

INSTRUCTION MANUAL
MARCO SIDEWINDER
PART NO.
24863, 24868

CUSTOMER:
SEAPRO
SALES ORDER:
24490

OCTOBER, 2002

TABLE OF CONTENTS

I. Set Up & Operation of MARCO Sidewinder Skimmer	1
A. Installation	1
B. Deployment of the Filterbelt System	2
C. Hydraulic Power Requirements	3
D. Filterbelt Oil Recovery	3
1. Installing Filterbelt	3
2. Installing Filterbelt Pads	5
3. Collection	5
4. Handling Debris	6
5. Cleaning and Decontamination	6
6. Stowage	6
II. Maintenance & Repair of MARCO Sidewinder Skimmer	7
A. Storage	7
B. Periodic Maintenance When In Standby	7
C. Periodic Maintenance When In Daily Use	8
D. Troubleshooting	9
E. Disassembly, Repair and Reassembly	9
Filterbelt Unit Troubleshooting	10

I. SET UP AND OPERATION OF MARCO SIDEWINDER SKIMMER

A. INSTALLATION

The following instructions are for the SIDEWINDER Series Skimmers equipped with the "short pin" davit. Figures 1 and 2 show typical mounting configurations. If other davit or pivot configurations are used, they will be described in an addendum to the manual.

1. Right and Left hand Configurations. The belt units can be fabricated as either right or left hand units. As you look from the drive end of the belt unit toward the float end, a right hand unit is on the right hand side of the davit and has the speed controls on the left side of the belt unit. A left hand unit mounts on the left side of the davit, and has the speed controls on the right side of the belt unit. All the units shown in Figure 1 are left hand units.
2. Davit Location. The davit should be mounted as shown in Figure 2. The davit should be mounted as close to the rail a possible so the davit arm can hold the belt unit over the rail with plenty of room for belt unit motion. If possible, the davit should be positioned within the mid-ship one-third length to reduce relative motion caused by the vessel pitching. Where possible, the davit should be installed directly over continuously welded deck stiffeners. Alternately, a doubler plate may be installed, but the stiffeners below should still be continuously welded to the deck beneath the doubler plate. The davit is rated for 500 pounds at its 57-inch radius (227 kg at 1.45m). A Naval Architect should specify and approve the installation.
3. Davit Pedestal Height. The pedestal is fabricated with excess height. The pedestal should be setup square to the vessel and its bottom trimmed to fit the deck. When trimming, adjust the pedestal height so that the davit pivot arm clears the rail by about 1.5 inches. After trimming the pedestal, it should be continuously welded to the deck (or deck doubler plate).

DEPLOYMENT MODES

ADVANCING

BOW MOUNT

STATIONARY

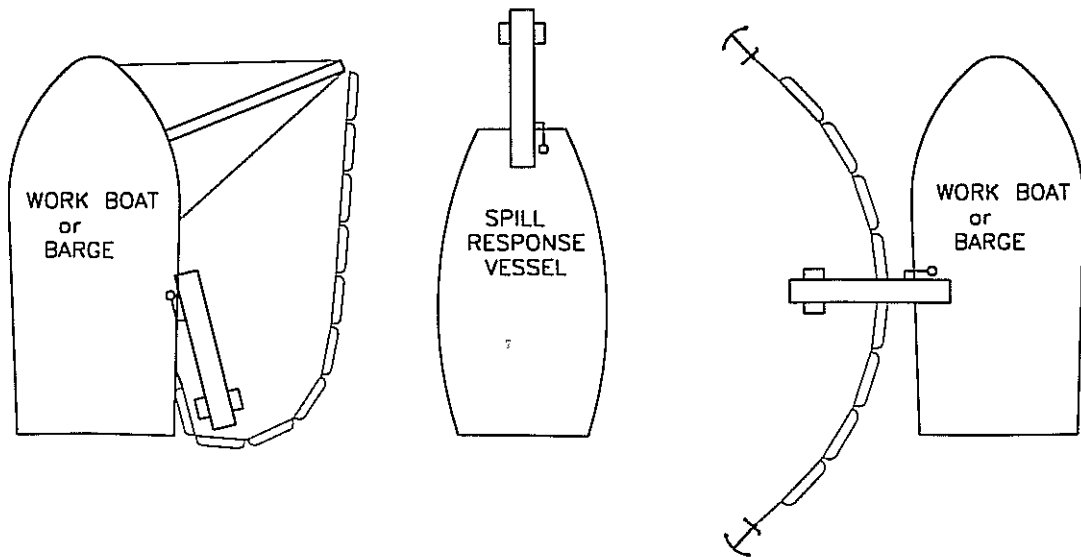


Figure 1

SIDEWINDER INSTALLATION

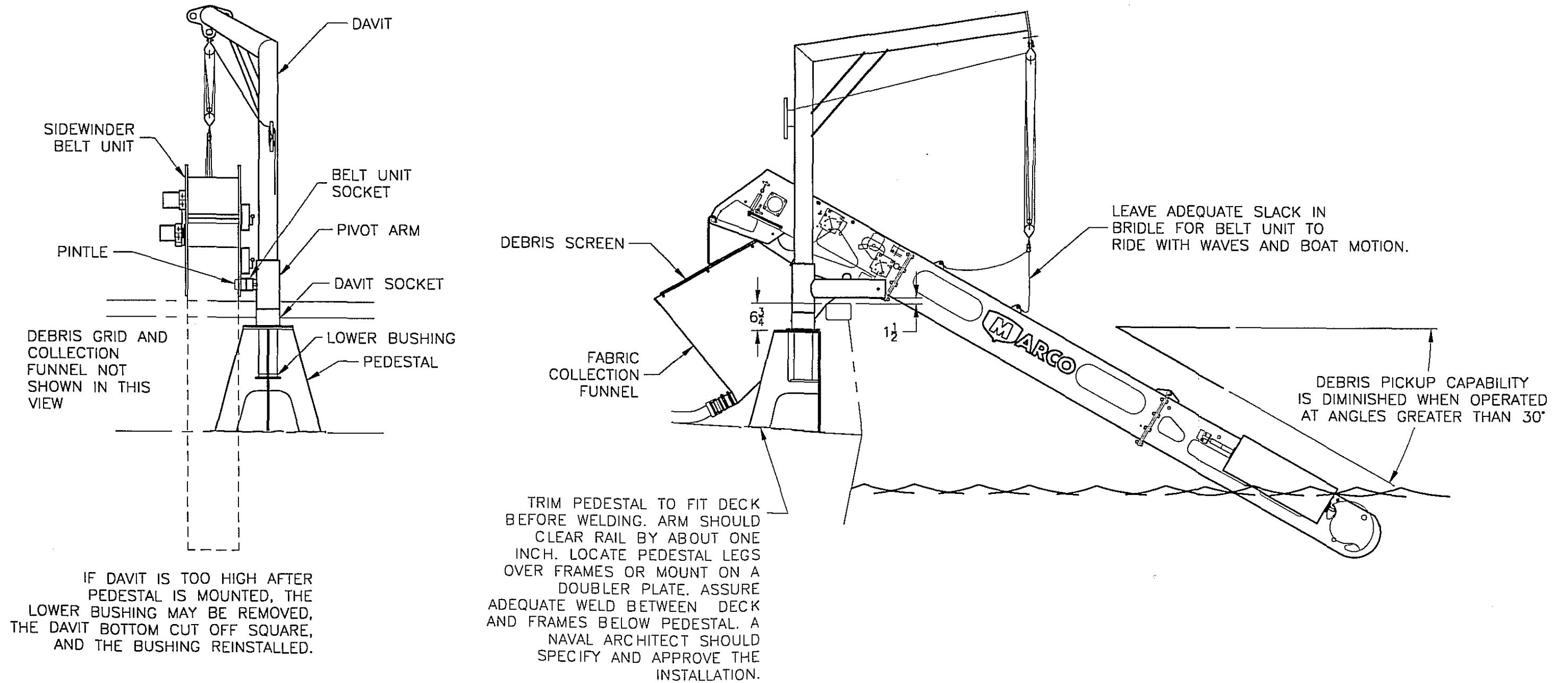


Figure 2

4. Davit Height. The standard davit provided with the SIDEWINDER is configured for maximum allowable overall height. This may be too high for your application. The unit can be shortened as much as necessary by trimming the vertical member of the davit. If a shorter davit is desired, make a square cut on the lower end of the davit. To make a square cut, mark the davit with a pipe wrap and saw around with a hack saw. Sawing straight through will usually result in a skewed cut. There is a bushing in the lower end of the davit. Be careful not to cut, burn or otherwise damage the bushing when trimming the davit. An easy way to do this, is to hacksaw cut the davit at least 4 inches above the end of the davit. The bushing can then be driven out of the cutoff piece with a hammer and a block of wood and reinserted into the newly cut davit end.
5. Pivot Arm Orientation. When assembling the davit, slide the pivot arm on the davit before inserting the davit into the socket. The pivot arm must be oriented so that when the support arm is pointing outboard, the pivot pintle points to the left for left hand belt units, or to the right for right hand belt units. If the pintle points the wrong way, the belt unit drive motors will hit the davit when the belt unit is deployed.

B. DEPLOYMENT OF THE SIDEWINDER FILTERBELT UNIT

1. Position the SIDEWINDER on deck close to the davit. For a side installation, the SIDEWINDER floats should be pointing forward when sitting on deck. Once the unit is installed on the pivot and rotated over the side, it will then be in the proper aft-facing position.
2. Using the davit block and tackle, lift the SIDEWINDER to approximately the height of the swing arm. Maneuver the unit until the pintle on the pivot arm slides into the belt unit pipe socket near the induction pump control valve on the belt unit (see Figure 3). Insert the lock pin attached to the belt unit into the hole on the side of the pipe socket to secure the belt unit to the davit arm. The button on the top of the locking pin must be depressed before the pin can be inserted or removed.
3. Attach the fabric funnel to the debris grid and attach the grid to the belt unit as shown in Figure 3. Connect the supply and return hydraulic hoses to the belt unit. The female quick disconnect accepts pressurized oil, and the male quick disconnect is for return oil. Attach a transfer hose from the bottom of the funnel to a storage tank or to a transfer pump. Attach a tag line to the nose of the belt unit.

