

# Underway Replenishment Products



Catalog  
709

Certified System



[410] 643-8900

[www.HYDRASEARCH.com](http://www.HYDRASEARCH.com)

# Underway Replenishment Products

## Catalog 709

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While every effort has been made to ensure the accuracy of the enclosed information, we cannot be responsible for any errors that may have arisen. We do request any notification of any errors or omissions so that the necessary changes can be made.

# Underway Replenishment Products

## *Committed to Quality and Innovation*

Founded in 1962, Hydrasearch Company, Inc. is dedicated to providing military and commercial marine vessels with the highest quality products, fully compliant with customer requirements.

We have successfully built our business through strict adherence to product design and quality control, interchangeability with existing products, close attention to customer requirements and delivery needs, and competitive pricing. As a result, we have steadily increased our market presence.

Today, Hydrasearch products are found in marine vessels throughout the world. We supply all major shipyards in the U.S., and our market continues to grow internationally.

## *A Knowledge Base Built on Experience*

For Over 40 years, Hydrasearch has focused on the design, development, and manufacture of fluid systems and components. Many of our original products were specially designed hydraulic systems and fueling-at-sea systems for the U.S. Navy. Our in-depth knowledge of hose fitting designs for demanding applications soon led to the development of innovative hose couplings and related products that are now part of many fuel and water handling systems used by military and commercial customers alike.

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# Underway Replenishment Products

## Underway Replenishment Equipment

Hydrasearch is the world's leading manufacturer of underway replenishment equipment - a core product line since the early 1960s. Our comprehensive range of offerings include equipment and components for fueling, solid cargo and vertical replenishment-at-sea. Most of our products meet the requirements of U.S. Military Specifications and U.S. Navy Drawings.

## Quality Control Ensures Reliability

Supplying high quality products is our foremost concern at Hydrasearch. We maintain an ISO 9001 registered Quality System which ensures strict adherence to requirements. Many Hydrasearch products contain special codes that can be traced to a specific heat of raw material whose chemical and physical properties have been analyzed, tested, and recorded.

## Complete Customer Satisfaction

Supplying products that meet strict design and quality standards is only part of our mission. At Hydrasearch, we strive to establish and maintain close relationships with each of our customers. We pay attention to the little details that will help you obtain just what you need, when you need it. If your requirements call for more than a "standard" product, our technical sales staff will work to satisfy those special needs.

## Statement of Guaranty

Hydrasearch Company, Inc. guarantees that its own designed and manufactured equipment meets the overall specifications, technical proposals or published catalog data.

Hydrasearch equipment is guaranteed to be free of defects in materials and workmanship for twelve (12) months from date of shipment. Components purchased for the above equipment, and under warranty by another manufacturer, carry that manufacturer's warranty only.

Liabilities under this warranty are limited to the replacement, correction, or repair of the defect at the original place of shipment. No liability can be accepted for the loss of revenues due to non-operation of equipment, nor for the cost of repair beyond those stated above.



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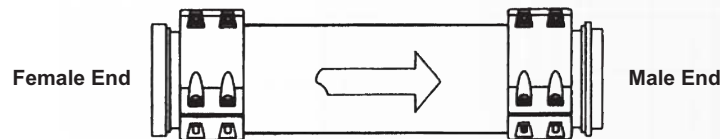
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# Underway Replenishment Products

## Alpha-Numeric Listing

This catalog is based on an alpha-numeric principle, closely following the Underway Replenishment Hardware & Equipment Manual (S9570-AD-CAT-010). For example, adapters are listed before clamps, and 2-1/2" before 7". Miscellaneous parts will be found towards the end of the catalog. All adapters, reducers, couplings, etc. are listed under the principle that whichever end "sees" the flow first is listed first. Since the male end is always on the delivery end of the hose, the female end "sees" the flow first. (See figure below illustrating primary flow direction.)



## Pricing and Availability

Please contact the Hydrasearch Technical Sales Department at (410) 643-8900 or email us at [sales@hydrasearch.com](mailto:sales@hydrasearch.com) for pricing and availability information.

## Ordering Information

When ordering, all bulk hose and assembly lengths are in inches. For example, 420L = 35 feet long.

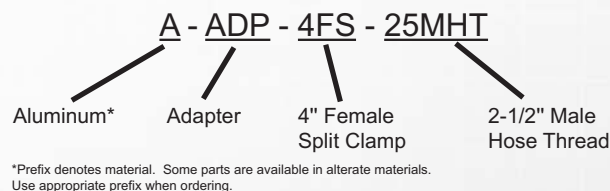
Bore Sizes are noted as follows: 25 = 2-1/2"

6 = 6"

4 = 4"

7 = 7"

All flanges denoted by "F" have ANSI Standard 150# dimensions. All dimensions are given in inches. (See below for explanation of a typical part number)



## Accuracy of Information

Every effort has been made to ensure the accuracy of the information contained in this catalog. While we cannot assume liability for any errors or omissions, we encourage you to contact our Customer Service Department with such information, so that the necessary changes can be made.

## Other Catalogs Available

Please contact our Technical Sales Department at (410) 643-8900 or email us at [sales@hydrasearch.com](mailto:sales@hydrasearch.com) to request other Hydrasearch product literature, free of charge:

- Marine Hose & Fittings
- Reattachable Couplings for Layflat & Rubber Hoses
- Connect/Disconnect Flange Connectors
- Tech-O-Seal Valves & Fittings

# Underway Replenishment Products

## Abbreviations Used in Hydrasearch Part Numbers

### A

A	aluminum or type A
AD	automatic disconnect
ADP	adapter
AY	assembly

### B

B	bronze or type B
BF	blank flange
BG	bag
BKT	becket
BML	brummel
B/MOD	modified "B" end
BRI	bridle
BS	breakable spool
BUO	buoy
BWG	bulwark gripper

### C

C	type "C"
CAT	catcher
CG	cap and gasket
CGO	cargo
CH	cargo hook
CHR	chair
CI	cast iron
CLMP	clamp
CN	canvas
CON	conical
CONN	connector
COV	cover
CPL	coupling
CRK	crook
CRMP	crimper
CTR	cutter

### D

D	diameter
DVE	device
DM	distress marker
DP	drop
D/P/REC	double probe receiver
D/PR	double probe

### E

EF	end fitting
ELB	elbow

### F

F	flange
FAS	fueling-at-sea
FE	female end
FF	female/female
FIT	fitting
FHT	female hose thread
FLT	female through
FRM	frame
FS	female split clamp end

### G

GPNL	grapnel
GSK	gasket

### H

H/A	hose assembly
H/H	hose handling
HK	hook
HL	highline
HM	hose messenger
HOS	hose
HST	hoisting
HYD	hydraulic

### I

IH/OH	inhaul/outhaul
IMP	impact
INBD	inboard
INHL	inhaul
INST	instructions

### J

JNT	joint
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### L

L	lower or length
LCH	latch
LNCHR	launcher
LNK	link
L/O/D	lay on deck
LT	light
LTR	litter

### M

M	manila
ME	male end
MES	messenger
MHT	male hose thread

### M (Cont.)

MOD	modified
MS	male split clamp end
MSNG	messenger

### N

NR	nylon rope or night RAS
----	-------------------------

### P

PDL	paddle
PEL	pelican
PF	probe fueling
PGTL	pigtail
PHN	phone
PLG	plug
PLT	plate
POS	position
PR	probe
PRO	protective
PR/R	probe receiver
P/S/R	probe sleeve retractor

### Q

QR	quick release
Q/T/D	quick trip device



# Underway Replenishment Products

## Abbreviations Used in Hydrasearch Part Numbers



### R

R	rig or rubber
REC	receiver
RELACH	relatching
RET	retractor
RG	retrograde
RGN	rigging
RK	rack
R/L or RL	riding line
RL/MA	remating line messenger attachment
RNG/O	o-ring
ROB	robb coupling

### S

S	split
S81	segmental '81
SADL	saddle
S/A	safety anchor
SGNL	signal
SHKL	shackle
SLNG	sling
SLR	shot line return
SLV	sleeve
SP	special
S/P	single probe or shear pin

### S (Cont.)

SPL	spanline
S/P/REC	single probe receiver
SPW	spanwire
S/PWR	sound powered
SS	stainless steel
STA	station
STAR	surf, traveling actuated remotely
STB	stabilizer
STBD	starboard
STBK	strongback
STOW	stowage
STP	stopper
STR	stress, strap, or stream
STROL	stream trolley
STR/PR	star probe
SUP	support
SW	swivel

### T

T1	type 1
T2	type 2
T/A	towing adapter
TFD	threefold
TL	tool
TOW	towing
T/P	tie plate
TPR	tapered
TRAN	transfer
TROL	trolley
TUB	tube
TVL	traveling

### U

U	upper or union
UBLT	u-bolt
UR	urethane

### W

WL	weak link
WND	wand
WR	wire rope
WRE	wire
WRN	wrench

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



# Underway Replenishment Products

## A

### Adapters

Towing Adapter .....	B-ADP/SW-25FHT-25MS .....	1
Towing Adapter Clamp .....	SS-CLMP-T/A-AF .....	1
Female Split Clamp to Male Hose Thread Adapter .....	B-ADP-4FS-4MHT.....	2
	B-ADP-7FS-4MHT.....	2
4" Female Hose Thread to 2-1/2" Male Hose Thread Adapter .....	B-ADP-4FHT-25MHT .....	2
Female Split Clamp to Female Hose Thread Adapter .....	B-ADP/SW-25FS-25FHT .....	3
Female Hose Thread to Male Split Clamp Adapter .....	B-ADP/SW-25FHT-25MS .....	3
Female Split Clamp to Female Hose Thread Swivel Adapter.....	B-ADP/SW-4FS-25FHT .....	4
	B-ADP/SW-4FS-4FHT .....	4
4" Female Hose Thread Union Adapter .....	B-ADP/UN-4FHT-4FHT .....	4
Female Split Clamp to Special Male Thread Adapter .....	B-ADP-6FS-9MHT .....	5
	B-ADP-7FS-9MHT .....	5
Female to Male Split Clamp Adapter .....	A-ADP/TPR-7F-25MS .....	5
	A-ADP/TPR-8F-25MS .....	5
Female Split Clamp to Flange Adapter.....	A-ADP-25FS-25F .....	6
	A-ADP-25FS-4F .....	6
	A-ADP-4FS-4F .....	6
	A-ADP-4FS-6F .....	6
	A-ADP-6FS-6F .....	6
	ST-ADP-6FS-6F .....	6
	A-ADP-7FS-6F .....	6
	A-ADP-7FS-7F .....	6
	ST-ADP-7FS-7F .....	6
Flange to Male Split Clamp Adapters .....	A-ADP-25F-25MS .....	7
	A-ADP-4F-4MS .....	7
	A-ADP-6F-4MS .....	7
	A-ADP-6F-6MS .....	7
	ST-ADP-6F-6MS .....	7
	A-ADP-6F-7MS .....	7
	A-ADP-7F-7MS .....	7
	A-ADP-8F-7MS .....	7
Female Split Clamp to Male Split Clamp Adapter .....	A-ADP-4FS-6MS .....	8
	A-ADP-6FS-4MS .....	8
	A-ADP-6FS-7MS .....	8
	A-ADP-7FS-25MS .....	8
	A-ADP-7FS-4MS .....	8
	A-ADP-7FS-6MS .....	8
90° Elbow for 2-1/2" Rig Adapter .....	A-ADP/ELB-90-25-R .....	9
EII Adapter .....	ST-ADP-ELL-6F-8F .....	9

# Underway Replenishment Products

## C

### Caps & Plugs

Female Hose Thread Cap .....	B-CAP-25FHT .....	10
	B-CAP-4FHT .....	10
Male Hose Thread Plug .....	B-PLG-25MHT .....	10
	B-PLG-4MHT .....	10
Lay-On-Deck Conical Cap .....	ST-CAP/CON-L/O/D .....	11
NATO "B" Mod Coupling Conical Cap .....	A-CAP/CON-B/MOD .....	11
Female Split Clamp Cap .....	A-CAP-25-FS .....	12
	A-CAP-25-FS .....	12
	A-CAP-25-FS .....	12
	A-CAP-25-FS .....	12
Male Split Clamp Plug .....	A-PLG-25MS .....	12
	A-PLG-4MS .....	12
	A-PLG-6MS .....	12
	A-PLG-7MS .....	12

### Clamps

Aluminum Split Clamps .....	A-CLMP-25S .....	13
	A-CLMP-4S .....	13
	A-CLMP-6S .....	13
	A-CLMP-7S .....	13
Bronze Split Clamps .....	B-CLMPS-25S .....	13
	B-CLMPS-4S .....	13
	B-CLMPS-6S .....	13
2-1/2" Hose Handling Clamp .....	ST-CLMP-25H/H .....	14
4" Hose Handling Clamp .....	ST-CLMP-4H/H .....	14

### Couplings

2-1/2" Female Split Hose Coupling S81 .....	A-CPL/HOS-25FS-S81 .....	15
2-1/2" Male Split Hose Coupling S81 .....	A-CPL/HOS-25MS-S81 .....	15
4", 6", & 7" Female Split Hose Coupling S81 .....	A-CPL/HOS-4FS-S81 .....	16
	A-CPL/HOS-6FS-S81 .....	16
	A-CPL/HOS-7FS-S81 .....	16
4", 6", & 7" Male Hose Coupling S81 .....	A-CPL/HOS-4MS-S81 .....	16
	A-CPL/HOS-6MS-S81 .....	16
	A-CPL/HOS-7MS-S81 .....	16
7" Female Split Coupling FC91 .....	CPL-7FS-FC91 .....	17
7" Male Split Coupling FC91 .....	CPL-7MS-FC91 .....	17
7" Receiver Hose Female Coupling .....	A-CPL-7FS-REC .....	18
7" Receiver Hose Male Coupling .....	A-CPL-7MS-REC .....	18
NATO Breakable Spool Coupling - "B" End .....	ST-CPL/AY-NATO/B .....	19
	ST-CPL/BF-NATO/B .....	19
	R-CPL/GSK-NATO/B .....	19
NATO Breakable Spool Coupling - "B" End Modified .....	ST-CPL/MOD-NATO/B-AF .....	19
NATO Breakable Spool Coupling - "A" End .....	CI-CPL/BS-NATO/A .....	20
2-1/2" Automatic Disconnect Coupling .....	A-CPL/HOS-25-AD .....	20

# Underway Replenishment Products

## C (Cont.)

### Couplings (Cont.)

4" Female Pigtail Hose Coupling .....	B-CPL-4FHT-PGTL .....	21
4" Male Pigtail Hose Coupling .....	B-CPL-4MHT-PGTL .....	21
Quick Release Coupling .....	B-CPL/HOS-25QR .....	22
	B-CPL/HOS-4-QR .....	22
Robb Coupling Quick Trip .....	A - CPL/ROB-Q/T/D .....	22
Robb Coupling Body - Female End .....	B-CPL/ROB-FE-6FS .....	23
	B-CPL/ROB-FE-7FS .....	23
Robb Coupling Nipple - Male End and Cap .....	A-CPL/HOS-25MS-S81 .....	23

## E

### End Fittings

1/2" Sleeve Adapter .....	ST-ADP/SLV-1/2 .....	24
Eye Socket Span Wire End Fitting .....	EF-SPW-3/4 .....	24
	EF-SPW-7/8 .....	24
Inhaul/Outhaul End Fitting .....	EF-IH/OH-1/2 .....	24
	EF-IH/OH-3/4 .....	24
Span Wire Weak Link End Fitting .....	EF-SPW/WL-3/4 .....	25
	EF-SPW/WL-7/8 .....	25
Inhaul/Outhaul Weak Link End Fitting .....	EF-IH/OH-WL-1/2 .....	25
	EF-IH/OH-WL-3/4 .....	25

## H

### Highline

Highline Shear Pin Adapter .....	ADP-HL/SP .....	26
Highline Shear Pin .....	PIN/SHR-HL/ADP .....	26
Highline End Fitting Adapter .....	ST-ADP-HL/EF .....	26
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### Hooks

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Probe Remating Line/Messenger Attachment .....	ST-HK/PR-RL/MA .....	28
Cargo Hook - Stream Trolley Adapter .....	ADP/AY-CH/STROL .....	29
Hoisting Assembly - MK20 MOD O .....	ST-HST/AY .....	29
Cargo Safety Hook - MK20 MOD O .....	ST-HK/CGO .....	30
1" Standard & Stream Pelican Hooks .....	ST-HK/PEL-FAS-1D-T1 .....	30
	ST-HK/PEL-FAS-1D-T2 .....	30
1/2" Pelican Hook .....	ST-HK/PEL-FAS-1/2D .....	31
1-3/8" Stream Pelican Hook .....	ST-HK/PEL-FAS-1-3/8D .....	31



# Underway Replenishment Products

## H

### Hose & Assemblies

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	HOS-22240-4A-XXXL .....	32
	HOS-22240-6A-XXXL .....	32
	HOS-22240-6B-XXXL .....	32
	HOS-22240-7A-XXXL .....	32
Jumper Hose Assemblies .....	H/A1FF-22240-25C-XXXL .....	32
	H/A1FF-22240-6A-XXXL .....	32
Alongside & Astern Fueling at Sea Hose Assemblies .....	H/A-22240-25C-XXXL .....	33
	H/A-22240-4A-XXXL .....	33
	H/A-22240-6A-XXXL .....	33
	H/A-22240-6B-XXXL .....	33
	H/A-22240-7A-XXXL .....	33
	H/A-FC91-7A-XXXL .....	33
4" Pigtail Hose Assemblies (10' & 30') .....	H/A-17505-4-120L .....	34
	H/A-17505-4-360L .....	34
Receiver Probe Hose Assemblies .....	H/A-7-REC-104L-LT .....	34
	H/A-7-REC-104L .....	34

## L

### Lines

Bridge-To-Bridge Phone/Distance Line .....	LN-PHN-BR/BR .....	35
Station-To-Station Phone Line .....	LN-PHN-STA/STA .....	36
Position Buoy Line .....	WP-POS/LINE-BUO-AF .....	36

### Links

1/2" End Link .....	ST-LNK-1/2D-25R .....	37
1" Probe Fueling Link .....	ST-LNK-1-PF .....	37

### Litter

Protective Frame with Floats .....	A-PRO/FRM .....	38
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### Messengers

Fueling-At-Sea Messenger .....	NR-MES/AY-RAS .....	38
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Phone/Distance Lead Line Messenger .....	MES/AY-PD .....	40
Star Messenger .....	NR-MES/AY-STAR .....	40
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# Underway Replenishment Products

## P

### Pig

Pig Launcher .....	ST-PIG/LNCHR-25AF .....	41
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Hose Cleanout Pig .....	UR-PIG-25AF .....	42
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### Probes

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## R

### Receivers

Single Probe Receiving Station .....	STA-S/P/REC .....	46
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Single Probe Receiver Swivel Arm .....	ST-ARM/SW-S/P/REC .....	50
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MKII Cargo Drop Reel Stand .....	STOW-CGO/REEL .....	51
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	A-FIT/RL-6-FLT .....	54
	A-FIT/RL-7-FLT .....	54
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# Underway Replenishment Products

## S

### Saddles

Inboard Saddle Support .....	SS-SADLSUP-INBD .....	55
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### Strap

Anti-Toppling Strap .....	STR-A/TPL .....	60
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### Stress Wire

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### Strongback

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### Swivel

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### Surfs

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## T

### Tools

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# Underway Replenishment Products

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## Misc.

