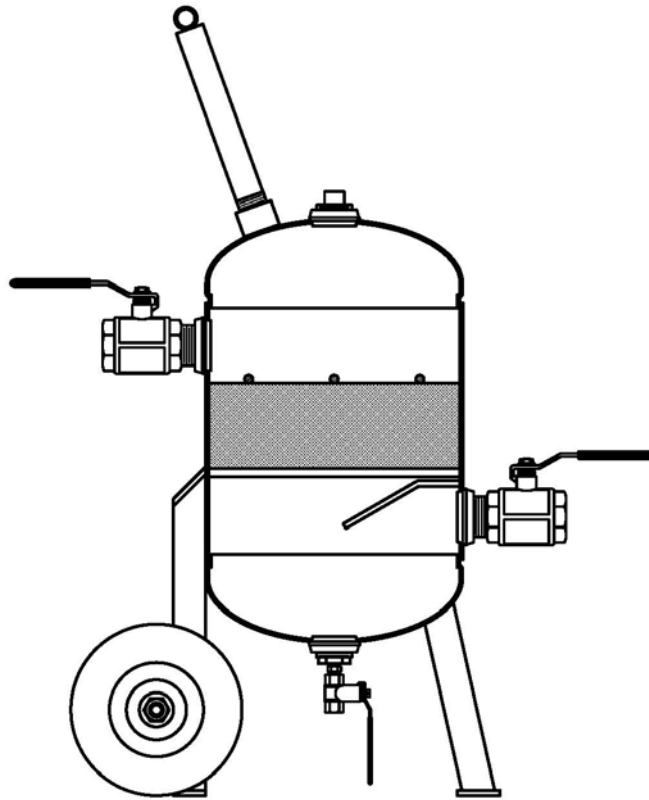


**MOISTURE SEPARATOR  
OPERATION AND MAINTENANCE MANUAL  
JANUARY 2014**



**SCHMIDT®**

**SAVE THIS MANUAL AND MAKE AVAILABLE  
TO ALL USERS OF THIS EQUIPMENT!**

Manual Part Number 7200-305



AXXIOM Manufacturing, Inc.  
11927 S. Highway 6, Fresno, Texas 77545  
800.231.2085 \* 281.431.0581 \* fax 281.431.1717



## **0.0 SAFETY WARNINGS**

### **0.1 Important Safety Instructions**

- 0.1.1 Do not remove, repair or replace any item on vessel while it is under pressure.
- 0.1.2 Do not operate if there is a leak in the vessel. Immediately take vessel out of service and call your certifying authority.
- 0.1.3 Do not operate above maximum allowable working pressure (MAWP) at maximum operating temperature (°F) shown on ASME nameplate.
- 0.1.4 Do not weld, grind or sand vessel. It will not be safe to operate.
- 0.1.5 Do not operate if the vessel has been damaged by fire. Take out of service immediately and notify your certifying authority.
- 0.1.6 Any damage to vessel can make it unsafe. Inspect outside and inside of vessel regularly for corrosion or damage (i.e. dents, gouges or bulges). If damaged take out of service immediately and notify your certifying authority.
- 0.1.7 Do not connect the air discharge on this unit onto a common header with any other unit of any description, or any other source of compressed air, without first making sure a check valve is used between the header and this unit. If this unit is connected in parallel with another unit of higher discharge pressure and capacity, a safety hazard could occur in a back-flow condition.

### **0.2 Recommended Safe Procedures**

- 0.2.1 Never attempt to perform maintenance while the unit is under pressure or is even capable of being pressurized. This means at a minimum the inlet ball valve should be closed and ideally the air source be shut off or disconnected. Anytime the manual blow-down valve is closed it should be assumed that the unit is under pressure.
- 0.2.2 This machine contains high pressure air which can cause severe injury or death from flying parts. Always relieve pressure before removing covers, plugs, caps or other parts from the pressurized air system. Follow these rules for safe operation.
  - Do not remove access cover until all air pressure is out of vessel.
  - Do not try to tighten cover if you hear or feel a leak. Immediately shut off air supply to vessel and reduce pressure to zero. Install a new cover and gasket.
  - Do not use power tools or cheater bars to tighten nut on cover. Too much force can distort cover and/or gasket. If damaged by over tightening, the cover can blow out and cause serious injury.
  - Inspect cover and sealing surface every time cover is removed or at least once a year for damage such as corrosion, cracks or distortion. If there is any damage, install a new cover and/or gasket.
- 0.2.3 Periodically check all hoses to see that they are in good condition. Repair any valves or hoses that show any signs of wear or leakage.
- 0.2.4 All air hose couplings are provided with holes which must be safety pinned or wired to prevent accidental disconnections.
- 0.2.5 The interior condition of the vessel should be inspected regularly for corrosion.