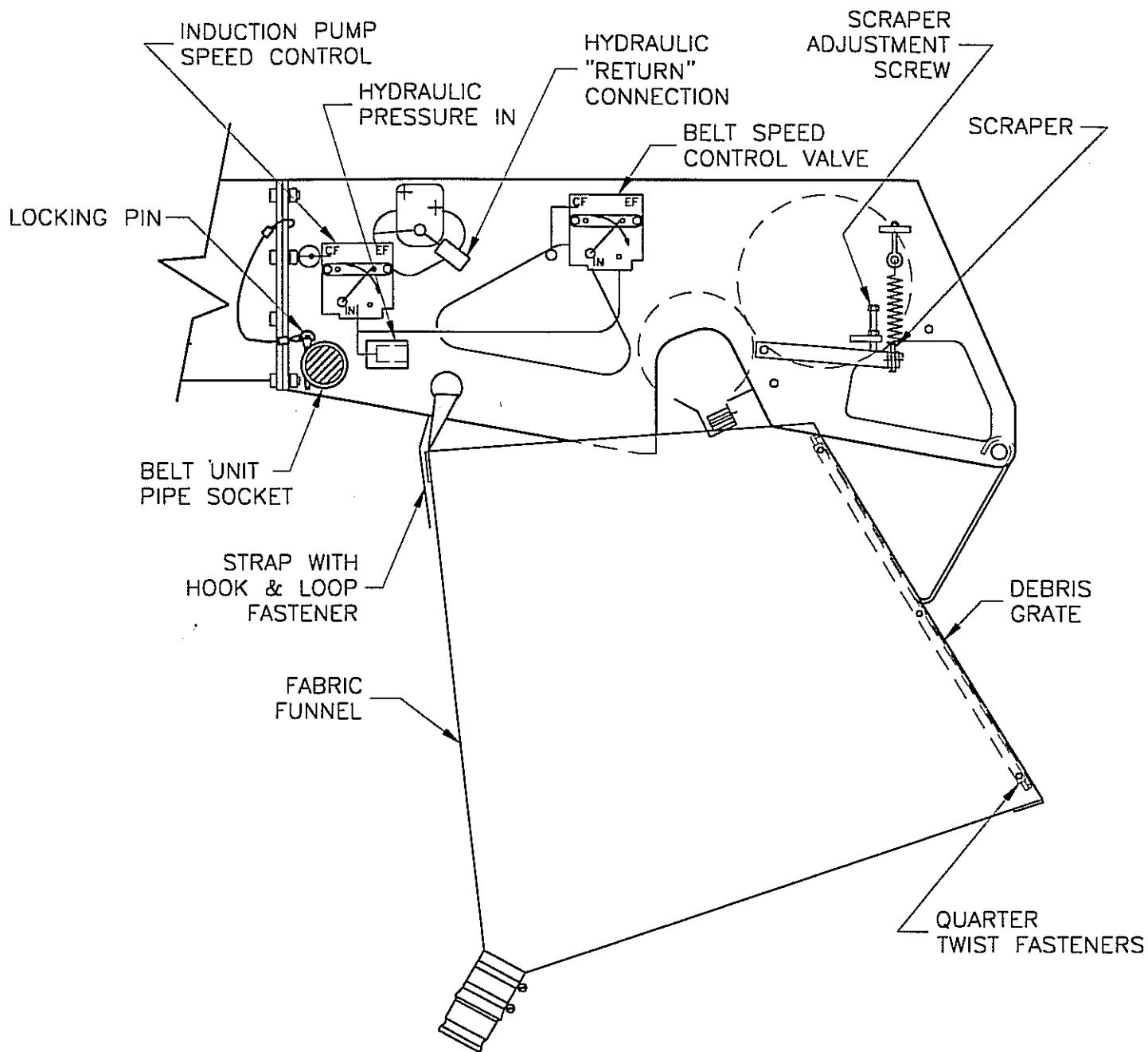


Figure 3

4. Rotate the SIDEWINDER into position and lower the nose into the water. Use the tag line to help position the belt unit. Leave slack in the hoist line so the SIDEWINDER can ride with the waves and boat motion without lifting the nose. The tag line can be used to control the tendency of the induction pump to rotate the belt unit.
5. Start the hydraulic power unit. If the power source has adjustable delivery pressure, system pressure should be set at about 1600 psi.
6. Start the belt rotation by using the belt speed control valve as identified in Figure 3. Start the induction pump using the induction pump control valve. Adjust the belt and induction speed to suit oil conditions. See FILTERBELT OIL RECOVERY section below.
7. Decanting. During normal recovery operations, the Filterbelt will bring aboard some free water. This water will normally settle out in the recovered oil tanks. Discharging or decanting this free water from the tanks can reduce disposal requirements. Pumping slowly from the bottom of the tank can do this. Decanted water should be directed over the Filterbelt, so that any oil that is accidentally discharged can be recovered.

Note: Remember that the discharge of oil, even from an oil recovery vessel, can be an unlawful act. Ensure that decanting is carried out in a manner that is consistent with federal and local laws.

C. HYDRAULIC POWER REQUIREMENTS.

Under maximum load conditions, the SIDEWINDER requires up to 10 gallons per minute of hydraulic flow at up to 1600 psi.

D. FILTERBELT OIL RECOVERY

1. **Installing the Filterbelt.** The Filterbelt consists of a 2-piece backing belt, two splice pins, and auxiliary pads. The Filterbelts for the different SIDEWINDER configurations are as follows:

Configuration	SIDEWINDER 14	SIDEWINDER 17	
SIDEWINDER 21			
Basic backing belt	P/N 21680	P/N 21680	P/N
21680			
Backing belt extension	P/N 24416	P/N 24866	P/N
24697			
# of pads per set	5	6	7

The two sections of backing belt must be fed onto the belt unit as shown in Figure 4 and connected together with pins (Figure 5). Pads have hook strips sewn onto the leading edge and both sides to match the loop strips on the backing belts.

Note: When installing the Filterbelt, or working on the module, be sure the hydraulic power source is secured and the hydraulic controls are in the full off position.

To install the Filterbelt for the first time, find the arrow on one end of the belt. The arrow indicates the upper side of the belt and points in the direction of travel when the belt is installed. Place the belt upside down behind the module with the arrow pointing toward the float end. Work the belt in under the drive roller and over the squeeze roller. Work the belt down through the under side of the framework, staying above the rollers. When you get close to pulling the belt section inside the belt unit, couple the second section of belt to the first, again checking the directional and top/bottom orientation of the new section. After pushing the splice pin through the joint, bend the ends of the pin back so they do not hang up on anything or gouge the sides of the belt unit. Pull the spliced combination up and around the induction pump housing, over the top of the grid and top of the belt unit back toward the drive end. Leave the end that you have been pulling and return to the trailing end. Feed the trailing end between the drive roller and the scraper, up and over to the first end. Splice the two ends together, again bending the pin ends back. The belt should be quite loose. Lift the belt near the center of the belt unit to check the tightness. The belt should lift up about a foot (300 mm).

Belts sometimes shrink during storage. If the belt is too tight to mate up the ends and insert the splice pin, it can be lengthened by about three inches by carefully cutting the stitching at a lapped joint. This joint can be found under the flap at the leading edge of the shorter of the two belt sections, very near the splice connection.

When replacing a worn out Filterbelt with a new one, attach the new Filterbelt to the old one and pull it through the module as you pull off the old one.

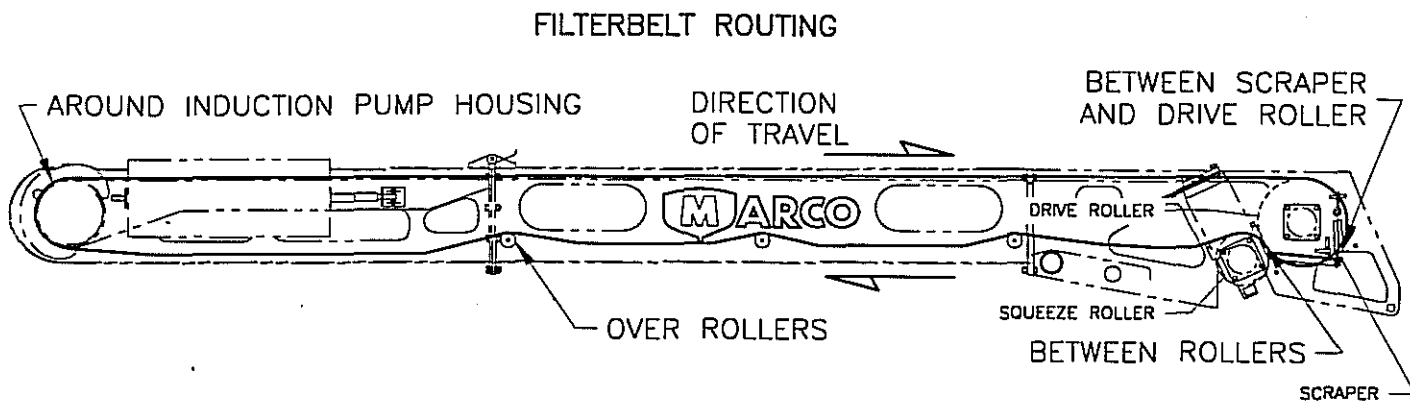


Figure 4

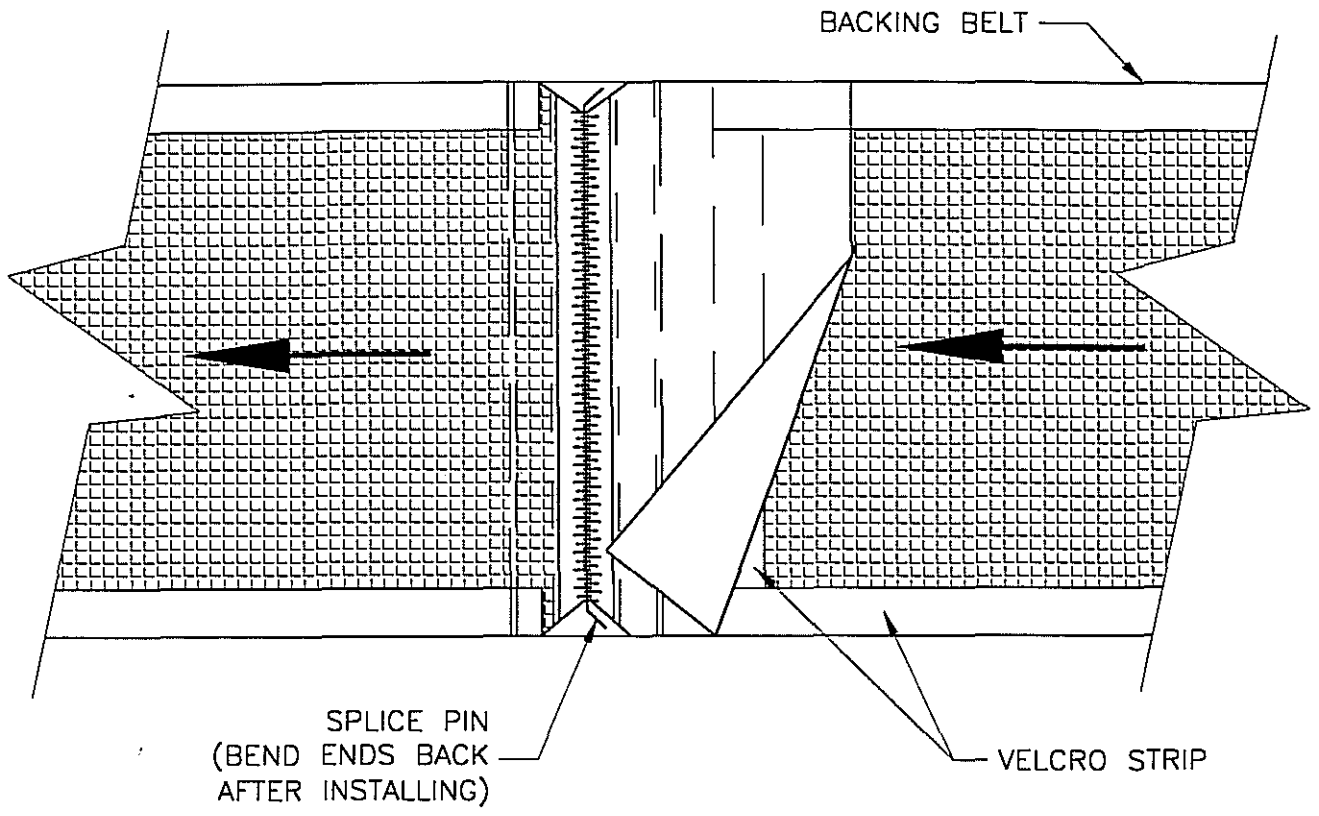


Figure 5

2. **Installing Filterbelt Pads.** Install the pads, one by one, pressing the hook and loop strips firmly together. There are several types of pads available as shown in the following list.

<u>Part Number</u>	<u>Oil Type</u>
22783	Oil Sheen
24851	Diesel
21682	Lube & Lt. Crude
24115	Heavy Oil

3. **Collection:** Refer to DEPLOYMENT MODES in figure 1. The MARCO SIDEWINDER oil recovery system is often used as a stationary skimmer. When spilled oil is contained, the nose of the SIDEWINDER can be placed in the pool of oil. The induction pump then draws oil from the surrounding surface area so that the Filterbelt can recover it.