### Miscellaneous

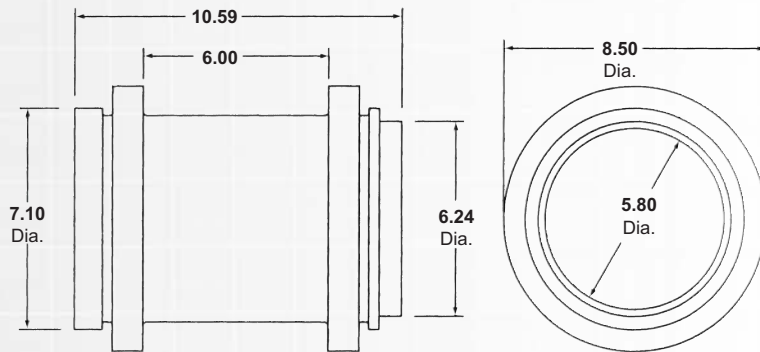
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## ADAPTER - TOWING

**Material:** Aluminum

The towing adapter is used as a hose coupling between the last two lengths of hose on the 6" astern fueling rig and provides a means of attaching the towing adapter clamp found on page 13 to the hose rig.

To be used with aluminum split clamps shown on page 13.

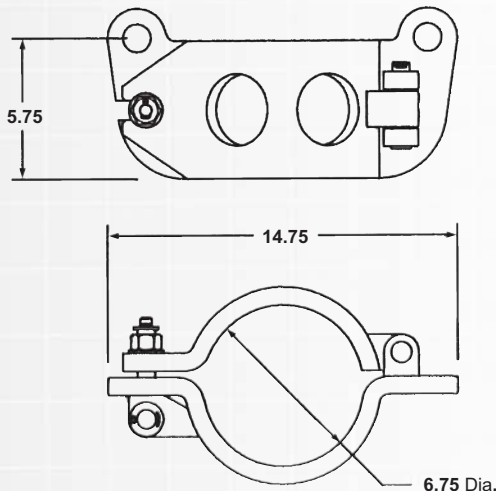
*O-Ring must be ordered separately. See page 74.*

H.S. Part Number	NAVSEA Dwg. No.	Size	Est. Weight, Lbs.
A-ADP/TOW-AF	810-1385893	6"	12

## ADAPTER - CLAMP FOR TOWING PURPOSES

## Astern Fueling

1

**Material:** Stainless Steel

The towing adapter clamp attaches to the towing adapter between the last two lengths of hose on the 6" astern fueling rig and provides an attachment point for the hose messenger bridle.

For use with towing adapter above.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
SS-CLMP-T/A-AF	810-1385893	37

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



# Underway Replenishment Products

A

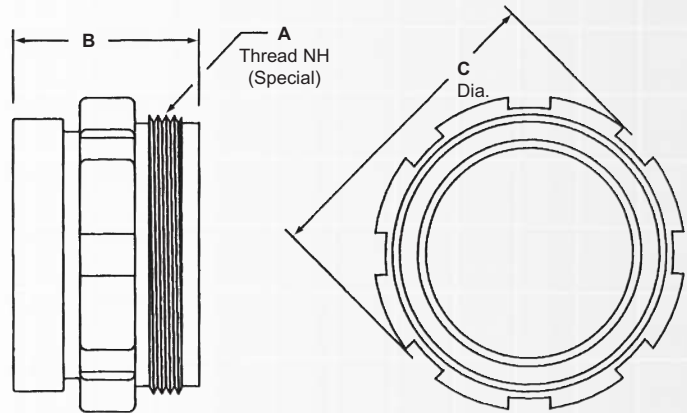
## ADAPTER - FEMALE SPLIT CLAMP TO MALE HOSE THREAD

**Material:** Bronze

The female split clamp to male hose thread adapter connects male split clamp fittings to female hose thread fittings.

To be used with bronze split clamps shown on page 13.

*O-Ring must be ordered separately. See Page 74.*



H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Clamp Size	Thread End Size	Est. Weight, Lbs.
		A	B	C			
B-ADP-4FS-4MHT	805-4472642	4"-6	3.31	5.50	4"	4"	10
B-ADP-7FS-4MHT	805-4472640	4"-6	5.12	9.75	7"	4"	29

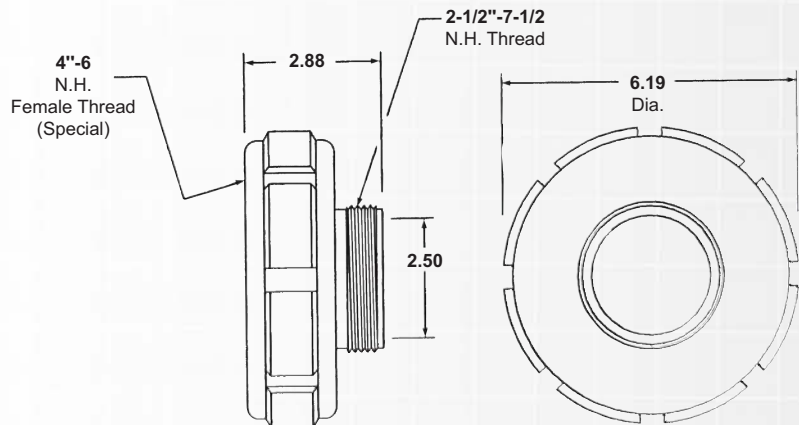
## ADAPTER - 4" FEMALE HOSE THREAD TO 2-1/2" MALE HOSE THREAD

2

**Material:** Bronze

The 4" female hose thread to 2-1/2" male hose thread adapter connects 4" male threaded fittings to 2-1/2" female threaded fittings.

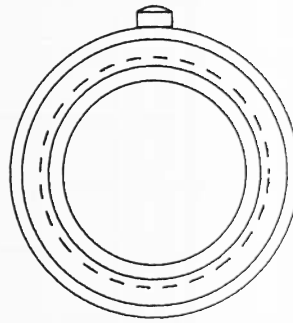
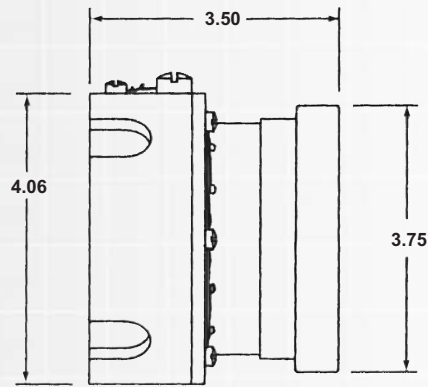
*Gasket included with assembly.*



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
B-ADP-4FHT-25MHT	803-2260817	6

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## ADAPTER - FEMALE SPLIT CLAMP TO FEMALE HOSE THREAD



**Material:** Bronze

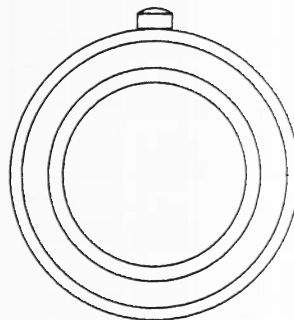
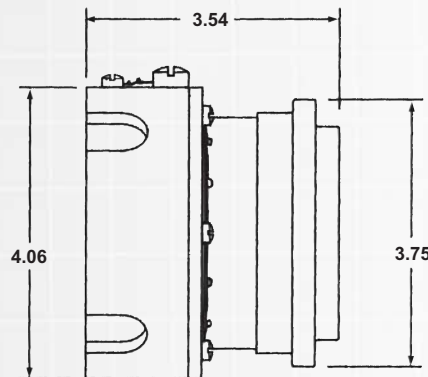
The female split clamp to female hose thread adapter connects 2-1/2"-7-1/2 T.P.I. male threaded fittings.

To be used with bronze split clamps shown on page 13.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
B-ADP/SW-25FS-25FHT	803-2260822-1	4

## ADAPTER - FEMALE HOSE THREAD TO MALE SPLIT CLAMP

3



**Material:** Bronze

The female hose thread to male split clamp adapter connects 2-1/2"-7-1/2 T.P.I. male threaded fittings to 2-1/2" female split clamp fittings

To be used with bronze split clamps shown on page 13.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
B-ADP/SW-25FHT-25MS	803-2260821-2	4

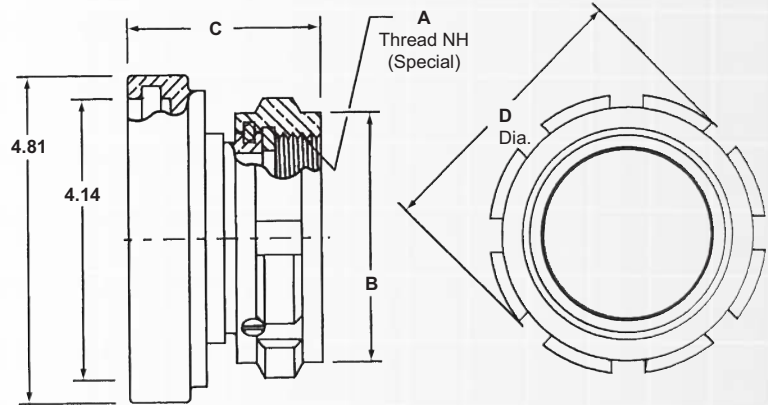
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## ADAPTER - FEMALE SPLIT CLAMP TO FEMALE HOSE THREAD SWIVEL

**Material:** Bronze

The female split clamp to female hose thread swivel adapter connects male threaded fittings to 4" male split clamp fittings.

*O-Ring must be order separately.  
See page 74.*

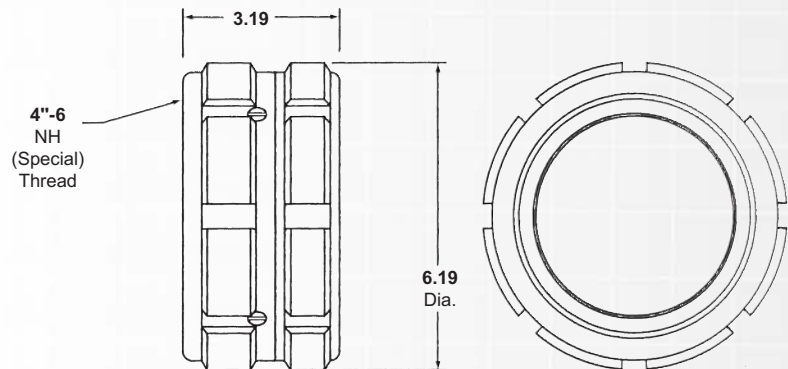


H.S. Part Number	NAVSEA Dwg. No.	Dimensions				Est. Weight, Lbs.
		A	B	C	D	
B-ADP/SW-4FS-25FHT	805-4472645	2-1/2"-7-1/2"	3.68	2.88	4.12	5
B-ADP/SW-4FS-4FHT	805-4472644	4"-6"	5.81	3.03	6.19	5

## ADAPTER - UNION, 4" FEMALE HOSE THREAD

**Material:** Bronze

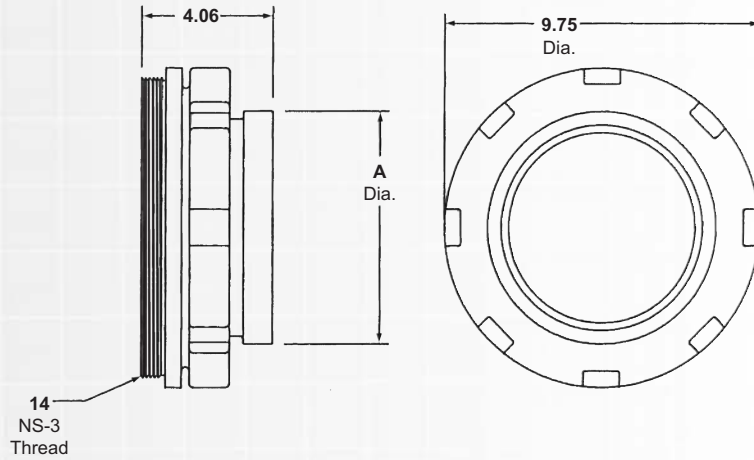
The 4" female hose thread adapter union is a swivel that mates two 4" male hose thread fittings



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
B-ADP/UN-4FHT-4FHT	805-4472662	11

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## ADAPTER - FEMALE SPLIT CLAMP TO SPECIAL MALE THREAD



### Material: Bronze

The female split clamp to special male thread adapter is the part of the female robb coupling that mates the female robb coupling body to the 6 or 7 inch male split clamp end fittings.

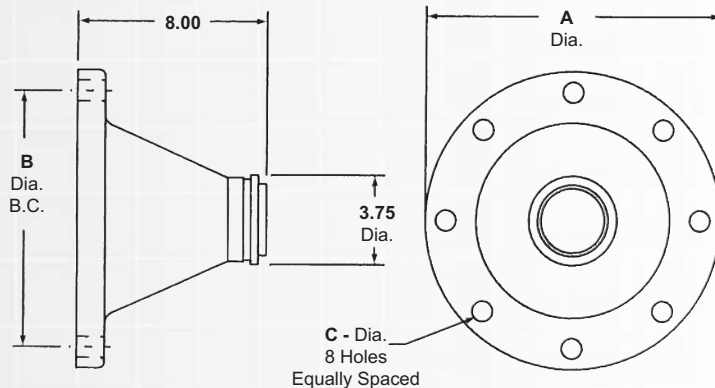
To be used with bronze split clamps shown on page 13.

*O-Ring must be order separately. See Page 74.*

H.S. Part Number	BUSHIPS Dwg. No.	Dimensions A	Female Clamp End Size	Est. Weight, Lbs.
B-ADP-6FS-9MHT	S4824-841597	7.10	6"	26
B-ADP-7FS-9MHT	S4824-841597	8.10	7"	26

## ADAPTER - FEMALE TO MALE SPLIT CLAMP

5



### Material: Aluminum

The flange to male split clamp adapter connects 7 or 8 inch 150 pound flanges to 2-1/2" female split clamp end fittings.

To be used with aluminum split clamps shown on page 13.

H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Flange Size	Est. Weight, Lbs.
		A	B	C		
A-ADP/TPR-7F-25MS	803-2260821	12.50	10.75	.88	7	15
A-ADP/TPR-8F-25MS	---	13.50	11.75	.94	8	16

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

A

## ADAPTER - FEMALE SPLIT CLAMP TO FLANGE

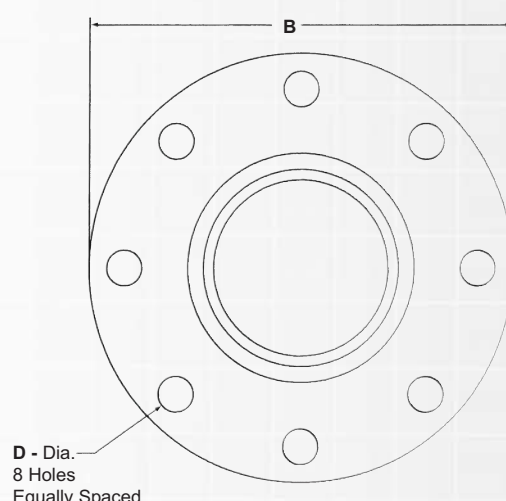
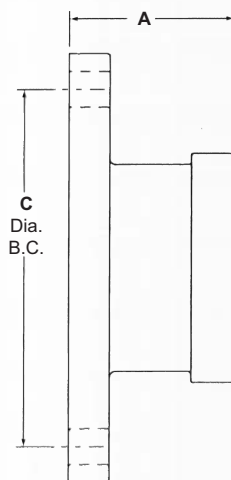
**Material:** A - Aluminum  
ST - Steel

The female split clamp to flange adapter connects male split clamp end fittings to 150 pound flanges.

To be used with aluminum split clamps shown on page 13.

*O-Ring must be order separately. See page 74.*

*Order A-ADP1-(SIZE) to include o-ring and split clamp.*



D - Dia.  
8 Holes  
Equally Spaced

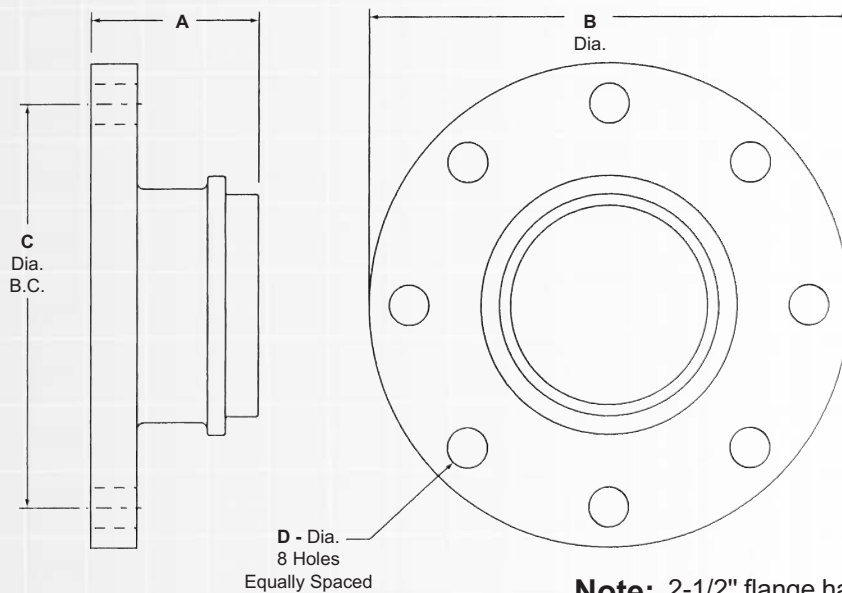
**Note:** 2-1/2" flange has 4 bolt holes.

