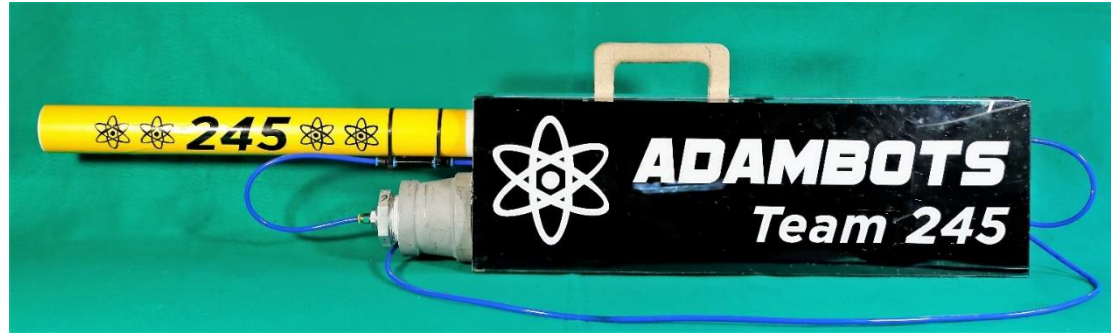


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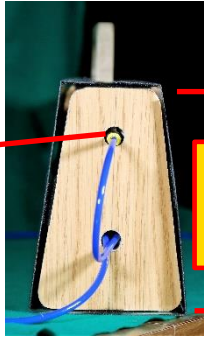
T-Shirt Cannon

- Description
- Parts List
- Pneumatic/Mechanical Schematic/Arrangement
- Assembly Tips
- Operating Instructions



Views of Cannon

Drill hole
to match
Port
Location



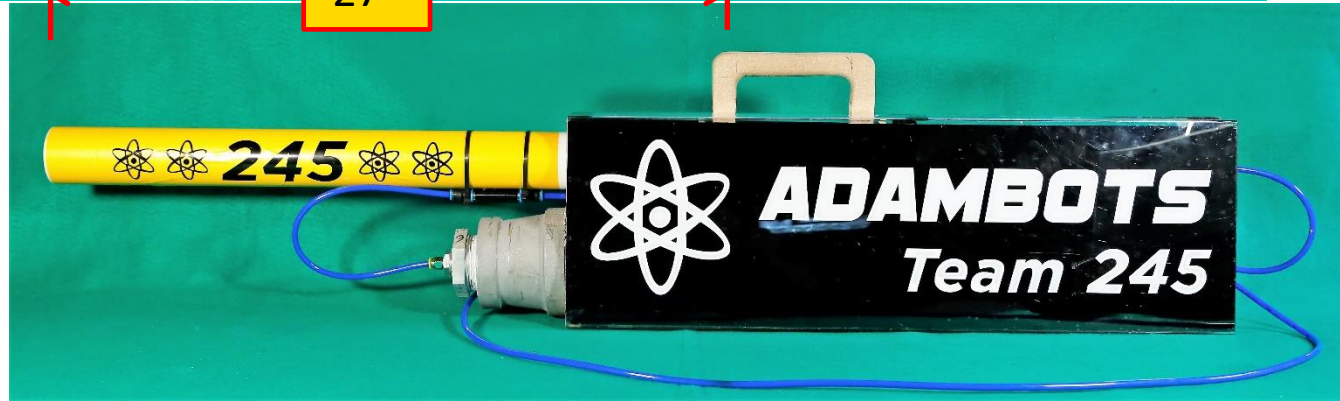
8 1/2"

48 1/2"

245

27"

