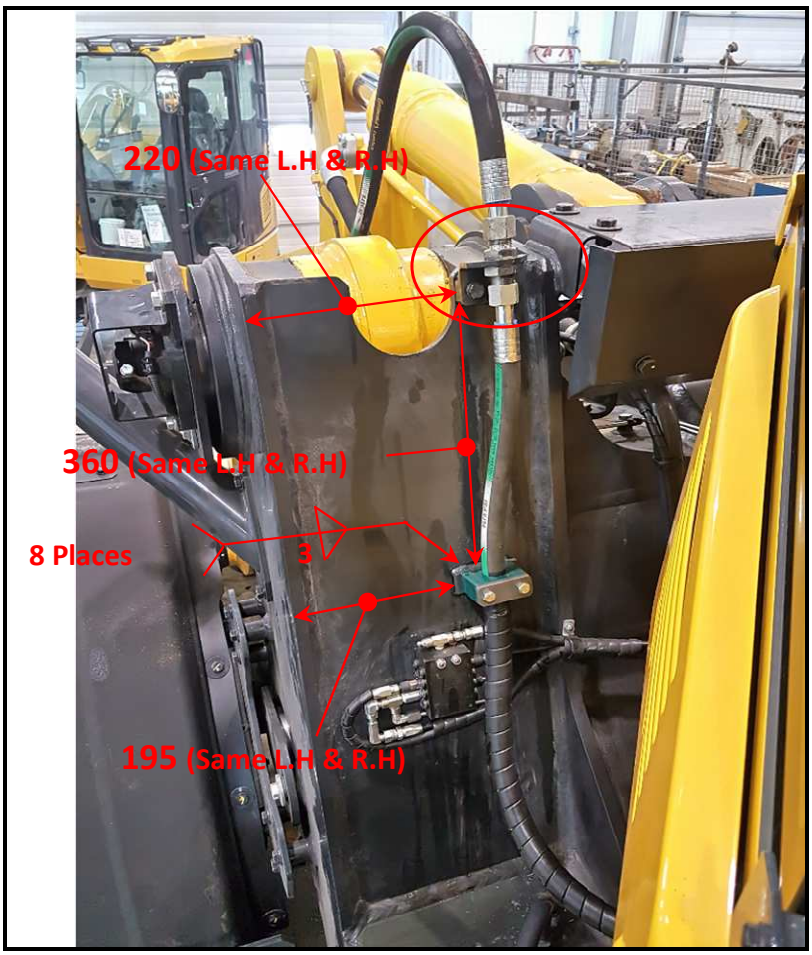
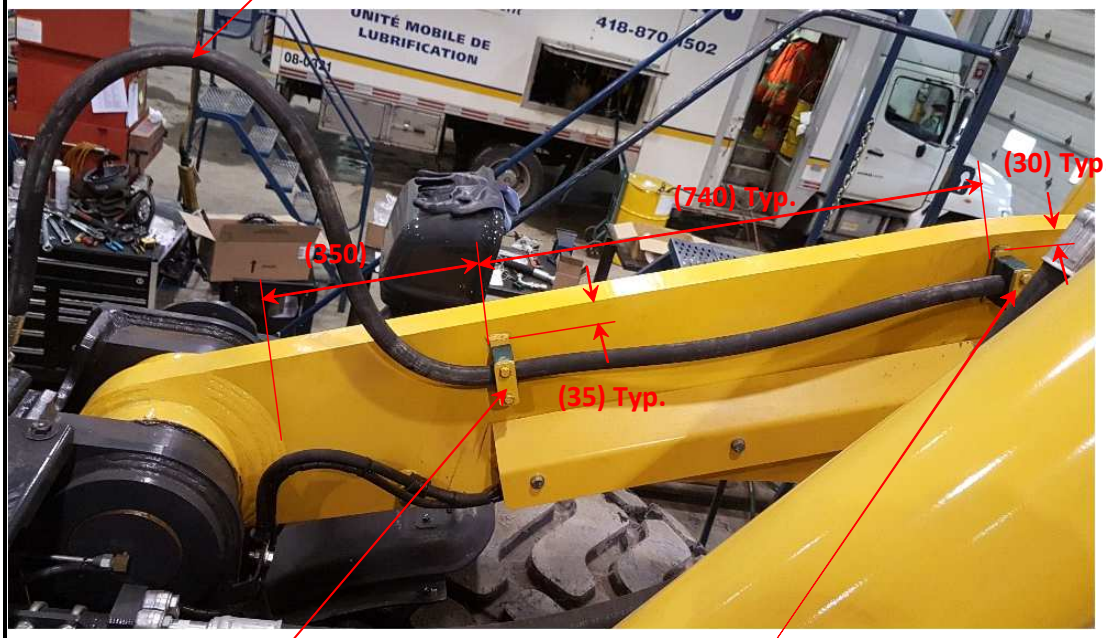

220 (Same L.H & R.H)
360 (Same L.H & R.H)
8 Places
3
195 (Same L.H & R.H)

(Notes: Adjust the Hose Radius properly, high tension in the hose can cause the crack)