The SIDEWINDER can also be used as an advancing skimmer when deployed over-the-side from a suitable host vessel. When used for this purpose, it is best to use a single leg of containment boom led outboard and forward from the side of the vessel to divert the oil to a collection area. This type of collection system is called a "J boom" sweep, because of the characteristic shape of the boom catenary. The SIDEWINDER is then deployed such that the nose is pointed aft into the collection area of the sweep. The outboard leg of the J-boom can be held by a support boat, or tended from the host vessel with a structural outrigger.

Once the nose of the SIDEWINDER is positioned in the collection pocket, start the Induction Pump and the Filterbelt. Adjust the speed of each to suit conditions. The following are very general guidelines. You will gain experience as you use the Filterbelt oil recovery system and after some experimenting, will become experienced and confident.

- a) With thick, heavy oil or emulsions use the backing belt alone. Adjust the Filterbelt speed to a relatively high value, 0.6 to 1 meter per second. Use high Induction Pump speed.
- b) With less viscous oils, use Filterpads and lower belt speeds. Reduce Induction Pump speed if there are signs of oil in the induction pump exhaust flow.

II. Maintenance & Repair of MARCO SIDEWINDER Skimmers

A. STORAGE

The MARCO SIDEWINDER Skimmer module is simple and robust construction, requiring very little routine maintenance. When in storage, it should be protected from the elements. A simple tarpaulin is usually sufficient to prevent:

- deterioration of rubber pieces from direct sunlight
- accumulation of dust, dirt and debris in the rotating/sliding machinery
- corrosion and salt buildup from repeated seawater wetting and drying

It is vital that the Filterbelt pads and belts not be exposed to direct sunlight when not in use. The pads and certain elements of other filtering media will degrade rapidly under exposure to ultraviolet light.

B. PERIODIC MAINTENANCE WHEN IN STANDBY

When not in use, the unit should be inspected, deployed and run at least twice a year. Inspect the unit as follows:

1. Inspect all weld joints for signs of weak or fractured welds. Aluminum welds can be repaired using standard shipyard techniques. Painting of aluminum surfaces is not required. The key to good aluminum welding is clean surface preparation.
2. Inspect all attaching hardware (pins, bolts, nuts and screws) for tightness and wear. Tighten or replace as necessary.
3. Inspect all hydraulic piping, hoses, fittings and components for signs of leakage. Tighten loose fittings and re-coat disturbed paint on steel fittings with a zinc rich corrosion inhibiting primer, such as CarboMastic. Replace missing or deteriorated seals and gaskets as required. Inspect hydraulic hoses for wear and deterioration. Replace as required.

4. Inspect quick-acting hose couplings (snap couplers on hydraulic hoses and kamlocks on product hoses) for proper operation and presence of proper gaskets.
5. Without pressurizing the hydraulic system, manually check the control valves for free unrestricted movement. Repair or replace valves as necessary. Be sure to return valves to the "off" position.
6. Check the Filterbelt for signs of wear or damage. Ensure that no debris or dirt has accumulated on the belt which will cause wear during operation. Clean as necessary. Remove the belt to clean underneath it if necessary.
7. Inspect the piston rod on the squeeze roller tension cylinder for pitting, burring or corrosion. Minor pitting can be polished out using a crocus cloth or similar mild abrasive. Look for signs of piston seal damage.
8. Lubricate the squeeze roller pivot bearing at the grease fitting provided. Use a good quality waterproof grease.

C. PERIODIC MAINTENANCE WHEN IN DAILY USE

The following inspections should be carried out on a daily basis during a recovery operation:

1. Inspect all weld joints for signs of weak or fractured welds. Aluminum welds can be repaired using standard shipyard techniques. Painting of aluminum surfaces is not required. The key to good aluminum welding is clean surface preparation.
2. Inspect all attaching hardware (pins, bolts, nuts and screws) for tightness and wear. Tighten or replace as necessary.
3. Check the Filterbelt for signs of wear or damage. Ensure that no debris or dirt has accumulated on the belt which will cause wear during operation. Clean as necessary. Remove the belt to clean underneath it if necessary.

4. Inspect the piston rod on the squeeze roller tension cylinder for pitting, burring or corrosion. Minor pitting can be polished out using a crocus cloth or similar mild abrasive. Look for signs of piston seal damage.
5. Check for proper adjustment of the Scraper Blade. When using the backing belt alone, the scraper should be positioned so that it is about 1/16" (2 mm) from the surface of the belt at the drive roller. When using Filterpads, the scraper should indent the foam about 1/4" (6 to 7 mm).

The squeeze roller pivot bearing should be greased weekly during ongoing recovery operations. Grease fittings are located under the side cover.

D. TROUBLESHOOTING

The following table provides information for recognizing, location and correcting malfunctions in the MARCO SIDEWINDER Filterbelt system.

E. DISASSEMBLY, REPAIR, AND REASSEMBLY

Assembly drawing and material lists for the major components of the SIDEWINDER Oil Recovery systems are attached in the Appendix.

FILTERBELT UNIT TROUBLESHOOTING

SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
1. Filterbelt does not move When speed control is Activated .	1a. No hydraulics to console 1b. Jamed debris. 1c. Faulty control valve. 1d. Faulty motor.	1a. Check hydraulic source. 1b. Clear debris. 1c. Repair or replace. 1d. Repair or replace.
2. Filterbelt slips.	2a. Jammed debris. 2b. Inadequate squeeze roller pressure.	2a. Clear debris. 2b. Adjust spring tension, repair or replace tension cylinder or leaf spring.
3. Filterbelt tracks poorly.	3a. Induction pump housing Misaligned. 3b. Damaged Filterbelt.	3a. Adjust position of induction pump housing using shims. 3b. Replace Filterbelt.
4. Poor water flow through Filterbelt.	4a. Faulty propeller. 4b. Faulty motor. 4c. Excessive draft at forward End. 4d. Clogged pads. 4e. Induction pump idscharge Clogged.	4a. Repair or replace. 4b. Repair or replace. 4c. Raise Filterbelt module by repositioning floats 4d. Change pads or use backing belt without pads. 4e. Remove belt or exhaust deflector and clear debris.
5. Induction pump does not operate when speed control is activated.	5a. No hydraulics to control 5b. Jammed debris in induction pump. 5c. Motor jammed.	5a. Check hydraulic source. 5b. Clear debris 5c. Replace faulty motor.



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Material List

14-OCT-2002 03:11 P

Page 1 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24863	None	MA	BELT UNIT	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
0		24747	None	0	DRAWING	
1	M	24864	None	1	BOOM	
2	M	24692	C	1	DRIVE	
3	M	24693	F	1	SQUEEZE	
4	M	24694	D	1	PUMP	
6	M	24713	F	1	PREPIPING	
7	M	24391	C	1	SCRAPER	
9	M	21680	M	1	FILTERBELT	
10		24866	None	1	FILTERBELT	
11		24867	None	1	COVER	
12		24657	None	2	LABEL PLATE	
13		24699	B	2	GUIDE	
14		89501	None	4	SCREW	
15		12541	None	4	NUT	
18		24418	None	2	GUIDE	
19		82054	None	4	SCREW	
21		24700	None	1	GRID	
22		12802	None	8	SCREW	
25	M	24712	B	4	ROLLER	
26	M	24751	C	1	FLOAT ASSY	
27		24703	None	1	FUNNEL	
28		24702	None	1	FUNNEL	
29		15099	None	2	SCREW	
30		15304	None	2	WASHER	



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Material List

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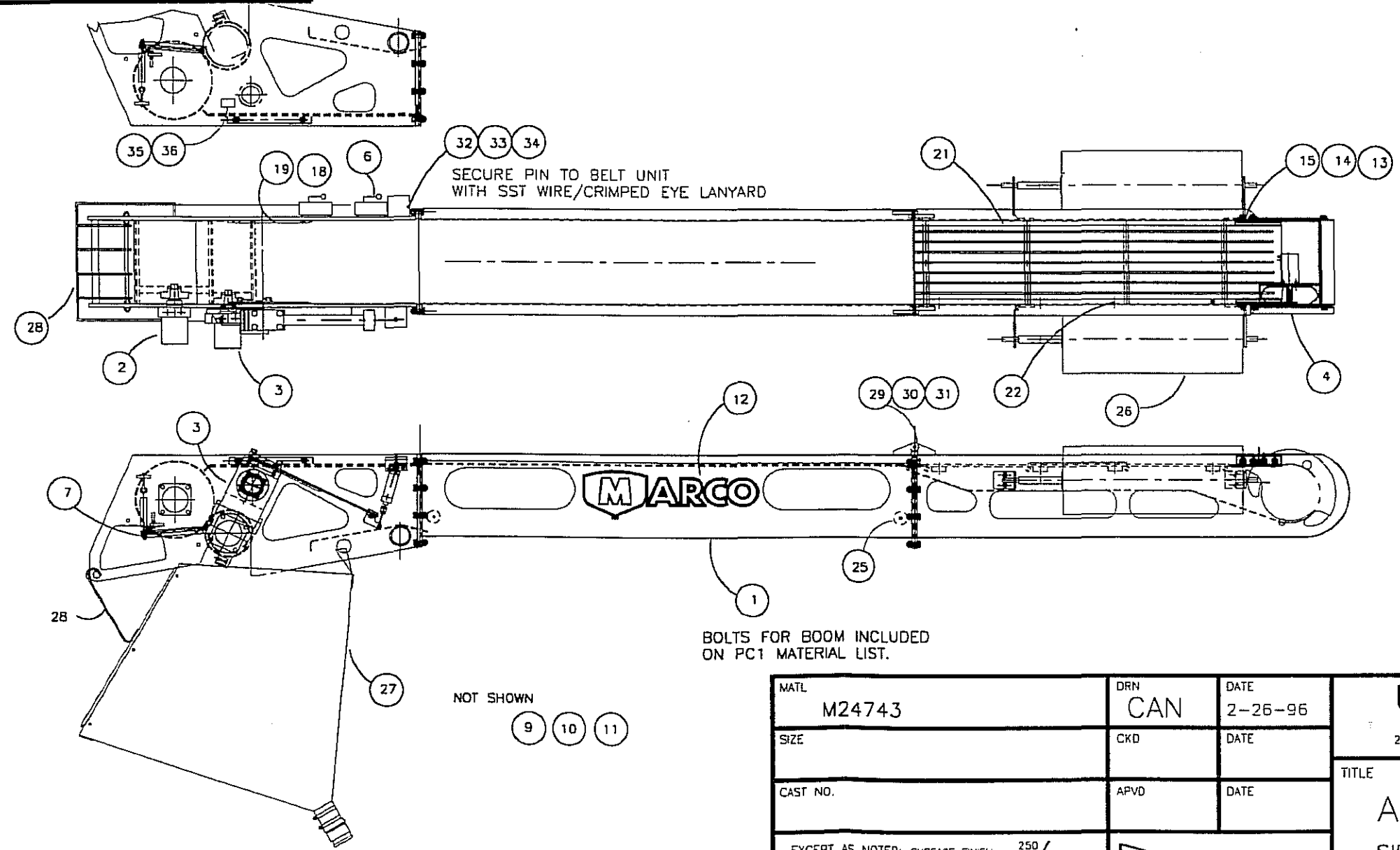
Page 2 of 15

1 STANDARD ASSEMBLY

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
31		12543	None	2	NUT	
32		89714	None	1	PIN	
33		19829	None	12	ROPE	
34		15347	None	2	SLEEVE	
35		30875	L	1	LABEL PLATE	
36		12740	None	4	SCREW	