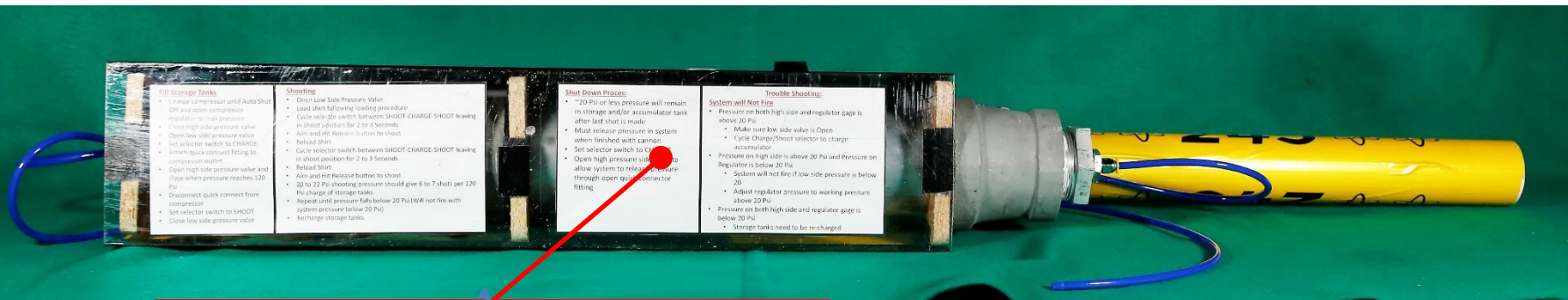
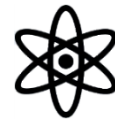
5 3/4"





Views of Cannon

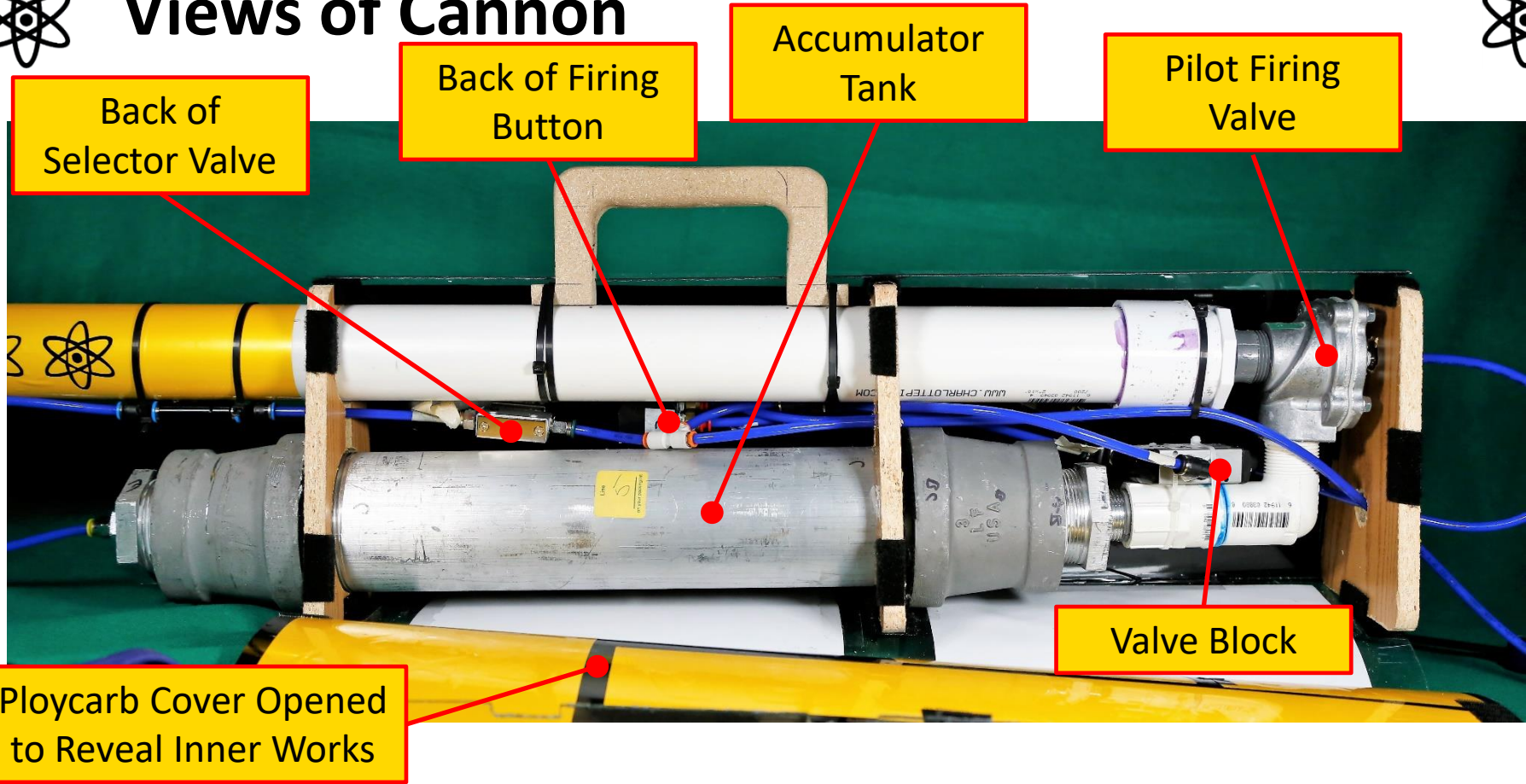
Graphics on inside of polycarb cover to prevent scratches and damage with normal handling