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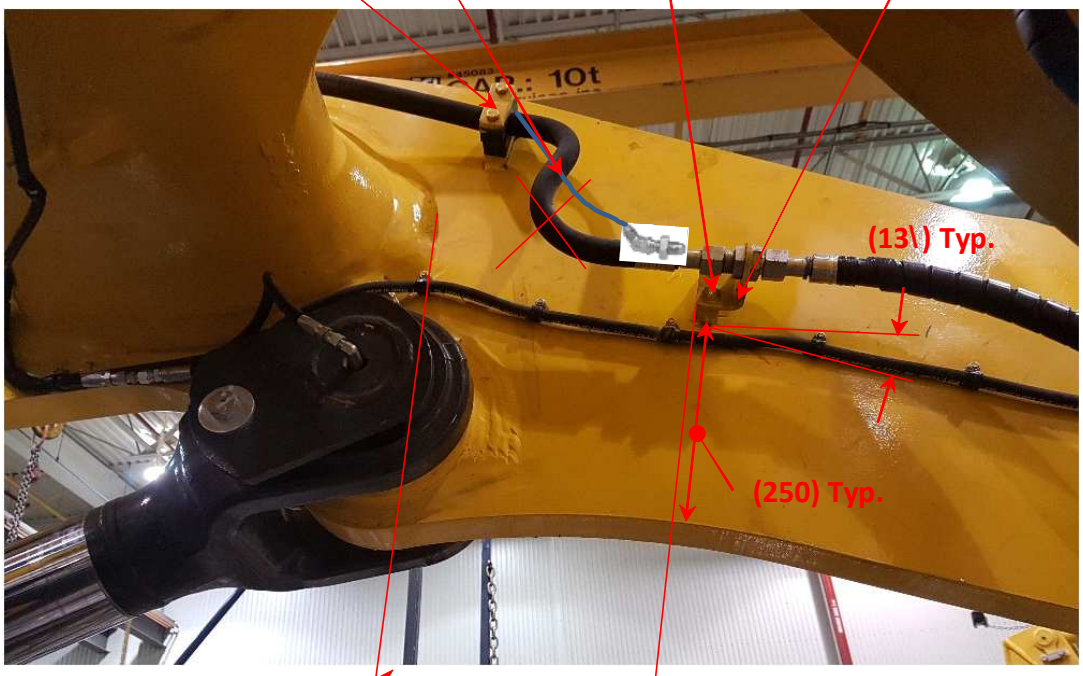
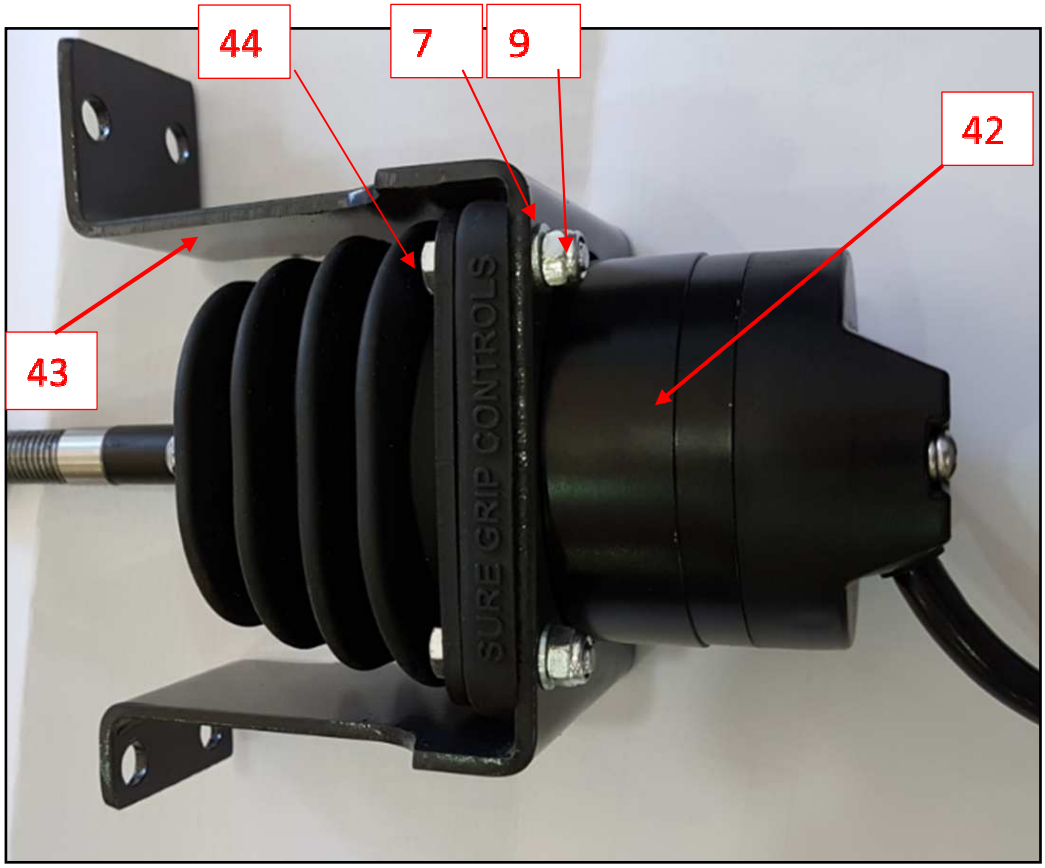