H.S. Part Number	NAVSEA Dwg. No.	Dimensions				Female Clamp End	Flange End	Est. Weight, Lbs.
		A	B	C	D			
A-ADP-25FS-25F	---	3.15	7.00	5.50	.75	2-1/2"	2-1/2"	5
A-ADP-25FS-4F	---	3.15	9.00	7.50	.75	2-1/2"	4"	5
A-ADP-4FS-4F	---	3.51	9.00	7.50	.75	4"	4"	6
A-ADP-4FS-6F	805-4472647	3.51	11.00	9.50	.88	4"	6"	9
A-ADP-6FS-6F	805-4472647	2.94	11.00	9.50	.88	6"	6"	10
ST-ADP-6FS-6F	---	2.94	11.00	9.50	.88	6"	6"	21
A-ADP-7FS-6F	805-4472647	2.94	11.00	9.50	.88	7"	6"	10
A-ADP-7FS-7F	---	3.12	12.50	10.75	.88	7"	7"	13
ST-ADP-7FS-8F	805-2213794	3.38	13.50	11.75	.88	7"	8"	39

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



## ADAPTER - FLANGE TO MALE SPLIT CLAMP



7

H.S. Part Number	NAVSEA Dwg. No.	Dimensions				Flange End Size	Male Clamp End	Est. Weight, Lbs.
		A	B	C	D			
A-ADP-25F-25MS	---	3.10	7.00	5.50	.75	2-1/2"	2-1/2"	5
A-ADP-4F-4MS	805-4472639	3.15	9.00	7.50	.75	4"	4"	6
A-ADP-6F-4MS	805-4472639	3.57	11.00	9.50	.88	6"	4"	9
A-ADP-6F-6MS	805-4472639	3.31	11.00	9.50	.88	6"	6"	10
ST-ADP-6F-6MS	---	3.31	11.00	9.50	.88	6"	6"	21
A-ADP-6F-7MS	805-4472639	3.31	11.00	9.50	.88	6"	7"	10
A-ADP-7F-7MS	805-4472639	3.50	12.50	10.75	.88	7"	7"	13
A-ADP-8F-7MS	805-4472639	3.50	13.50	11.75	.88	8"	7"	15

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

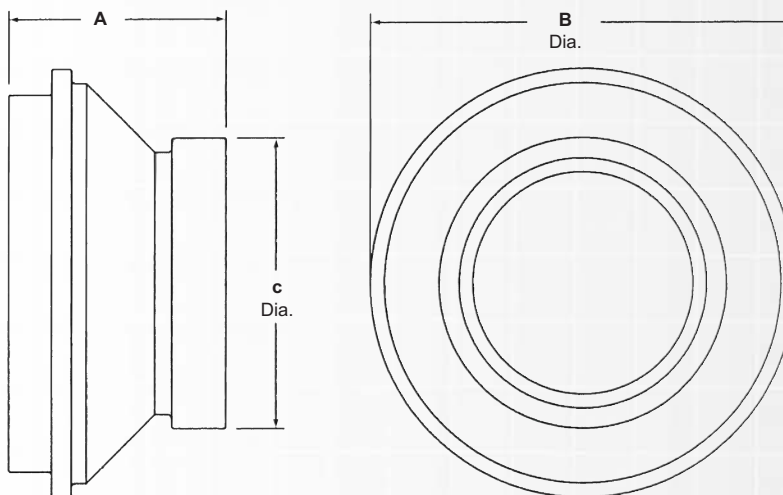
## ADAPTER - FEMALE SPLIT CLAMP TO MALE SPLIT CLAMP

**Material:** Aluminum

The female split clamp to male split clamp adapter connects various size male and female split clamp end fittings.

To be used with aluminum split clamps shown on page 13.

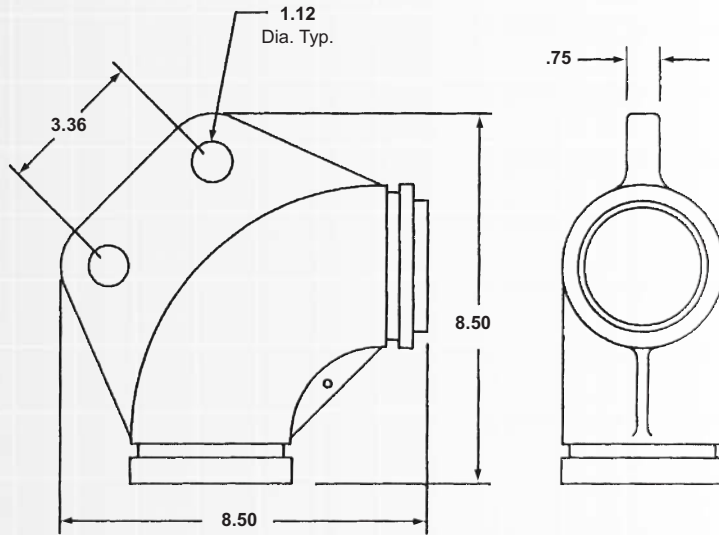
*O-Ring must be order separately. See Page 74.*



H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Female Clamp End	Male Clamp End	Est. Weight, Lbs.
		A	B	C			
A-ADP-4FS-6MS	805-4472651	3.64	7.10	4.81	4"	6"	4
A-ADP-6FS-4MS	---	3.64	4.81	7.10	6"	4"	5
A-ADP-6FS-7MS	805-4472651	3.21	8.10	7.10	6"	7"	4
A-ADP-7FS-25MS	---	6.12	3.75	8.10	7"	2-1/2"	6
A-ADP-7FS-4MS	---	4.12	4.81	8.10	7"	4"	5
A-ADP-7FS-6MS	805-4472651	3.01	7.10	8.10	7"	6"	4

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## ADAPTER - 90° ELBOW FOR 2-1/2" RIG

**Material:** Aluminum

The 2-1/2" 90° elbow adapter is a male to female split clamp adapter that mates with the 2-1/2" breakaway coupling and is secured to the receiving ship.

To be used with aluminum split clamps shown on page 13.

*O-ring must be ordered separately. See page 74.*

Order A-ADP1-ELB-90-25R to include o-ring and split clamp.

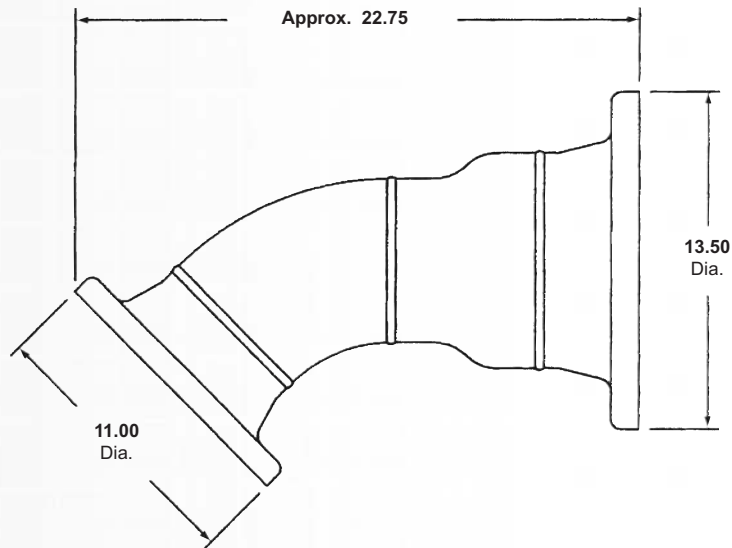
H.S. Part Number	NAVSEA Dwg. No.	Size	Est. Weight, Lbs.
A-ADP/ELB-90-25-R	803-2260823	2-1/2"	5

## ADAPTER - ELL

9

**Material:** Steel

The ell adapter is a 8" to 6" flanged reducing spool used to connect the male robb coupling and NATO "A" end coupling to the receiving ship's riser.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-ADP/ELL-6F-8F	805-2213794 Detail "A"	85

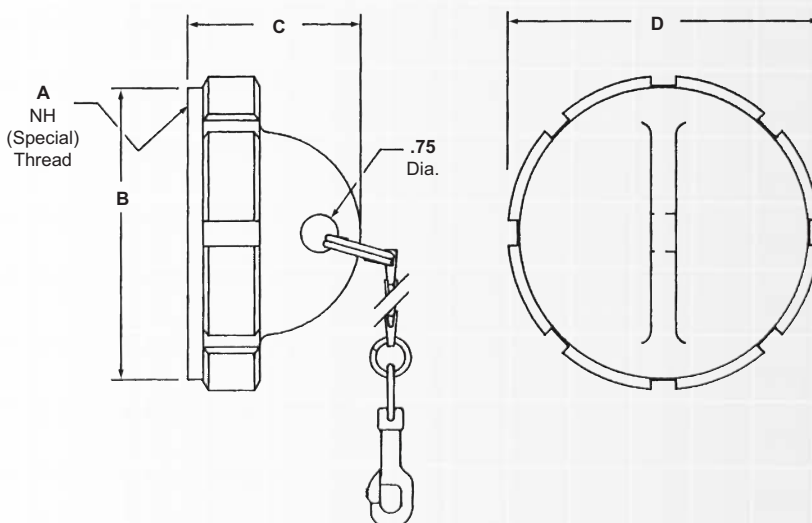
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## CAP- FEMALE HOSE THREAD

**Material:** Bronze

The female hose thread cap is used to seal and protect male hose thread fittings.

*O-ring must be ordered separately. See page 74.*

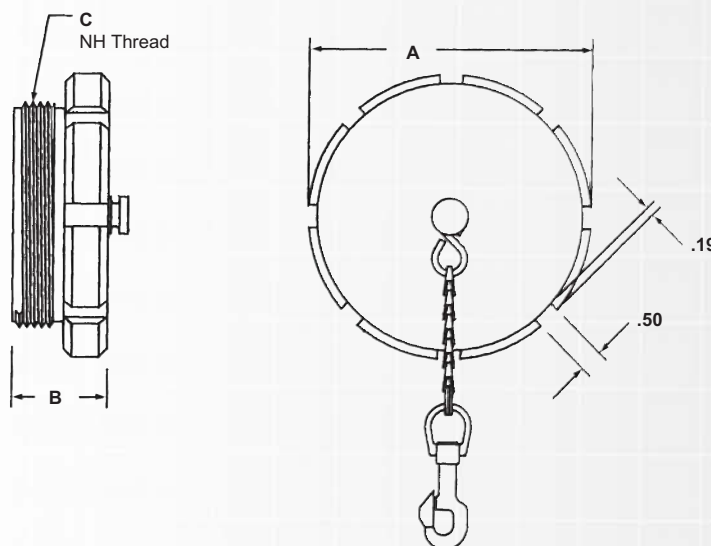


H.S. Part Number	NAVSEA Dwg. No.	Dimensions				Female Hose Thread Size	Est. Weight, Lbs.
		A	B	C	D		
B-CAP-25FHT	805-4472658	2-1/2"-7-1/2"	3.80	2.59	4.12	2-1/2"	4
B-CAP-4FHT	805-4472658	4"-6"	5.74	3.38	6.19	4"	5

## PLUG - MALE HOSE THREAD

**Material:** Bronze

The male hose thread plug is used to seal and protect female hose thread fittings.



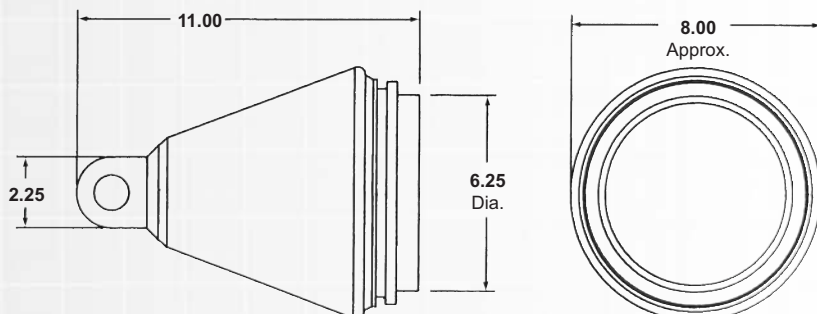
H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Male Hose Thread Size	Est. Weight, Lbs.
		A	B	C		
B-PLG-25MHT	805-4472661	4.12	1.87	2-1/2"-7-1/2"	2-1/2"	4
B-PLG-4MHT	805-4472661	6.19	2.06	4"-6"	4"	5

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## CAP - LAY-ON-DECK CONICAL

### Astern Fueling

**Material:** Stainless Steel



The lay-on-deck conical cap is attached to the towing adapter on the inboard end of each flight of hose in the 6" lay-on-deck astern fueling rig. It is shackled to the end of the delivery ship's recovery line which is used to pay out or haul in the hose rig over the stern.

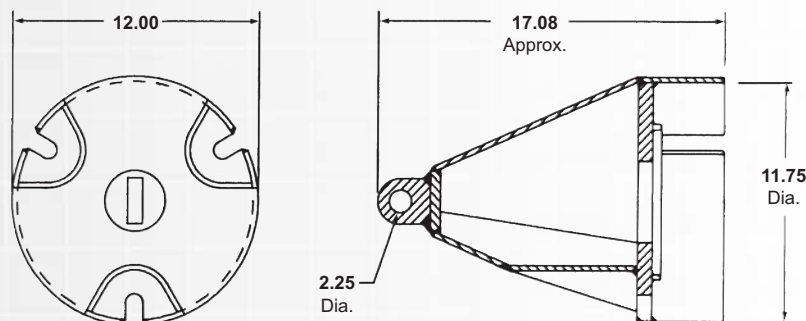
To be used with aluminum split clamps shown on page 13.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-CAP/CON-L/O/D	803-2257585	35

## CAP - CONICAL CAP FOR NATO "B" MOD COUPLING

### Astern Fueling

**Material:** Aluminum



The conical cap mates with modified NATO "B" end coupling found on page 19 and provides an air and water tight seal for the outboard end of the astern fueling rig.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CAP/CON-B/MOD	803-2257584	20

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



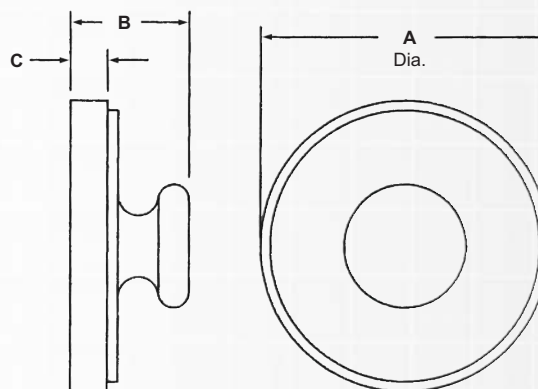
## CAP - FEMALE SPLIT CLAMP

**Material:** Aluminum

The female split clamp cap is used to seal and protect the male split clamp fitting.

To be used with aluminum split clamps shown on page 13.

O-ring must be ordered separately. See page 74.



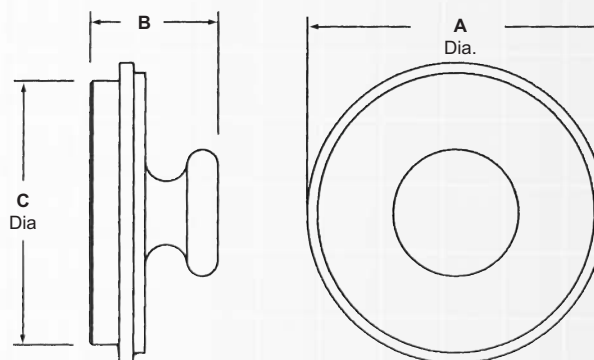
H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Female Clamp End	Est. Weight, Lbs.
		A	B	C		
A-CAP-25FS	803-2260817	3.75	2.13	.61	2-1/2"	1.5
A-CAP-4FS	805-4472652	4.81	2.91	.90	4"	2
A-CAP-6FS	805-4472652	7.10	2.91	.90	6"	3
A-CAP-7FS	805-4472652	8.10	2.91	.90	7"	5

## PLUG - MALE SPLIT CLAMP

**Material:** Aluminum

The male split clamp plug is used to seal and protect the female split clamp fitting.

To be used with aluminum split clamps shown on page 13.

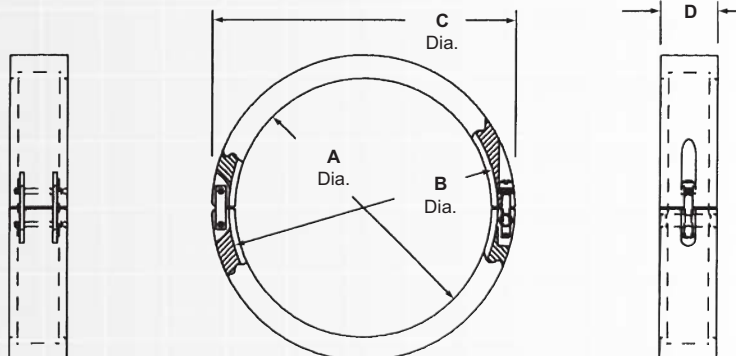


H.S. Part Number	NAVSEA Dwg. No.	Dimensions			Male Clamp End	Est. Weight, Lbs.
		A	B	C		
A-PLG-25MS	803-2260817	3.75	2.25	3.00	2-1/2"	1.5
A-PLG-4MS	805-4472657	4.81	2.96	4.12	4"	2
A-PLG-6MS	805-4472657	7.10	3.06	6.24	6"	3
A-PLG-7MS	805-4472657	8.10	3.06	7.24	7"	5

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## CLAMP - ALUMINUM SPLIT

### Hose Coupling



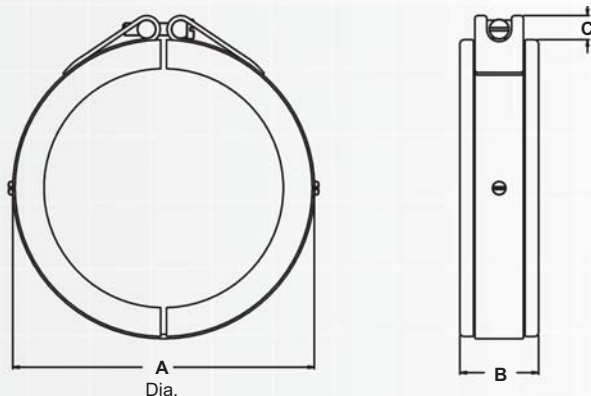
**Material:** Aluminum

The split clamp assembly is a hinged ring that fits over the shoulder of the joined male-female split clamp fittings and holds the connection in place.

H.S. Part Number	Hose Size	NAVSEA Dwg. No.	Dimensions				Est. Weight, Lbs.
			A	B	C	D	
A-CLMP-25S	2-1/2"	---	3.47	3.80	4.93	1.43	1
A-CLMP-4S	4"	805-4472628	4.50	4.85	5.96	1.75	1.75
A-CLMP-6S	6"	805-4472628	6.78	7.14	8.19	1.75	2
A-CLMP-7S	7"	805-4472628	7.78	8.14	9.19	1.75	2.5

## CLAMP - BRONZE SPLIT

### Hose Coupling



**I. A. W. MIL-F-24787/4**

**Material:** Clamp - Alum. Bronze  
Hardware and Band - Monel

The split clamp assembly is a hinged ring that fits over the shoulder of the joined male- female split clamp fittings and holds the connection in place.