Operating instructions on Bottom



Views of Cannon

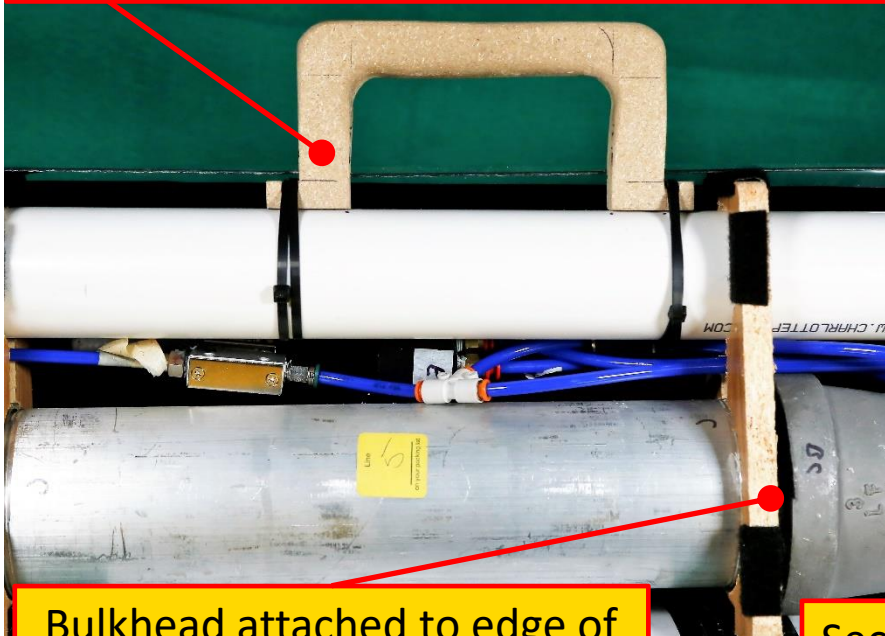




Views of Cannon



Carrying handle at Center of Gravity attached with Wire Ties



Bulkhead attached to edge of tank reducer with Velcro

1/2 " Thick cover support Bulkheads



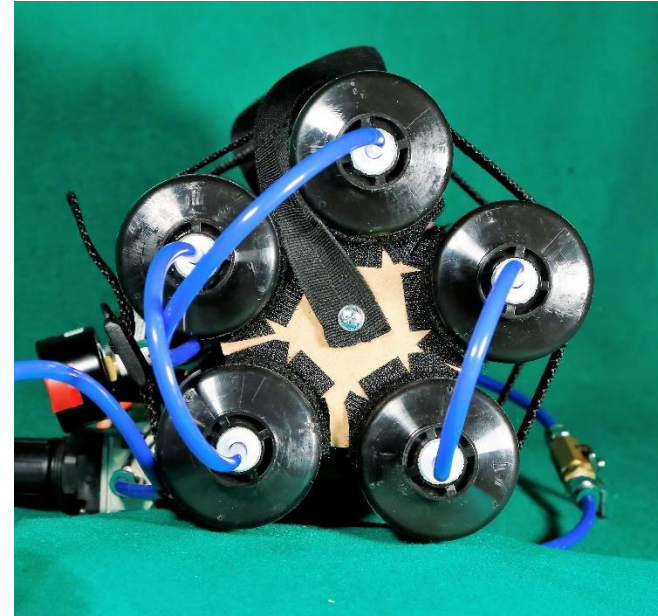
Secure Line from Air Tanks here to Avoid Pulling on Quick Connect