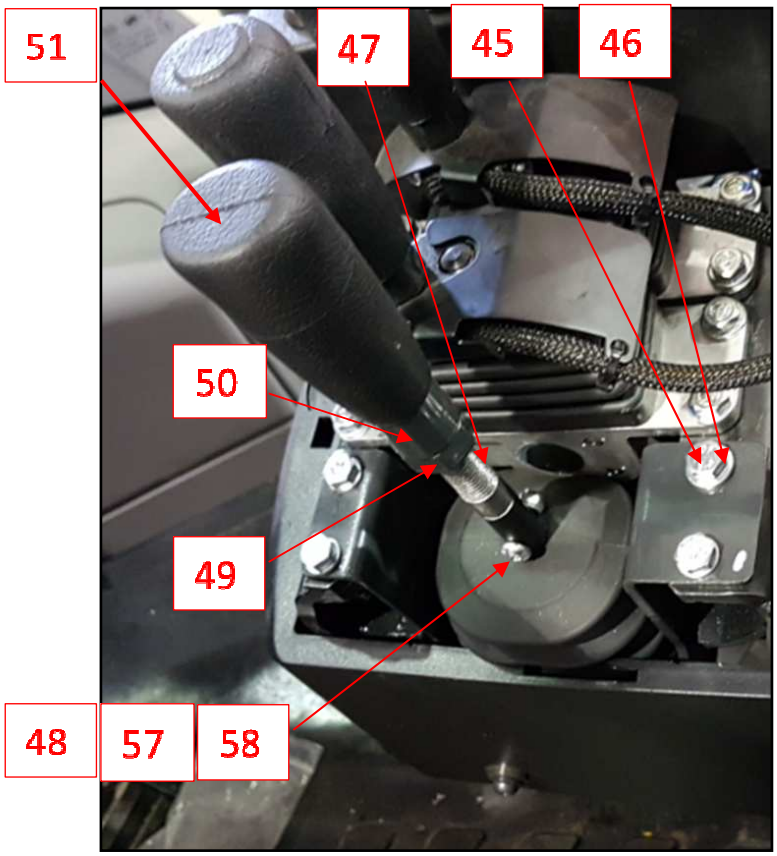
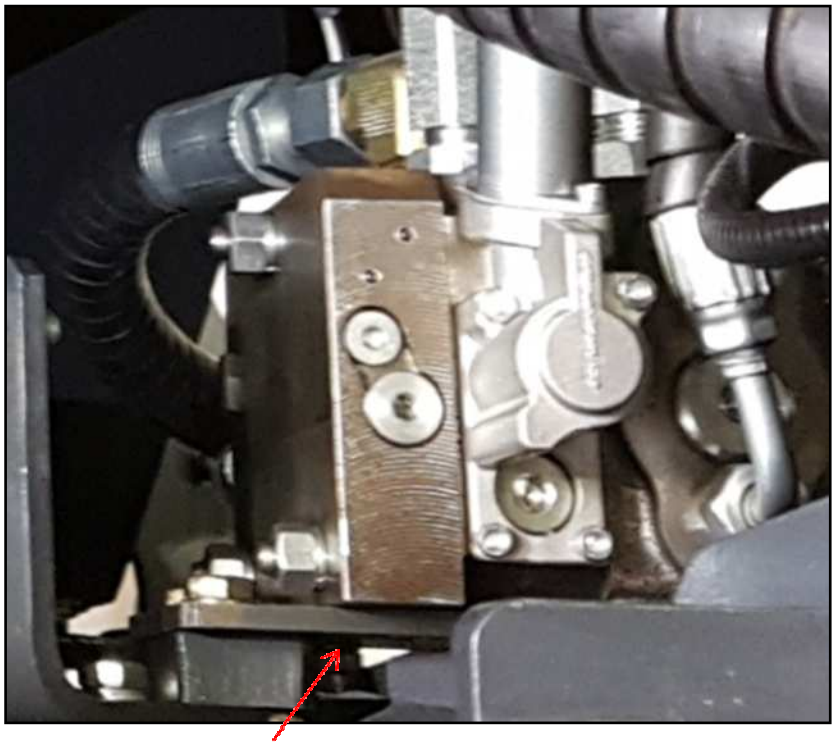
33 BON 36 & 37 38



