Philadelphia Scientific Ltd
Model Attach-A-Puller

Installation, Operation, and Maintenance Manual

English (EN)

Contents Page

Statement of Warranty

There are no warranties that extend beyond the description on the face hereof.

Philadelphia Scientific Ltd warrants to and for the sole benefit of the original purchaser of its equipment, that such equipment is free from defects in materials and workmanship under normal and proper use, operation, and maintenance. This warranty shall remain in effect for a period of one (1) year from the date of delivery of the equipment to the original purchaser.

The term “original purchaser,” as used in this warranty, means the customer to whom the equipment was first delivered for use.

Philadelphia Scientific Ltd shall provide both the labor and the parts required to repair, or at Philadelphia Scientific Ltd ’s option, replace any part of the equipment that is determined by Philadelphia Scientific Ltd to have been defective during the applicable warranty period.

Notice of any defect must be promptly given to Philadelphia Scientific Ltd or an authorized Philadelphia Scientific Ltd dealer by the original purchaser.

Philadelphia Scientific Ltd requires the warranty part to be returned to Philadelphia Scientific for inspection.

Philadelphia Scientific Ltd does not warrant and this warranty does not apply to accessories or attachments not manufactured by MTC which are incorporated in or delivered with the equipment and are warranted by their respective manufacturers.

Damage or defects caused by overloading or other misuse, negligence, abuse, accident, failure to follow operation or maintenance instructions, or from other causes having an origin other than in the manufacture of the equipment are not within the scope of this warranty.

Philadelphia Scientific Ltd reserves the right to make changes and improvements in the design and construction of its equipment without thereby being obligated to make corresponding changes and improvements in previously manufactured equipment.

The warranty set forth herein is the complete and entire warranty made by Philadelphia Scientific Ltd and there are no other warranties, either expressed or implied, concerning the merchantability or fitness for a particular purpose, made by Philadelphia Scientific Ltd.

The right to repair or replace, as set forth herein, is the sole and exclusive remedy for breach of the above warranty, and Philadelphia Scientific Ltd shall not be liable for any damages, whether direct, incidental, consequential or otherwise, occasioned by any breach of this warranty, or for any charges or expenses of any nature incurred without Philadelphia Scientific Ltd’s consent. In no event shall Philadelphia Scientific Ltd’s liability, under any claim, exceed the purchase price of the equipment for which damages are claimed.

Safety

- ***Read this entire manual before operating the unit.***
- Before performing any maintenance, service, installation or removing/replacing components, isolate all forms of energy by means of appropriate lockout and tagout procedures of all systems and subsystems in order to prevent unexpected energisation of the unit.

 **WARNING:** Failure to isolate all forms of energy by means of appropriate lockout and tagout procedures of all systems and subsystems could cause unexpected energisation of the unit resulting in equipment damage, serious bodily injury or death.

- Do not operate or perform any maintenance on the unit until you have been fully trained for that task.
- Internal safety functions can cause the unit to stop operation. Remedying the cause of the fault or resetting the unit can cause the equipment to begin operation again.
- Never operate this unit with any guard or cover removed. Keep hands, loose clothing and hair out of machine when it is in operation.

 **WARNING:** Operating this unit with any guard or cover removed could result in serious bodily injury or death.

- Always wear personal protective equipment appropriate to the task being performed and wherever it is necessary by reason of hazards of processes or environment encountered that is capable of causing injury or bodily harm.

 **WARNING:** Failure to wear personal protective equipment could result in serious injury or death.

- Always observe warning signs posted on the equipment.
- Electrical system must be grounded.
- Replace fuses with manufacturer approved fuses of the correct value.

 **WARNING:** Failure to use manufacturer approved fuses of the correct value can result in serious equipment damage.

 **WARNING:** Some components can reach high temperatures during operation and can cause severe burns. Use extreme care when removing lubrication plugs and vents while servicing the unit. Never use hands or fingers to test temperatures. Burns and reflex damage can occur immediately.

1.0 - Introduction

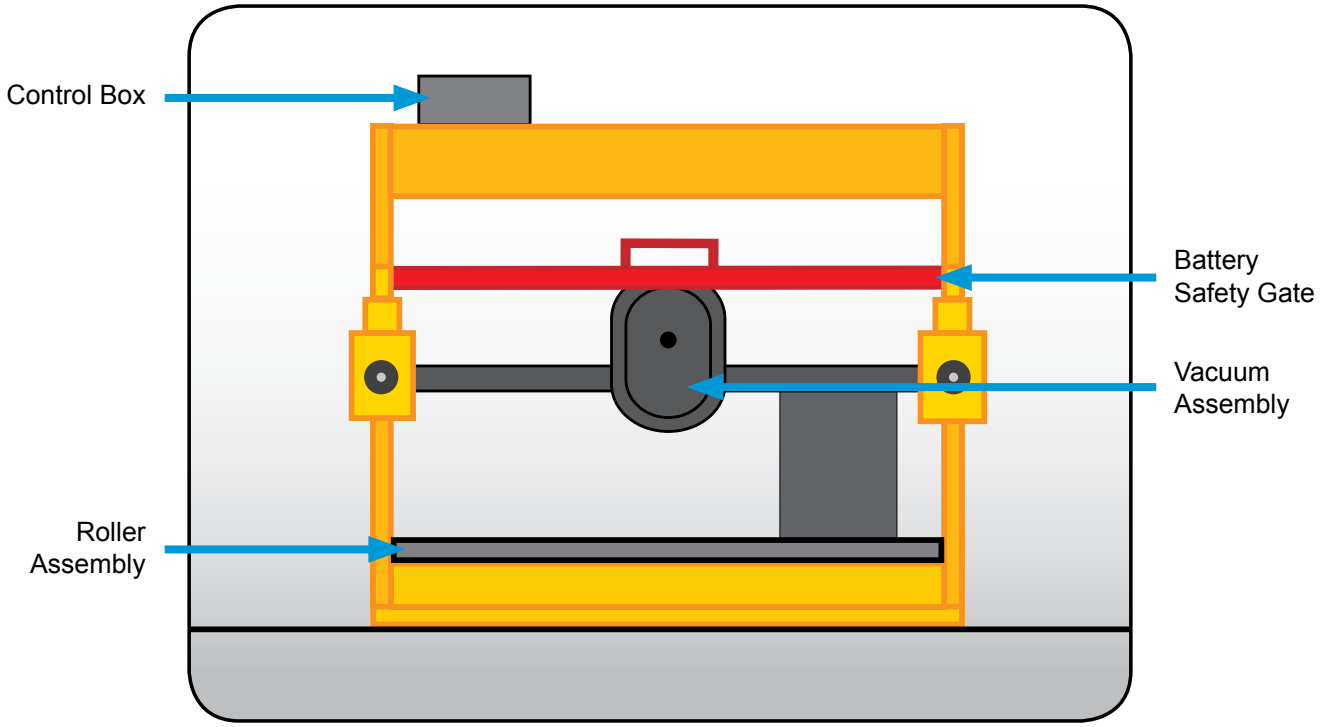
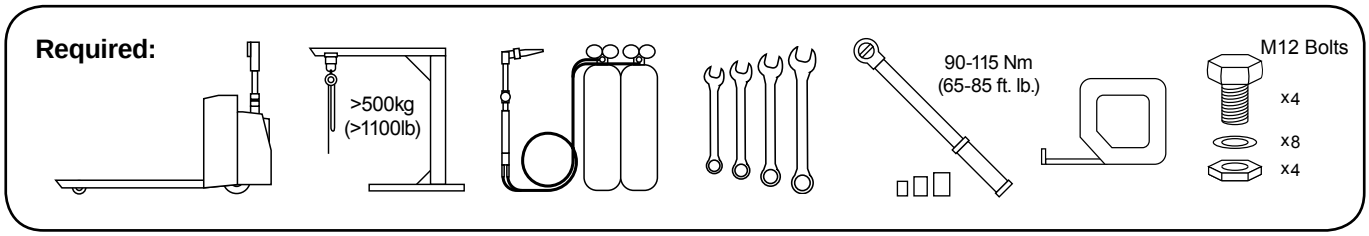
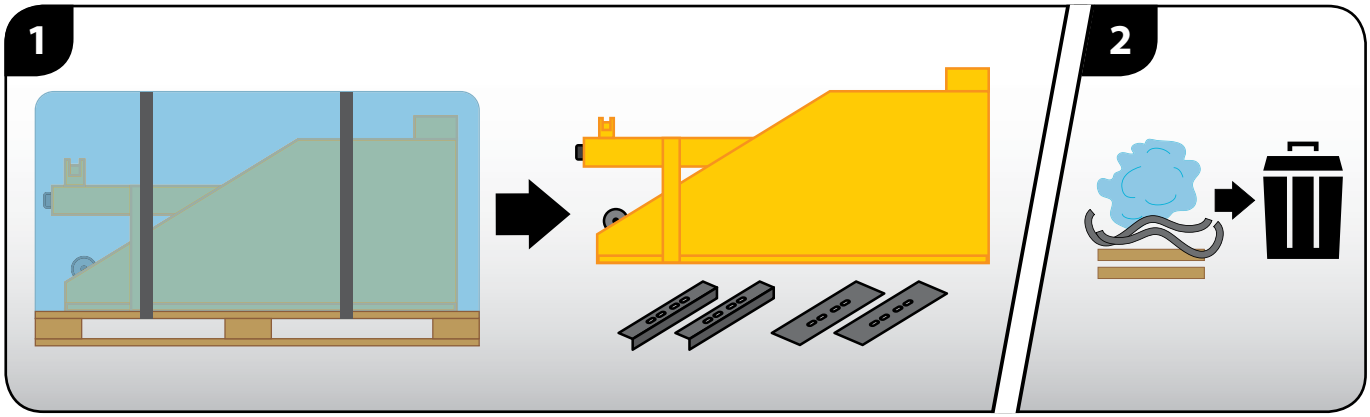