Views of Cannon

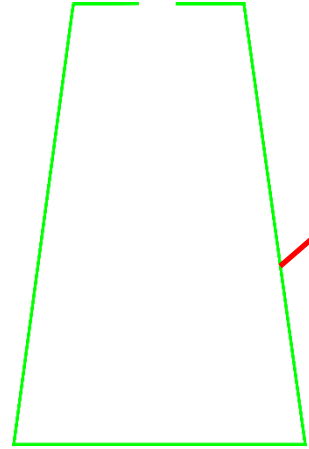
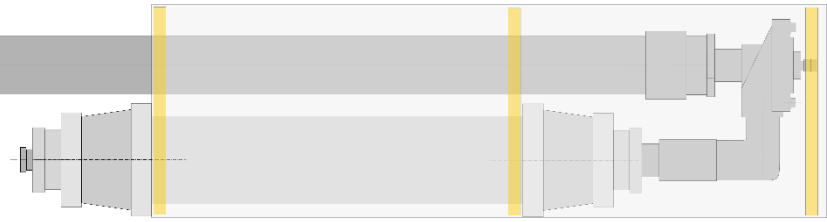
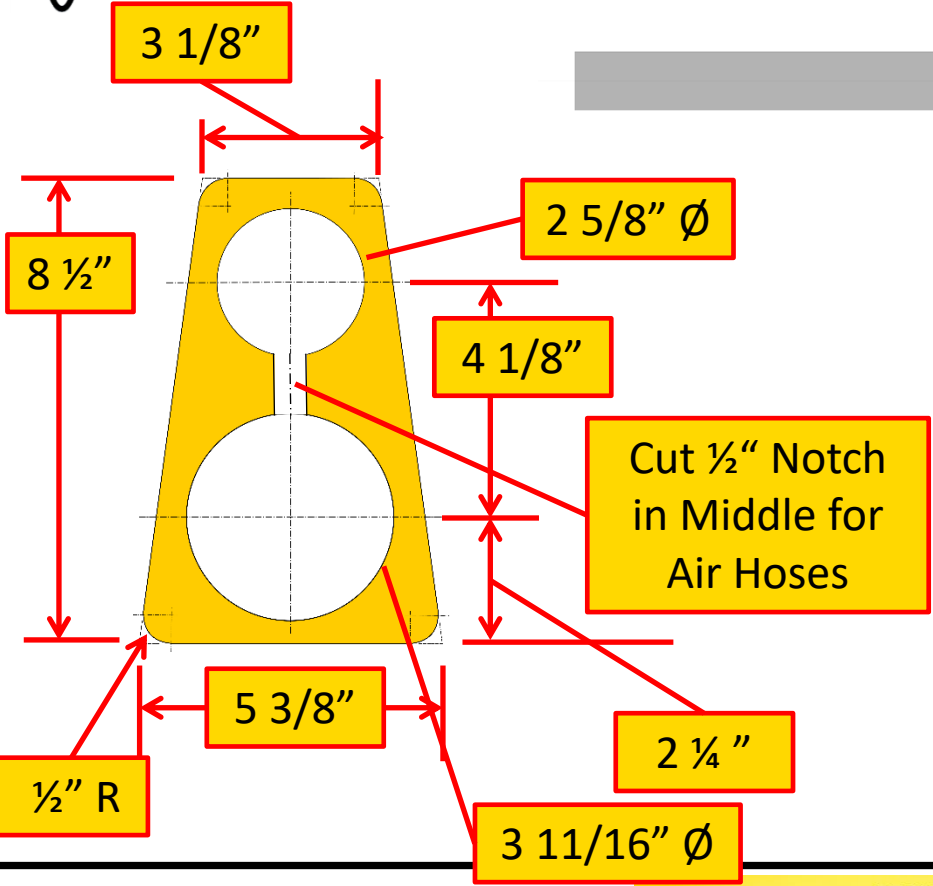


Tank Bundle: Held in place around central armature by Velcro and Nylon Straps with Regulator and Tank Pressure Gauges arranged for mutual visibility





Cannon Cover and Bulkheads



Cover:
 27" x 25.5"
 60/1000 Polycarb.
 Bend to match
 perimeter of
 Bulkhead with
 allowance for
 Velcro (~ 1/8"
 Thick)