H.S. Part Number	Hose Size	Specification	Dimensions			Est. Weight, Lbs.
			A	B	C	
B-CLMP-25S	2-1/2"	MIL-F-24787/4	4.42	1.44	.39	1.90
B-CLMP-4S	4"	MIL-F-24787/4	6.12	1.62	.39	3.15
B-CLMP-6S	6"	MIL-F-24787/4	8.25	1.94	.39	5.08

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

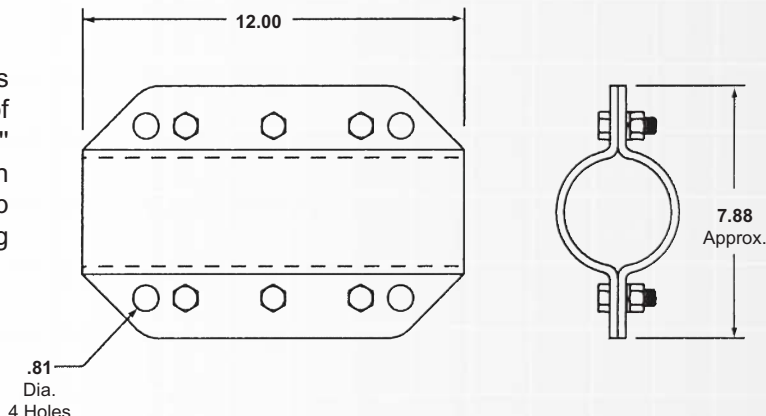
C

## CLAMP - 2-1/2" HOSE HANDLING

Astern Fueling

**Material:** Steel

The 2-1/2" hose handling clamp is installed on the outboard end of the hose assembly on the 2-1/2" astern fueling rig and provides an attachment point for the pickup float messenger and connecting pendant.

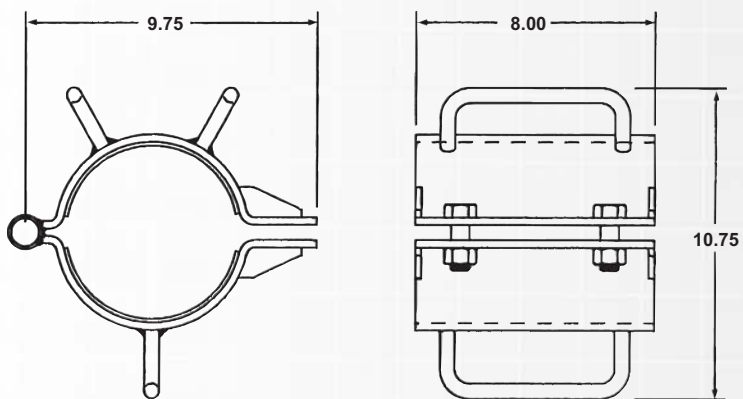


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-CLMP-25-H/H	805-2252862	19

## CLAMP - 4" HOSE HANDLING

**Material:** Steel

The 4" hose handling clamp provides a means to lash the pigtail hose into the receiving trunk and assist in handling of the hose.



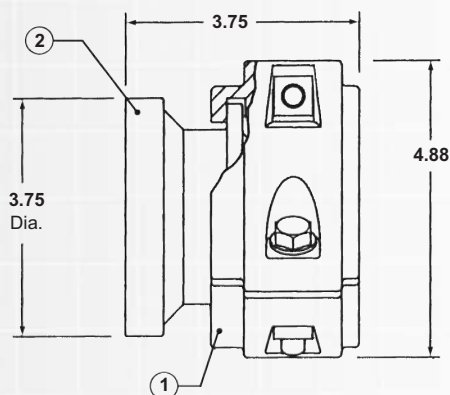
H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-CLMP-4-H/H	805-2554166	19

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## COUPLING - 2-1/2" HOSE, FEMALE SPLIT

Semental '81™

I. A. W. MIL-C-24356

**Material:** Aluminum

The 2-1/2" female split hose coupling provides a termination for the fueling hose that can be attached to additional couplings, adapters or fittings.

To be used with aluminum split clamps shown on page 13.

*O-ring must be ordered separately. See page 74.*

**For assembly instructions see page 78.**

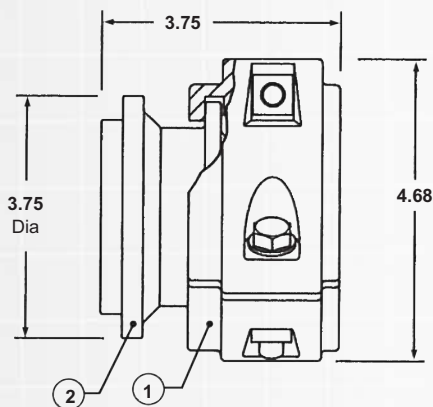
H.S. Part Number	Segment Ass'y * ①	Nipple ②	Specification	Est. Weight, Lbs.
A-CPL/HOS-25FS-S81	C16081	C14872	<b>MIL-C-24356</b>	2.75

\* Segment assembly (includes hardware) is available separately.

## COUPLING - 2-1/2" HOSE, MALE SPLIT

Segmental '81™

I. A. W. MIL-C-24356

**Material:** Aluminum

The 2-1/2" male split hose coupling provides a termination for the fueling hose that can be attached to additional couplings, adapters or fittings.

To be used with aluminum split clamps shown on page 13.

**For assembly instructions see page 78.**

H.S. Part Number	Segment Ass'y * ①	Nipple ②	Specification	Est. Weight, Lbs.
A-CPL/HOS-25MS-S81	C16081	C14850	<b>MIL-C-24356</b>	2.75

\* Segment assembly (includes hardware) is available separately.

All Dimensions are in Inches.  
Dimensional information is for reference only.  
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# Underway Replenishment Products

C

Couplings

## COUPLING - 4", 6" & 7" HOSE, FEMALE SPLIT

Segmental '81™

I. A. W. MIL-C-24356

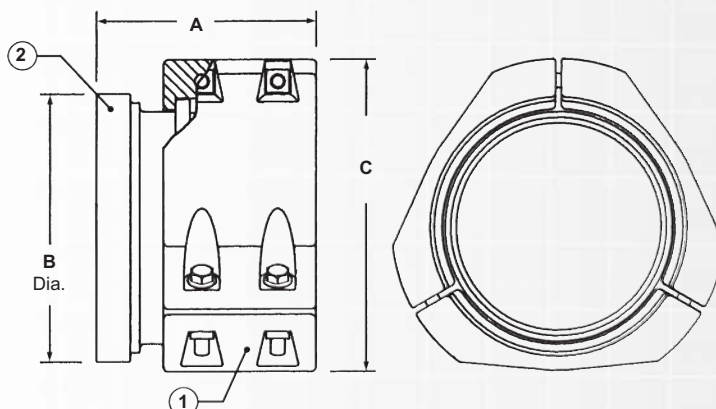
**Material:** Aluminum

The 4", 6", and 7" female split couplings provide a termination for the fueling hose that can be attached to additional couplings adapters, or fittings.

To be used with aluminum split clamps shown on page 13.

O-ring must be ordered separately. See Page 74.

For assembly instructions see page 78.



H.S. Part Number	Segment Ass'y* (1)	Nipple (2)	NAVSEA Dwg. No.	Dimensions			Est. Weight, Lbs.
				A	B	C	
A-CPL/HOS-4FS-S81	D16083-40	C14492-40	805-4472628	4.84	4.81	6.75	6
A-CPL/HOS-6FS-S81	D16083-60	C13179-60	805-4472628	5.69	7.10	8.75	8
A-CPL/HOS-7FS-S81	D16083-70	C13179-70	805-4472628	5.69	8.10	9.75	10

\* Segment assembly (includes hardware) is available separately.

## COUPLING - 4", 6", 7" HOSE, MALE SPLIT

Segmental '81™

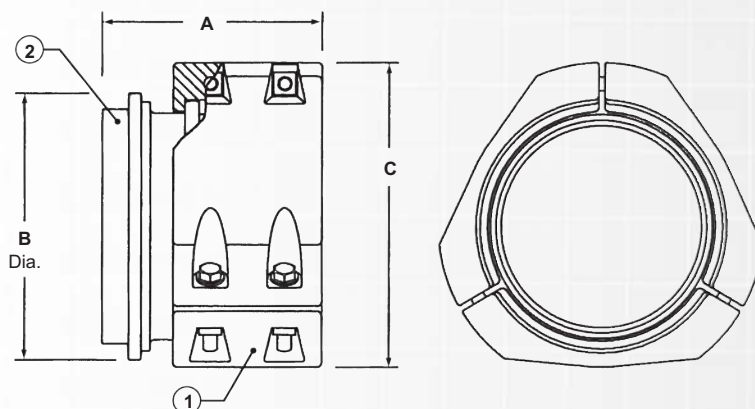
I. A. W. MIL-C-24356

**Material:** Aluminum

The 4", 6" and 7" male split hose couplings provide termination for the fueling hose that can be attached to addition couplings, adapters or fittings.

To be used with aluminum split clamps shown on page 13.

For assembly instructions see page 78.



H.S. Part Number	Segment Ass'y* (1)	Nipple (2)	NAVSEA Dwg. No.	Dimensions			Hose Size	Est. Weight, Lbs.
				A	B	C		
A-CPL/HOS-4MS-S81			805-4472628	4.87	4.81	6.75	4	6
A-CPL/HOS-6MS-S81			805-4472628	5.68	7.10	8.75	6	8
A-CPL/HOS-7MS-S81			805-4472628	5.68	8.10	9.75	7	10

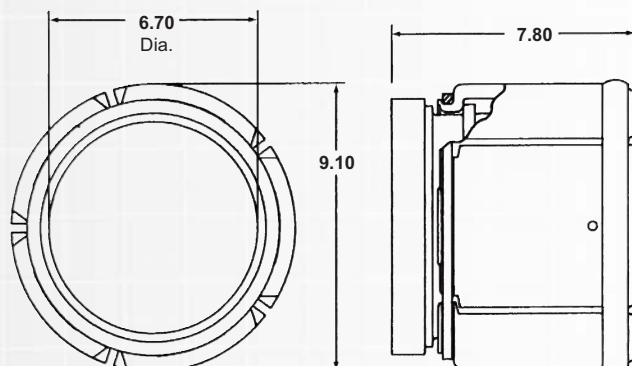
Segment assembly (includes hardware) is available separately.

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



## COUPLING - 7" HOSE, FEMALE SPLIT

FC91



*For assembly instructions  
see page 79.*

*For assembly tool  
see page 63.*

I. A. W. MIL-C-24356

**Material:** Aluminum

The 7" female split coupling provides a termination for the fueling hose that can be attached to additional couplings, adapters, or fittings.

Hydrasearch FC91 couplings can be installed with existing assembly tools for the 7" fueling at sea couplings.

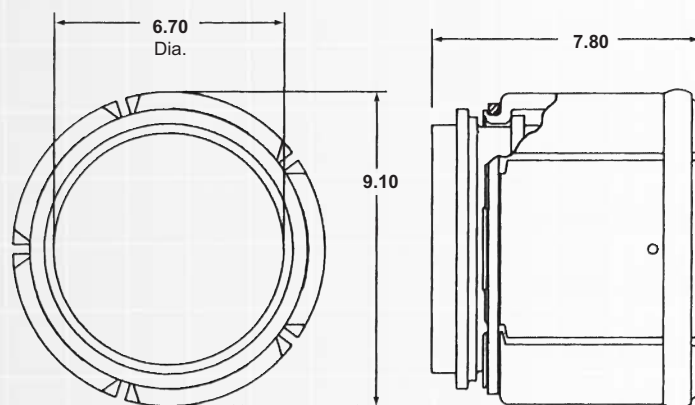
To be used with aluminum split clamps shown on page 13.

*O-ring must be ordered separately. See Page 74.*

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CPL-7FS-FC91	805-4472628	10

## COUPLING - 7" HOSE MALE SPLIT

FC91



*For assembly instructions  
see page 73.*

*For assembly tool  
see page 63.*

I. A. W. MIL-C-24356

**Material:** Aluminum

The 7" male split coupling provides a termination for the fueling hose that can be attached to additional couplings adapters, or fittings.

Hydrasearch FC91 couplings can be installed with existing assembly tools for the 7" fueling at sea couplings.

To be used with aluminum split clamps shown on page 13.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CPL-7MS-FC91	805-4472628	10

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

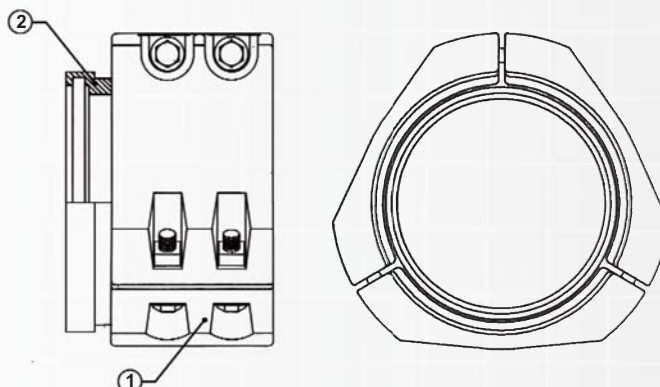
## COUPLING - 7" RECEIVER HOSE, FEMALE

**Material:** Aluminum

The 7" female receiver hose coupling is used on 104" standard length receiver hose assemblies shown on page 34 bottom.

To be used with aluminum split clamps shown on page 13.

*O-ring must be ordered seperately. See Page 74.*



H.S. Part Number	Segment Ass'y *	① Nipple	②	Est. Weight, Lbs.
A-CPL-7FS-REC	D16271	C13350		10

\* Segment assembly (includes hardware) is available separately.

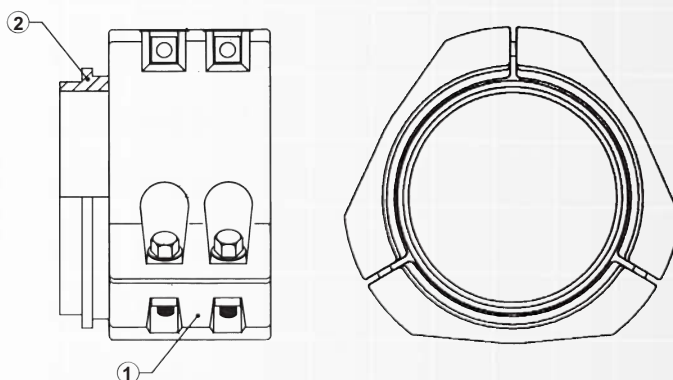
## COUPLING - 7" RECEIVER HOSE , MALE

**Material:** Aluminum

The 7" male receiver hose coupling is used on 104" standard length receiver hose assemblies shown on page 34 bottom.

The male receiver coupling is used with the adapter flange found on page 6 (ST-ADP-7FS-8F).

To be used with aluminum split clamps shown on page 13.



H.S. Part Number	Segment Ass'y *	① Nipple	②	Est. Weight, Lbs.
A-CPL-7MS-REC	D16271	C13349		10

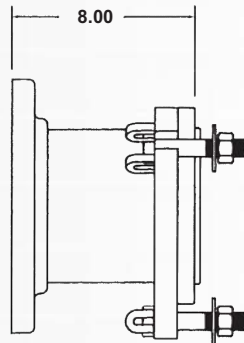
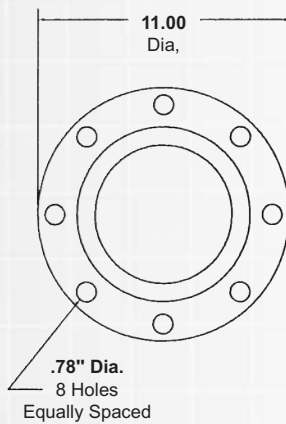
\* Segment assembly (includes hardware) is available separately.

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

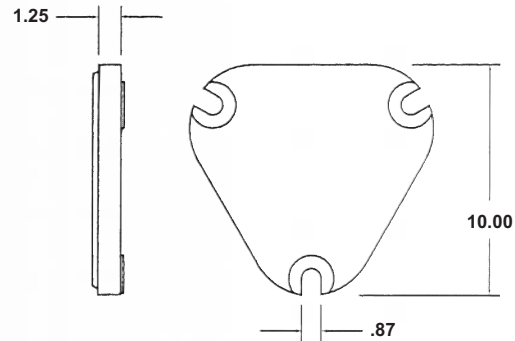
## COUPLING - NATO BREAKABLE SPOOL

"B" End

Coupling Assembly



Blank Flange

**Material: Steel**

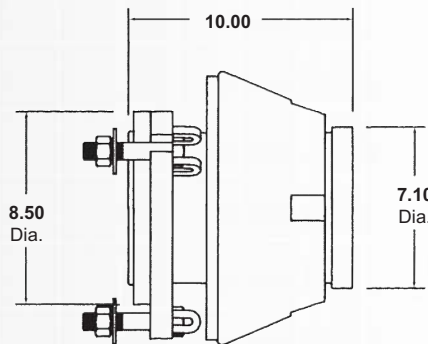
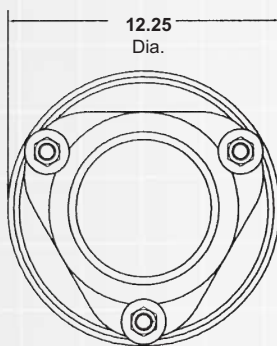
The NATO breakable spool "B" end mates with the NATO breakable spool "A" end and is used by the delivery ship when fueling NATO/SEATO ships equipped with the "A" end. The blank flange is installed when the hose is passed to prevent oil from spilling and water from entering the line.