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## 1.0 GENERAL DATA

### 1.1 Moisture Separator Dimensional Specifications

MODEL NO.	PART NO.	TYPE	HEIGHT in(mm)	WIDTH in(mm)	LENGTH in(mm)	INLET (NPT)	OUTLET (NPT)	WEIGHT lbs (kgs)
800 CFM	1200-080-03	STATIONARY	28 (711)	13 (330)	15 (381)	2"	2"	40 (18)
800 CFM	1200-080-02	PORTABLE	40 (1016)	18 (457)	20 (508)	2"	2"	57 (26)
800 CFM	1200-080-06	STATIONARY W/FITTINGS	28 (711)	13 (330)	26 (660)	2"	2"	50 (23)
800 CFM	1200-080-05	PORTABLE W/FITTINGS	40 (1016)	18 (457)	26 (660)	2"	2"	67 (30)
1600 CFM	1200-160-03	STATIONARY	33 (838)	19 (483)	21 (533)	2"	2"	105 (48)
1600 CFM	1200-160-02	PORTABLE	45 (114)	22 (559)	27 (686)	2"	2"	125 (57)
1600 CFM	1200-160-04	STATIONARY W/FITTINGS	33 (838)	19 (483)	33 (838)	2"	2"	115 (52)
1600 CFM	1200-160-05	PORTABLE W/FITTINGS	45 (114)	22 (559)	33 (838)	2"	2"	135 (62)

### 1.2 Moisture Separator Operating Specifications

Maximum Working Pressure	150 psi @ 250°F
Minimum Metal Temperature	-20°F @ 125 psi
Tank Volume	See table below

MODEL NO.	800 CFM	1600 CFM
VOLUME (cu ft) (Liters)	1.1 (31)	3.4 (96)

### 1.3 Warranty

All U.S. Filter / Schmidt products are guaranteed to be free of defects in material and workmanship at time of shipment. U.S. Filter / Schmidt will replace any of its products or component parts thereof which thus prove defective under proper use within three months of the date sold, provided that prompt notice has been given to U.S. Filter / Schmidt. However, U.S. Filter / Schmidt's liability is limited to replacement of such defective products or components and U.S. Filter / Schmidt shall have no liability for labor, consequential damages or special charges. This guarantee is in lieu of all other representations.

### 1.4 Return Merchandise Policy

In no case is merchandise to be returned to U.S. Filter / Schmidt for credit without authorization. At the time of authorization, U.S. Filter / Schmidt will issue a return authorization number which must be included on all packages and correspondence. Any material returned without prior authorization will remain the property of the sender and U.S. Filter / Schmidt will not be responsible for same.

All returns must be shipped prepaid freight. All returns may be exchanged for other equipment or parts of equal dollar value. If goods are not exchanged, they are subject to a 15% restocking charge. Any cost incurred by U.S. Filter / Schmidt to restore such goods to first class condition will be charged to the customer.

## 2.0 GENERAL OPERATION

Moisture accumulates in compressed air in vapor form at the air compressor. This moisture creates problems in a blast system when the hot compressed air cools as it reaches the equipment. When the compressed air cools the vapor condenses into water droplets. In blast systems this cooling occurs in two primary areas. First, when it enters the blast vessel where it expands. Second, as the compressed air exits the blast nozzle again it expands. This expansion cools the air causing condensation of moisture in the blast media and on the object being blasted.

The moisture separator is designed to remove condensed moisture and contaminants from compressed air for use in abrasive blasting equipment. Moisture and contaminants shorten the life of equipment controls and decrease blasting efficiency. **Note:** A moisture separator does not remove moisture that is in vapor form. Therefore in high humidity areas it is possible for moisture to condense downstream of the separator as the compressed air cools.

This manual contains part identification numbers (#) within the text that are found on the drawing in section 5-0, page #5-2. Refer to this drawing as needed while reading this manual.

### 2.1 AIR INLET

The compressed air enters the separator tank (#1) at the air inlet connection. The air inlet connection is the port located low on the separator tank shell. This location is below the separator element. The separator may be equipped with an inlet crowfoot (#2) and an inlet ball valve (#3) depending on the model. If the separator is not equipped with these fittings, they should be field installed. **Note:** Some models are equipped with multiple air inlets.