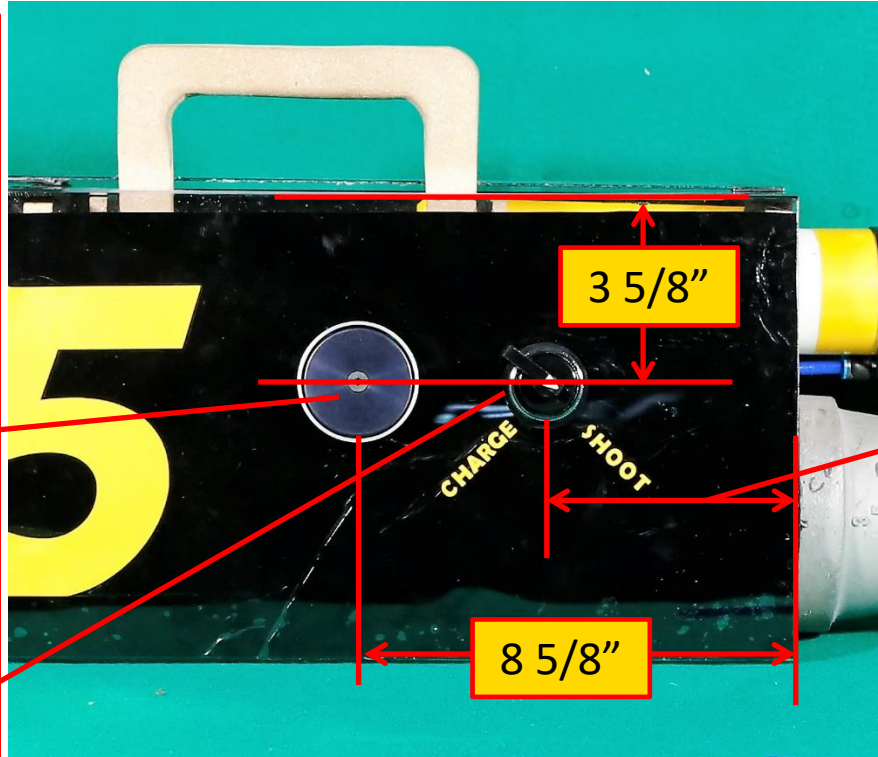
Holes for Selector Switch and Firing Button



Drill $1 \frac{1}{8}$ "
Diameter holes
to mount
selector switch
and fire button

Head of fire
button unscrews
from valve body

Handle for
switch feeds
through hole





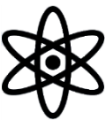
Views of Cannon







Shirt Tamper Pole: 1 1/8" Diameter
Shirts are loaded from the Muzzle



Parts List







Fittings

Item	#	Photo	Description	Source	P/N
A	1		Quick Connect to Compressor	McMaster Carr	6534K46
B	1		1/4" NPT Connector	McMaster Carr	4429K111
C	1		1/4" NPT to 1/4" Push In	Andy Mark	am-2010
D	12		1/8" NPT to 1/8" Push In	Andy Mark	am-2011

Parts List





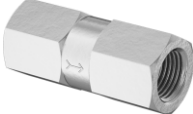
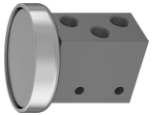
Fittings

Item	#	Photo	Description	Source	P/N
E	2		1/8" NPT Connector	McMaster Carr	50785K91
F	3		1/8" NPT to 1/4" Push In Elbow	Andy Mark	am-3871
G	2		"T" 1/4" Push in to 1/8" NPT	McMaster Carr	7699N52
H	2		1/4" Push In "Y"	Andy Mark	am-2184

Parts List



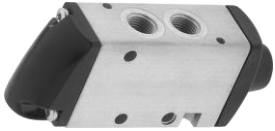


Valves

Item	#	Photo	Description	Source	P/N
I	2		Lever Operated Ball Valve	McMaster Carr	4112T12
J	1		125 Psi Pressure Relief Valve	Andy Mark	am-3871
K	1		1/8" NPT Check Valve	McMaster Carr	7699N52
L	2		Air Control Firing Valve	McMaster Carr	6464K35

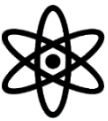
Parts List







Valves

Item	#	Photo	Description	Source	P/N
M	1		Air Directional Control Valve	McMaster Carr	6124K403
N	1		Air Control Valve	Grainger	3NB14
O	1		Remote Pilot Valve	Grainger	5LU49 (2 Options with Same P/N)