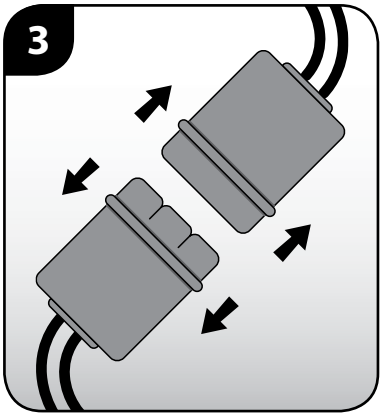
Figure 1-1. Attach-A-Puller

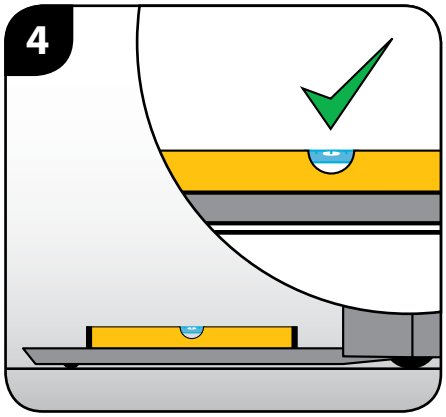
2.0 - Installation

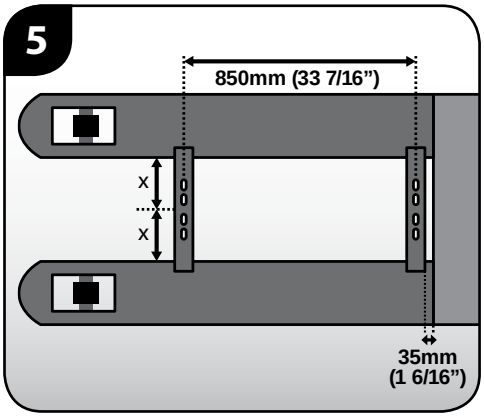


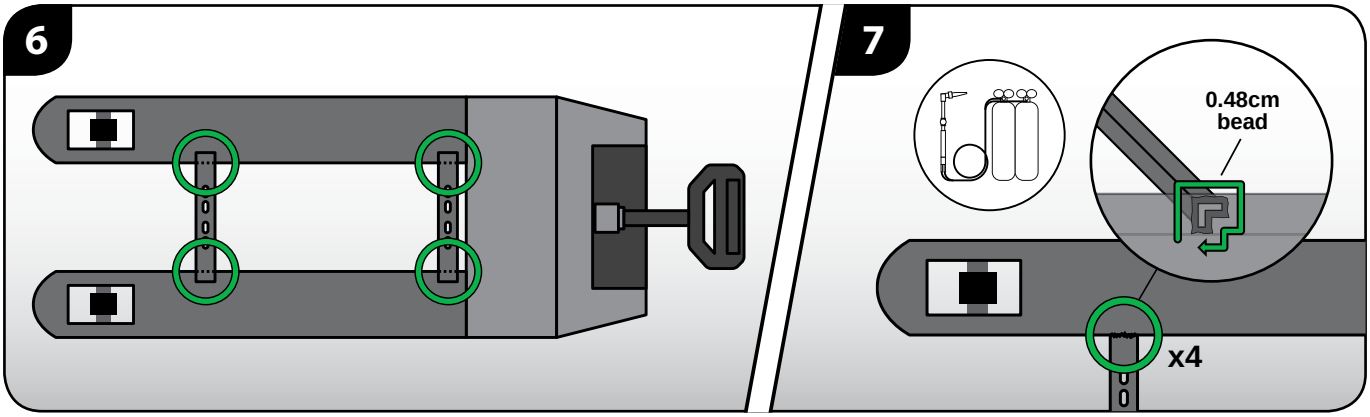
WARNING: The installation involves welding. Cover the pallet truck's battery to prevent sparks from contacting battery.