6. INSTALLATION LE JOYSTICK



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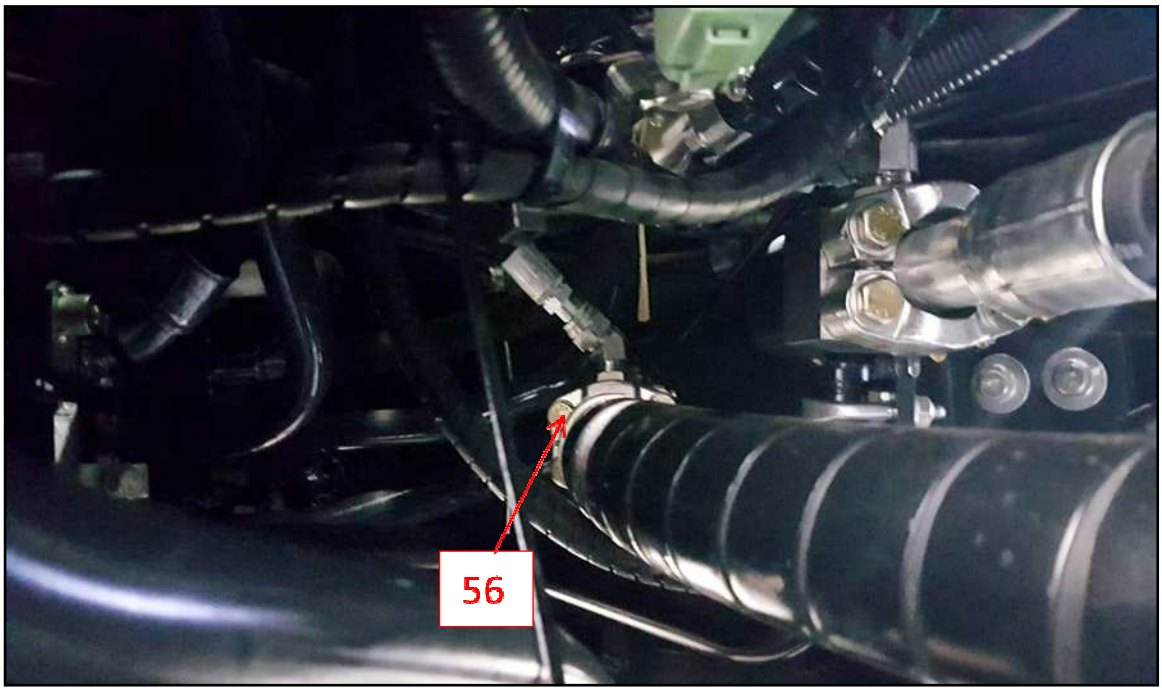