Parts List







Gauges, Tanks, Air Hoses

Item	#	Photo	Description	Source	P/N
P	1		Pressure Gauge	McMaster Carr	3847K71
Q	1		Pressure Regulator	Grainger	36JN40
R	5		120 Psi Air Tanks	Andy Mark	am-2649
S			$\frac{1}{4}$ " Polyurethane Tubing	Andy Mark	am-2137

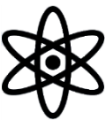
Parts List







Aluminum Accumulator

Item	#	Photo	Description	Source	P/N
T	1		3 x 16" Pipe	McMaster Carr	5038K73
U	2		3" to 2" Reducer	McMaster Carr	44705K489
V	1		2" to 1" Adapter	McMaster Carr	44705K287
W	1		2" to 1/2" Adapter	McMaster Carr	44705K625

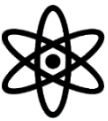
Parts List







Aluminum Accumulator, and PVC Parts

Item	#	Photo	Description	Source	P/N
X	1		1/2" to 1/8" Adapter	McMaster Carr	44705K439
Y	2		1" NPT Nipple	McMaster Carr	44665K221
Z	1		1" FPT to 1" PVC Elbow	Ace Hardware	#44901
AA	1		2" Pipe to 1" FPT Bushing	Ace Hardware	#48214

Parts List



PVC Parts

Item	#	Photo	Description	Source	P/N
AB	1		1" Slip to 1" FPT Connector	Ace Hardware	#43537
AC	1		2" PVC Repair Coupling	Home Depot	#PVC001300800HD
AD	1		2" PVC Sch 40 Pipe 42" Long	Anywhere	
AE	1		1" PVC Sch 40 Pipe 4" Long	Anywhere	