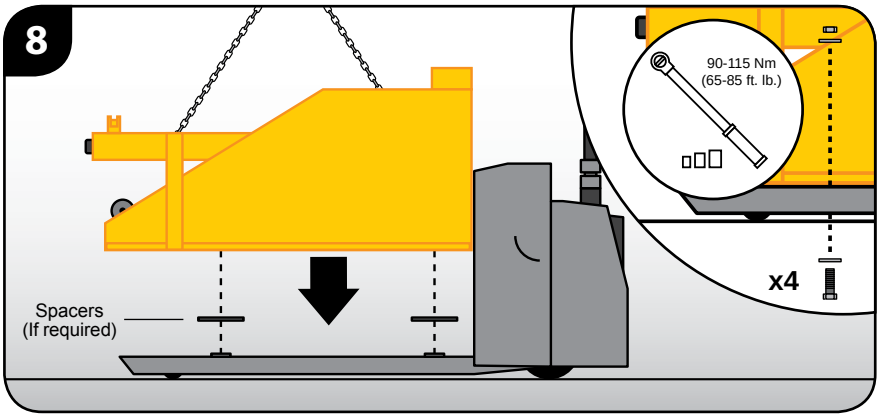


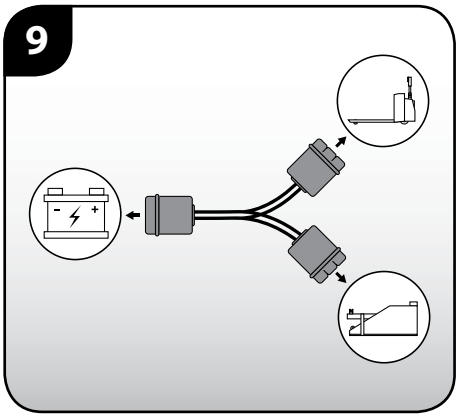


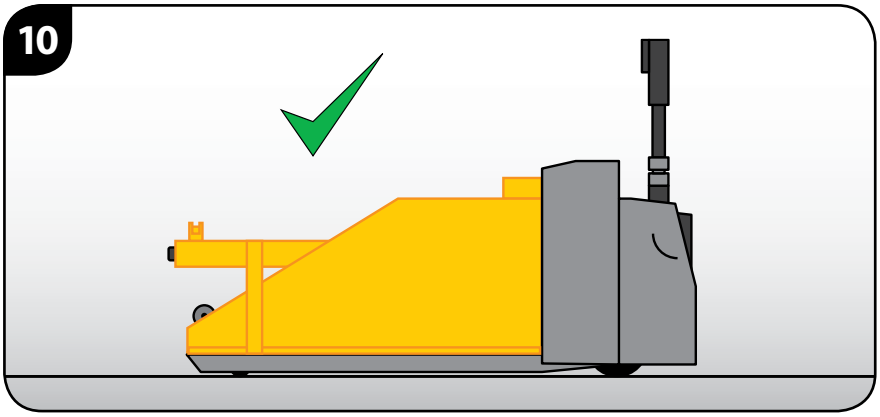




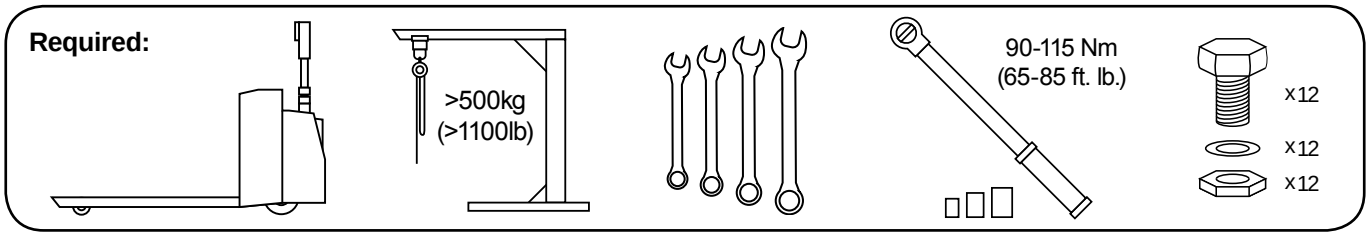
2.0 - Installation

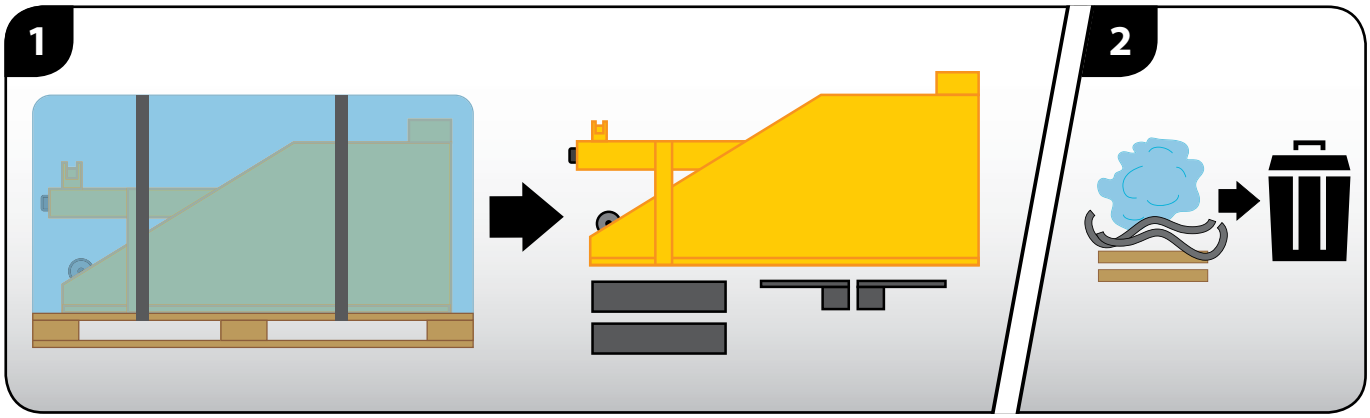


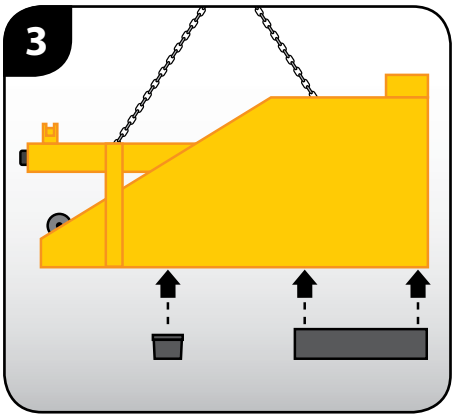


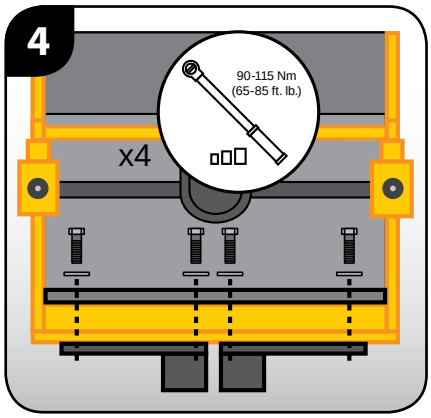


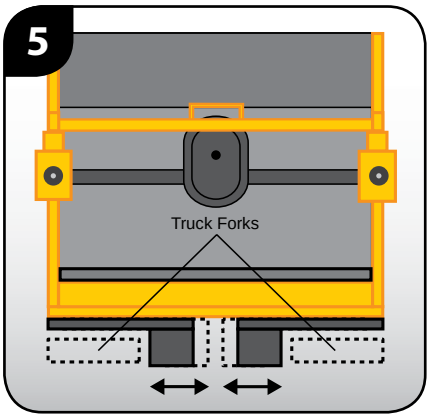
2.0 - Installation (With Fork Pockets)