H.S. Part Number	NAVSEA Dwg. No.	Description	Est. Weight, Lbs.
ST-CPL/AY-NATO/B	S5501-1692338	Coupling Ass'y. w/ Gasket	60
ST-CPL/BF-NATO/B	S5501-1692338	Blank Flange	10
R-CPL/GSK-NATO/B	S5501-1692338	Gasket	.02

19

## COUPLING - NATO BREAKABLE SPOOL, "B" END MODIFIED

Astern Fueling

**Material: Stainless Steel**

The modified NATO breakable spool "B" end is the terminal end fitting for the 6" astern fueling hose assembly. The coupling mates with the NATO breakable spool "A" end attached to the receiving ship.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-CPL/MOD-NATO-B-AF	803-2257593	60

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

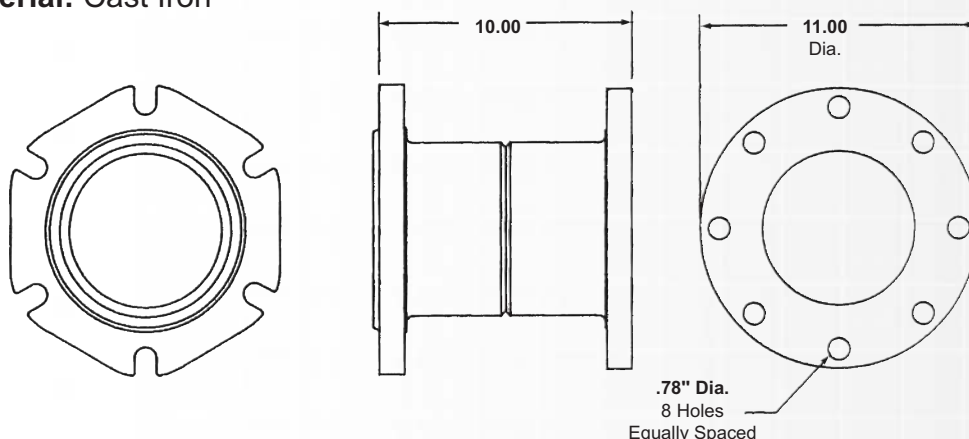
C

Couplings

## COUPLING - NATO BREAKABLE SPOOL

"A" End

Material: Cast Iron



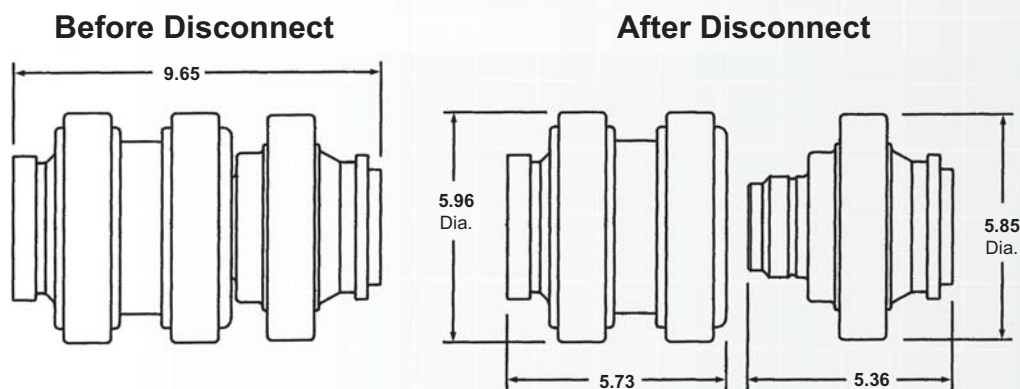
The NATO breakable spool "A" end mates with the NATO breakable spool "B" end and provides a method of quick disconnect during emergency breakaways. A machined groove in the center weakens the spool so it can be broken easily with a blow from a sledge hammer.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CI-CPL/BS-NATO/A	S5501-169238	50

## COUPLING - 2-1/2" AUTOMATIC DISCONNECT

Material: Aluminum & Stainless Steel

20



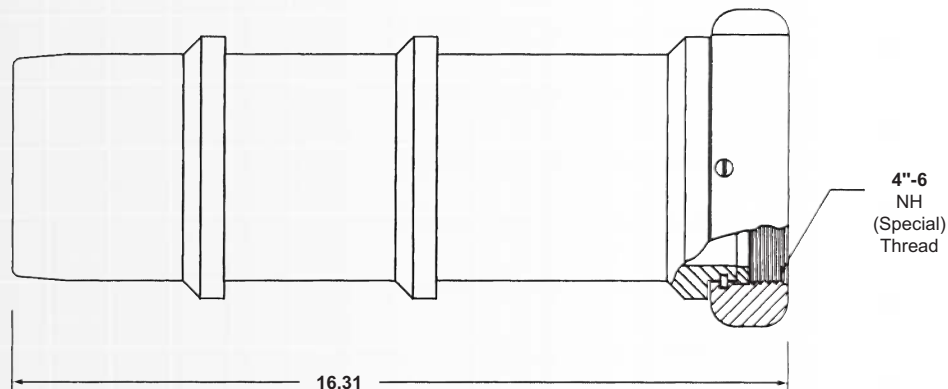
The 2-1/2" automatic disconnect coupling consists of a coupling body which separates into two halves with closure valves in each to prevent spillage. It is used with the 2-1/2" F.A.S. hose rigs to provide an automatic disconnect with fuel shutoff when tensile loads on the rig exceed 500 pounds.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CPL/HOS-25-AD	803-2260817	13

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## COUPLING - 4" PIGTAIL HOSE, FEMALE

I. A. W. MIL-H-17505

**Material:** Bronze

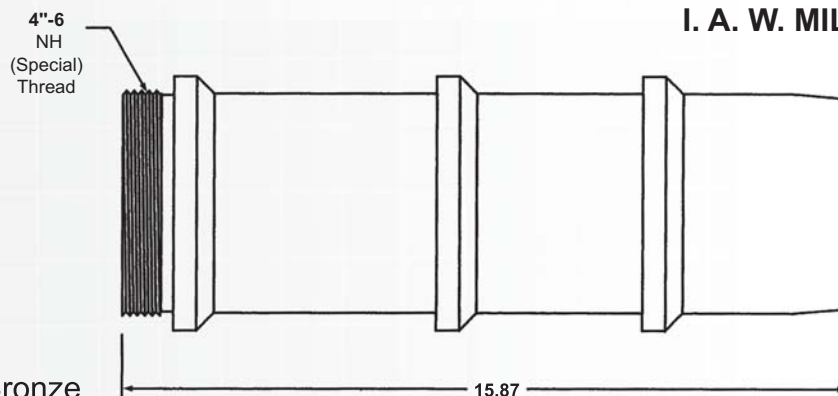
The female pigtail hose coupling is a built in nipple which is utilized with the 4" pigtail hose assembly found on page 34.

*Gasket included with assembly*

H.S. Part Number	Specification	Size	Est. Weight, Lbs.
B-CPL-4FHT-PGTL	MIL-H-17505	4"	30

## COUPLING - 4" PIGTAIL HOSE, MALE

I. A. W. MIL-H-17505

**Material:** Bronze

The male pigtail hose coupling is a built in nipple which is utilized with the 4" pigtail hose assembly found on page 34.

H.S. Part Number	Specification	Size	Est. Weight, Lbs.
B-CPL-4MHT-PGTL	MIL-H-17505	4"	29

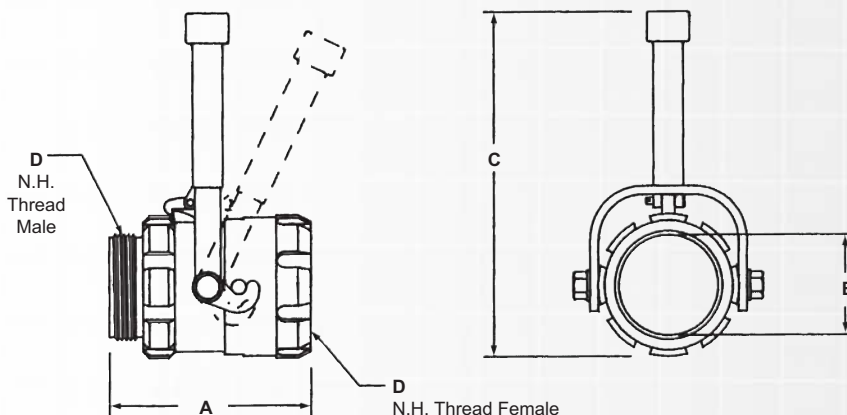
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



## COUPLING - HOSE, QUICK RELEASE

**Material:** Bronze

The quick release coupling consists of a coupling body that separates into two halves when the hand operated releasing handle is activated. The coupling provides a quick release termination for the 4" and 2-1/2" fueling hose.

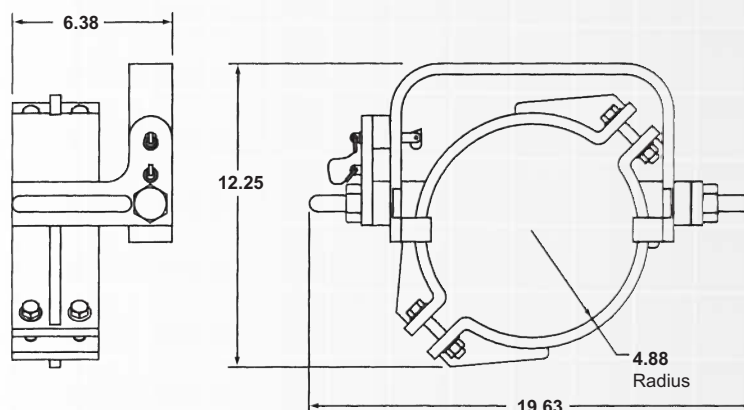


H.S. Part Number	NAVSEA Dwg. No.	Dimensions				Size	Est. Weight, Lbs.
		A	B	C	D		
B-CPL/HOS-25-QR	805-2557603	5.94	2.50	10.00	2-1/2"-7-1/2"	2-1/2"	17
B-CPL/HS-4-QR	805-2556892	9.05	4.02	11.50	4"-6"	4"	25

## COUPLING - ROBB, QUICK TRIP DEVICE

**Material:** Aluminum

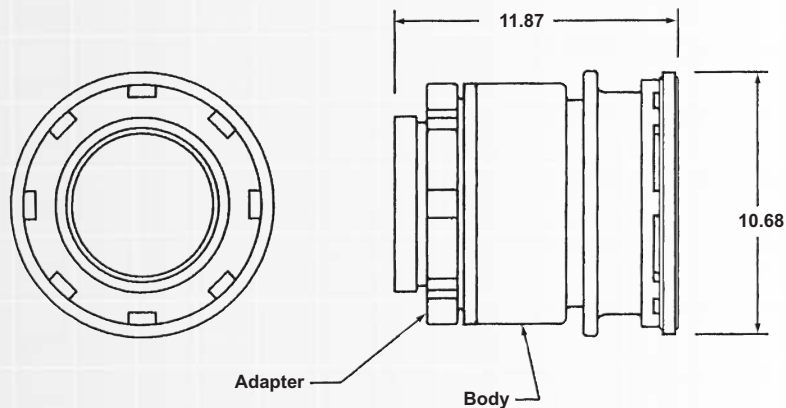
The robb coupling quick trip device is connected to the female half of the robb coupling and provides a faster means of connecting or releasing the robb coupling assembly.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CPL/ROB-Q/T/D	805-2556863	20

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

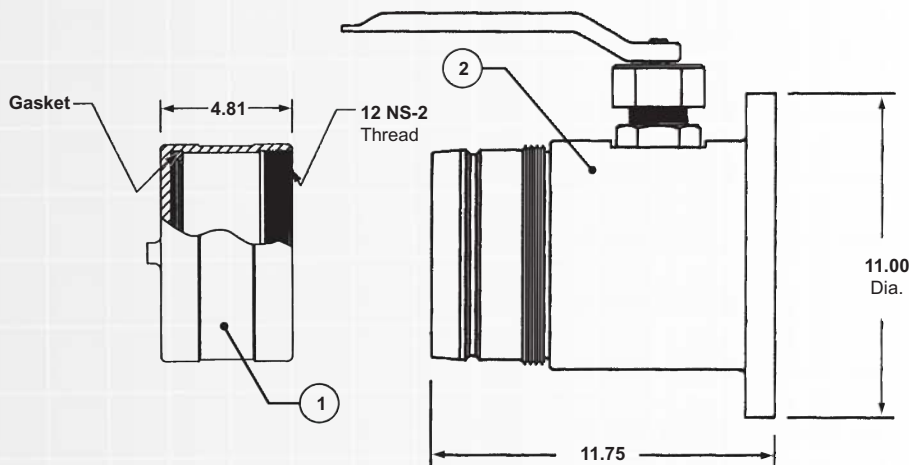
## COUPLING - ROBB BODY, FEMALE END

**Material: Bronze**

The robb coupling body is the female end of the robb coupling assembly. The robb body connects to the end of the fueling hose sent by the delivery ship and contains a valve to prevent fuel spillage. It mates with the robb male end attached to the fuel riser of the receiving ship.

H.S. Part Number	BUSHIPS Dwg. No.	Hose Size	Est. Weight, Lbs.
B-CPL/ROB-FE-6FS	S4824-841597	6"	79
B-CPL/ROB-FE-7FS	S4824-841597	7"	80

## COUPLING - ROBB NIPPLE, MALE END &amp; CAP

**Material: Bronze**

The robb coupling nipple is the male end of the robb coupling assembly. The robb nipple connects to the fuel riser on the receiving ship and mates with the robb female end sent by the delivery ship on the end of the fueling hose. A protective cap fits on the nipple when not in use to prevent damage of the male end and contaminants from entering the fuel system.

H.S. Part Number (Complete Ass'y)	Cap & Gasket ①	Nipple ②	BUSHIPS Dwg. No.	Est. Weight, Lbs.
B-CPL/ROB-ME-CG	B-CAP/ROB-ME	B-CPL/ROB-ME	S4824-841597	80

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

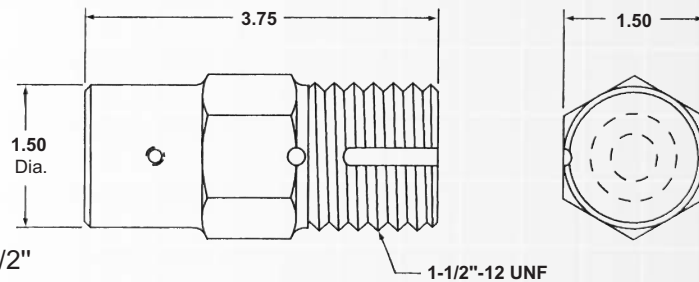
# Underway Replenishment Products

E

## END FITTING - 1/2" SLEEVE ADAPTER

**Material:** Steel

The 1/2" sleeve adapter provides a 1/2" wire rope end fitting that is compatible with existing 3/4" inhaul/outhaul end fittings.

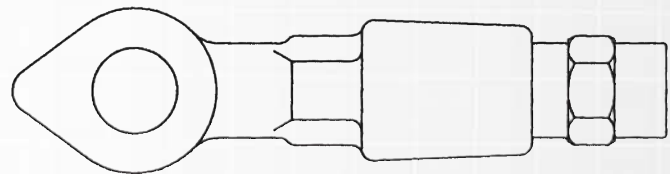


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-ADP/SLV-1/2	805-2580282	1

## END FITTING - SPAN WIRE, EYE SOCKET

**Material:** Steel

The eye socket span wire end fitting is a modified standard eye fiece fitting for 3/4" or 7/8" wire rope. It is used with a 5/8" or 3/4" screw pin anchor shackle and a 1" pelican hook to secure the span wire to the receiving ship's long link when F.A.S. weak links are not available.

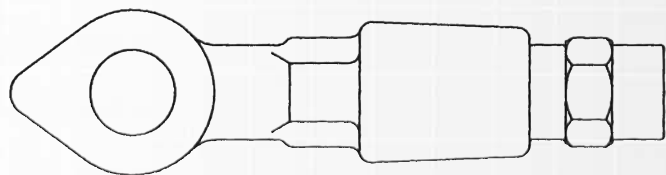


H.S. Part Number	NAVSEA Dwg. No.	Wire Rope Size	Length	Diameter	Est. Weight, Lbs.
EF-SPW-3/4	805-4476421	3/4"	9.62	2.25	5
EF-SPW-7/8	---	7/8"	11.12	2.62	8

## END FITTING - INHAUL/OUTHAUL WITH EYE ADAPTER

**Material:** Steel

The inhaul/outhaul end fitting with eye adapter is a modified standard eye fiece fitting for 1/2" or 3/4" wire rope. It is designed so 1/2" or 3/4" wire ropes can be used for other purposes than stream.



H.S. Part Number	NAVSEA Dwg. No.	Wire Rope Size	Length	Diameter	Est. Weight, Lbs.
EF-IH/OH-1/2	803-5184178	1/2"	6.75	1.12	2
EF-IH/OH-3/4	803-5184179	3/4"	9.62	2.25	2

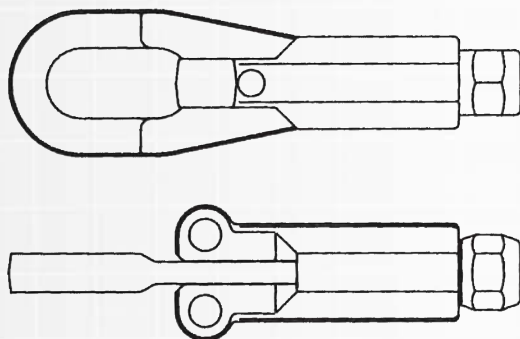
All Dimensions are in Inches.  
Dimensional information is for reference only.  
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End Fittings

24

# Underway Replenishment Products

## END FITTING - SPAN WIRE, WEAK LINK



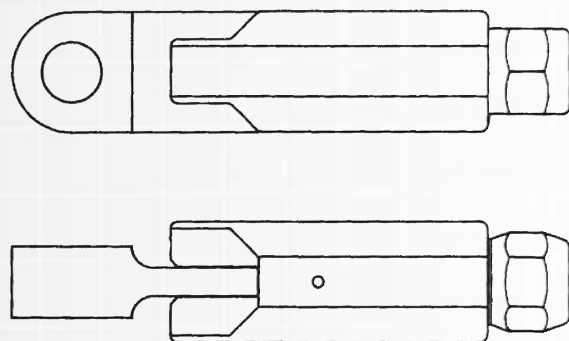
**Material:** Steel

The span wire weak link end fitting secures the end of the 3/4" or 7/8" span wire to the pelican hook on the receiving ship's probe receiver. It is designed to fail before a tight line condition could part the span wire.

H.S. Part Number	NAVSEA Dwg. No.	Wire Rope Size	Length	Width	Height	Failure Point (Lbs)	Est. Weight, Lbs.
EF-SPW/WL-3/4	803-2252855	3/4"	11.75	3.25	3.00	30,000	9
EF-SPW/WL-7/8	803-2252856	7/8"	11.75	3.25	3.00	35,000	9

## END FITTING - INHAUL/OUTHAUL WEAK LINK

25



**Material:** Steel

The inhaul/outhaul weak link end fitting connects to the 1/2" or 3/4" inhaul and outhaul wires. It is designed to protect the stream rigs by pulling apart at overloads but not normal working loads. The fitting will break between 13,000 and 15,000 pounds.

H.S. Part Number	NAVSEA Dwg. No.	Wire Rope Size	Length	Diameter	Est. Weight, Lbs.
EF-IH/OH-WL-1/2	803-4710519	1/2"	9.31	2.12	10
EF-IH/OH-WL-3/4	803-4710520	3/4"	9.81	2.12	10

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

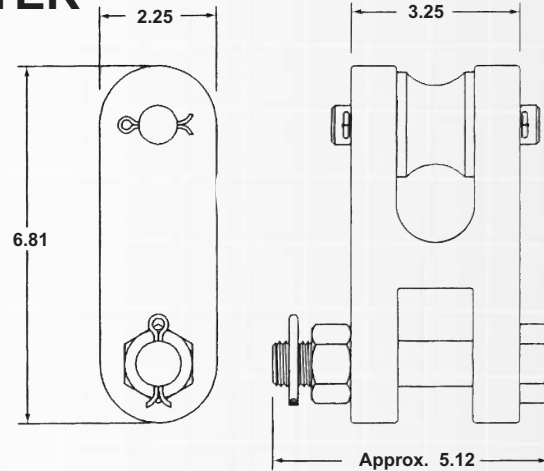
H

## HIGHLINE SHEAR PIN ADAPTER

**Material:** Steel

The highline shear pin adapter provides a 50,000 pound weak link between the star probe highline end fitting and the pelican hook.