### 2.2 SEPARATOR TANK

The separator tank (#1) houses a stainless steel coalescent element which separates moisture droplets and contaminants from the compressed air. The separator tank also allows the compressed air to expand causing moisture condensation. The air enters the tank at a low elevation, as the flow rises through the tank it passes through the stainless steel element. The condensed moisture clings to the stainless steel element then drops to the bottom of the separator tank. The moisture collected in the separator tank can be drained through the ball valve (#6) located at the bottom of the separator tank. This ball valve should be left slightly open anytime the system is in operation. This allows water to be drained as it is filtered from the air. After each use the drain ball valve should be completely opened to drain all the moisture that has accumulated. The drain ball valve (#6) should be left open anytime the unit is not in use.

### **2.2.1 Stainless Steel Coalescent Element**

The stainless steel element removes condensed moisture and contaminants from the air stream as it passes through. The air moves freely through the element, but moisture droplets cannot make the turns through the element as quickly because of their higher inertia. Therefore the moisture droplets are caught in the mesh. As more droplets are caught in the mesh they collect and grow in size. When they become large enough they run down through the mesh to the bottom of the separator tank. The moisture collected can be drained through the drain ball valve (#6) at the bottom of the separator tank.

### **2.2.2 Drain Ball Valve**

Any moisture accumulated in the separator tank can be drained from the drain ball valve (#6). This ball valve should be left slightly open anytime the system is in operation. This allows water to be drained as it is filtered from the air. After each use the drain ball valve should be completely opened to drain all the moisture that has accumulated. The drain ball valve (#6) should be left open anytime the unit is not in use.

### **2.2.2 Pressure Release**

To relieve the separator tank pressure turn off the supply air and close the air inlet ball valve(s) (#3) and the air outlet ball valve(s) (#5). Then open the drain ball valve (#6) located at the bottom of the tank. **CAUTION:** The air pressure in all connecting hoses and equipment must also be relieved.

### **2.2.3 Inspection Port**

Each moisture separator has a plugged port (#7) at the top for inspection. This port can also be used to clean the stainless steel coalescent element (refer to section 4-0).

## **2.3 AIR OUTLET**

The compressed air, free of condensed moisture and contaminants, exits the separator at the air outlet connection. The air outlet connection is the port located high on the separator tank shell. This location is above the separator element. The separator may be equipped with an outlet crowfoot (#4) and an outlet ball valve (#5) depending on the model. If the separator is not equipped with these fittings, they should be field installed. **Note:** Some models are equipped with multiple air outlets.

## **2.4 FLOW CAPACITY**

The air flow capacity for the moisture separator is found on the vessel nameplate. It is identified by the model number (i.e. 800 CFM). The blast nozzle(s) to be used determine the flow requirement. Refer to section 6.0 table 1 for nozzle air consumption for blast nozzles at various blast pressures.

### **3.0 OPERATING PROCEDURE**

This section contains part identification numbers (#) within the text that are found on the drawing in section 5-0, page #5-2. Refer to this drawing as needed while reading this manual. Do not attempt to operate this equipment before completely reading this manual.

#### **3.1 Unit Set Up:**

- 3.1.1 Close the air inlet ball valve(s) (#3).
- 3.1.2 Close the air outlet ball valve(s) (#5).
- 3.1.3 Close drain ball valve (#6).
- 3.1.4 Connect an air supply hose(s) to the air inlet connection(s) (#2) and install safety clips to prevent accidental disconnections during operation.
- 3.1.5 Connect output air supply hose(s) to the outlet connection(s) (#4) on the separator tank and install safety clips to prevent accidental disconnections during operation.

#### **3.2 Unit Operation:**

- 3.2.1 After completion of the procedures in section 3.1, the moisture separator is now ready for compressed air. Supply air to the unit by starting the air compressor and/or by opening the compressor's air outlet valve.
- 3.2.2 Slowly open the air inlet ball valve(s) (#3).
- 3.2.3 Slightly open drain ball valve (#6) so that moisture can be drained from the separator tank as it is removed from the compressed air.
- 3.2.4 Follow all set up procedures for the blast equipment or other equipment to be used with the moisture separator. Then open the outlet ball valve(s) (#5) to supply air.

#### **3.3 Unit Shut Down:**

- 3.3.1 Turn off the air compressor and/or close the compressor's air outlet ball valve.
- 3.3.2 Close the air outlet ball valve(s) (#5).
- 3.3.3 Slowly open the drain ball valve (#6) to relieve all the air pressure.
- 3.3.4 Close the air inlet ball valve(s) (#3).
- 3.3.4 Follow the shut down procedures for all connecting equipment to relieve all pressurized air vessels and hoses.