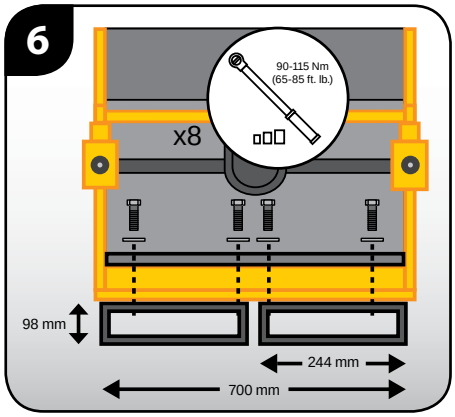


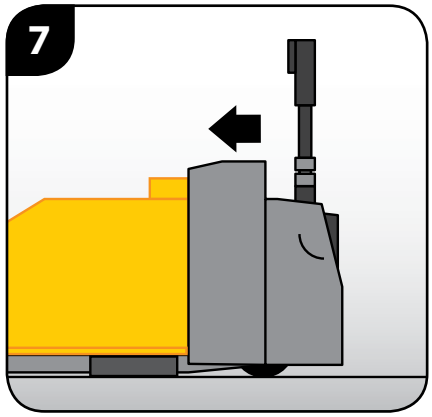


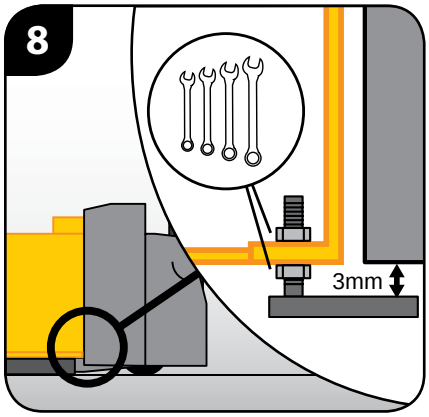




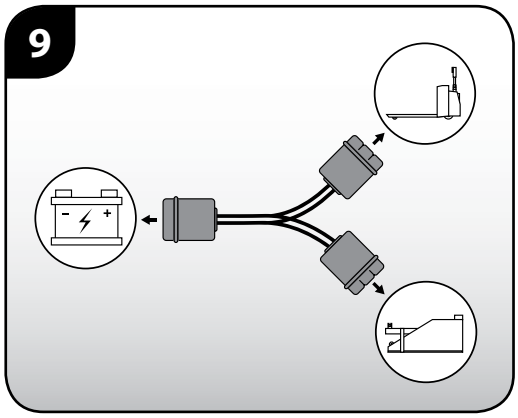


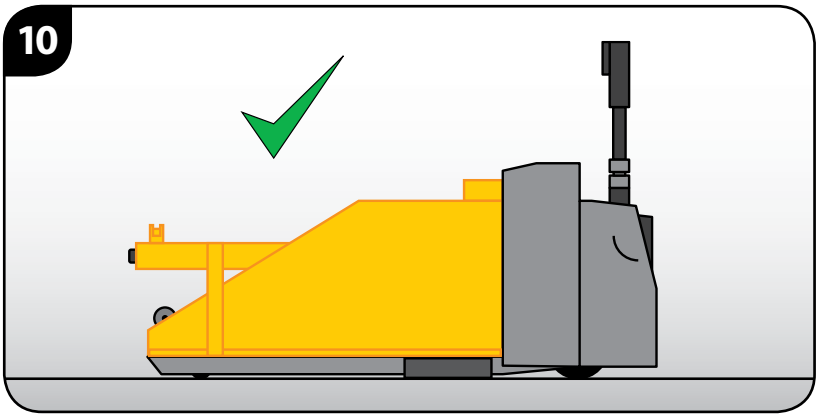






2.0 - Installation (With Fork Pockets)





3.0 - Operation

WARNING: Before using the Battery Transfer Cart, ensure that all personnel and obstacles are clear of the operating area.