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USED ON		SYM	ZONE	REVISION	BY	DATE
MODEL	MATL LIST	PC	B	ADD PC31, PC34, PC35, PC36.	CAN	9/27/96



MATL M24743	DRN CAN	DATE 2-26-96
SIZE	CKD	DATE
CAST NO.	APVD	DATE
EXCEPT AS NOTED: SURFACE FINISH 250 ✓ DIMENSIONS ARE IN INCHES, DO NOT SCALE DRAWING REMOVE BURRS AND BREAK SHARP EDGES .005/.015+.45° DIMENSIONAL TOLERANCES		
MACHINED FRACTIONS ±1/32 2-PLACE ±.01 3-PLACE ±.005 ANGLES ± 1°	FABRICATED 0-311 ±1/8 OVER 311 ±1/4 ANGLES ±2°	CAST 0-12in. ±1/16 12-24in. ±1/8 OVER 24in. ±1/4 ANGLES ±2°
PLACE FOR PART NO A: CAST ON B: STL STP C: ETCH D: INK STP E: TAG		SCALE 1/16=1

MARCO MARINE SEATTLE
2300 W. Commodore Way, Seattle, Wa 98199, USA

TITLE
ASS'Y
SIDEWINDER 14
RIGHT HAND

DWG. NO. **B24747**

REV. **B** SH 1 OF 1



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Material List

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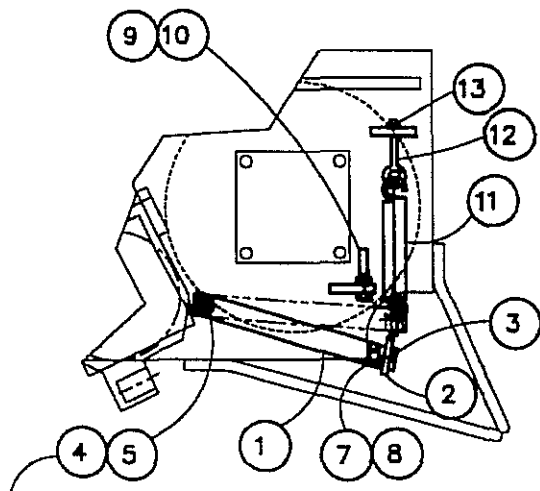
Page 4 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24391	C	MP	SCRAPER	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		24412	B	1	ARM	
2		24223	C	1	SCRAPER	
3		24221	B	1	PLATE	
4		15125	None	2	SCREW	
5		12486	None	4	WASHER	
6		12570	None	2	NUT	
7		89913	None	4	SCREW	
8		12507	None	4	WASHER	
9		64175	B	2	SCREW	
10		12568	None	2	NUT	
11		87513	None	2	SPRING	
12		88190	None	2	EYEBOLT	
13		12566	None	2	NUT	

LIST OF MATERIAL					ASSY DWG	BELOW
PC NO.	PART NO.	QTY	DESCRIPTION	MAT'L	SPECIFICATION	
1	C24412	1	ARM, SCRAPER			
2	B24223	1	SCRAPER (BLADE)			
3	B24221	1	BACKING PLATE			
4	15125	2	SCREW, CAP HEX	SST	1/2-13NC x 1	
5	12486	4	WASHER, FLAT	SST	1/2	
6						
7	89913	4	SCREW, CAP BUT SOC	SST	5/16 UNC x 1	
8	12507	4	WASHER, LOCK	SST	5/16 MED	
9	A64175	2	SCREW, ADJ.	SST	3/8 NC x 2	
10	12568	2	NUT, HEX	SST	3/8 NC	
11	87513	2	SPRING	SST		
12	88190	2	EYEBOLT	STL	CROSBY G-291, 1/4 x 2	
13	12566	2	NUT, HEX	SST	1/4-20NC	



1/8 SCALE

SECURE PC4 WITH A HIGH STRENGTH THREAD LOCKING COMPOUND, LOKTITE 271(RED) OR EQUAL.

C PC5 WAS 2, PC7 WAS 81564.
 B PC4 WAS 15096, PC5 WAS QTY 4, PC6 WAS 17428.

CAN 9/25/96
 CAN 12/11/95

SYM	REVISION			BY	DATE
	DWN	CAN	DATE 2-19-93	APPD	DATE
	LIST NO.	M24391		REV C	SHT 1 OF 1

MARCO MARINE
 SEATTLE
 2300 W. Commodore Way, Seattle, Wa 98199, USA





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Material List

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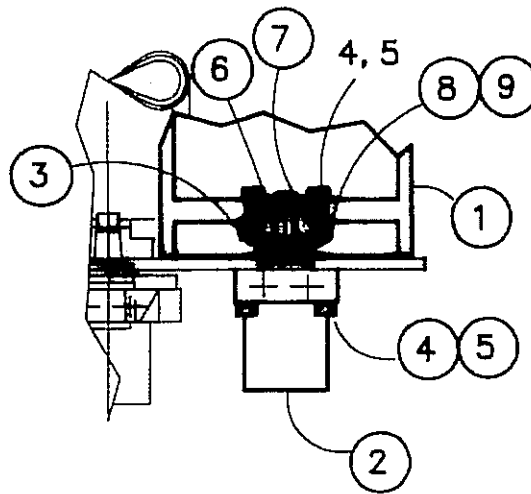
Page 5 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24692	C	MP	DRIVE	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		24705	None	1	ROLLER	
2		89715	None	1	MOTOR HYD	ROSS MF-12-08-25-AAAA
3		24707	B	1	HUB	
4		15099	None	8	SCREW	
5		12511	None	8	WASHER	
6		11196	None	1	KEY	
7		87927	None	1	NUT	
8		24737	None	2	SHIM	
9		24738	None	2	SHIM	

LIST OF MATERIAL DRIVE ROLLER & MOTOR ASSY					ASSY DWG BELOW
PC NO.	PART NO.	QTY	DESCRIPTION	MAT'L	SPECIFICATION
1	A24705	1	ROLLER, DRIVE		
2	89715	1	MOTOR, HYD		ROSS MF-12-08-25-AAAA
3	A24707	1	HUB		
4	15099	8	SCREW, HEX CAP	SST	1/2-13NC-2
5	12511	8	WASHER, LOC MED	SST	1/2
6	11196	1	KEY	STL	WOODRUFF #008, 1/4 x 1
7	87927	1	NUT, LOCK	ZPL	.75NF ESNA 4INTE-126
8	A24737	2	SHIM, .12	AL	
9	A24738	2	SHIM, .06	AL	
10					

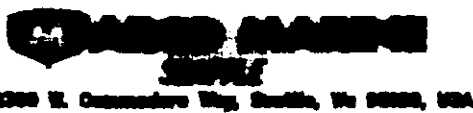


SCALE: 1/8

B PC4 WAS (4), PC5 WAS (4), ADDED PCS 7,8&9.
 B PC8 WAS 88977

CAN 11-27-95
 WLB 10/18/95

SYM	REVISION	BY	DATE
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DATE	10/2/95	APPD	DATE
LIST NO.	M24692	REV	C
SHT	1	OF	1



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Material List

14-OCT-2002 03:11

Page 6 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24693	F	MP	SQUEEZE	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		24706	None	1	ROLLER	
2		89716	None	1	MOTOR HYD	ROSS MF-08-08-25-AAAA
3		24707	B	1	HUB	
4		18752	None	4	SCREW	
5		12511	None	18	WASHER	
6		11196	None	1	KEY	
7		87927	None	1	NUT	
8		24405	B	1	CARRIER	
9		24406	B	1	COVER	
10		15002	None	1	FITTING LUBE	
11		24708	B	1	ARM	
12		88978	None	2	BEARING	
13		88979	None	1	BEARING	
14		11428	None	1	SEAL	
15		81595	None	4	SCREW	
16		12507	None	4	WASHER	
17		12851	None	2	SCREW	
18		89717	None	1	CYLINDER HYD	
19		88974	None	2	CLEVIS	
20		24402	C	1	BRACKET	
21		24403	None	1	SCREW	
22		15096	None	4	SCREW	
23		12570	None	2	NUT	
24		12568	None	2	NUT	



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Material List

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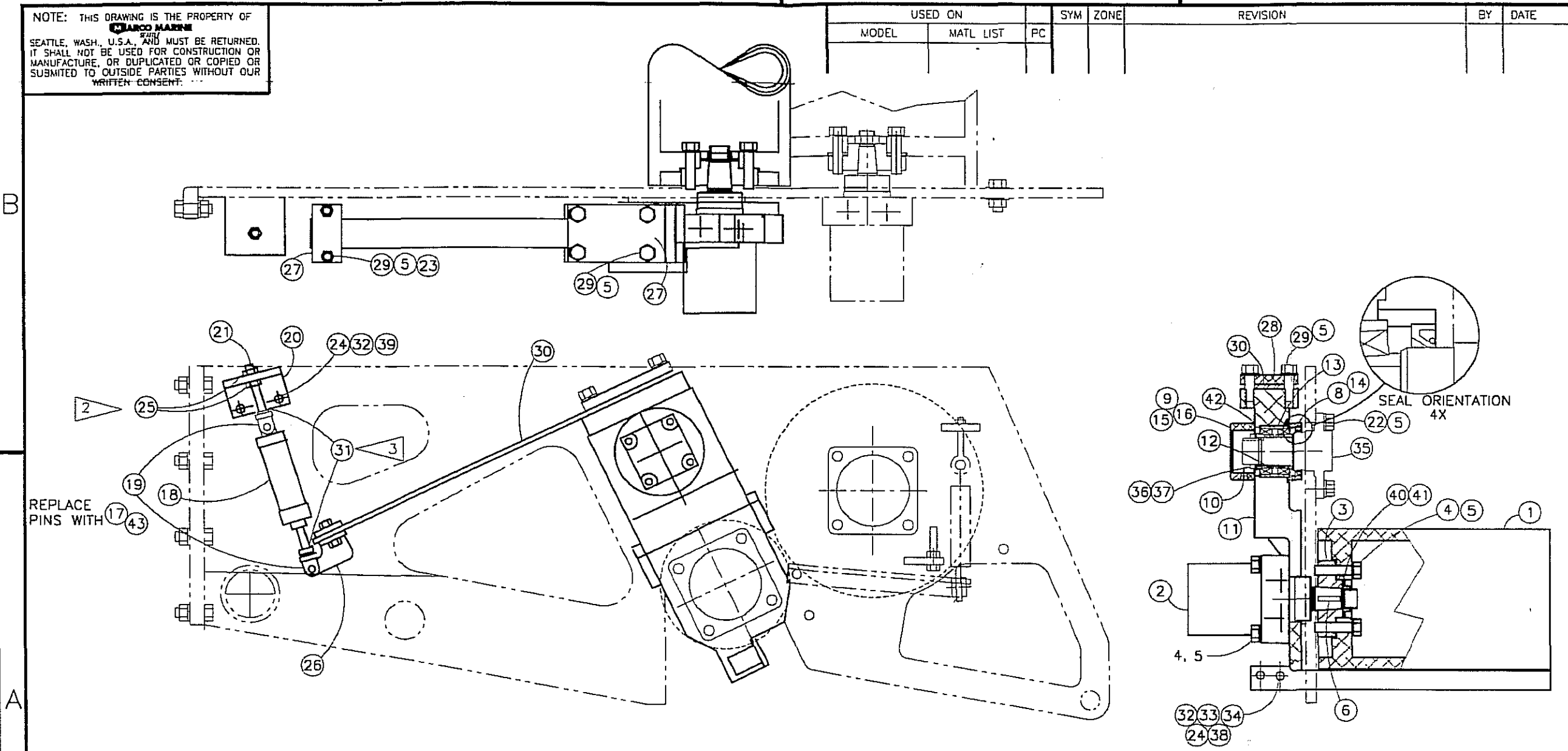
Page 7 of 15

1 STANDARD ASSEMBLY

Piece No.	ML	Component Part	Rev	Qty Noun	Description
25		12578	None	2	NUT
26		24709	B	1	BRACKET
27		24409	None	1	PLATE
28		24723	None	1	RETAINER
29		15054	None	6	SCREW
30		24414	B	1	LEAF
31		88549	None	2	NUT
32		87843	None	4	WASHER
33		24413	None	1	SCRAPER
34		12905	None	2	SCREW
35		24422	C	1	SHAFT
36		11275	None	1	WASHER
37		11263	None	1	NUT
38		12485	None	2	WASHER
39		12895	None	2	SCREW
40		24737	None	2	SHIM
41		24738	None	2	SHIM
42		24874	None	1	GASKET
43		17421	None	2	NUT

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USED ON		SYM	ZONE	REVISION	BY	DATE
MODEL	MATL LIST					



REPLACE PINS WITH 17

- NOTES:
 1. LEFT HAND VERSION SHOWN. FOR RIGHT HAND, ASSEMBLE ON THE OTHER SIDE OF THE BELT UNIT.
 2. ADJUST CYLINDER POSITION SO THERE IS 3/4" DEFLECTION IN THE LEAF SPRING AT FULL ROD EXTENSION.
 3. APPLY RED LOCKTITE ON THREADS.