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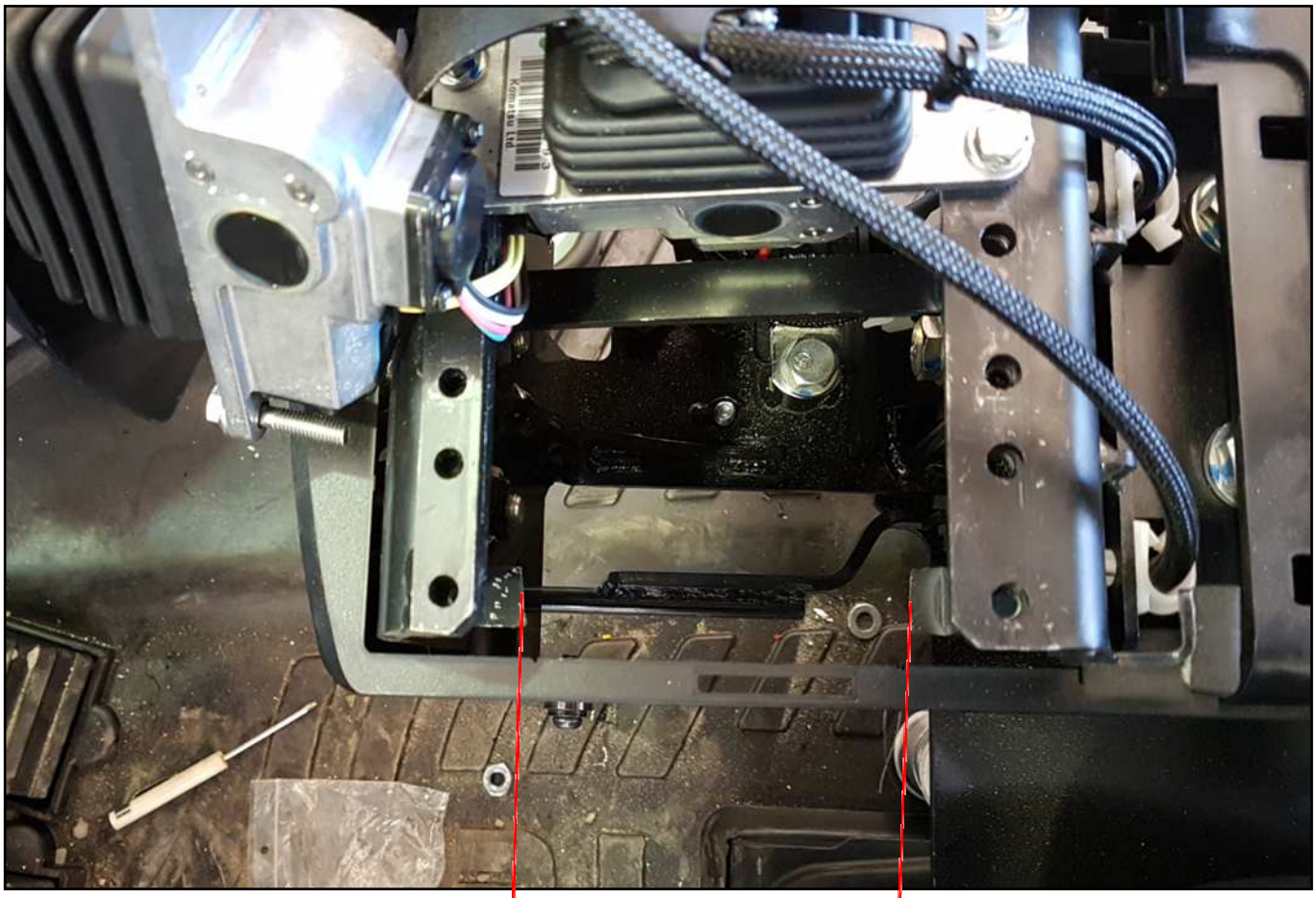
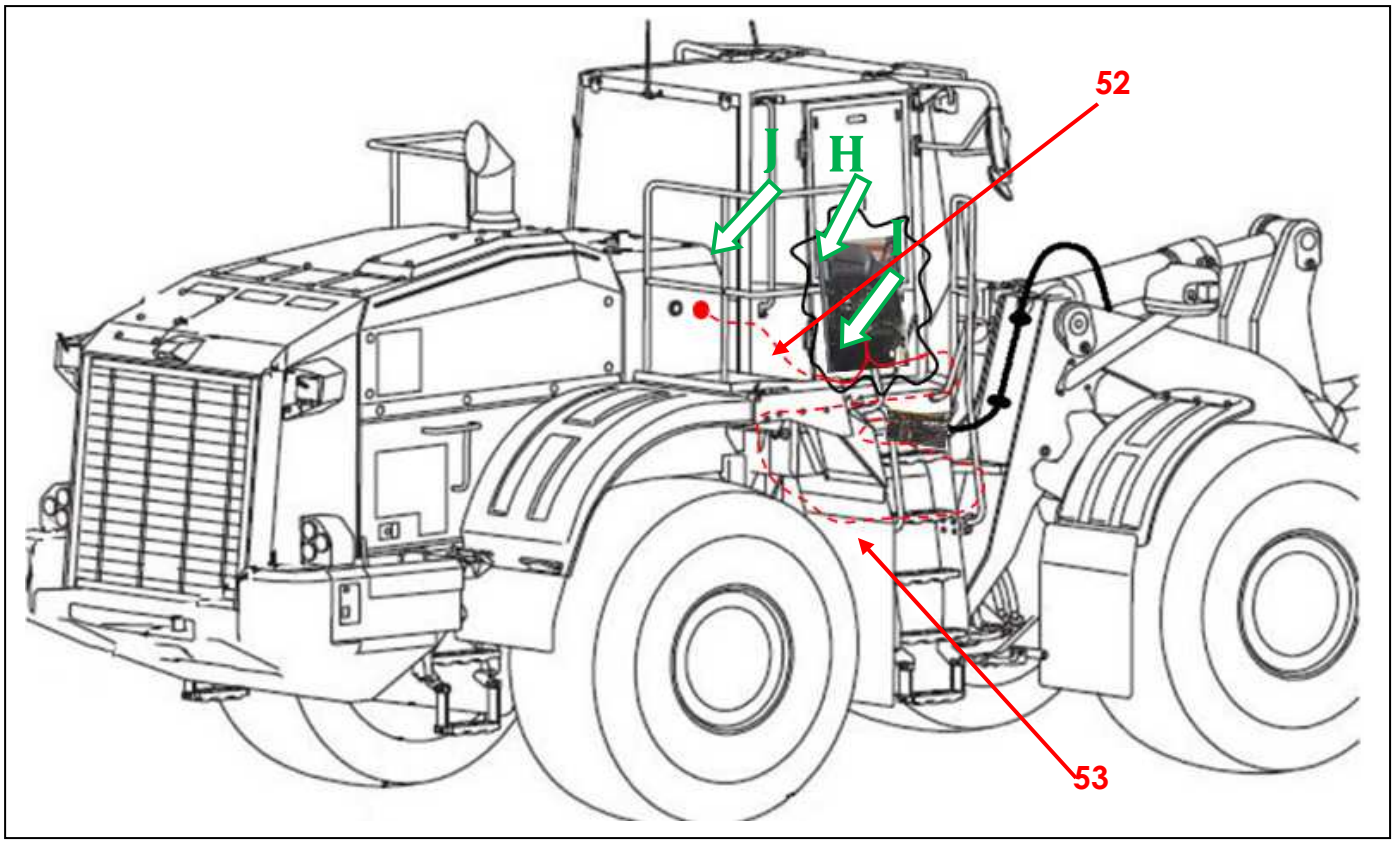
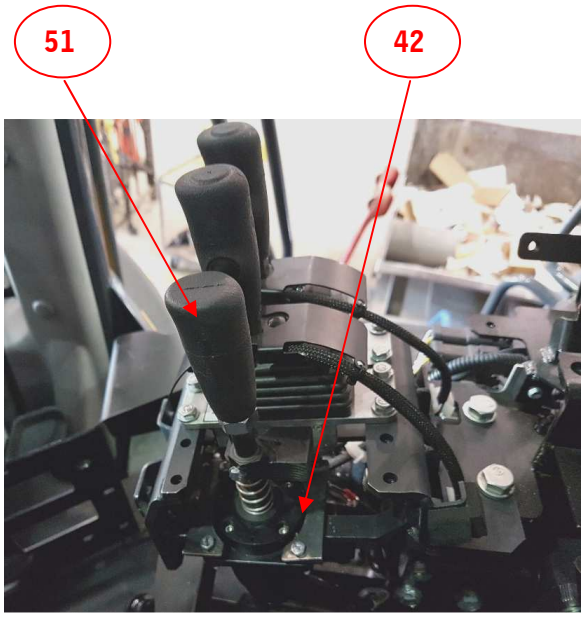