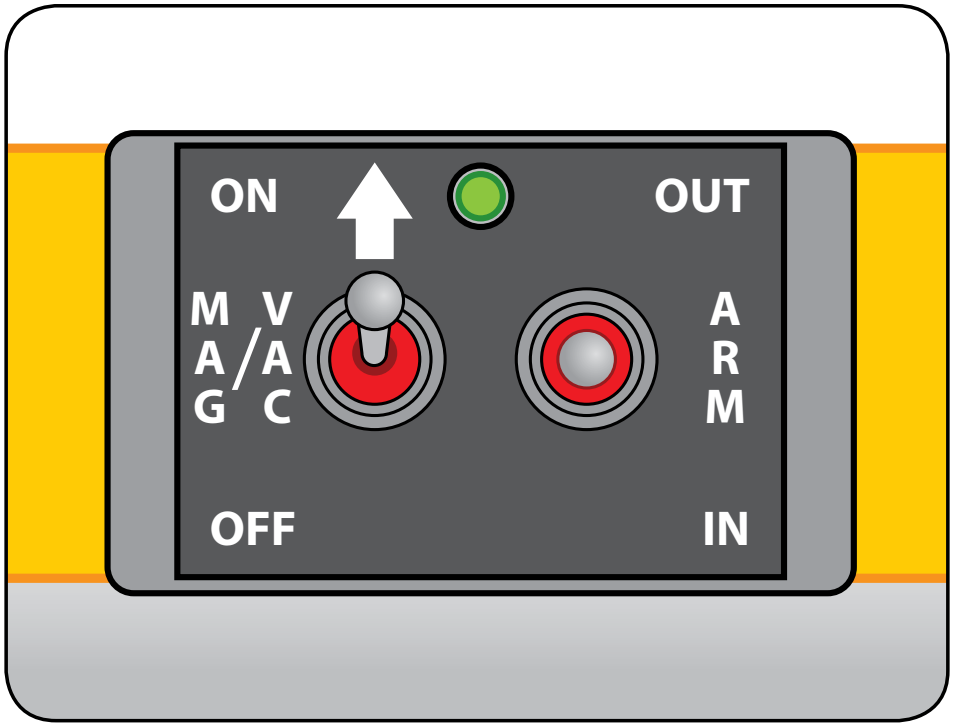


Figure 3-1. Control Box

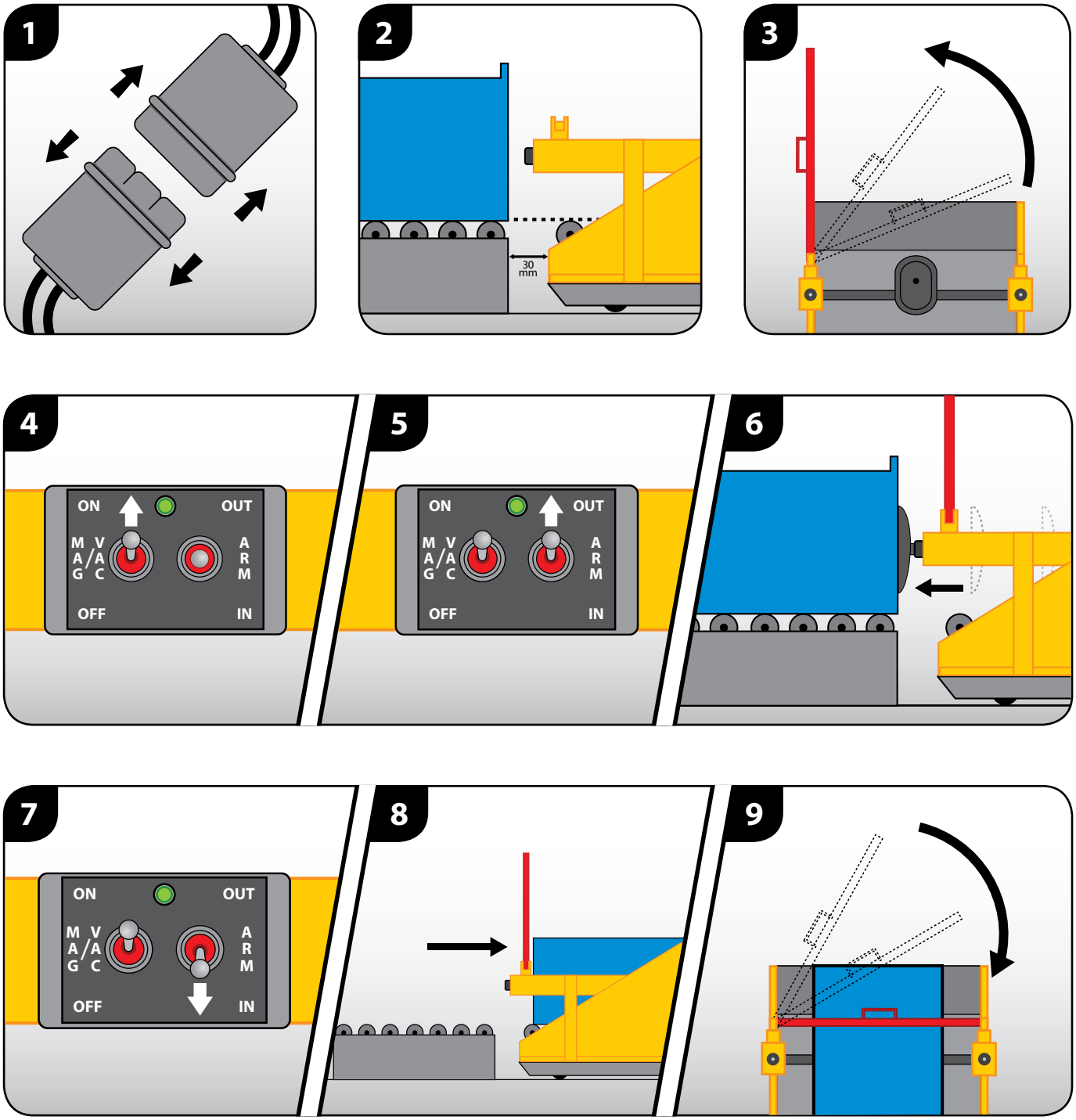
3.0 - Operation

Preparation

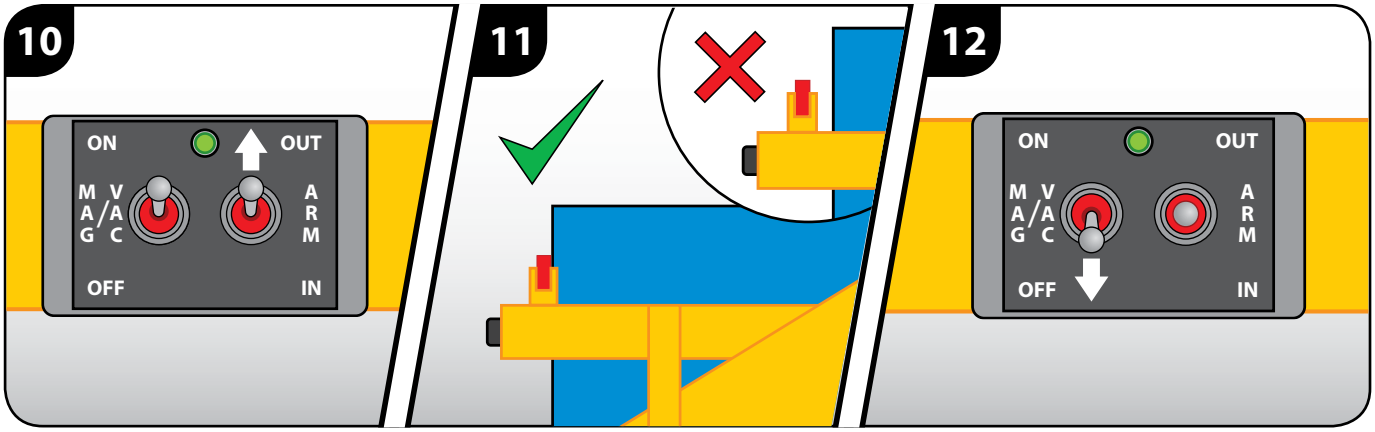
Before starting daily operations, complete an inspection and fill out Operator's Daily Checklist (see section 4).

WARNING: If the suction cup is attached to the battery and the roller platform is not aligned properly, remove the suction cup from the battery case before attempting to adjust the level of the roller platform.
You will damage the suction cup if it is attached to the battery when you raise or lower the ABP.

Removing Battery

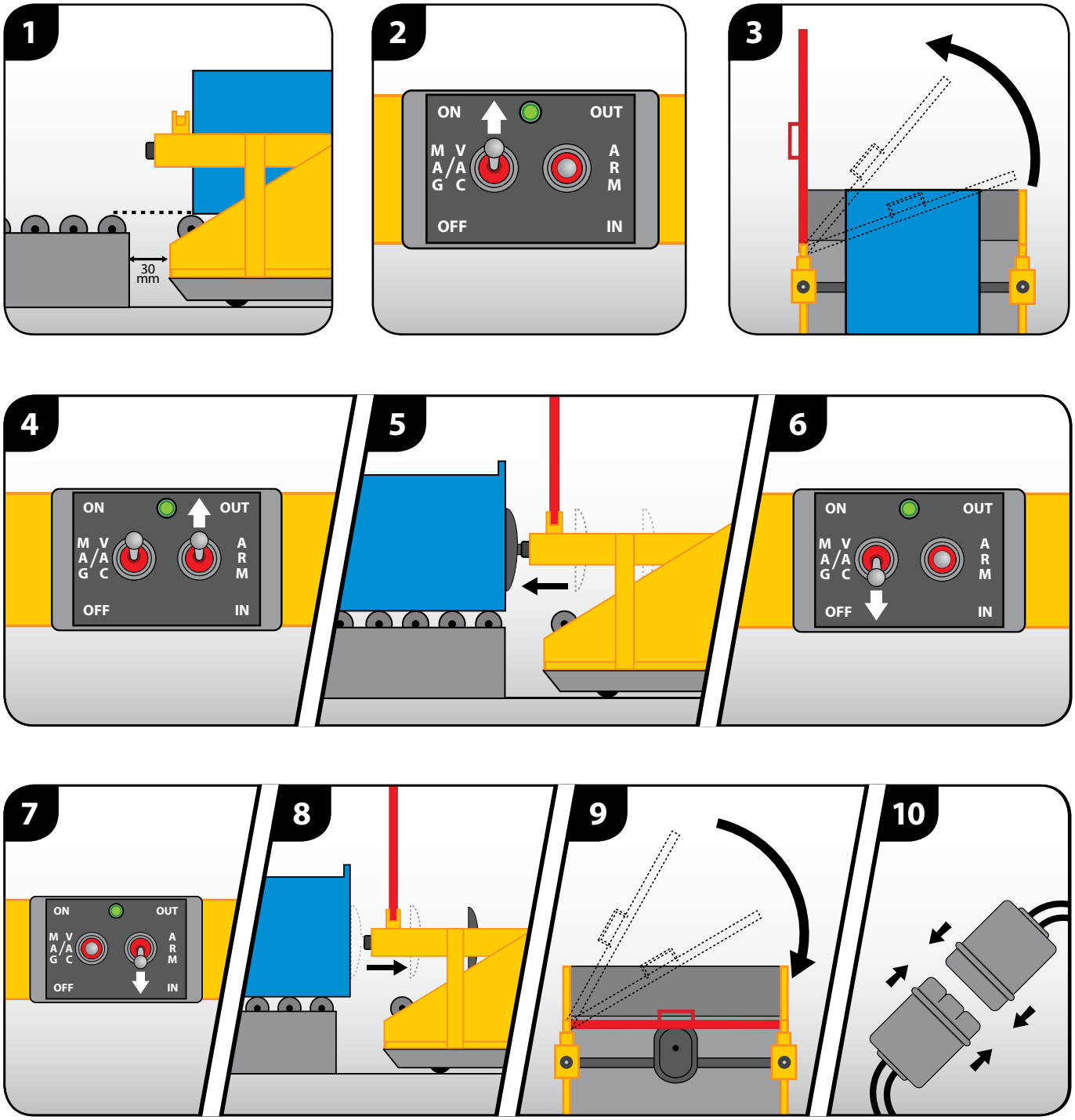


3.0 - Operation



3.0 - Operation

Inserting Battery



4.0 - Maintenance

This unit must be operated only by properly trained personnel wearing appropriate personal protective equipment and following all applicable safety rules.

WARNING: Failure to maintain the equipment will void the warranty

Operator's Daily Checklist

Operator's Daily Checklist														
Items to be checked	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
	OK	Maintenance Review Required?	OK	Maintenance Review Required?	OK	Maintenance Review Required?	OK	Maintenance Review Required?	OK	Maintenance Review Required?	OK	Maintenance Review Required?	OK	Maintenance Review Required?
Battery safety gate operating freely?														
Damage Is the vacuum cup damaged?														
Chains Check the drive chain tension (fig 4.1). refer to adjust chain tension section														
Check the extension arm chain tension. refer to adjust chain tension section														
Slide pads Check the condition of the slide pads, if worn, replace														
Carriage Rollers Are carriage rollers straight? Do rollers spin freely?														
Movement Check for movement or noise from hardware														
Oil Level Check the hydraulic oil level and if necessary refill. Check pump and hoses for leaks														
Date			Operator's initials						Supervisor's acceptance					

Comments (items needing repair or adjustment):
Caution: If the equipment is found to be in need of repair or in any way unsafe, or if the equipment becomes unsafe during operation, the matter must be reported to the designated authority. Do not operate equipment until it has been restored to a safe operating condition. Do not make adjustments or repairs unless specifically authorized.