Parts List

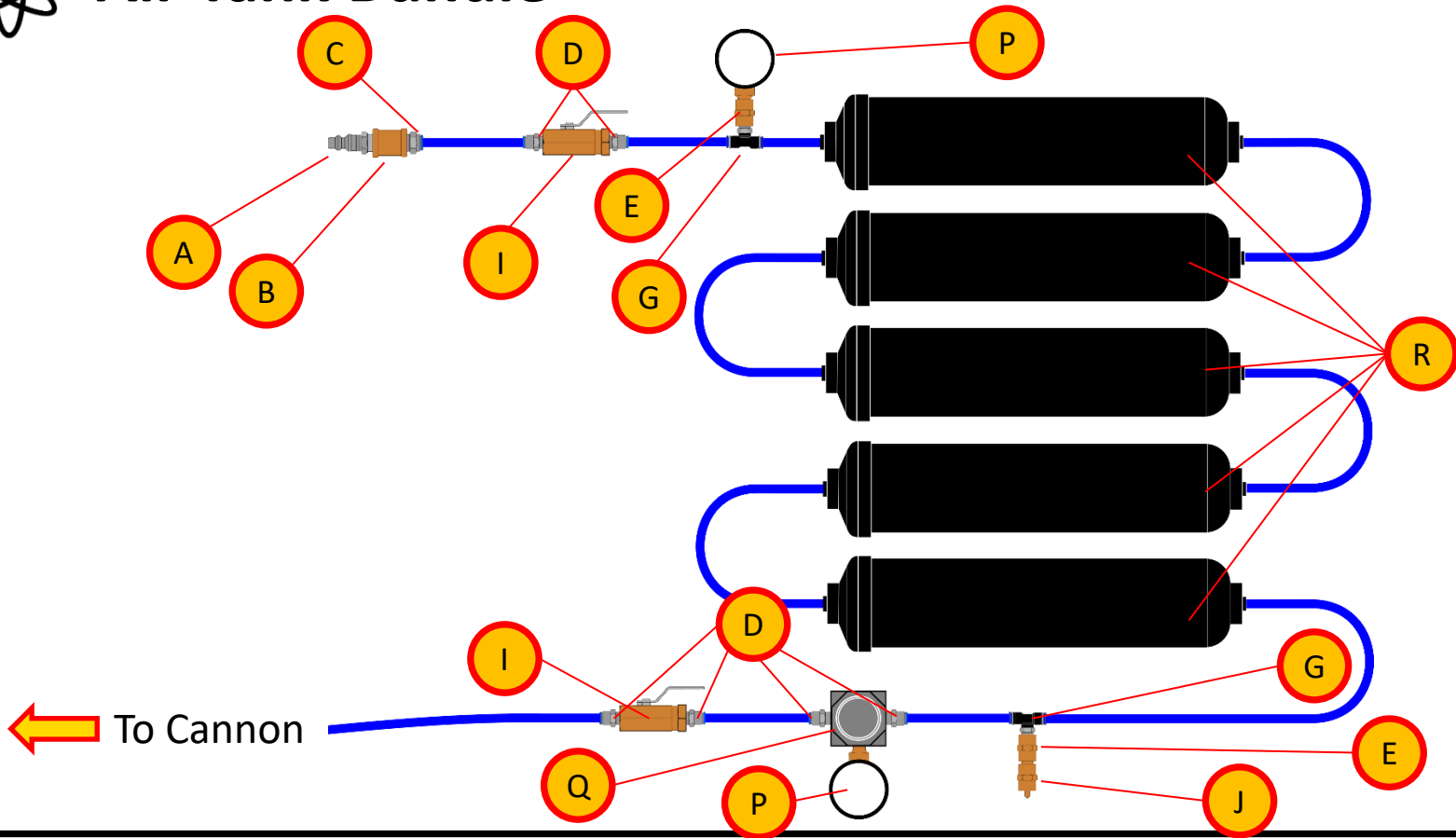


Misc Parts

Item	#	Photo	Description	Source	P/N
AF	1		60/1000" Polycarb Sheet	Anywhere	Need 28" x 26" Sheet
AG	1		½" Thick Particle Board	Anywhere	Enough for 3 6"x9" Pieces
AH	1		Self Adhesive Hook and Look Velcro	Anywhere	Approx 45" Length