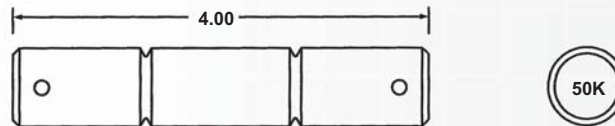
*Replacement shear pins are found below.*



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ADP-HL/SP	53711-5177046	8

## HIGHLINE SHEAR PIN

**Material:** Steel



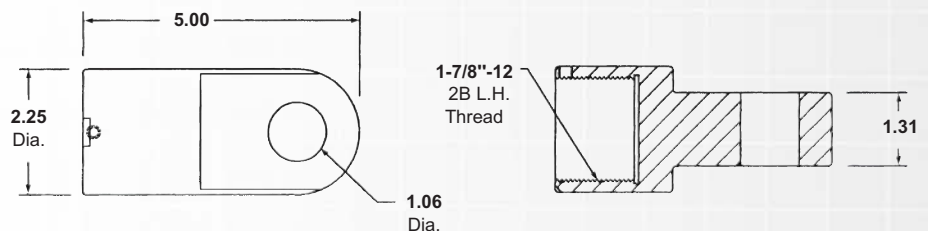
The shear pin for the highline shear pin adapter is a replacement for the adapter found above. It is designed to fail when loads exceed 50,000 pounds and prevents damage to the supporting ship's structure and surrounding equipment.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
PIN/SHR-HL/ADP	53711-5177065	1

## HIGHLINE END FITTING ADAPTER

**Material:** Steel

The highline end fitting adapter is used with the 7/8" or 1" wire rope poured socket found on page 27. It is used to reconfigure the end fitting of a highline wire rope for stream or conventional transfer methods.

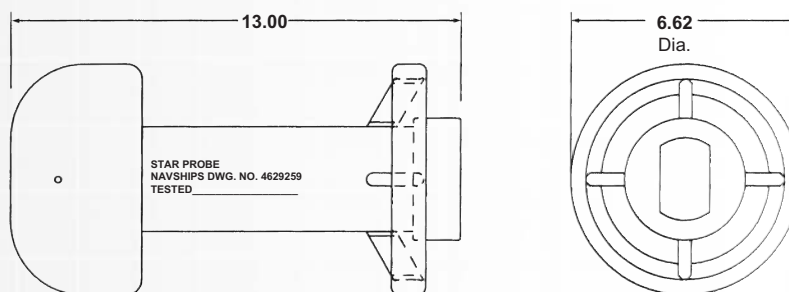


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-ADP-HL/EF	53711-5177021	3

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## HIGHLINE STAR PROBE

**Material:** Steel



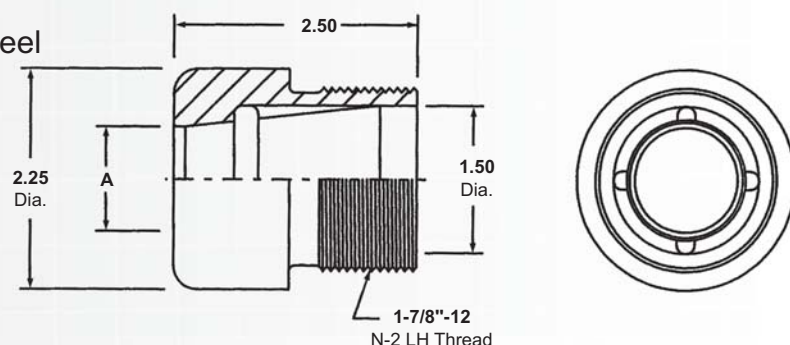
The star probe fitting consists of a probe head, tube with end cap, and a fin mounted guide ring. It slides over the highline end fitting and provides a securing point for the star latch assembly when using the star rig.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
FIT-STR/PR	80064-4629259	40

## HIGHLINE END FITTING - POURED SOCKET

27

**Material:** Steel



The highline end fitting poured socket is a permanently installed threaded fitting attached to the outboard end of the wire rope highline. It is used in conjunction with the highline end fitting adapter found on page 26.

H.S. Part Number	NAVSEA Dwg. No.	Wire Rope Size	Diameter A	Est. Weight, Lbs.
S-EF/HL-7/8	803-5184180	7/8"	.92	1.5
S-EF/HL-1	803-5184180	1"	1.06	1.5

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

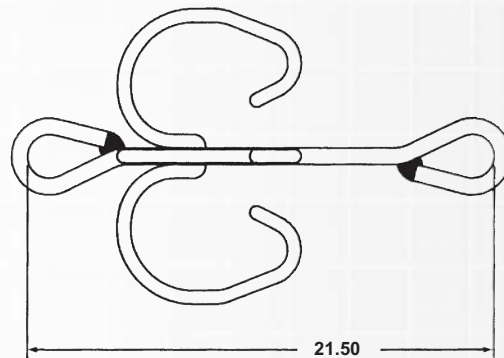


## HOOK - GRAPNEL

### Astern Fueling

**Material:** Steel

The astern fueling grapnel is used by the receiving ship when retrieving the astern hose rig. It is attached to a 50 foot manila line and thrown across the hose messenger line. When it connects with the hose messenger line grapnel the line is retrieved to bring the astern hose aboard the receiving ship.

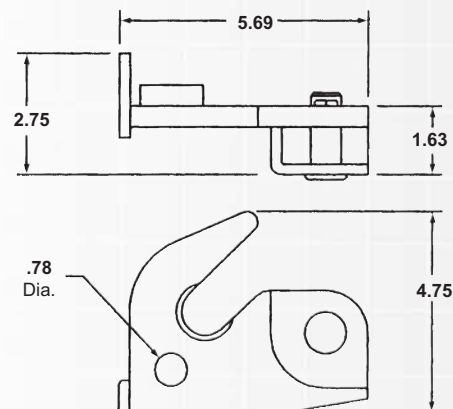


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-GPNL-AF	803-2257583 PC. 6	20

## HOOK - PROBE, REMATING LINE/MESSENGER ATTACHMENT

**Material:** Steel

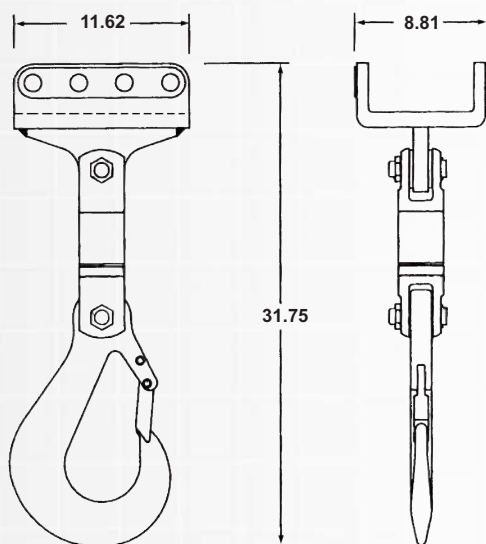
The probe remating line/messenger attachment is made to attach to the outboard padeye of the single probe trolley. It is used as an attachment point for the messenger line during in-haul of the probe and an attachment point for the remating line before the messenger is removed by the receiving ships's personnel.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-HK/PR-RL/MA	805-2225100	5

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## CARGO HOOK - STREAM TROLLEY ASSEMBLY



**Material:** Steel

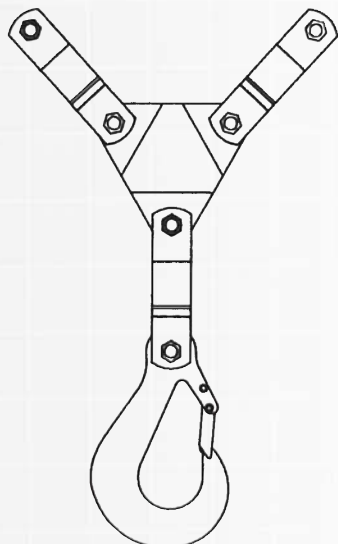
The cargo hook, stream trolley adapter assembly is used with the heavy or lightweight highline trolley for the transfer of stores or cargo.

Assembly includes adapter, cargo safety hook swivel, and cargo safety hook.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ADP/AY-CH/STROL	805-2549948	75

## HOOK - HOISTING ASSEMBLY

MK20 MOD O



**Material:** Steel

The MK20 MOD O hoisting assembly consists of a rigging plate, 3 cargo safety hook swivels, and a cargo safety hook. The assembly is used in the conventional and housefall transfer methods.

H.S. Part Number	NAVORD Dwg. No.	Length	Width	Height	Capacity (Tons)	Est. Weight, Lbs.
ST-HST/AY	563891	12"	3"	41"	5	130

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

H

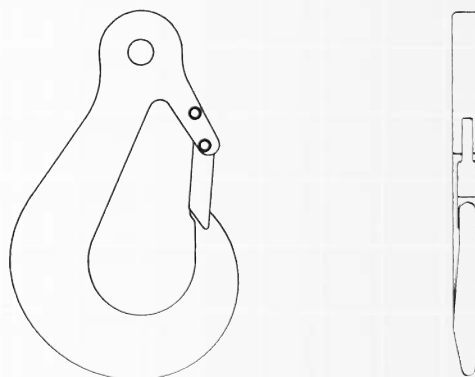
Hooks

## HOOK - CARGO SAFETY

### MK20 MOD O

**Material:** Steel

The MK20 MOD O cargo safety hook is used in operations where heavy loads are handled. It has a throat opening of 2-1/2" with a spring loaded safety latch that can be latched in the open or closed position.

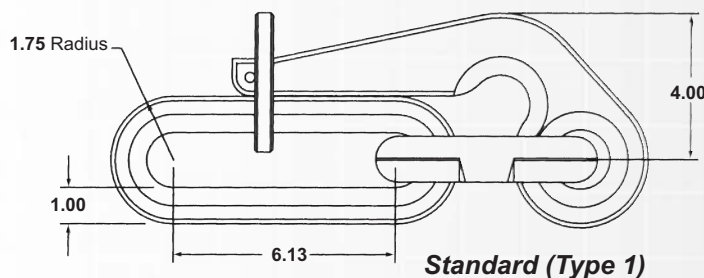


H.S. Part Number	NAVORD Dwg. No.	Length	Width	Capacity (Tons)	Est. Weight, Lbs.
ST-HK/CGO	563869	17"	10.87	5	40

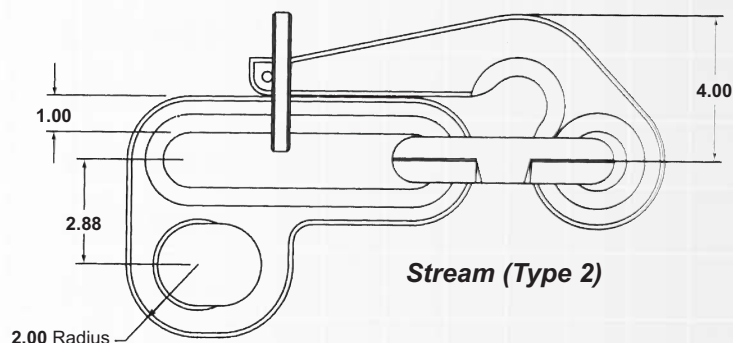
## HOOK - PELICAN, STANDARD AND STREAM, 1"

**Material:** Steel

The 1" standard and stream pelican hooks are lightweight high strength pelican hooks designed to replace the 1", 1-1/8" and 1-3/8" pelican hooks on BUSHIPS drawing number S1801-860234. The stream pelican hook is similar to the standard pelican hook but includes a bail as part of the long link. The pelican hooks provide a quick release attachment for all stream rigs, the wire highline rig (non-tensioned), and all housfall rigs.



Standard (Type 1)



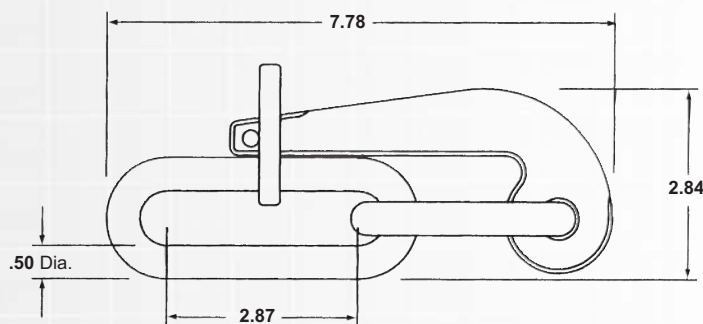
Stream (Type 2)

H.S. Part Number	Type	NAVSEA Dwg. No.	Maximum Working Load, Lbs.	Est. Weight, Lbs.
ST-HK/PEL-FAS-1D-T1	Standard (Type 1)	805-2556852	50,000	18
ST-HK/PEL-FAS-1D-T2	Stream (Type 2)	805-2556852	50,000	20

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## HOOK - PELICAN, F.A.S., 1/2"

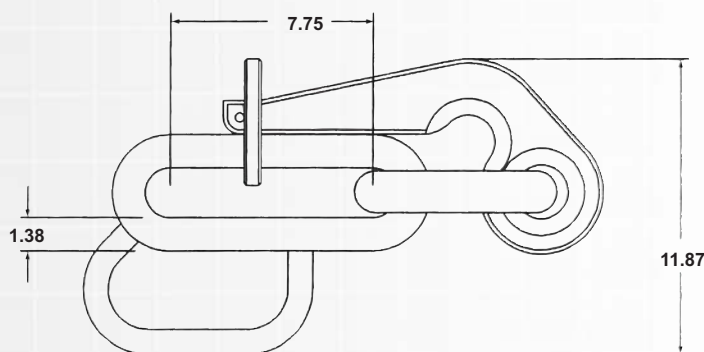


**Material:** Steel

The 1/2" pelican hook is used to suspend the riding line fitting from their trolleys and the hose from the free trolley. It provides an easily releasable attachment point.

H.S. Part Number	NAVSEA Dwg. No.	Maximum Working Load, Lbs.	Est. Weight, Lbs.
ST-HK/PEL-FAS-1/2D	805-2556882	3000	7

## HOOK - PELICAN, STREAM, 1-3/8"



**Material:** Steel

The 1-3/8" stream pelican hook is similar to the standard pelican hook but also has a 1" diameter bail welded to the underside of the long link. The long link is tested to 50,000 pounds, while the bail is separately tested to 37,000 pounds. It is designed to provide a quick release attachment for all stream rigs, the wire highline rig (non-tensioned), and all housefall rigs. It must be used with the traveling surf rig but can be used with other rigs.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-HK/PEL-FAS-1-3/8D	804-860234	60

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

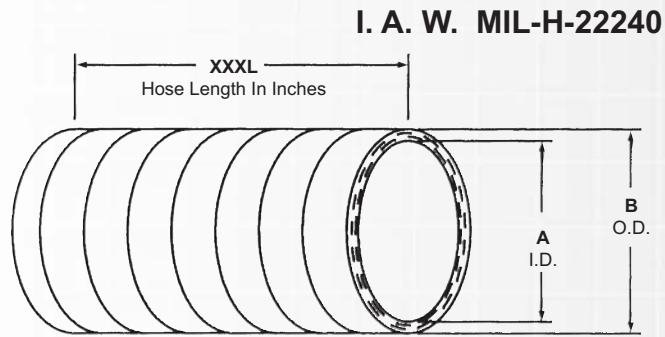
## HOSE - ALONGSIDE AND ASTERN FUELING AT SEA

**Type A:** Alongside Fueling

**Type B:** Astern Refueling

**Type C:** Alongside Transfer  
(Water & Fuel)

**Material:** Rubber



Fueling at sea hoses come in 2-1/2", 4", 6", and 7" inside diameter sizes and are utilized for various transfer applications. The 4", 6", and 7" Type A hoses are used only for alongside fueling. The 2-1/2" Type C hoses can be used for the alongside transfer of the water in addition to fuel. The 6" Type B hose is utilized in astern refueling-at-sea operations.

H.S. Part Number	Size (I.D.)	Type	Dimensions		Proof Pressure (PSI)	Min. Burst Pressure (PSI)	Min. Tensile, Lbs.	Est. Weight/Ft., Lbs.
			A	B				
HOS-22240-25C-XXXL	2-1/2"	C	2.50	3.12	300	600	5,000	1.5
HOS-22240-4A-XXXL	4"	A	4.00	4.90	300	600	5,000	2.25
HOS-22240-6A-XXXL	6"	A	6.00	6.90	300	600	12,000	4.40
HOS-22240-6B-XXXL	6"	B	6.00	7.01	300	600	16,000	4.40
HOS-22240-7A-XXXL	7"	A	7.00	7.90	300	600	12,000	5

## HOSE ASSEMBLIES - JUMPER

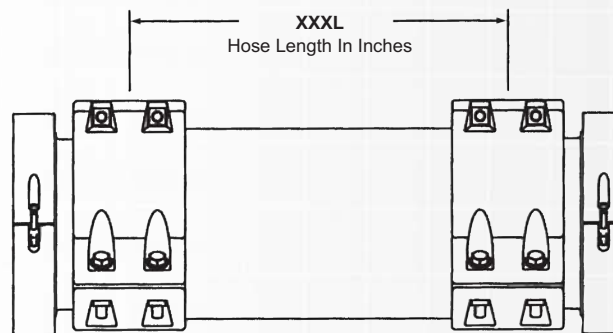
### FEMALE COUPLINGS & SPLIT CLAMPS BOTH ENDS

The 2-1/2" and 6" jumper hose assemblies contain one female split clamp coupling, o-ring, and split clamp on each end of the hose. They are utilized to mate to the male split end fitting when draining the hose rigs or transferring fuel or water.

To be used with aluminum split clamps shown on page 13.

See page 15(top) & 16(top) for couplings.