4.0 - Maintenance

Maintenance Checklist

MTC Model ABP Battery Transfer Cart Inspection and Maintenance Checklist	
Company	Model
Date	Serial No.
Inspector's Name	Date of Last Inspection
Inspector's Signature	Frequency of Inspection (Hours of operation or due date, whichever occurs first.)

Periodic Maintenance Tasks	Daily	Weekly	Monthly	Semi-annually	Annually	Inspector's Initials
Inspect carriage rollers, remove debris, and clean.	●					
Oil all chains with light chain lubricant.		●				
Change oil in the hydraulic reservoir in front of the component tray refer to section 4.0				●		

Comments (items needing repair or adjustment):

Cleared for continued operation (circle one)? Yes No Initial_____

Caution: If the equipment is found to be in need of repair or in any way unsafe, or if the equipment becomes unsafe during operation, the matter must be reported to the designated authority. Do not operate equipment until it has been restored to a safe operating condition. Do not make adjustments or repairs unless specifically authorized.

4.0 - Maintenance

WARNING: The use of any other oil without written authorization from Philadelphia Scientific will void the warranty.

Changing the Hydraulic Reservoir Oil

These oils or their equivalents may be used in all hydraulic systems:

- Mobil DTE 24 — up to 5°C / 40°F
- Mobil DTE 25 — 40°F to 32°C / 90°F
- Mobil DTE 26 — Above 32°C / 90°F

WARNING: For most industrial applications, an operating temperature of 66°C / 150°F is considered maximum. At higher temperatures, difficulty is often experienced in maintaining reliable and consistent hydraulic control, component service life is reduced, hydraulic fluid deteriorates, and a potential danger to operating personnel is created. Using your company's best method (thermometer, etc.), check the temperature of the side of the hydraulic reservoir. If the temperature is above 66°C / 150°F, the system has a problem that must be investigated. Refer to the Troubleshooting Guidelines for further information.

a. Disconnect the battery cable from the ABP.

b. Remove the filler/breather cap (see 4.1) from the hydraulic reservoir.

c. Using a suitable pump, pump the oil out of the reservoir. Dispose of the oil in accordance with environmental regulations for your area.

d. Fill the hydraulic reservoir with one of the oils listed on the previous page to 12.5mm / 1/2 inch below the filler/breather hole.

e. Put the filler/breather cap back onto the reservoir and reconnect the battery cable to the ABP.

Adjusting the Drive Chain

a. Disconnect the battery cable from the ABP.

b. At the center point of the chain, press the opposing sides of the chain together. Each side of the chain should not move inward more than 1.6mm / 1/16 of an inch. (See fig 4.1).

c. If the above measurement is greater than specified, begin the adjustment procedure by loosening the motor mounting bolts that hold the hydraulic motor in place.

d. Loosen the locking nut and adjust the chain tension until the specified deviation is obtained.

e. Tighten the locking nut and the motor mounting bolts and reconnect the battery cable to the ABP.

Adjusting the Extension Arm Chain

a. Disconnect the battery cable from the ABP.

b. At the center point of the bottom side, the chain should be at least an inch from the mechanical extension arm. (See fig 4.2).

c. If the chain needs to be tightened, loosen the locking nut and turn the adjusting nut as required.

d. Once the specified condition has been achieved, tighten the locking nut and reconnect the battery cable to the ABP.

4.0 - Maintenance

Adjusting the Hydraulic Pressure

a. Remove the plug from the gauge port on top of the hydraulic reservoir. (See fig. 4.1). Install a 3000-psi gauge with an SAE-4 threaded adapter into the gauge port. To keep the gauge port from leaking, put an O-ring or similar fitting on the gauge before inserting it into the port.

b. Using the IN/OUT switch, move the vacuum cup to the end of the carriage. Continue holding the IN/OUT switch to the OUT position while checking and/or adjusting the pressure.

c. While holding the IN/OUT switch to the OUT position, check the pressure gauge. The gauge should read 96.2 bar / 1400 psi for a 12 Volt ABP and 48.26 bar / 700 psi for a 24 Volt ABP. If the gauge does not read the correct bar / psi for your model, the pressure needs to be adjusted.

d. To begin the adjustment procedure, unscrew the large cap screw that covers the pressure relief valve screw. Be sure to protect the small O-ring that is located between the cap screw and the pressure relief valve screw. This ring keeps the pressure relief valve from leaking during normal operation.

e. Using a screwdriver, turn the pressure relief valve screw clockwise to increase the pressure or anticlockwise to decrease the pressure.

f. Once the pressure has been adjusted to the correct bar / psi, release the IN/OUT switch, remove the gauge from the gauge port, replace the gauge port plug, and screw the cap screw back on top of the pressure relief valve screw.

Slide Pad Replacement

a. Disconnect the battery cable from the ABP.

b. Loosen the lock nut and the adjusting nut on the adjustable chain tensioner anchor. (See fig 4.2).

c. Remove the four parts of slide pad assembly from the push plate by removing the push plate attaching hardware (2 places).

d. Remove the two nuts and the four parts of the slide pad assembly.

e. Install the four parts of the slide pads and secure in place with the two nuts.

f. Adjust chain as explained in Adjusting the Extension Arm Chain.

g. Reconnect the battery cable to the ABP.