MATL	M24693	DRN	CAN	DATE	11/28/95
SIZE		CKD		DATE	
CAST NO.		APVD		DATE	
EXCEPT AS NOTED: SURFACE FINISH 250		PLACE FOR PART NO.			
DIMENSIONS ARE IN INCHES. DO NOT SCALE DRAWING. REMOVE BURRS AND BREAK SHARP EDGES .005/.015+45° DIMENSIONAL TOLERANCES		A: CAST ON B: STL STP C: ETCH D: INK STP E: TAG			
MACHINED	FABRICATED	CAST	SCALE 1/5=1 WT		
FRACTIONS ±1/32	0-311 ±1/8	0-12in ±1/16			
1-PLACE ±.01	OVER 311 ±1/4	12-24in ±1/8			
3-PLACE ±.005	ANGLES ±2°	OVER 24in ±1/4			
ANGLES ±1°		ANGLES ±2°			

MARCO MARINE
 SEATTLE
 2300 W. Commodore Way, Seattle, Wa 98199, USA

TITLE
SQUEEZE ROLLER ASSY WITH DRIVE MOTOR
SIDEWINDER SERIES FILTERBELT UNITS

DWG. NO. **B24693** REV. **F** SH. **1** OF **1**



Marco Marine Seattle

Material List

14-OCT-2002 03:11

Page 8 of 15

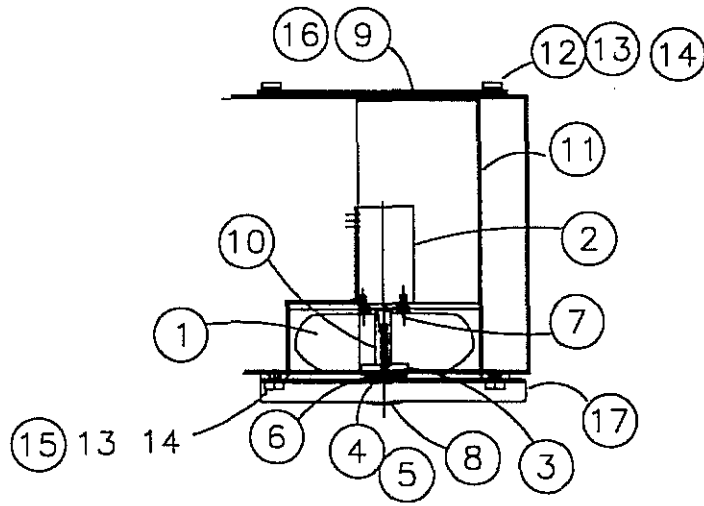
Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24694	D	MP	PUMP	

Piece		Component		Rev	Qty	Noun	Description
No.	ML	Part					
1		24619	F		1	PROPELLER	
2		24624	B		1	MOTOR HYD	DANFOSS 89482 REWORKED (FAC B513-053) ACAD
3		24604	B		1	RETAINER	
4		89483	None		1	SCREW	
5		12483	None		1	WASHER	
6		85488	None		2	SCREW	
7		12996	None		3	SCREW	
8		89523	None		1	PLUG	
9		66193	None		1	GASKET	
10		24616	C		1	SPACER	
11		24617	D		1	MOUNT	
12		89501	None		3	SCREW	
13		12509	None		6	WASHER	
14		12568	None		6	NUT	
15		15118	None		3	SCREW	
16		24411	None		1	COVER	
17		24736	None		1	COWLING	

LIST OF MATERIAL	INDUCTION PUMP ASSY	ASSY DWG BELOW
------------------	----------------------------	-----------------------

PC NO.	PART NO.	QTY	DESCRIPTION	MAT'L	SPECIFICATION
1	A24619	1	PROPELLER		
2	A24624	1	MOTOR, HYD		MODIFIED DANFOSS 151G0034 (.79 CU IN.)
3	A24604	1	RETAINER	AL	
4	89483	1	SCREW, HEX HD	SST	.25NF x 2.25, DR HD
5	12483	1	WASHER, FLT	SST	.25
6	85488	2	SCREW, HEX	SST	.31NC x 1.25
7	12996	3	SCREW, CAP	SST	.25NF x .5
8	89523	1	PLUG, HOLE	POLYETH	ø1.25 HEYCO 2740
9	A66193	1	GASKET		
10	A24616	1	SPACER	SST	



SCALE: 1/8

M24694

D	PC12 WAS (6), ADD PC15.	CAN	9/25/96
C	PC7 WAS (4), ADD PC10, PC12 WAS (3)88464, PC15 WAS (3)15188.	CAN	12/1/95
B	PC 17 WAS C24000	CAN	11-15-95

SYM	REVISION	BY	DATE
<p style="font-size: small; margin: 0;">2300 W. Commodore Way, Seattle, Wa 98199, USA</p>		DWN CAN DATE 10/2/95 APPD DATE	REV SHT OF D 1 2
LIST NO. M24694			





Marco Marine Seattle

Material List

14-OCT-2002 03:11

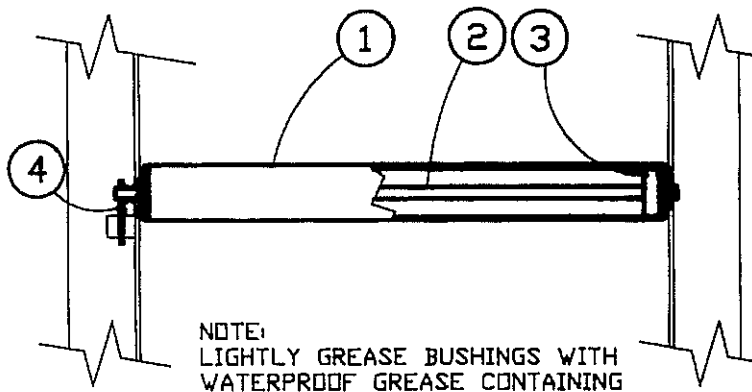
Page 9 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24712	B	MP	ROLLER	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		24718	None	1	ROLLER	
2		24719	B	1	PIN	
3		89721	None	2	BUSHING FLG	
4		12642	None	1	PIN	

LIST OF MATERIAL					ROLLER ASSY	SIDEWINDER FILTERBELT	ASSY DWG	BELOW
PC NO.	PART NO.	QTY	DESCRIPTION	MAT'L	SPECIFICATION			
1	A24718	1	ROLLER	AL	1 1/2 X SCH40 x 11.38			
2	A24719	1	PIN	SST				
3	89721	2	BUSHING	ACETAL	BOSTON 12P40D-.38/57344			
4	12642	1	PIN, COTTER	SST	.125 x 2			
5								
6								
7								
8								
9								
10								



NOTE:
LIGHTLY GREASE BUSHINGS WITH
WATERPROOF GREASE CONTAINING
MOLYDISULFIDE BEFORE INSERTING PIN.

1/4 SCALE

B	PC4 WAS(2)15664.	CAN	12/11/95
---	------------------	-----	----------

SYM	REVISION	BY	DATE
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 2300 W. Commodore Way, Seattle, Wa 98199, USA	DWN	CAN	DATE	10/13/95	APPD	DATE	
	LIST NO.	M24712			REV	SHT	OF
					B	1	1



Marco Marine Seattle

Material List

14-OCT-2002 03:11

Page 10 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24713	F	MP	PREPIPING	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1	M	66300	B	2	VALVE	ML HVF-101 FLOW CONTROL VALVE (BRAND 3/4PORTS) ACAD
2		12036	None	2	FITTING TUBE	
3		83428	None	2	FITTING TUBE	
4		12093	None	1	FITTING TUBE	
5		19997	None	4	SCREW	
6		83816	None	2	FITTING TUBE	
7		85527	None	2	FITTING TUBE	
8		89750	None	2	FITTING TUBE	
9		89080	None	1	FITTING TUBE	
10		80019	None	1	FITTING TUBE	
11		84306	None	2	FITTING TUBE	
12		18632	None	4	FITTING TUBE	
13		84258	None	2	FITTING TUBE	
14		89693	None	7	CLAMP	
15		12868	None	5	SCREW	
16		12567	None	7	NUT	
17		24710	None	11	PLATE	
18		24711	None	3	PLATE	
19		89633	None	3	FITTING TUBE	
20		17961	None	6	SCREW	
22		89751	None	1	HOSE ASSY	
23		89752	None	1	HOSE ASSY	
24		89753	None	1	HOSE ASSY	