## 5.0 PARTS LIST

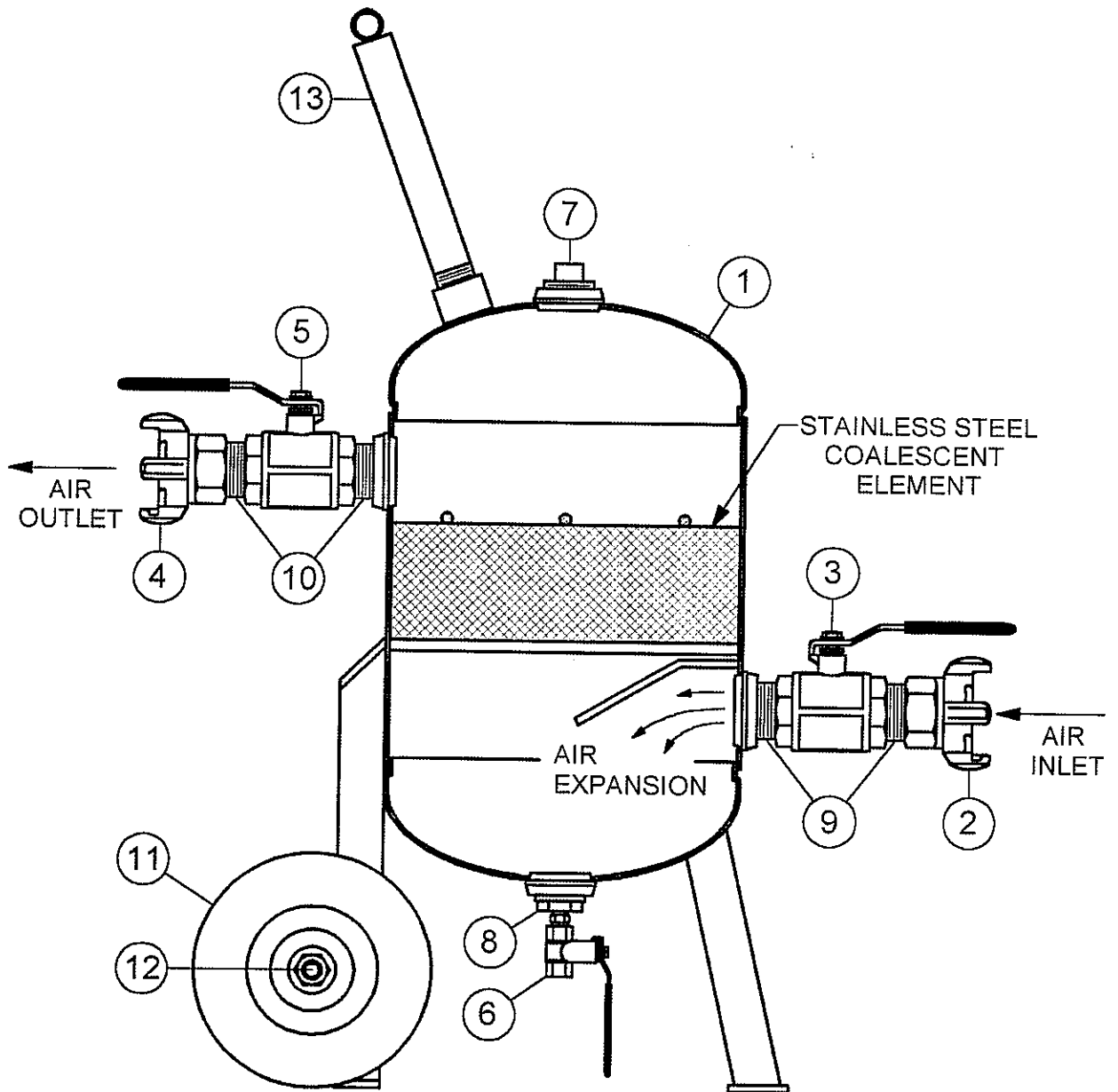
This section contains a parts breakdown covering all the major components which may require maintenance during operation of the Moisture Separator. The major items identified in the parts list are found on the drawing on page #5-2. Refer to this drawing as needed while reading this manual.