4.0 - Maintenance

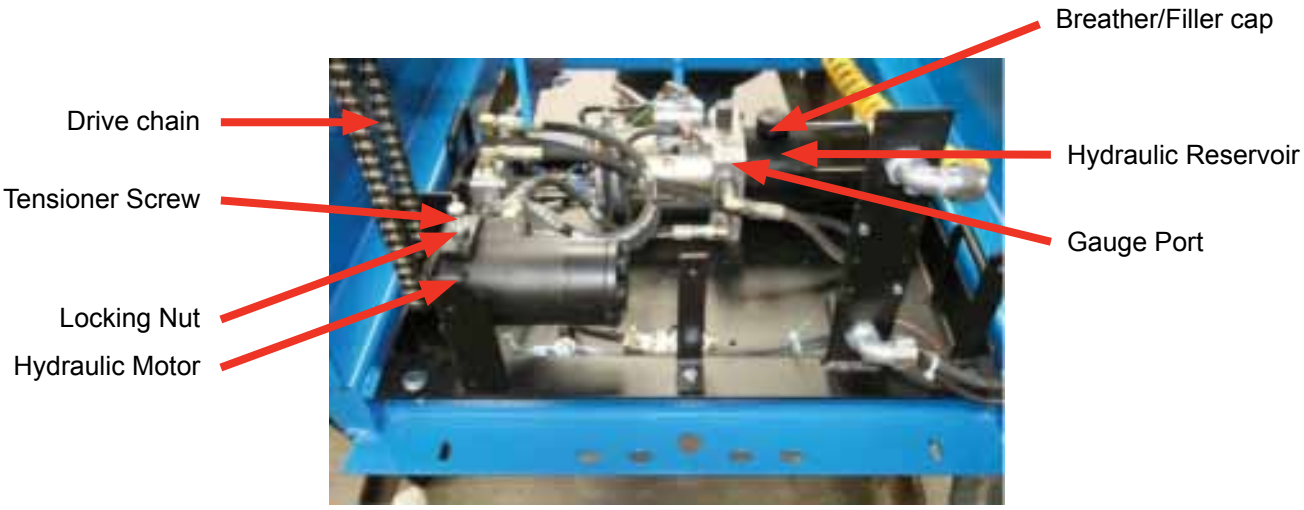


Figure 4–1

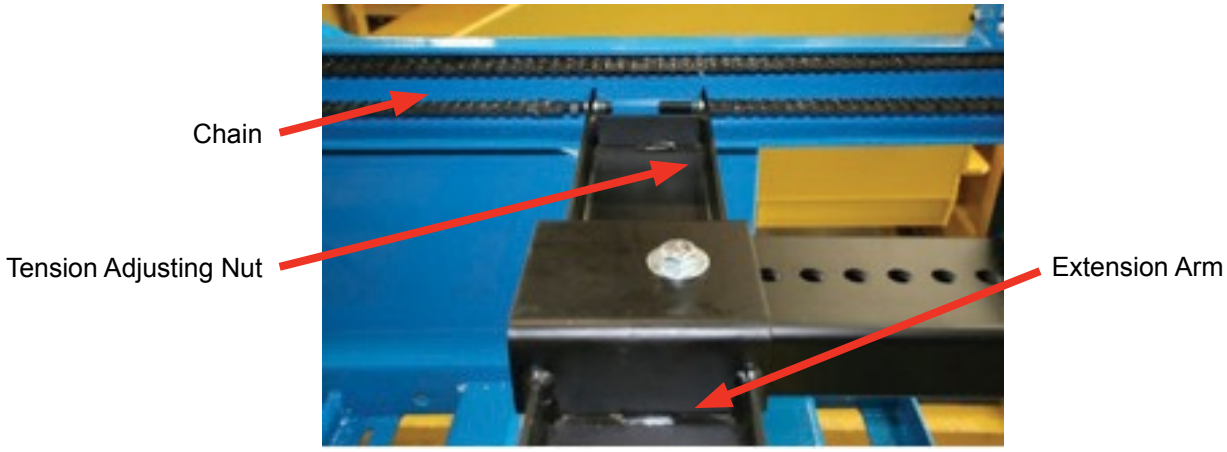


Figure 4–2

5.0 - Troubleshooting

To identify problems start with the Troubleshooting Guidelines. If problem does not fit any of the scenarios below, call Philadelphia Scientifics service department on: **+44 (0) 1204 467777**

(The above number is manned from 09:00 to 17:00 UK time.)

For out of hours advise please phone MTC on: **+1 800 433 3110** or **+1254 298 2900**

Alternatively email **support@ps-europe.net**

Troubleshooting Guidelines

Malfunction	Possible Cause	Solution
Pump Noise	Pump noise and crackle is most often caused by air entering the system.	Tightening the suction fittings usually eliminates this problem.
Spongy operation or jerky motion of the push plate slide assembly	Low hydraulic oil level	Fill hydraulic reservoir to 12.5mm / 1/2” below the filler/breather hole
Hydraulic Reservoir Excessively Hot to the Touch	Low hydraulic oil level	Fill hydraulic reservoir to 12.5mm / 1/2” below the filler/breather hole
	Hydraulic oil not of approved type	Drain reservoir and refill
	Pressure too low or pressure relief valve inoperative	Clean and check setting; adjust pressure if necessary
Hydraulic Pump Fails to Prime		Vent the pump momentarily by discharging to a container at atmospheric pressure to establish fluid flow.
Suction cup fails to attach to battery	Suction cup leaking	Replace suction cup.

6.0 - Parts

Part Numbers

The drawings located in the appendix at the back of this manual contain the lists of replaceable parts available for this unit.

How to Place and Order

A stock of spare parts is held by Philadelphia Scientific Ltd in the UK and can be dispatched within 24 hours of receipt of order.

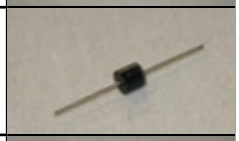
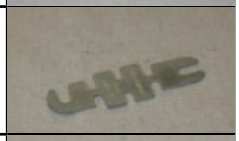
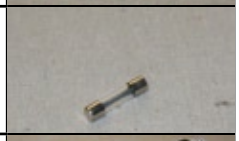
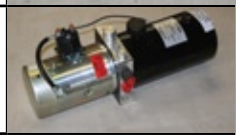
To order parts please visit **www.globalbatteryshop.com**

You will require the part reference as shown on the diagrams at the end of this manual.

If you can not find the part you require on the website or for advise on part references please contact Philadelphia Scientific Ltd on: **+44 (0) 1204 467777** or alternatively email **support@ps-europe.net**

Recommended Spare Parts

The following spare parts are the most commonly used, for the least amount of down time it is recommended that they are kept in stock.

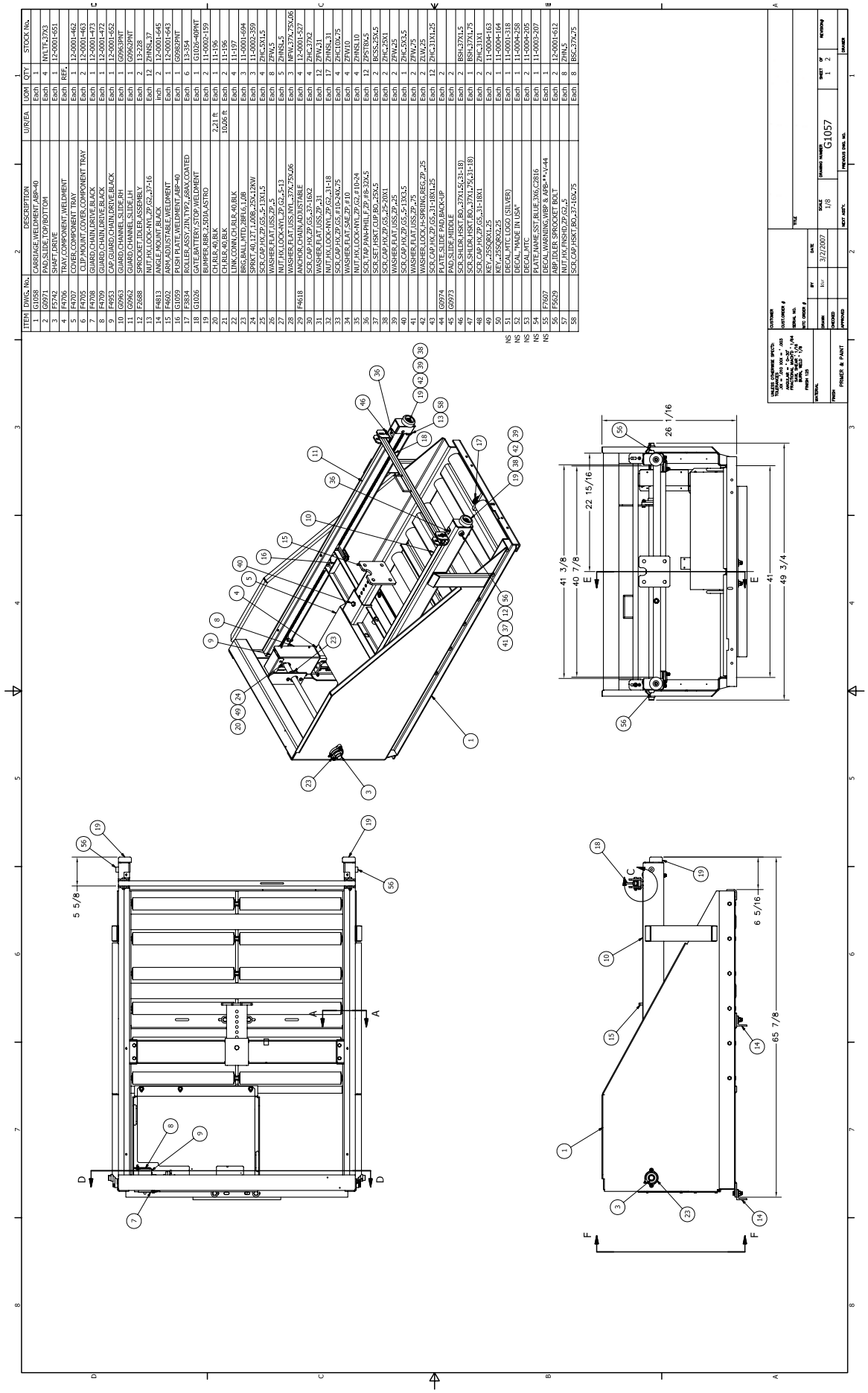
Recommended Spare Parts for Vacuum ABP					
Description	**12-V**	**24-V**	**Qty.**	**Part Number**	**Image**
Bumper, Rubber	●	●	2	11-0002-159	
Chain Anchor (#40 Chain)	●	●	2	12-0001-517	
Diode	●	●	1	10-0001-663	
Fuse Link, 125 Amp		●	1	10-0001-833	
Fuse Link, 250 Amp	●		1	10-0002-926	
Fuse, 14 Amp	●	●	1	10-0002-028	
Hydraulic Pump/Motor Assembly	●		1	9-0002-670	