Hose: I. A. W. MIL-H-22240  
Couplings: I. A. W. MIL-C-24356



H.S. Part Number	Size I.D.	Proof Pressure, PSI
H/A1FF-22240-25C-XXXL	2-1/2"	300
H/A1FF-22240-6A-XXXL	6"	300

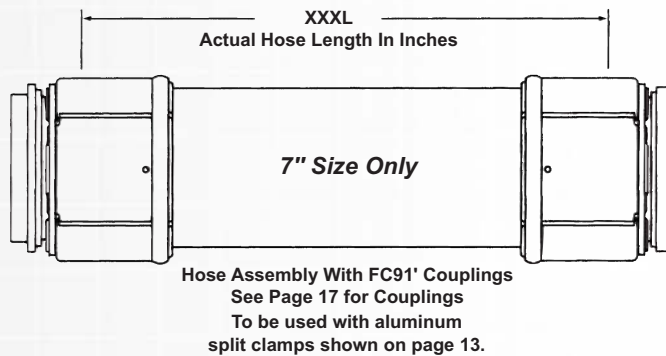
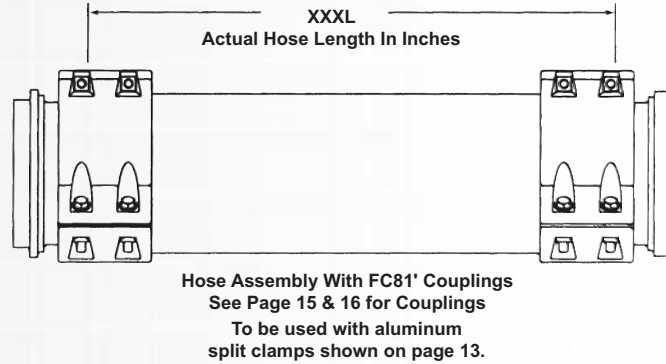
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## HOSE ASSEMBLIES

### ALONGSIDE AND ASTERN FUELING AT SEA

Hose: I. A. W. MIL-H-22240

Couplings: I. A. W. MIL-C-24356



The alongside and astern fueling at sea hose assemblies are available in 2-1/2", 4", 6", and 7" inside diameter sizes. Each contains one male and one female coupling, o-ring, and hose. The assembly is hydrostatically proof tested to test of 300 PSI prior to shipment.

Order H/A1-☐- XXXL to include 1 split clamp with assembly.

Order H/A2-☐- XXXL to include 2 split clamps, 1 cap and 1 plug with assembly.

H.S. Part Number	NAVSEA Dwg. No.	Size (I.D.)	Type	Coupling Type
H/A-22240-25C-XXXL	803-2260815/816/817	2-1/2"	Alongside Transfer (Water & Fuel)	SEG 81'
H/A-22240-4A-XXXL	805-4316751	4"	Alongside Fueling	SEG 81'
H/A-22240-6A-XXXL	805-4316751	6"	Alongside Fueling	SEG 81'
H/A-22240-6B-XXXL	803-2257594	6"	Astern Fueling	SEG 81'
H/A-22240-7A-XXXL	805-4316751	7"	Alongside Fueling	SEG 81'
H/A-FC91-7A-XXXL	805-4316751	7"	Alongside Fueling	FC91'

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



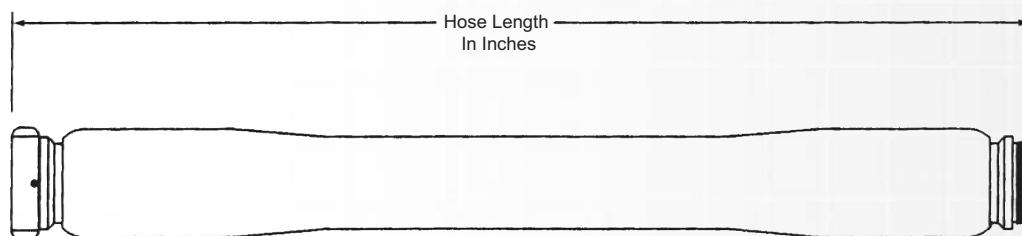
# Underway Replenishment Products



## HOSE ASSEMBLIES - PIGTAIL, 4"

**Material:** Rubber Hose  
Bronze Couplings

I. A. W. MIL-H-17505



The 4" pigtail hose assemblies are available in 10 or 30 foot lengths and are used in trunk fueling of ships. The male and female threaded couplings are built into the assembly during manufacture.

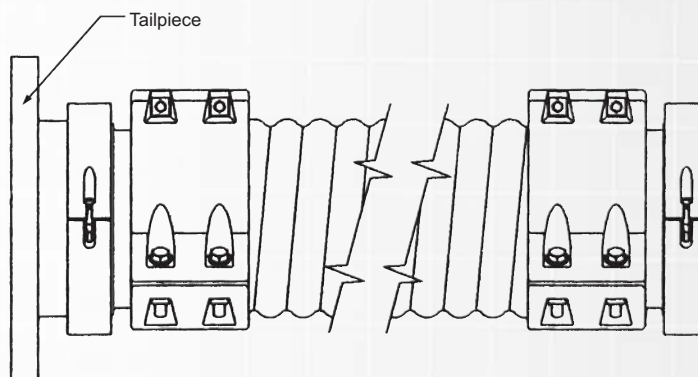
See page 21 for couplings.

H.S. Part Number	Nominal I.D.	Length, Ft.	Est. Weight, Lbs.
H/A-17505-4-120L	4"	10	100
H/A-17505-4-360L	4"	30	186

## HOSE ASSEMBLIES - RECEIVER PROBE

**Material:** Rubber Hose  
Aluminum Fittings  
Steel Tailpiece

The receiver hose assembly consists of an 8 foot section of 7" wire reinforced hose, two 7" split clamps, one 7" male and female coupling, two 7" o-rings and one 7" female split to 8" flange tailpiece (Optional). It provides a flexible but non-collapsible hose connection between the probe receiver and the fuel riser. Please specify with or without tailpiece when ordering.



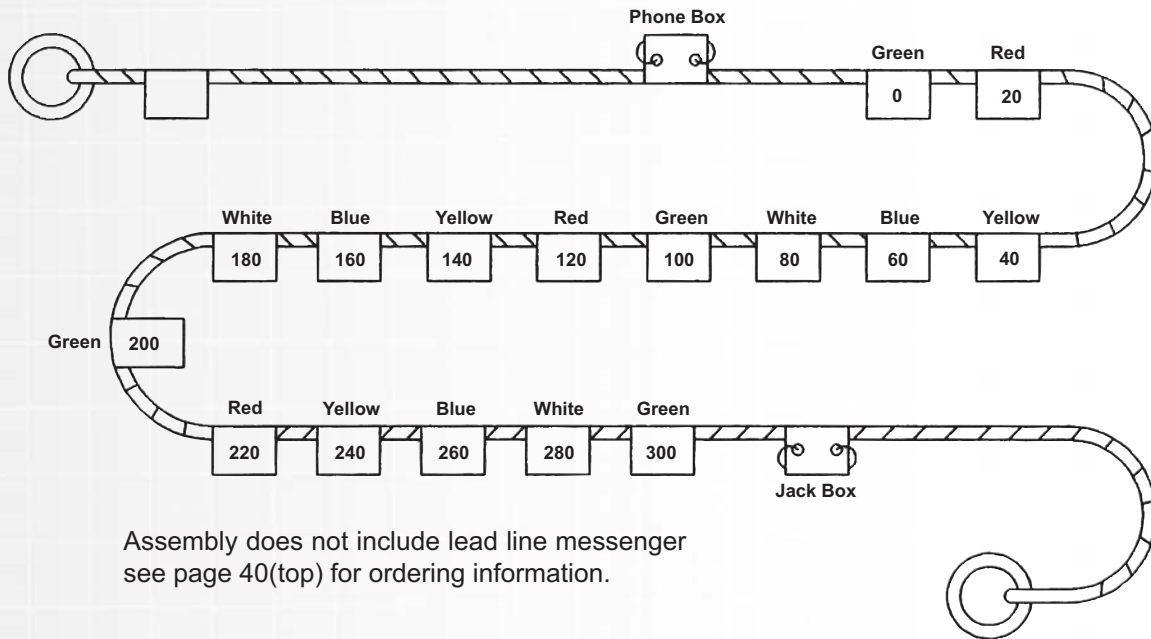
See page 18 for couplings.

H.S. Part Number	Tailpiece	NAVSEA Dwg. No.	Est. Weight, Lbs.
H/A-7-REC-104L-LT	Without Tailpiece	805-2213794	200
H/A-7-REC-104L	With Tailpiece	805-2213794	245

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## LINE - PHONE/DISTANCE, BRIDGE-TO-BRIDGE



### Material: Polypropylene Line

The bridge-to-bridge phone/distance line consists of 350 feet of 1-1/2" circumference 3 strand polypropylene line with a wire woven in each strand. A waterproof sound powered telephone jack box is connected to each end of the line. Sixteen markers are secured to the line at 20 foot intervals, each is marked with 5" high numerals to show the distance from the zero end of the line. A 200 foot lead line messenger found on page 40 is attached to the outboard end assembly.

The bridge-to-bridge phone/distance line provides sound powered telephone circuit between the ship's bridges and a visual indicator of ships separation during conrep.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
LN-PHN-BR/BR	53711-6695843 ASSY. #1	85

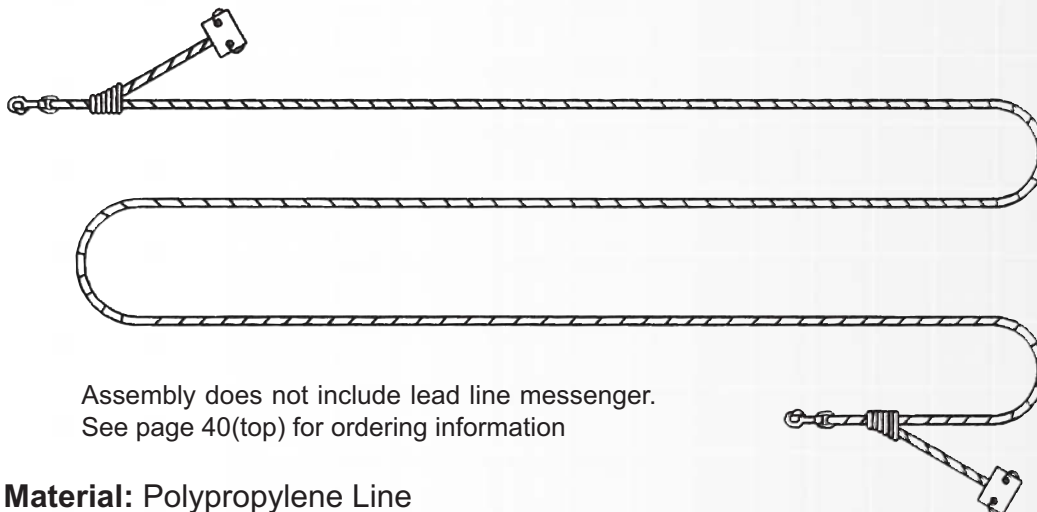
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

L

Lines

## LINE - PHONE, STATION-TO-STATION



Assembly does not include lead line messenger.  
See page 40(top) for ordering information

### Material: Polypropylene Line

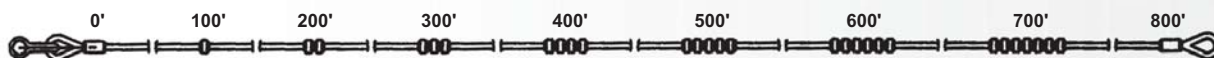
The station-to-station phone line consists of 450 feet of 1-1/2" circumference 3 strand polypropylene line with wire woven in each strand. A waterproof sound powered telephone jackbox is connected to the end of a 6 foot tail line located at each end of the assembly. A 200 foot lead line messenger, found on page 40, is attached to the outboard end of the assembly.

The station-to-station phone line provides a sound powered telephone circuit between delivery stations and receiving stations.

H.S. Part Number	NAVSEA Dwg.	Est. Weight, Lbs.
LN-PHN-STA/STA	53711-6695844 ASSY. #3	70

## LINE - POSITION BUOY

### Astern Fueling



### Material: Wire Rope

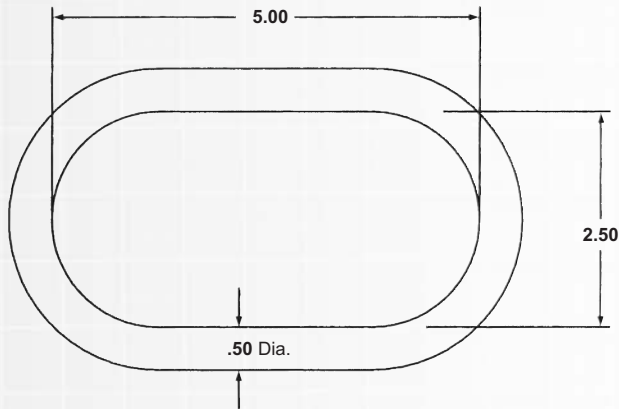
The position buoy line is an 800 foot wire rope assembly with button stops attached in 100 foot intervals. A position buoy is attached to the outboard end of the assembly. It is used to maintain ships separation during the astern fueling process.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
WR-POS/LINE-BUO-AF	803-2257583	160

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## LINK - 1/2" END

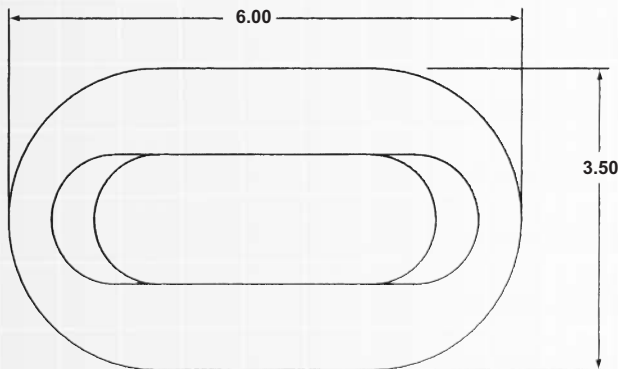


### Material: Steel

The 1/2" end link is used with the 2-1/2" spanline and auxiliary F.A.S. rigs to connect the 2-1/2" saddles to the spanline trolley or 7" saddles.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-LNK-1/2D-25R	803-2260817	2

## LINK - 1" PROBE FUELING



### Material: Steel

The probe fueling link attaches the spanwire to the pelican hook on the swivel arm of the probe receiver. It is used for fuel delivery at stations having rope used for purposes other than fuel delivery.

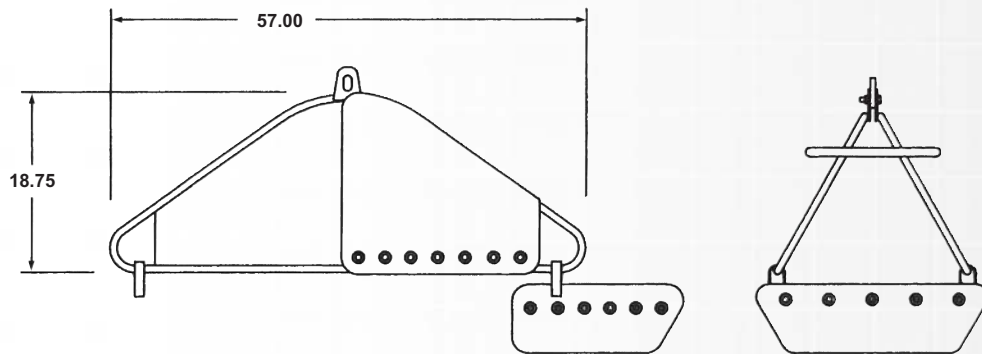
H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-LNK-1-PF	---	10

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

L-M

## LITTER - PROTECTIVE FRAME WITH FLOATS

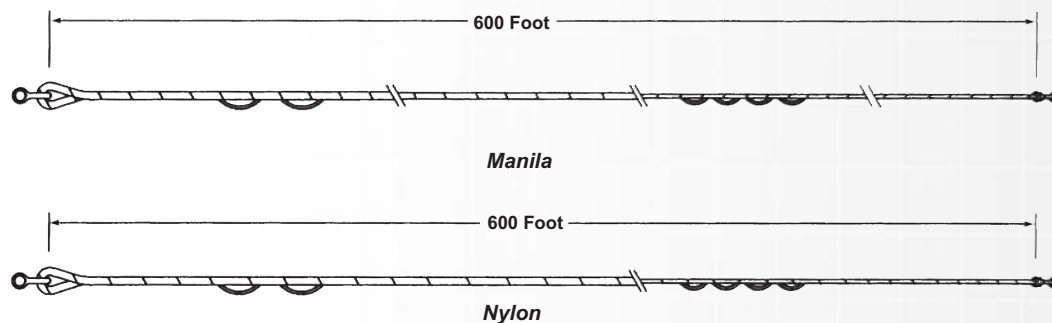


**Material:** Aluminum

The protective frame for the stokes litter consists of an aluminum framework and flotation bags made of kapok filled canvas. The assembly is used with a stokes litter for a transfer of an immobilized patient between ships at sea using a manila highline transfer method.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-PRO/FRM	805-2555038	110

## MESSENGER - BASIC FAS/RAS

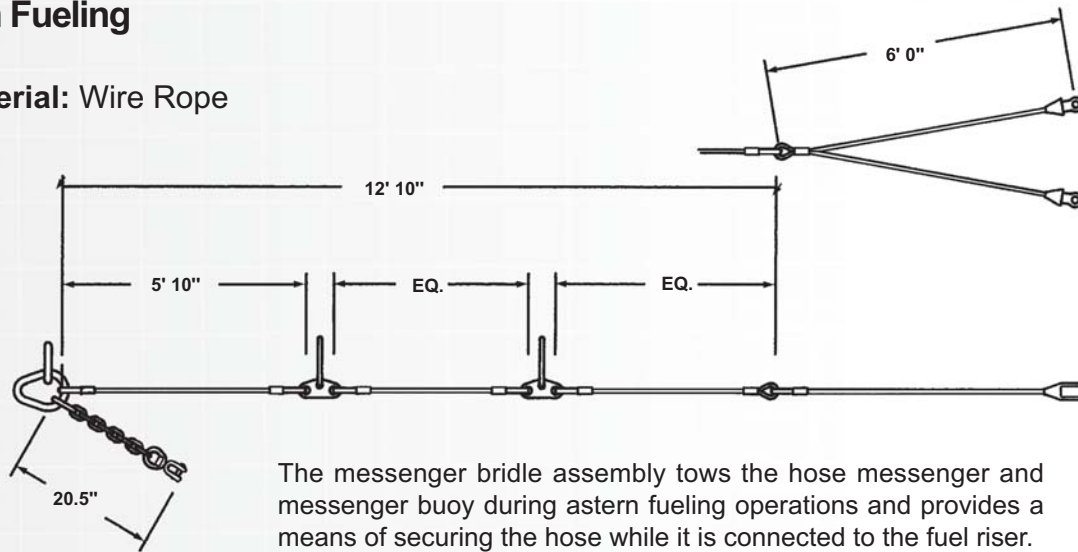


**Material:** Nylon or Manila  
Primarily used in Nylon.

The fueling-at-sea messenger is a 600 foot graduated line used to haul the transfer rig and other lines between ships during refueling.