100 (Cut for installing joystick)

7. INSTALLATION LE SYSTÈME DE CONTRÔLE ELECTRIQUE

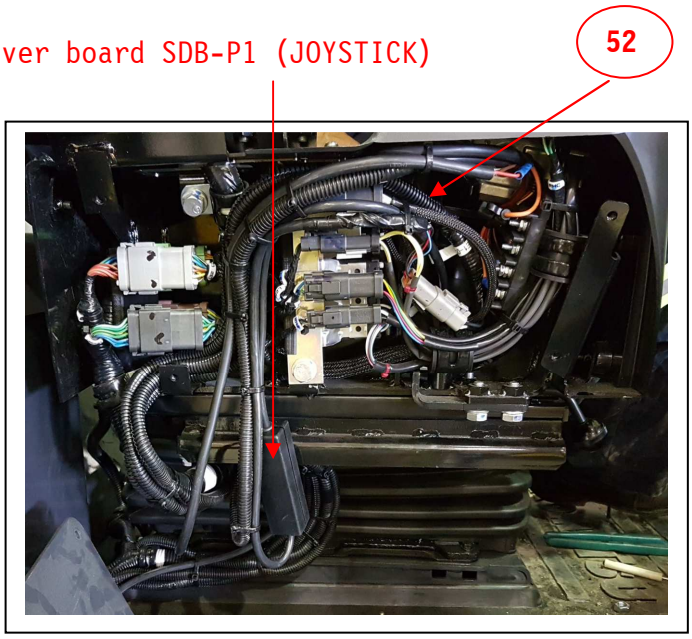
7.1. Branchez les fils d'électrique selon les Figures et les schémas électrique ci-joints





Vue **H**

Driver board SDB-P1 (JOYSTICK)



Vue **I**

Vue **J**

7.2. Utilisez les paramètres ci-dessous pour ajuster le Driver Board SDB-P1 (Voir les instructions ci-joints & Annexe) :

1L = 33
1H = 80
2L = 33
2L = 80

1L & 1H @ 2L & 2H

Single Axis
Driver Board SDB-P1

1949 Keating Cross Rd
Saanichton, BC, Canada V8M 2A4
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Fax: (250) 544-2279
TollFree: 1-800-831-2278
www.suregripcontrols.com
SURE GRIP CONTROLS INC.

Field Calibration:

The SDB-P1 features a user friendly calibration interface that is used to custom configure the operating parameters. The setup menu is accessed using the 4 switches mounted on the top of the board (see page 3 for top cover removal). The switches are used in conjunction with the display to navigate through the menu structure and modify operating parameters as they are selected by the user. A change that is made to a parameter is automatically saved when the user exits from that adjustment location.

The complete set of menu parameters and their definitions are given in **Table 1a**. The calibration menu consists of three levels, the top level menu is used to display the current profile number and is normally selected when not in calibration mode. The top level menu also provides feedback such as error codes when fault conditions are detected and real time output activity. Sub-level menu 1 is used to select a parameter. Sub-level menu 2 is used to make adjustments to a particular parameter value within the appropriate range e.g. PWM duty cycle minimum and maximum levels.

Table 1a: Display Readout Definitions

Top Level Menu		Sub-level Menu 1		Sub-level Menu 2	
Display Readout	Definition	Display Readout	Definition	Display Readout	Definition
P1	Profile 1	*1H*	Output 1 Maximum Duty Cycle	*05 - 99*	Duty Cycle Setting, 1% Increments
*P2**	Profile 2*	*1L*	Output 1 Minimum Duty Cycle	*05 - 99*	Duty Cycle Setting, 1% Increments
*P3**	Profile 3*	*2H*	Output 2 Maximum Duty Cycle	*05 - 99*	Duty Cycle Setting, 1% Increments
		2L	Output 2 Minimum Duty Cycle	*05 - 99*	Duty Cycle Setting, 1% Increments
		1r	Output 1 Ramp Rate	*0.1. - 9.9.*	Ramp Rate Setting, 0.1s Increments
		2r	Output 2 Ramp Rate	*0.1. - 9.9.*	Ramp Rate Setting, 0.1s Increments
		Co	Calibrate Outputs Command	*cF*	Indicates Calibration Finished
		Fr	PWM Frequency	*04 - 40*	PWM Frequency Setting, 10Hz Increments
		cr	Input Mode Select	*01 – 03*	01 Selects Single Input Mode - (0.5V - 4.5V). 02 Selects Dual Input Mode - (0.8V - 4.2V). 03 Selects Switched Input Mode - (0V(off), 5v(on)).