6.0 - Parts

Recommended Spare Parts

Slide Pad, Middle	●	●	2	12-0001-788	
Slide Pad	●	●	4	G0971	
Solenoid, Starter Motor		●	1	10-0001-609	
Vacuum Inlet Filter	●	●	2	9-0002-079	
Vacuum Cup (254mm / 10” Round) or	●	●	6	11-0004-468	
Vacuum Cup (178mm x 305mm / 7” X 12”) or	●	●	6	11-0004-469	
Vacuum Cup (279mm x 356mm / 11” X 14”)	●	●	6	11-0004-467	
Valve, Air		●	1	9-0002-343	
Valve, Air	●		1	9-0001-968	

Appendix A - Drawings



ITEM	DWG. No.	DESCRIPTION	U/R/EA	UOM	QTY	STOCK No.
1	G1058	CARRIAGE,WELDMENT,ABP-40		Each	1	
2	G0971	PAD,SLIDE,TOP/BOTTOM		Each	4	NYLTF-27X3
3	F5742	SHAFT,DRIVE		Each	1	12-0001-651
4	F4706	TRAY,COMPONENT,WELDMENT		Each	REF.	
5	F4707	COVER,COMPONENT TRAY		Each	1	12-0001-462
6	F4708	CLIP,MOUNT,COVER,COMPONENT TRAY		Each	2	12-0001-463
7	F4709	GUARD,CHAIN,DRIVE,BLACK		Each	1	12-0001-472
8	F4710	GUARD,CHAIN,DRIVE,BLACK		Each	1	12-0001-472
9	F4953	CAP,GUARD,CHAIN,DRIVE,BLACK		Each	1	12-0001-652
10	G0963	GUARD,CHANNEL,SLIDE,RH		Each	1	G0963PNT
11	G0962	GUARD,CHANNEL,SLIDE,LH		Each	1	G0962PNT
12	F2688	SPROCKET,IDLER,ASSEMBLY		Each	2	13-228
13		NUT-HX,LOCK-NYL,ZP,GR2,.37-16		Each	12	ZHNSL.37
14	F4813	ANGLE,MOUNT,BLACK		Inch	2	12-0001-645
15	F4602	ARM,ADJUSTABLE,WELDMENT		Each	1	12-0001-643
16	G1059	PUSH PLATE,WELDMENT,ABP-40		Each	1	G0980PNT
17	F3934	ROLLER,ASSY,2IN,TYP2,60MAX,COATED		Each	6	13-234
18	G1060	ANGLE,SUPPORT,STOP,WELDMENT		Each	1	G1060PNT
19	G1065	BUMPER,RBR,2.50DIA,ASTRO	2.21 ft	Each	1	11-0000-159
20		CH,RLR,40,BLK	10.06 ft	Each	2	11-196
21		CH,RLR,40,BLK		Each	2	11-196
22		LINK,CONN,CH,RLR,40,BLK		Each	4	11-197
23		BRG,BALL,MTD,2BH-6,1.08		Each	3	11-0001-694
24		SPROCT,40,12T,1.008,.25X.12KW		Each	3	11-0002-359
25		SCR,CAP,HX,ZP,GR5,.5-13X1.5		Each	4	ZHC.5X1.5
26		WASHER,FLAT,USS,ZP,.5"		Each	8	ZFW.5
27		NUT-HX,LOCK-NYL,ZP,GR2,.5-13		Each	5	ZHNSL.5
28	F4618	WASHER,FLAT,USS,NYL,#3/8-.75X.06		Each	3	NYFW.37X.75X.06
29		ANGLE,CHAIN,DRIVE,BLACK		Each	4	12-0001-527
30		SCR,CAP,HX,ZP,GR5,.37-16X2		Each	4	ZHC.37X2
31		WASHER,FLAT,USS,ZP,.31		Each	12	ZFW.31
32		NUT,HX,LOCK-NYL,ZP,GR2,.31-18		Each	17	ZHNSL.31
33		SCR,CAP,HX,ZP,GR5,#10-24X.75		Each	4	ZHC10X.75
34		WASHER,FLAT,SAE,ZP,#10		Each	4	ZFW10
35		NUT-HX,LOCK-NYL,ZP,GR2,#10-24		Each	4	ZHNSL10
36		SCR,TAP,PAN-PHIL,F,ZP,.#8-32X.5		Each	12	ZPSTB8X.5
37		SCR,SET,HSKT,CUP,BO,.25X.5		Each	2	BCSS.25X.5
38		SCR,CAP,HX,ZP,GR5,.25-20X1		Each	2	ZHC.25X1
39		WASHER,FLAT,USS,ZP,.25		Each	2	ZFW.25
40		SCR,CAP,HX,ZP,GR5,.5-13X3.5		Each	2	ZHC.5X3.5
41		WASHER,FLAT,USS,ZP,.25		Each	2	ZFW.25
42		WASHER,LOCK,H-SPRING,REG,ZP,.25		Each	2	ZLW.25
43		SCR,CAP,HX,ZP,GR5,.31-18X1.25		Each	12	ZHC.31X1.25
44	G0974	PLATE,SLIDE PAD,BACK-UP		Each	2	
45	G0973	PAD,SLIDE,MIDDLE		Each	2	
46		SCR,SHLDR,HSKT,BO,.37X1.5(.31-18)		Each	2	BSH.37X1.5
47		SCR,SHLDR,HSKT,BO,.37X1.75(.31-18)		Each	1	BSH.37X1.75
48		SCR,CAP,HX,ZP,GR5,.31-18X1		Each	2	ZHC.31X1
49		KEY,.25SQX1.25		Each	2	11-0004-163
50		SCR,CAP,HX,ZP,GR5,.25-20X.5		Each	2	ZHC.25X.5
51		DECAL,MTC LOGO,(SILVER)		Each	1	11-0001-318
52		DECAL,"MADE IN USA"		Each	1	11-0004-258
53		DECAL,MTC		Each	2	11-0004-205
54		PLATE,NAME,SST,BLUE,.3X6,C2816		Each	1	11-0005-207
55	F7607	DECAL,WARNING,WBP & APB-**-V-44		Each	1	
56	F5629	ABP,IDLER,SPROCKET BOLT		Each	2	12-0001-612
57		NUT-HX-FNSHD,ZP,GR2,.5		Each	8	ZHN.5
58		SCR,CAP,HSKT,BO,.37-16X.75		Each	8	BSC.37X.75