### MOISTURE SEPARATOR 800 CFM AND 1600 CFM

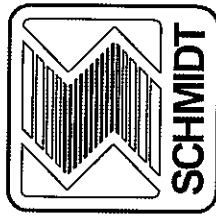
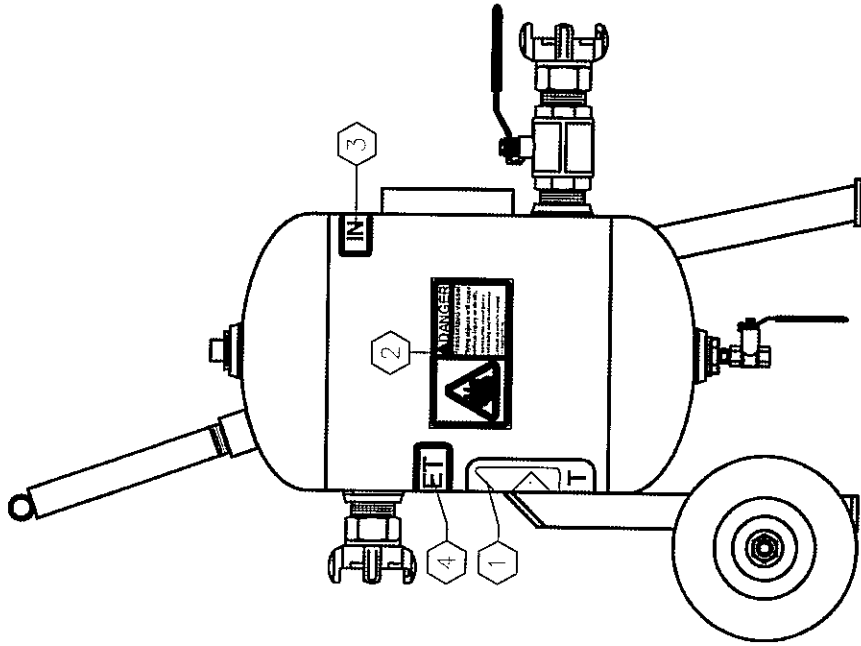
<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1.	1200-080-00	800 CFM moisture separator vessel
	1200-160-00	1600 CFM moisture separator vessel
	1200-XXX-XX	Non-standard models (provide serial number)
2.	4211-109	Crowfoot, 4-lug 2"
	4211-108	Crowfoot, 4-lug 1-1/2"
	4211-107	Crowfoot, 4-lug 1-1/4"
3.	2401-509	Ball valve, 2" full port
	2401-508	Ball valve, 1-1/2" full port
	2401-507	Ball valve, 1-1/4" full port
4.	4211-109	Crowfoot, 4-lug 2"
	4211-108	Crowfoot, 4-lug 1-1/2"
	4211-107	Crowfoot, 4-lug 1-1/4"
	4209-106	Crowfoot, 2-lug 1"
	4209-105	Crowfoot, 2-lug 3/4"
5.	2401-509	Ball valve, 2" full port
	2401-508	Ball valve, 1-1/2" full port
	2401-507	Ball valve, 1-1/4" full port
	2401-506	Ball valve, 1" full port
	2401-505	Ball valve, 3/4" full port
6.	2401-502	Ball valve, 1/4" full port
	3031-312-02	Hex nipple, 1/4" x 1/4"
	3006-102	Elbow, street 90° 1/4" galvanized
7.	3014-009	Plug, 2"
	3014-007	Plug, 1-1/4"
8.	3026-008-02	Bushing, 1-1/2" x 1/4"
	3026-007-02	Bushing, 1-1/4" x 1/4"
9.	3029-009-99	Nipple, 2" x close
	3029-008-99	Nipple, 1-1/2" x close
	3029-007-99	Nipple, 1-1/4" x close
10.	3029-009-99	Nipple, 2" x close
	3029-008-99	Nipple, 1-1/2" x close
	3029-007-99	Nipple, 1-1/4" x close
	3029-006-99	Nipple, 1" x close
	3029-005-99	Nipple, 3/4" x close
11.	7046-002	Wheel, semi-pneumatic 800MT
	7046-003	Wheel, semi-pneumatic 1600MT
12.	7040-001	Axle, 3/4" x 17-1/2" 800MT
	7040-003	Axle, 3/4" x 22" 1600MT
13.	1200-000-01	Handle, 800MT & 1600MT
	7032-005	Handle grip, 3/4"