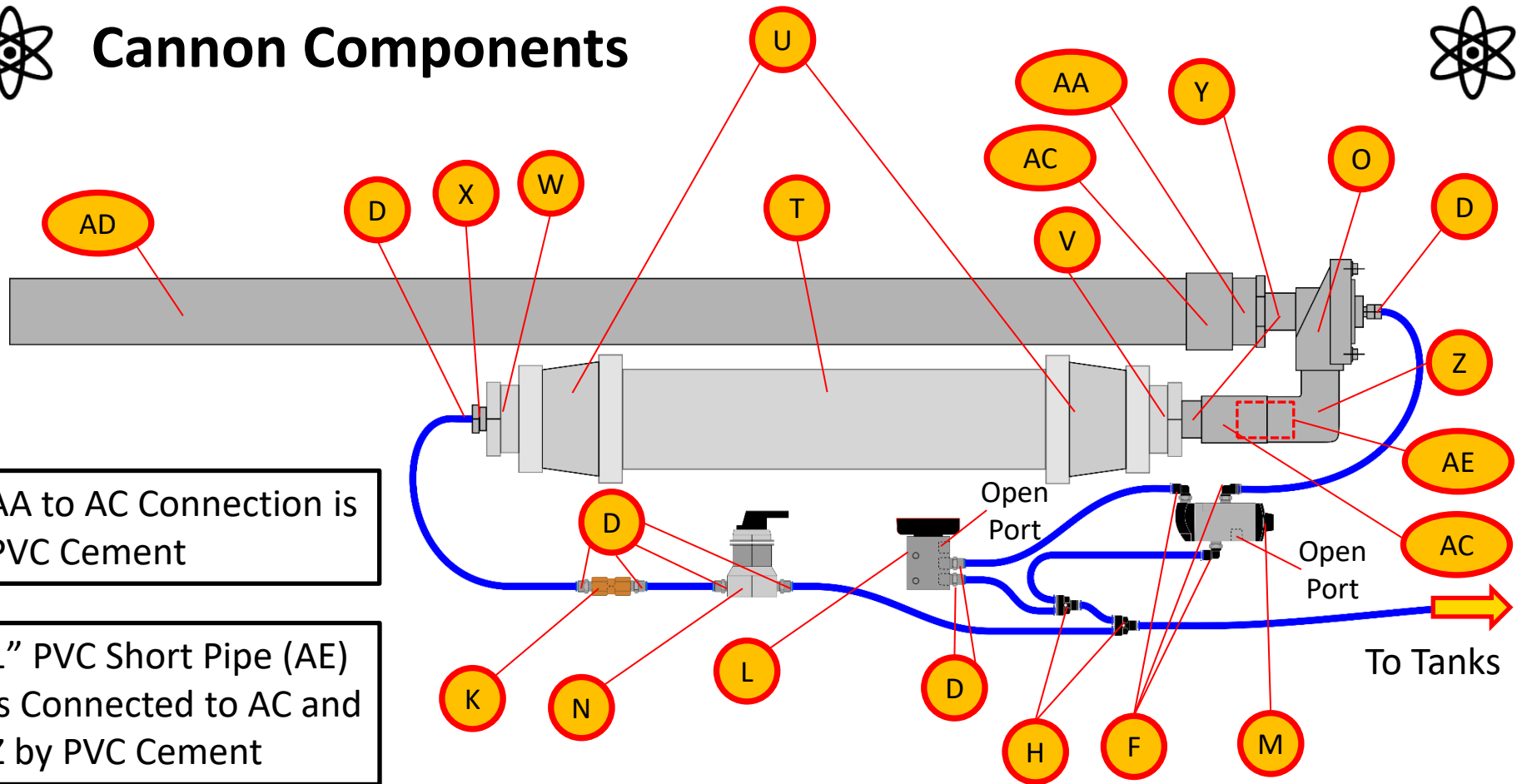


Air Tank Bundle





Cannon Components



AA to AC Connection is PVC Cement

1" PVC Short Pipe (AE) is Connected to AC and Z by PVC Cement

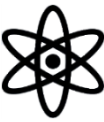
Assembly Tips



- ✿ **Teflon tape all joints with plastic components**
- ✿ **1/8" and 1/4" NPT Fittings need Teflon tape**
- ✿ **Use silicon to seal threaded joints between aluminum components. Teflon tape resulted in Leaks.**
- ✿ **Hose Length connecting air tank fittings should be around 11" to prevent excess angle at push connect fittings and avoid leaks**
- ✿ **Center to center distance for holes in bulkhead may vary depending on thread engagement of elbow in valve**
- ✿ **Bend polycarb cover to fit bulkhead dimensions**
- ✿ **Holes in valve end bulkhead should match specific valve connection**







Special Operational Instructions:

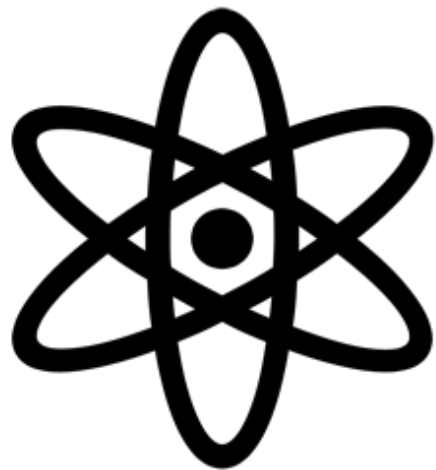


- ✱ **120 Psi max in storage tanks. Relief valve will kick in at 125 Psi**
- ✱ **40 Psi should be Max working pressure into accumulator**
- ✱ **20 Psi is lowest working pressure. Valves will not fire for pressures below 20 Psi**
- ✱ **20 Psi is more than adequate to shoot shirt over stands in football stadium when launching from running track in front of stands**
- ✱ **120 Psi charge in tanks should give 4 to 5 Shots at 20 Psi working pressure before tank pressure falls below 20 Psi minimum pressure**
 - ✱ **Slow leaks in system may reduce shots per charge**
- ✱ **Can work as Single shot cannon without tank bundle by closing valve and disconnecting hose from tank bundle**

Special Operational Instructions:



-  **Ball valve between Tanks and Cannon should remain open when firing**
-  **Selector switch prevents pressure loss from Accumulator during fire sequence. Cannon will fire if in Charge position, but may experience unneeded pressure loss.**
-  **Selector switch should be in charge position when charging tanks. This will provide another shot per charge.**
-  **Selector switch should be cycled between shoot-charge-shoot between shots on a single tank charge. Leave in charge position for ~5 Seconds for air to transfer from tanks to accumulator.**



ADAMBOTS

Team 245