(*) Available through optional Profile Select Switch

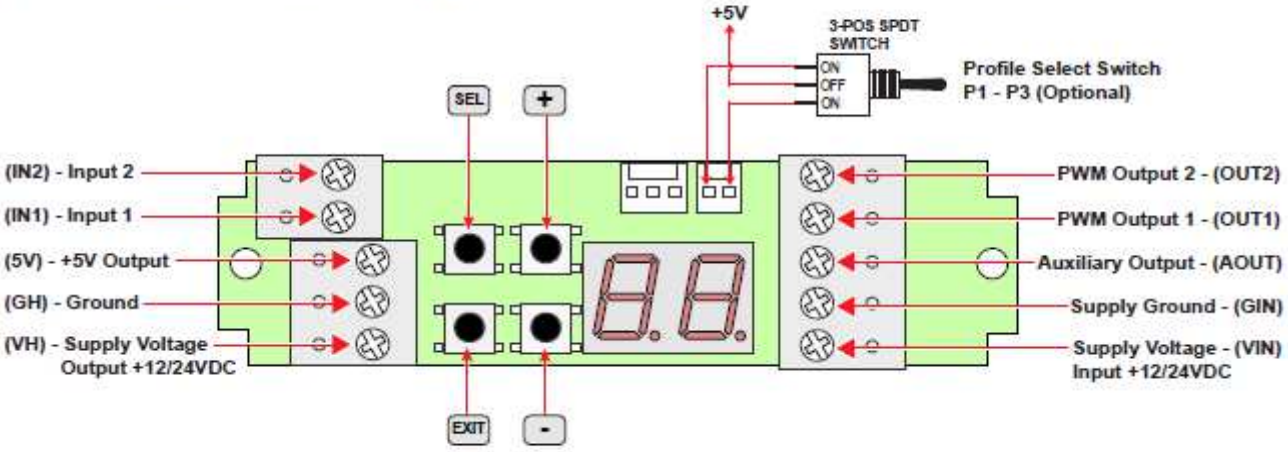

Figure 1: Wiring Connections and Calibration Switch Locations

Table 1b: Switch Functions

Name	Top Level Menu Function	Sub-level Menu 1 Function	Sub-level Menu 2 Function
SEL	Access sub-level menu 1	Scroll through parameter/command list	n/a
EXIT/SAVE	n/a	Revert back to top level menu, saves current settings	Revert back to previous menu, saves current settings
+	n/a	Move to sub-level menu 2 to increase value, or execute command e.g. 'calibrate outputs'	Increase parameter value
-	n/a	Move to sub-level menu 2 to decrease parameter value	Decrease parameter value

Note: While in normal run mode, the display will shut off after a period of 15 seconds. The display can be reactivated by pressing any one of the switches, and will automatically turn on when one of the outputs is activated, or if a fault has occurred.

Calibration Menu:

Figure 2b shows the menu structure for setting up the parameters for a single profile i.e. default configuration: no external switch option. If the external option switch is connected, the procedure for setting up the other two profiles is identical. When not in calibration mode (run mode), the display will show the current profile number: 'P1' without the switch option installed, or 'P1' - 'P3 with the switch installed. While in run mode, if either output 1 or 2 is activated, the PWM duty cycle will be shown on the display. If the board detects a valid fault at any time while in run mode, the corresponding fault code E5 to E6 will be shown on the display (see **table 2** below), and will remain displayed until the problem has been resolved followed by cycling power to the board. The display will shut off after a period of inactivity, and can be reactivated by pressing any of the four switches. The display will also reactivate when one of the outputs is trigged or if a fault has occurred. While in calibration mode, the driver board will time out after a period of inactivity of 15 seconds and automatically return to 'run' mode. Any changes made to operating parameters are not saved when this occurs, and helps to ensure that the board does not remain in calibration mode.