# MOISTURE SEPARATOR (800 CFM AND 1600 CFM)



ITEM	QTY	PART NO.	DESCRIPTION
1	1	7031-001	DECAL MEDIUM "SCHMIDT"
2	1	7031-007A	DECAL "PRESSURIZED VESSEL"
3	1	7031-017	DECAL "INLET"
4	1	7031-018	DECAL "OUTLET"
-	-	7031-999-01	DECAL KIT MOISTURE TRAP



ITEM 1



ITEM 2



ITEM 3



ITEM 4

NOTE: ON UNITS THAT ARE SHIPPED PRIMED ONLY, ALL DECAL/WARNING LABELS ARE TO BE SHIPPED SEPARATELY ALONG WITH A COPY OF THIS DRAWING

TOLERANCES UNLESS OTHERWISE NOTED		NOTES:	
ANGLES ±			
FRACTIONS ±			
.X ±			
.XX ±			
.XXX ±			
C	ITEM 2 WAS 7031-007	8/24/04	JH
B	ADDED DECAL KIT	9/12/03	JH
A	CORRECTED PART NO. ON ITEM 4	9/12/03	JH
REV	DESCRIPTION	DATE	BY

<b>SCHMIDT</b>		SCALE: 1:8.5	APPROVED BY:	DRAWN BY: JH
		DATE: 1/24/03		REVISED
800 CFM & 1600 CFM MOISTURE TRAP PLACEMENT DETAIL				
PART NUMBER:		DRAWING NUMBER: I:\A-FDWGS\SAFETY\DECAL\M.T.VC6		

## 6.0 BLASTING DATA

### 6.1 TABLE 1 APPROXIMATE AIR CONSUMPTION (CFM) PER BLAST NOZZLE

NOZZLE SIZE	NOZZLE PRESSURE						
	60 psi	70 psi	80 psi	90 psi	100 psi	120 psi	140 psi
No.2 1/8"	14	16	18	20	22	26	30
No.3 3/16"	32	36	41	45	49	58	66
No.4 1/4"	57	65	72	80	90	105	121
No.5 5/16"	90	101	113	125	140	160	185
No.6 3/8"	126	145	163	182	200	235	270
No.7 7/16"	170	193	215	240	270	315	360
No.8 1/2"	230	260	290	320	350	410	470
No.10 5/8"	360	406	454	500	550	640	740
No.12 3/4"	518	585	652	720	790	925	1060

### 6.2 TABLE 2 ABRASIVE CONSUMPTION (lbs. per hour) PER BLAST NOZZLE

NOZZLE SIZE	NOZZLE PRESSURE						
	60 psi	70 psi	80 psi	90 psi	100 psi	120 psi	140 psi
No.2 1/8"	90	105	115	130	140	165	190
No.3 3/16"	205	230	260	290	320	375	430
No.4 1/4"	365	420	460	500	560	660	760
No.5 5/16"	575	650	725	825	900	1050	1200
No.6 3/8"	840	945	1050	1155	1260	1475	1700
No.7 7/16"	1150	1300	1450	1600	1750	2050	2350
No.8 1/2"	1460	1660	1850	2000	2250	2650	3000
No.10 5/8"	2290	2600	2900	3125	3520	4100	4750
No.12 3/4"	3300	3750	4180	4500	5060	5950	6800

### 6.3 TABLE 3 HOSE SELECTION GUIDE (BLASTING @ 100 psi)

NOZZLE SIZE	No.4 1/4"	No.5 5/16"	No.6 3/8"	No.7 7/16"	No.8 1/2"
CFM @ 100psi	90	140	200	270	350
AIR HOSE	1 1/4"	1 1/4"	1 1/2"	1 1/2"	2"
BLAST HOSE	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"
MEDIA ( lbs per hr)	560	900	1260	1750	2250

## 6.4 ADDITIONAL INFORMATION ON BLASTING PRODUCTIVITY

Air volume and pressure are very important. The blasting production rate will increase with higher blasting pressures and decrease with lower blasting pressures. The National Association of Corrosion Engineers' data suggests that for each 1 psi reduction in nozzle pressure, there is a 1.5% production loss. Pressure drop through a Schmidt blast unit is normally less than 1 psi, while blast units manufactured by some of our competitors have pressure losses as high as 12 psi resulting in an 18% loss of production. Air pressure loss can also be avoided by using the shortest possible hose of adequate size. The inside diameter of both the blast hose (other than whip hose) and the air hose should be approximately three times the diameter of the orifice in the blast nozzle.

Standard Schmidt blast units are rated for a maximum pressure of 125 psi although high pressure units rated for 150 psi are available on request.