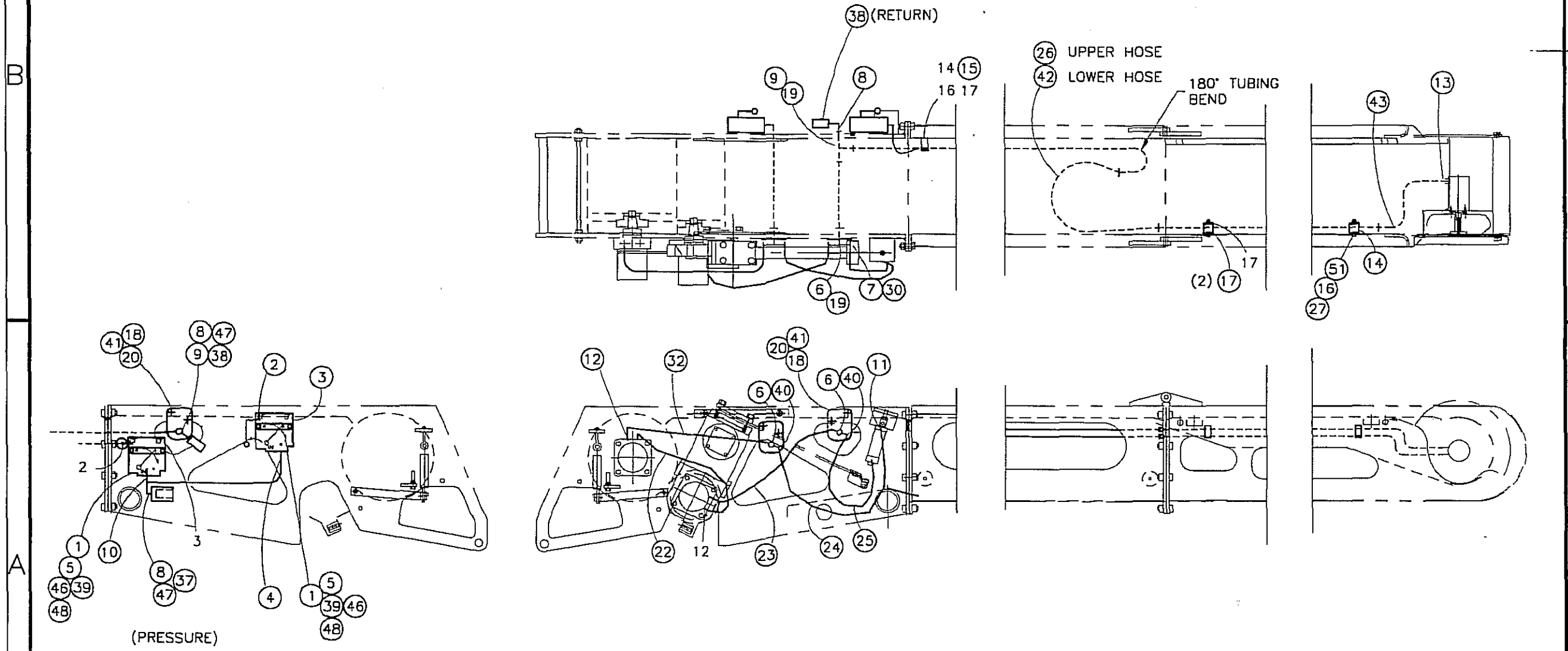


1 STANDARD ASSEMBLY

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
25		89754	None	1	HOSE ASSY	
26		89755	None	1	HOSE ASSY	
27		12507	None	7	WASHER	
30		16885	None	20	FITTING TUBE	
31		12177	None	20	FITTING TUBE	
32		9042	None	360	TUBE, ROUND	
33		88723	None	6	FITTING TUBE	
37		89745	None	2	FITTING QD	
38		89746	None	2	FITTING QD	
39		24740	None	2	STOP	
40		83098	None	4	FITTING TUBE	
41		87843	None	6	WASHER	
42		89756	None	1	HOSE ASSY	
43		89757	None	2	HOSE ASSY	
46		24741	None	2	SPACER PL	
47		13259	None	2	FITTING PIPE	
48		12505	None	8	WASHER	
51		12869	None	2	SCREW	

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B. ADDED PCS 34 THRU 37. WLB 10/16/95
 C. REMOVED EF PLUMBING. CAN 11/10/95
 D. AS BUILT. CAN 11/10/95
 E. SEE ML. CAN 9/96
 F. ADD PC48,51. CAN 4/4/02



DRW CAN	DATE 10/3/95	MARCO MARINE SEATTLE	
CKD	DATE	TITLE PREPIPING	SIDEWINDER 17 OR 20 RIGHT HAND
SCALE 1/12=1	WT	DWG. NO. B24713	REV F
			SH 1 OF 1



Marco Marine Seattle

Material List

14-OCT-2002 03:11

Page 12 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
66300	B	MA	VALVE	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		66298	C	1	BODY	
2		66301	B	1	SPOOL	
7	M	66468	B	1	VALVE	COMMON PARTS HVF-**-** ACAD



Marco Marine Seattle

Material List

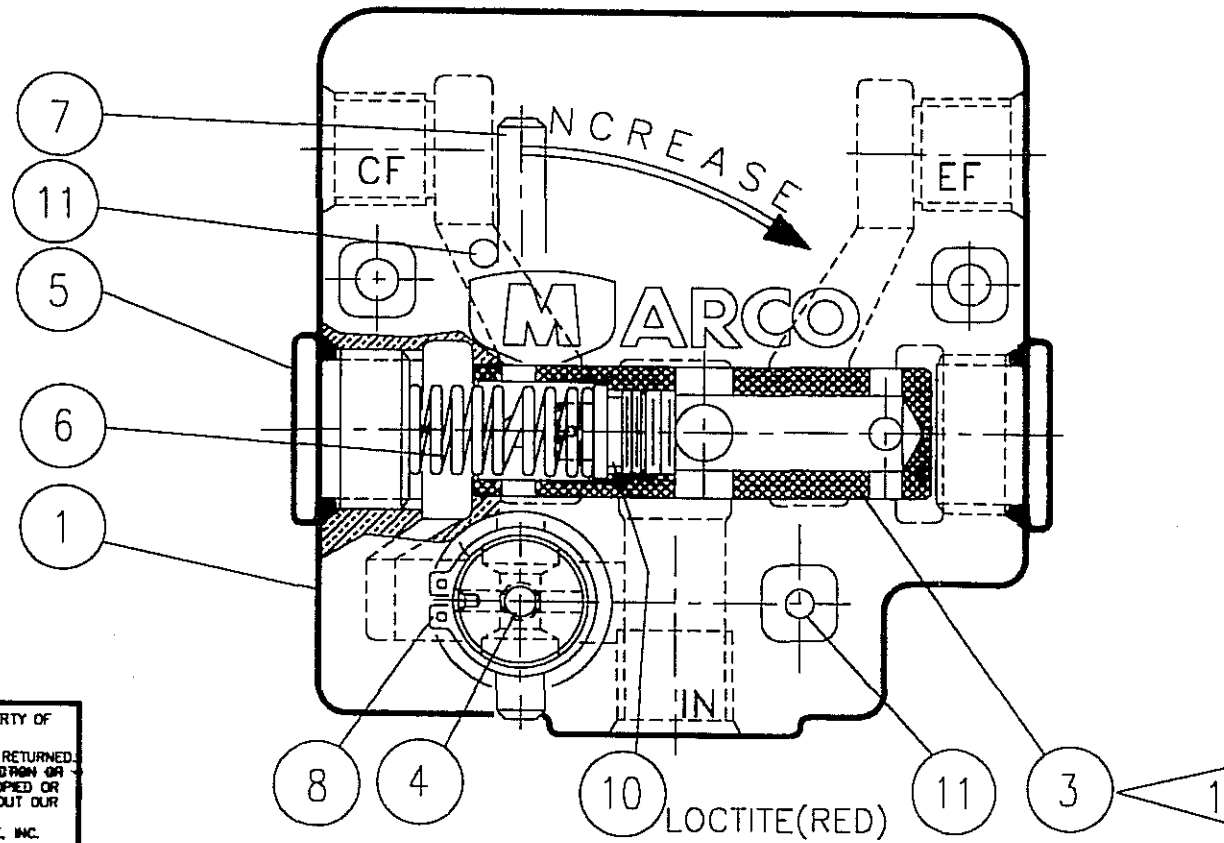
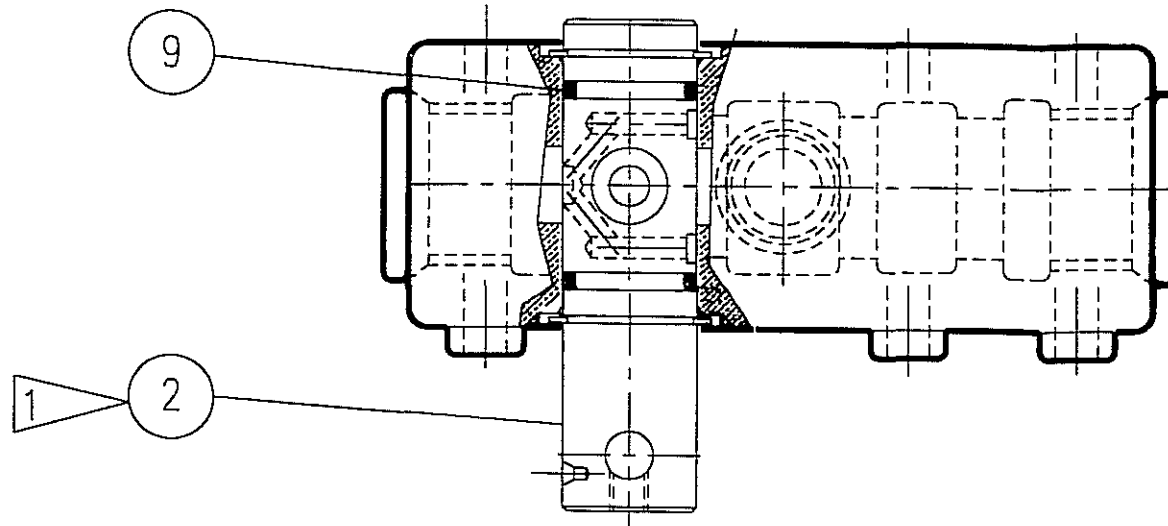
14-OCT-2002 03:11

Page 13 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
66468	B	MP	VALVE	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
3		66302	B	1	SPOOL	
4		13103	None	1	SCREW	
5		88763	None	2	FITTING TUBE	
6		89574	None	1	SPRING	
7		66432	None	1	HANDLE	
8		89670	None	2	SNAP RING	
9		18318	None	2	O-RING	
10		66431	B	1	PLUG	
11		12691	None	2	PIN	



NOTES:

1. SELECT SPOOLS FOR .0004 MAX. CLEARANCE. FINE LAPPING COMPOUND CAN BE USED IF NECESSARY TO ELIMINATE "STICKING".
2. THOROUGHLY CLEAN ALL PASSAGWAYS BEFORE ASSY.
3. OIL ALL INTERNAL PARTS.
4. TEST ASSY AT 500 PSI FOR 0-30 GPM FLOW AND MAX 30 ML LEAKAGE IN 90 SECONDS.

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USED ON: M66300
 COMMON PARTS: M66468
 REF: OUTLINE B66222

DRN WLB	DATE 2/16/95	 2300 W. Commodore Way, Seattle, Wa 98199, USA
CKD RAS	DATE 1-96	
APVD	DATE	TITLE FLOW CONTROL ASSEMBLY HVF-**-**
SCALE 1:1	WT	DWG. NO. B. 66299
		REV C
		SH OF



Marco Marine Seattle

Material List

14-OCT-2002 03:11

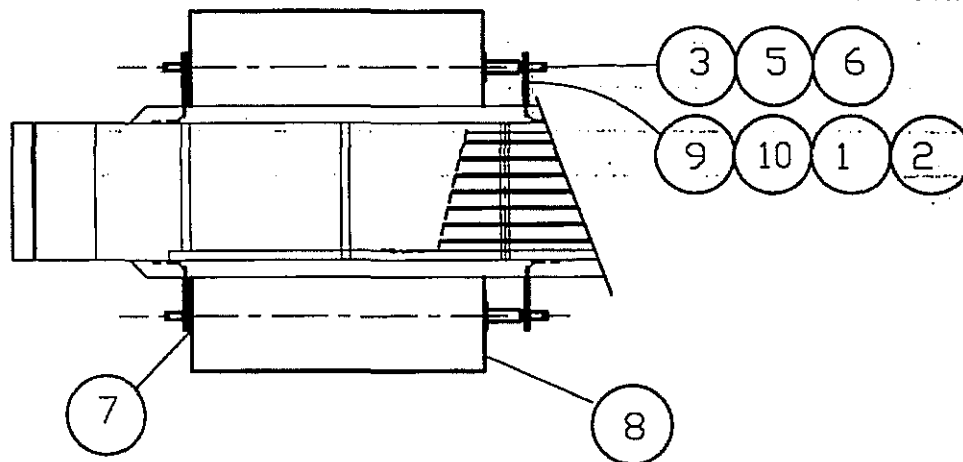
Page 14 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24751	C	MP	FLOAT ASSY	

Piece		Component			
No.	ML	Part	Rev	Qty Noun	Description
1		12568	None	8 NUT	
2		12509	None	8 WASHER	
3		12646	None	4 PIN	
5		24720	B	2 PIN	
6		24648	None	2 SPACER	
7		24681	None	8 WASHER	
8		89711	None	2 FENDER	
9		24722	B	4 BRACKET	
10		12882	None	8 SCREW	