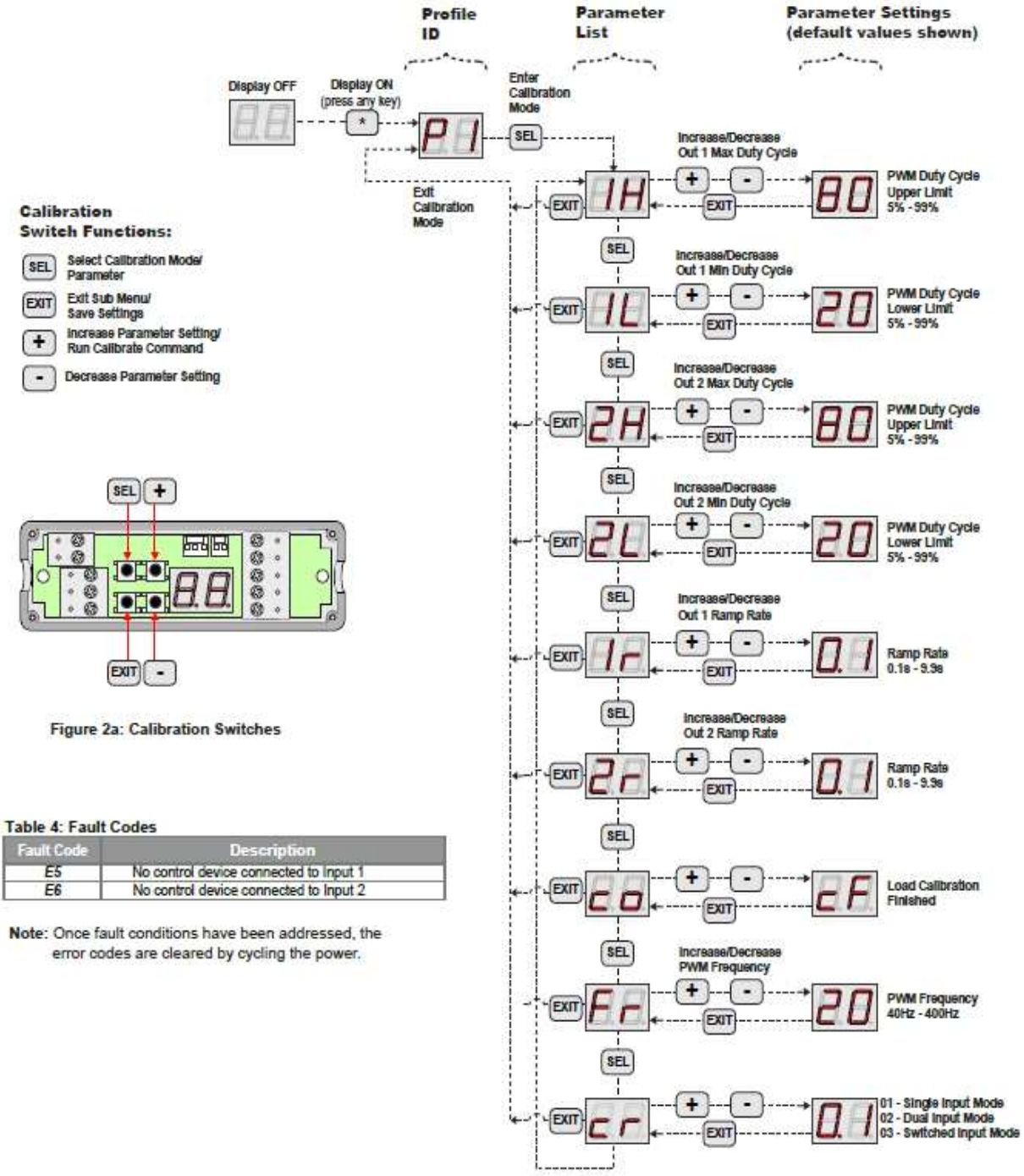

Figure 2b: Calibration Menu Diagram

Figure 2a: Calibration Switches

Table 4: Fault Codes

Fault Code	Description
E5	No control device connected to Input 1
E6	No control device connected to Input 2

Note: Once fault conditions have been addressed, the error codes are cleared by cycling the power.

Disassembly Instructions:

In order to access the calibration interface, the top half of the case assembly must be removed by loosening the 4 corner screws using a No. 1 Phillips screwdriver as shown in **figure 3a**. The parameters summarized in **table 3** can be modified in the field through the use of the on-board calibration menu. Before making any adjustments, it is important to ensure that the board is powered on with the appropriate input control device and the outputs connected.

Remove the 4 housing cover screws (No. 1 Phillips screwdriver required)

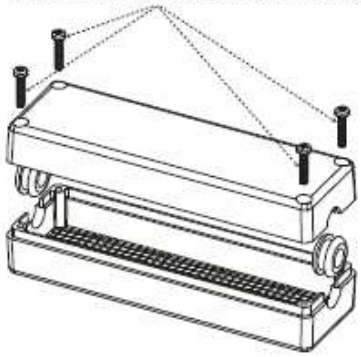

Figure 3a: Cover removal

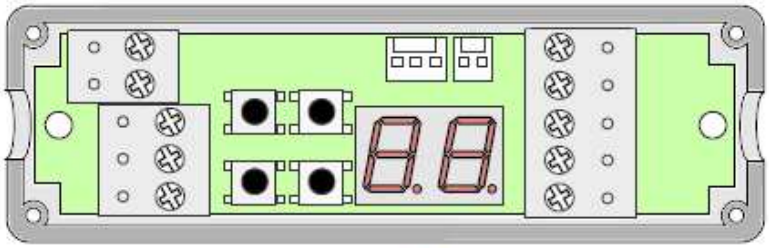

Figure 3b: Driver Board with top cover removed

Overview of Adjustable Parameters:

Table 3: Adjustable Operating Parameters

Parameter	Range of Adjustment and Characteristics	Factory Settings				
		Profile ID	Output ID	Min	Max	Unit
PWM Duty Cycle	Duty Cycle adjustable from 5% to 99% on both outputs independently	P1	OUT 1	20	80	%
			OUT 2	20	80	
		P2	OUT 1	30	90	%
			OUT 2	30	90	
		P3	OUT 1	40	99	%
			OUT 2	40	99	
				Setting		
PWM Frequency	PWM Frequency is adjustable from 40Hz to 400Hz, not independent	P1 – P3	OUT1, OUT2	200		Hz
Ramp Rate	Adjustable from 0.1s to 9.9s on both outputs independently	P1 – P3	OUT1, OUT 2	0.2		s
Output Calibration	The calibration command automatically sets the limit on the output current to match the attached loads	P1 – P3	OUT1, OUT 2	open loop		mA
			Input	Range		Out
Input Mode	Input mode 1 is used for a single control input e.g. one axis from a proportional joystick or a proportional slider module	Single input	IN1	2.5V - 4.5V		OUT1
			IN1	2.5V - 0.5V		OUT2
	Input mode 2 is used for dual control inputs e.g. two proportional modules	Dual input	IN1	0.8V - 4.2V		OUT1
			IN2	0.8V - 4.2V		OUT2
	Input mode 3 is used for switched control inputs	Dual input	IN1	0V (off), 5V (on)		OUT1
			IN2	0V (off), 5V (on)		OUT2

8. TEST DE PERFORMANCE APRÈS L'INSTALLATION KIT D'HYDRAULIQUE POUR LE 3RD VALVE

8.1. Vérifiez les tuyaux, les raccords, le harnais et les quincailleries, s'ils sont correctement installés.

8.2. Démarrer le moteur.

8.3. Poussez le joystick vers en avance, le fluide hydraulique doit sortir par le boyau a votre droite (Boom) et la direction de fluide est inverse lorsque vous tirez le joystick vers vous, si ce n'est pas le cas vous devez vérifier votre branchement des boyaux (Sortir A & B sur la valve 3rd spool). Ainsi le branchement des fils électrique entre le joystick et la valve 3rd spool, ils sont peut-être Inverses.

ANNEXE

ELECTRICAL CIRCUIT DIAGRAM OF 3RD SPOOL VALVE