LIST OF MATERIAL		FLOAT ASSY		SIDEWINDER 20	ASSY DWG	BELOW
PC NO.	PART NO.	QTY	DESCRIPTION	MAT'L	SPECIFICATION	
1	12568	8	NUT HEX	SST	3/8NC	
2	12509	8	WASHER LOCK	SST	3/8	
3	12646	4	PIN, COTTER	SST	.19 x 1.25	
4						
5	A 24720	2	PIN	SST		
6	A24648	2	SPACER	PVC	.75SCH80 x 3	
7	A24681	4	WASHER	UHMW		
8	89711	2	FENDER 10"	VINYL	POLYFORM HTM-3, BLACK	
9	A 24722	4	BRACKET FLOAT 8"			
10	12882	8	SCREW HEX	SST	3/8NC X 1	



M 24751

C PC 7 WAS QTY (8)
 B CORRECTED ASSY DWG

CAN 9/24/96
 CAN 6/13/96

SYM	REVISION			BY	DATE
 2300 W. Commodore Way, Seattle, Wa 98199, USA	DWN	CAN	DATE 2-23-96	APPD	DATE
	LIST NO.	M 24751		REV C	SHT 1 OF 1

REF: M24654 M24701



Marco Marine Seattle

Material List

14-OCT-2002 03:11

Page 15 of 15

Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24864	None	MP	BOOM	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
1		24704	None	1	FRAME	
2		24865	None	1	FRAME	
3		24752	C	1	FRAME	
4		15054	None	19	SCREW	
5		12480	None	19	WASHER	
7		12570	None	19	NUT	



Marco Marine Seattle

Material List

14-OCT-2002 03:09

Page 1 of 1

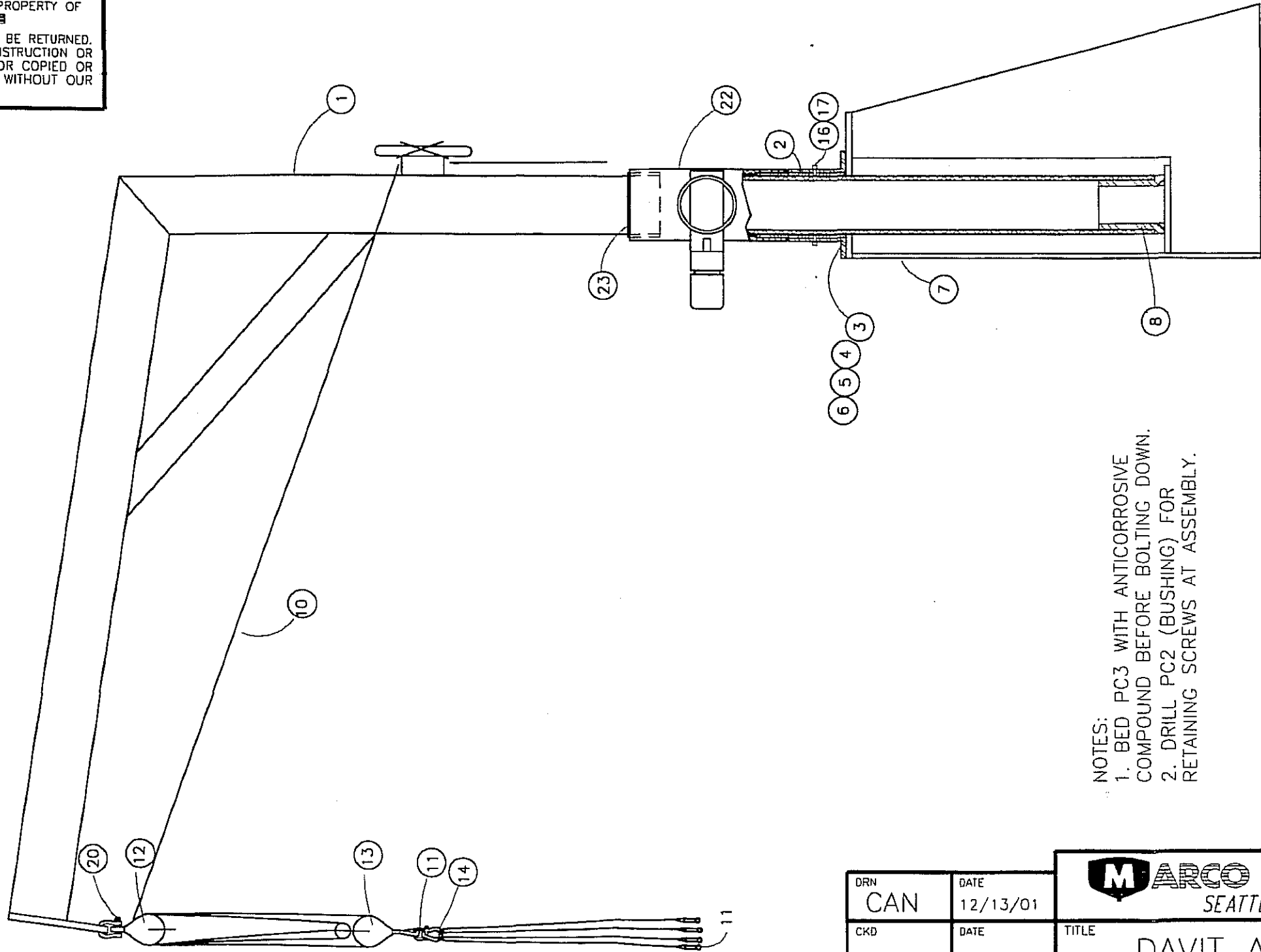
Material List No: 1 STANDARD ASSEMBLY

Part Number	Rev	Type	Noun	Description
24868	None	MA	DAVIT	

Piece No.	ML	Component Part	Rev	Qty	Noun	Description
0		24870	None	0	DRAWING	
1		24423	None	1	DAVIT	
2		24730	None	1	BUSHING	
3		24731	None	1	HOUSING	
4		15072	None	2	SCREW	
5		12511	None	2	WASHER	
6		12570	None	2	NUT	
7		24754	None	1	BASE	
8		24733	None	1	BUSHING FLG	
10		89770	None	40	ROPE	
11		89729	None	4	SHACKLE	
12		91308	None	1	BLOCK	
13		89769	None	1	BLOCK	
14		24734	B	1	SLING	
16		12845	None	2	SCREW	
17		12505	None	2	WASHER	
20		88571	None	2	SHACKLE	
22		24869	None	1	ARM	
23		24425	B	2	BUSHING	

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NOTES:
 1. BED PC3 WITH ANTICORROSIVE
 COMPOUND BEFORE BOLTING DOWN.
 2. DRILL PC2 (BUSHING) FOR
 RETAINING SCREWS AT ASSEMBLY.

DRN CAN	DATE 12/13/01
CKD	DATE
SCALE 1/8=1	WT

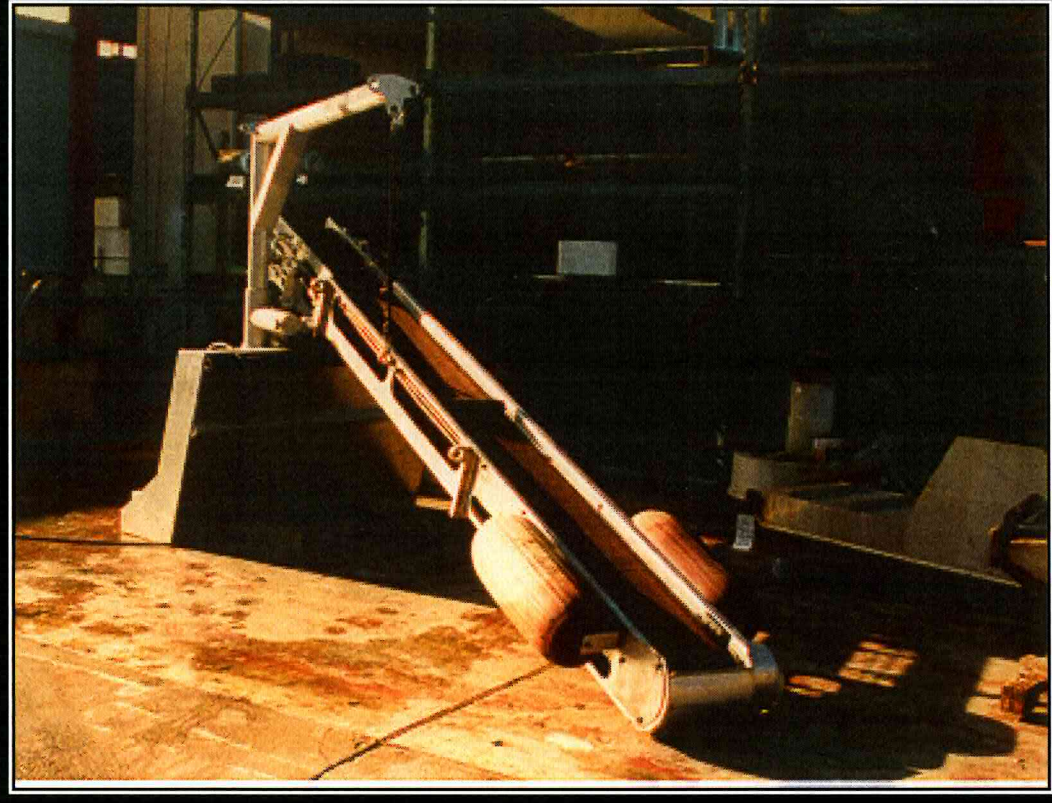
MARCO MARINE
SEATTLE

TITLE
DAVIT ASSY

DWG. NO. B24870

REV. A SH 1 OF 1

MARCO SIDEWINDER SKIMMER
Performance Specifications

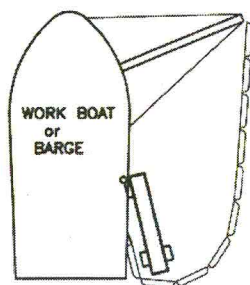


The MARCO SIDEWINDER Harbor VOSS unit features the Filterbelt Oil and Debris Recovery system in a package which is adaptable to a variety of workboats, barges and shoreside structures. The skimmer can be used in both stationary and advancing modes, with or without containment booms. Intended as a harbor skimmer, the SIDEWINDER is deployed over the side or over the bow of the host vessel. Its ability to recover oil in rough weather is limited only by the capability of the host vessel.

The Sidewinder Filterbelt oil and debris recovery system is comprised of the one foot wide Filterbelt ladder, mounting davit, bulwark pivot and oil collection hopper with debris screen. Belt speed and induction pump speed controls are mounted on the Filterbelt ladder.

DEPLOYMENT MODES

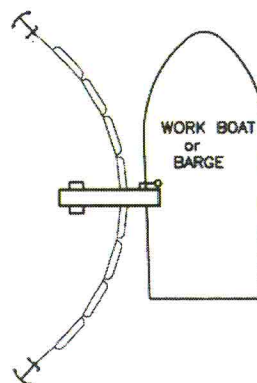
ADVANCING

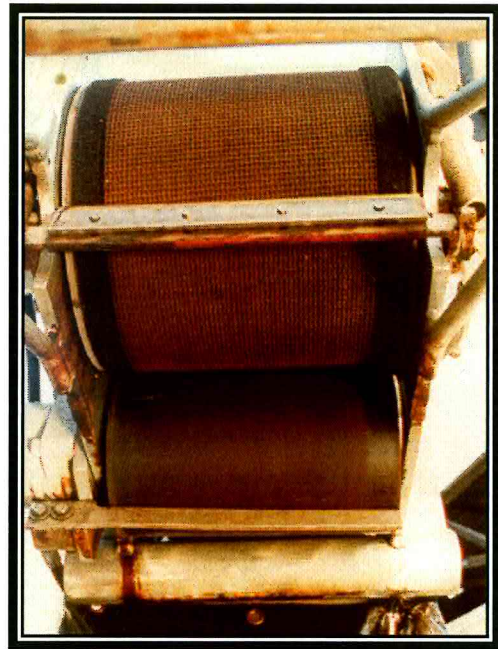
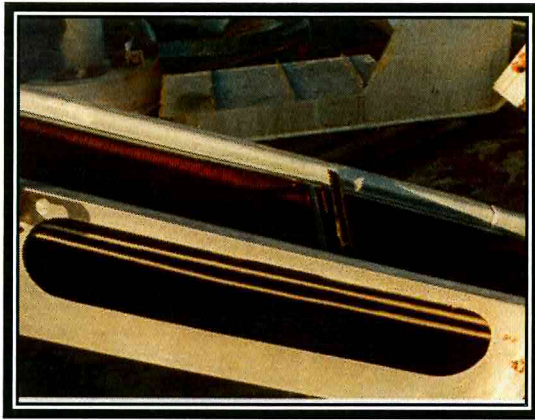


BOW MOUNT

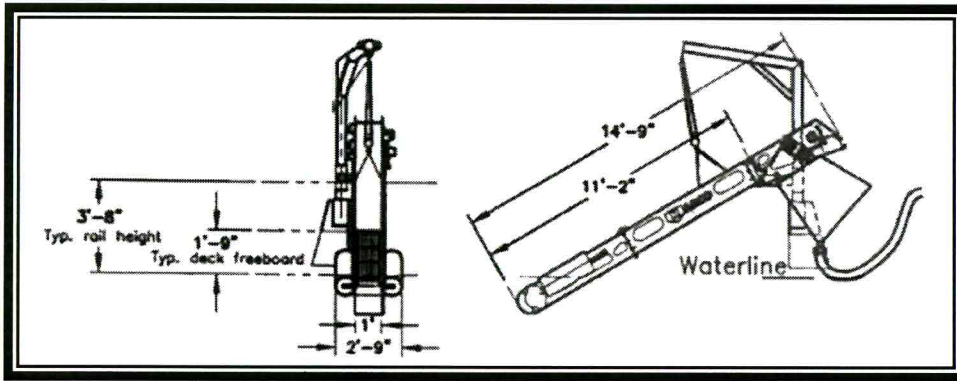


STATIONARY





Adaptable To Many Vessels
stationary Or Advancing Made Air
Transportable



Length:

Standard Length = 14'- 9"

Available in lengths of 11' - 9", 17' - 9", 20' - 9"

Adaptable to freeboards up to 6' - 7".

Hydraulic Requirements: 10 GPM at 1600 PSI.

RECOVER RATES

Belt Size	Group 2 Persistant Oils (Filterbelt)	Group 3 Persistant Oils (Bunkerbelt)	Group 4 Persistant Oils (Bunkerbelt)
12" Belt	207 bbls/hr	427 bbls/hr	427 bbls/hr

PRICE

17' - 9" Sidewinder skimmer with hydraulic hoses.....\$35,500.00

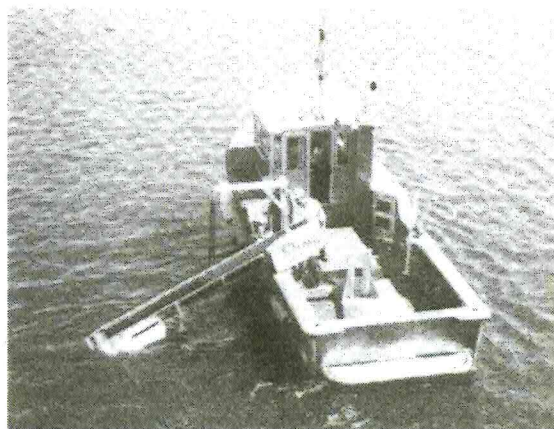
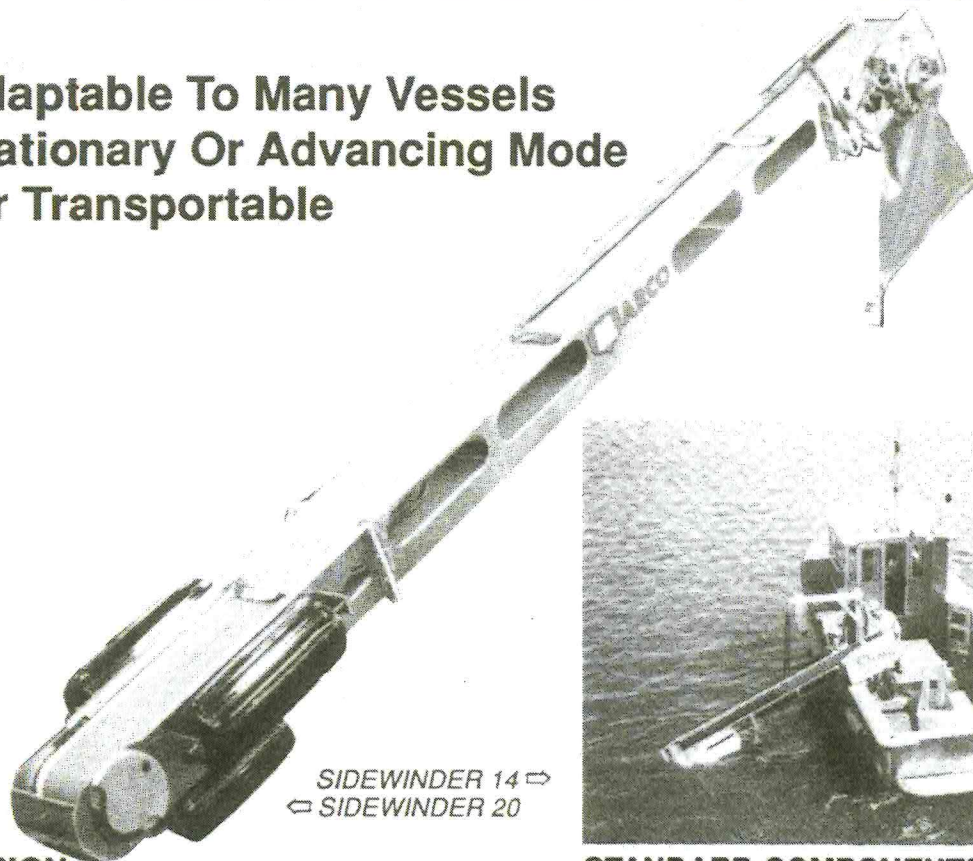


HARBOR VOSS

VESSEL OF OPPORTUNITY SKIMMING SYSTEM

THE MARCO SIDEWINDER

- Adaptable To Many Vessels
- Stationary Or Advancing Mode
- Air Transportable



MISSION:

The MARCO SIDEWINDER Harbor VOSS unit features the Filterbelt Oil and Debris Recovery system in a package which is adaptable to a variety of workboats, barges and shoreside structures. The skimmer can be used in both stationary and advancing modes, with or without containment booms. Intended as a harbor skimmer, the SIDEWINDER is deployed over the side or over the bow of the host vessel. Its ability to recover oil in rough weather is limited only by the capability of the host vessel.

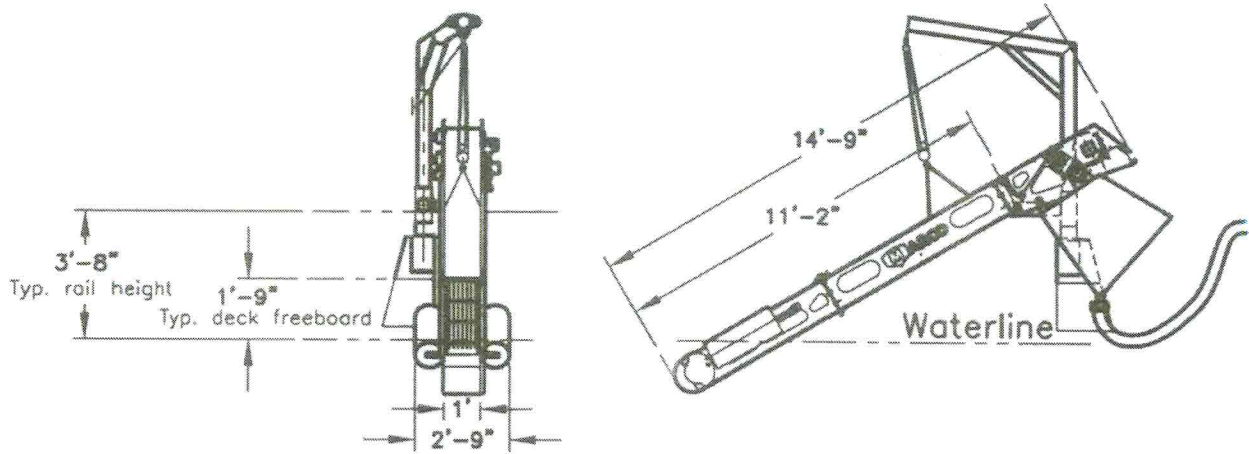
STANDARD COMPONENTS:

The Sidewinder Filterbelt oil and debris recovery system is comprised of the one foot wide Filterbelt ladder, mounting davit, bulwark pivot and oil collection hopper with debris screen. Belt speed and induction pump speed controls are mounted on the Filterbelt ladder.

OPTIONAL ITEMS:

Diesel/Hydraulic Power Pack, Recovered Oil Transfer Pump, Recovered Oil Hoses, Spare Filterbelts, and Spare Parts.

MARCO HARBOR VOSS SPECIFICATIONS

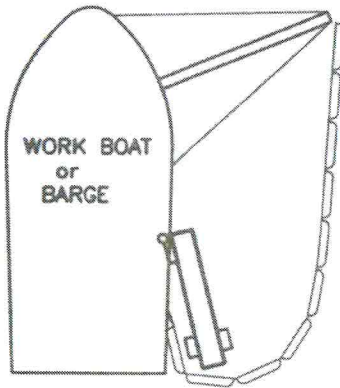


Length: Standard Length = 14'-9"
 Available in lengths of 11'-9", 17'-9", or 20'-9".
 Adaptable to freeboards up to 6'-7".

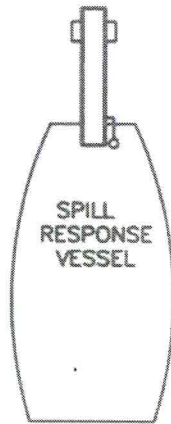
Hydraulic Requirements: 10 GPM at 1600 PSI.

DEPLOYMENT MODES

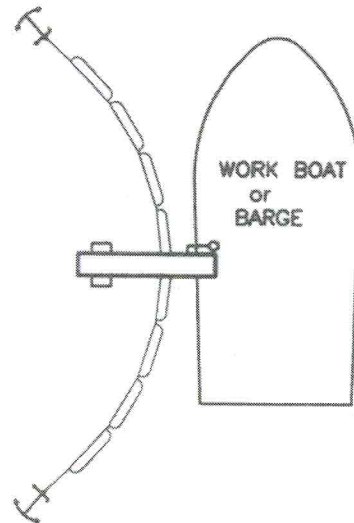
ADVANCING



BOW MOUNT



STATIONARY



RECOVERY RATES

Belt Size	Group 1 Non-Persistent Oils (Dieselbelt)	Group 2 Persistent Oils (Filterbelt)	Group 3 Persistent Oils (Bunkerbelt)	Group 1 Persistent Oils (Bunkerbelt)
12" Belt	50 bbls/hr	207 bbls/hr	427 bbls/hr	427 bbls/hr

MARCO POLLUTION CONTROL

2300 West Commodore Way * Seattle, WA 98199 USA
 Phone (206)285-3200 * FAX (206)285-2373