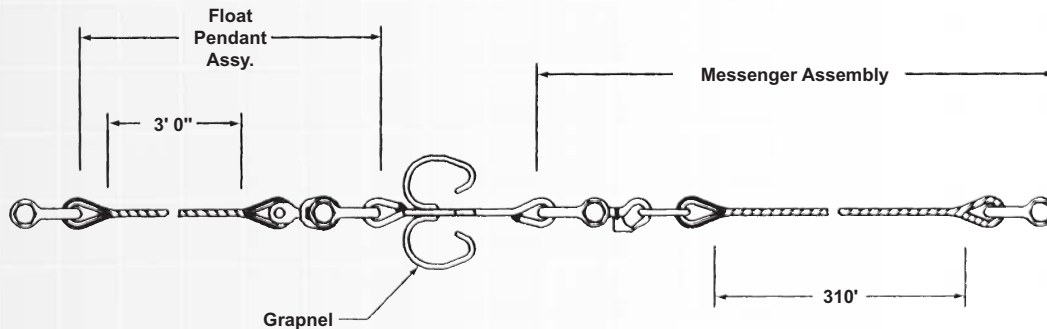
H.S. Part Number	Material	NAVSEA Dwg. No.	Est. Weight, Lbs.
NR-MES/AY-RAS	Nylon	805-2554183	196
MR-MES/AY-RAS	Manila	805-2554183	196

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

**MESSENGER - BRIDLE ASSEMBLY****Astern Fueling****Material:** Wire Rope

The messenger bridle assembly tows the hose messenger and messenger buoy during astern fueling operations and provides a means of securing the hose while it is connected to the fuel riser.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
WR-BRI-MSNG/AY-AF	803-2257586	120

**MESSENGER - HOSE****Astern Fueling****Material:** Nylon Rope / Steel Fittings

The hose messenger assembly consists of a 310 foot nylon messenger assembly, grapnel, and float and pendant assembly. It is used to tow the messenger buoy behind the astern fueling hose rig when the rig is deployed behind the delivery ship, providing a visual indicator of the hose rig location. It is also used to haul the messenger bridle and hose onboard the receiving ship.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
MES/AY-HOS-AF	803-2257583	110

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

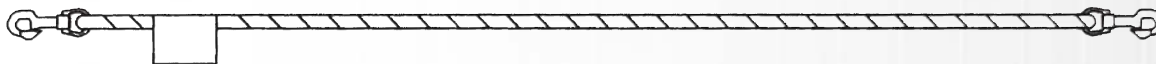


# Underway Replenishment Products

M

Messengers

## MESSENGER - PHONE/DISTANCE



### Material: Nylon

The phone/distance lead line messenger is a 200 foot length of nylon or 6 thread with snap hooks attached to each end. A 5" x 6" label is attached to one end stating "attach zero end B/B phone/distance line". It is used as a messenger for the bridge -to-bridge phone /distance and station-to-station phone lines found on pages 35 and 36.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
MES/AY-PD	53711-6695843 ASSY. #2	30



## MESSENGER - STAR

40



### Material: Nylon or Polyester Rope

The star messenger is an 800 foot graduated nylon or polyester line. Becketts are sliced into the messenger for attachments of various lines. It is used to haul the station-to-station phone line, highline, and surf/star between ships during the deployment of the messenger rigged star or traveling surf rigs.

H.S. Part Number	Material	NAVSEA Dwg. No.	Est. Weight, Lbs.
NR-MES/AY-STAR	Nylon	4629255	180
PR-MES/AY-STAR	Polyester	4629255	180

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

Cat.709

www.HYDRASEARCH.com

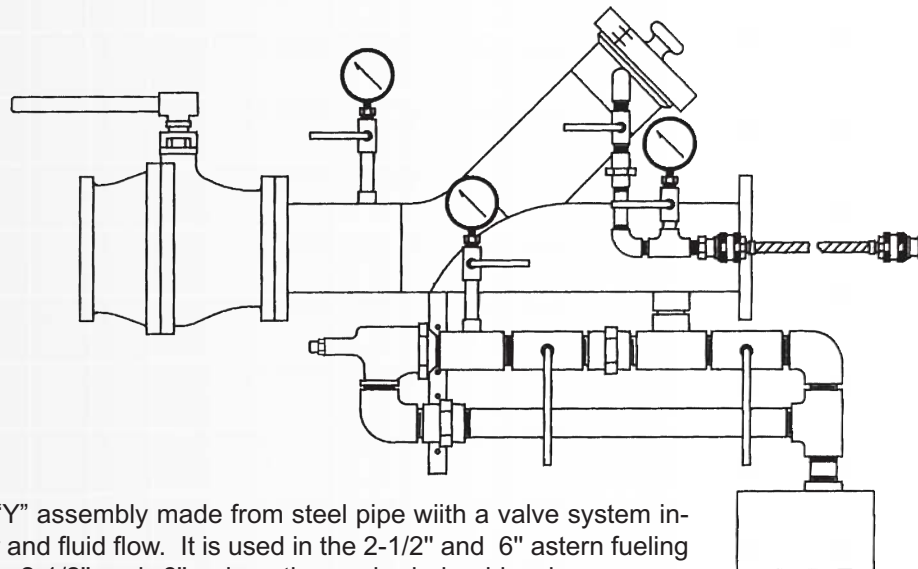
410.643.8900



# Underway Replenishment Products

## PIG - LAUNCHER - 2-1/2" & 6"

Astern Fueling



**Material:** Steel

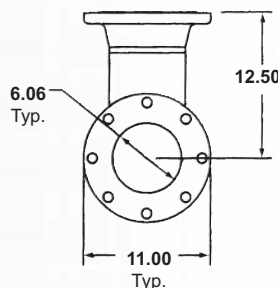
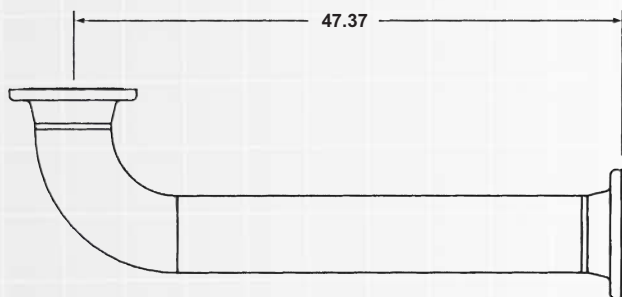
The pig launcher is a "Y" assembly made from steel pipe with a valve system incorporated to direct air and fluid flow. It is used in the 2-1/2" and 6" astern fueling operation to launch the 2-1/2" and 6" polyurethane pig during blowdown operations. The pig is loaded into the top of the "Y" assembly which is then capped. Compressed air is directed in from behind the pig to blow it through the launcher, the astern fueling reel, and down the astern hose line. Any residual oil is drained through the valve system on the lower part of the "Y" assembly into a separate tank.

H.S. Part Number	Size	NAVSEA Dwg. No.	Est. Weight Lbs.
ST-PIG/LNCHR-25AF	2-1/2"	---	---
ST-PIG/LNCHR-6AF	6"	571-4734261	400

41

## PIG - ELBOW CONNECTOR - 90°

Astern Fueling



**Material:** Steel

The 90° elbow connector is used with the 6" astern fueling system. It is the connector between the pig launcher and the flexible hose assembly on the astern fueling reel.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-ELB/CONN-90-6AF	571-4734254	125

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



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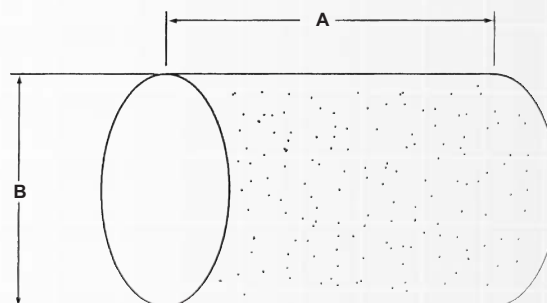
Cat.709

## PIG - HOSE CLEANOUT

### Astern Fueling

**Material:** Polyurethane Foam

The hose cleanout pig is a polyurethane foam cylinder coated on both ends, whose outside diameter is slightly larger than the inside diameter of the fuel hose. It is used during blowdown of the astern fueling operation to displace/remove the fuel from the hose prior to fuel hose disconnect on the receiving ship.



H.S. Part Number	Launcher Size	NAVSEA Dwg. No.	A	B	Est. Weight, Lbs.
UR-PIG-25AF	2-1/2"	---	6"	3"	.1
UR-PIG-4AF	4"	---	6"	4-1/2"	.2
UR-PIG-AF	6"	---	9"	6-1/2"	.4
UR-PIG-8AF	8"	---	12	8-1/2"	.6

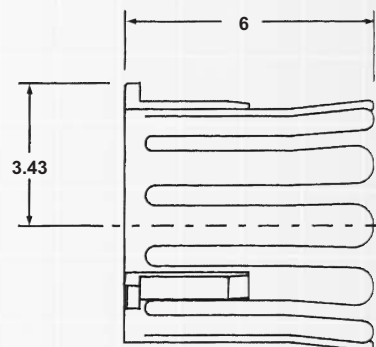
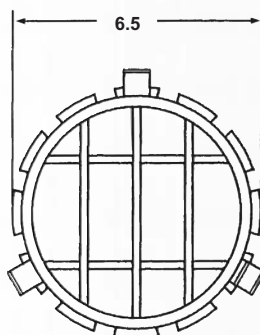


## PIG - CATCHER - 6"

### Astern Fueling

**Material:** Steel

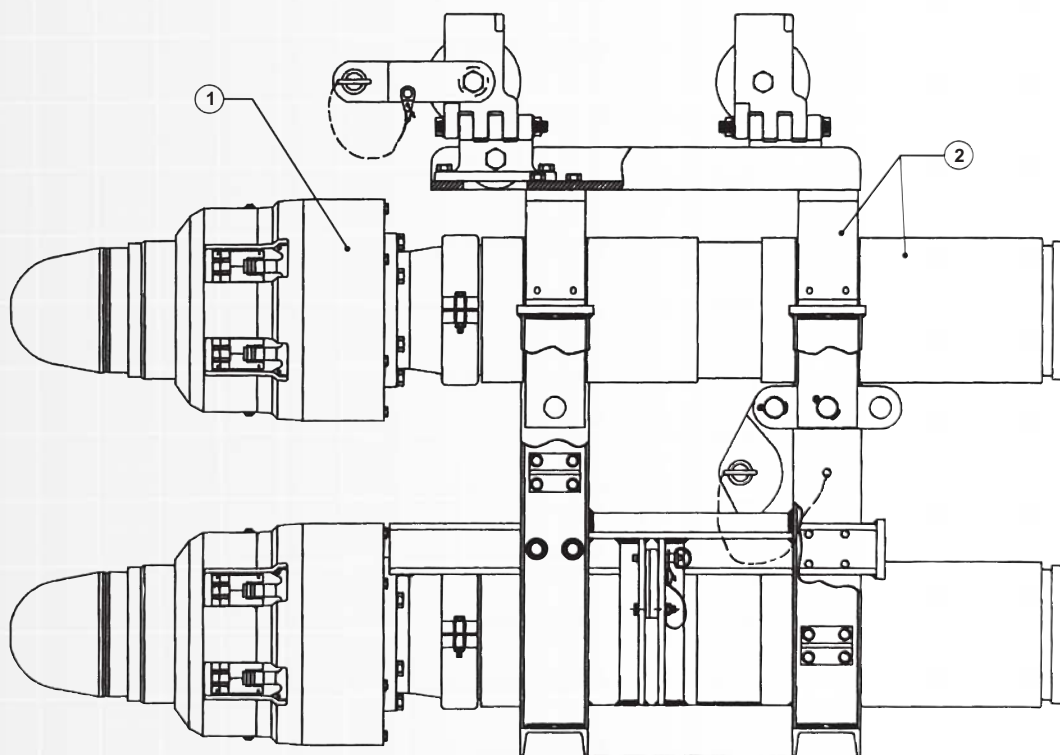
The 6" pig catcher is a metal basket designed to fit inside the modified NATO breakable spool B end. It is used to stop the pig in the hose end fitting just outboard of the receiving ship's fuel riser. During hose rig disconnect, after blowdown, the pig can be removed from the pig catcher when it is pulled from the modified NATO breakable spool.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-PIG/CAT-AF	803-2257593	5

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## PROBE - DOUBLE ASSEMBLY



**Material:** Bronze & Aluminum

The double probe assembly is used for transferring fuel to ships equipped with a single or double probe receiver. The double probe assembly consists of the probes and carrier assembly. The upper probe is a fixed position while the lower probe is clamped to a sliding mechanism. The mechanism allows the lower probe to align first with the lower receiver of the double probe receiver, then slides back until the upper probe is engaged in the upper receiver.

H.S. Part Number	NAVSEA Dwg.	Length	Width	Height	Est. Weight, Lbs.
B-AY-D/PR	810-2223300	64"	44"	18"	589

### Components

Description	H.S. Part Number	NAVSEA Dwg.	Est. Weight, Lbs.
① Probe	D15897	810-2255759	160
② Carrier Ass'y	D15899	810-2223300	269

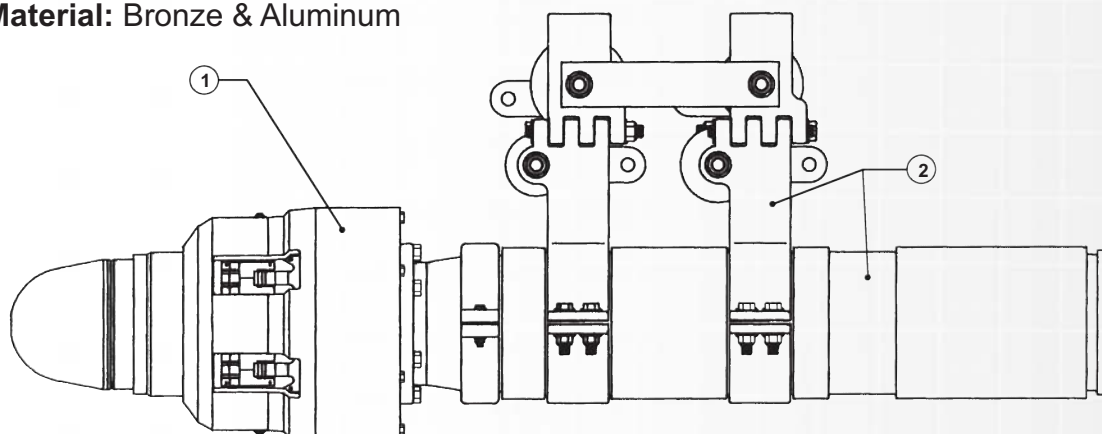
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

P

## PROBE - SINGLE ASSEMBLY

**Material:** Bronze & Aluminum



The single probe assembly is used to transfer fuel to ships equipped with a single or double probe receiver. The single probe assembly consists of the probe and the carrier assembly. It contains a self-aligning feature and spring loaded locking mechanisms which lock the probe in a receiver. The single probe has a spring loaded sliding sleeve valve which is actuated as the probe is mated and allows the transfer of fuel.

H.S. Part Number	NAVSEA Dwg. No.	Length	Width	Height	Est. Weight, Lbs.
B-AY-S/P	810-2255758	52"	11-1/2"	22"	290

### Components

Description	H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
① Probe	D15897	810-2255759	160
② Carrier Ass'y	D15896	810-2255760	130

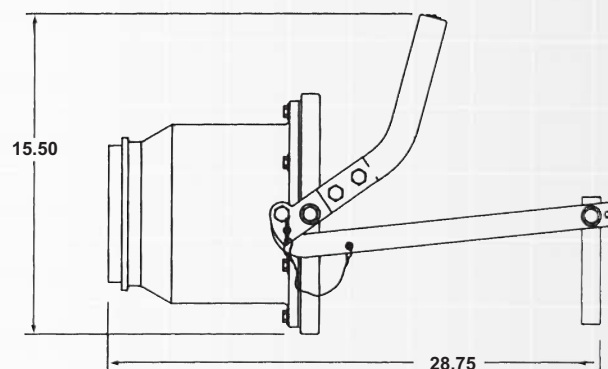
Probes

44

## PROBE - SLEEVE RETRACTOR

**Material:** Aluminum

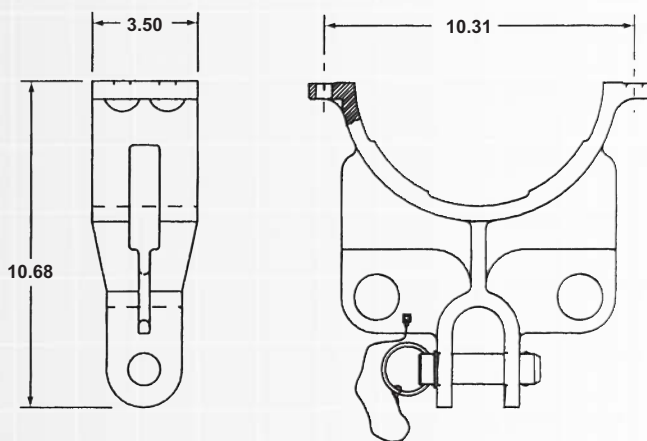
The probe sleeve retractor is used for draining fuel from the rig with probe installed, for conducting the pre-operational inspection of the sleeve valve, or for retracting the sleeve valve to provide access when replacing the probe nose seal.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-AY-P/S/R	805-2214629	30

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## PROBE CLAMP - SPECIAL INHAUL



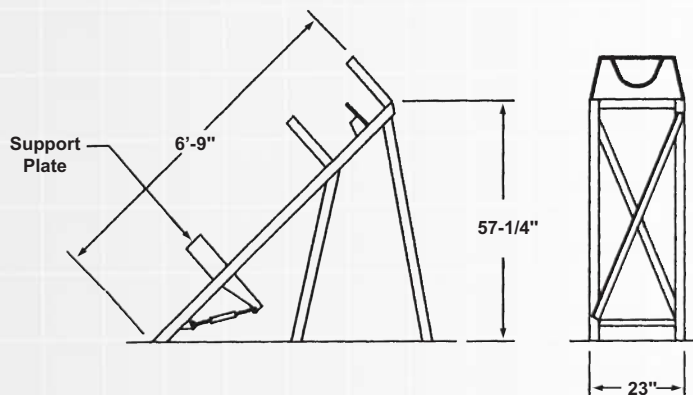
**Material:** Bronze

The special inhaul clamp attaches to the underside of the single probe and provides an attachment point for the basic messenger and messenger return line

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
B-CLMP-SP/INHL	803-2252874	21

## PROBE RACK- SINGLE PROBE STOWAGE

45



**Material:** Steel

The single probe stowage rack is a steel fabrication designed to provide rigid stowage for the single probe assembly. Stowage cradles with removable bolted stowage bars firmly lock the probe in the rack. Once the probe assembly is secured in the rack, the support plate may be hinged down so the probe sleeve retractor can be installed on the probe.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-RK-S/P/STOW	528-2227928	300

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

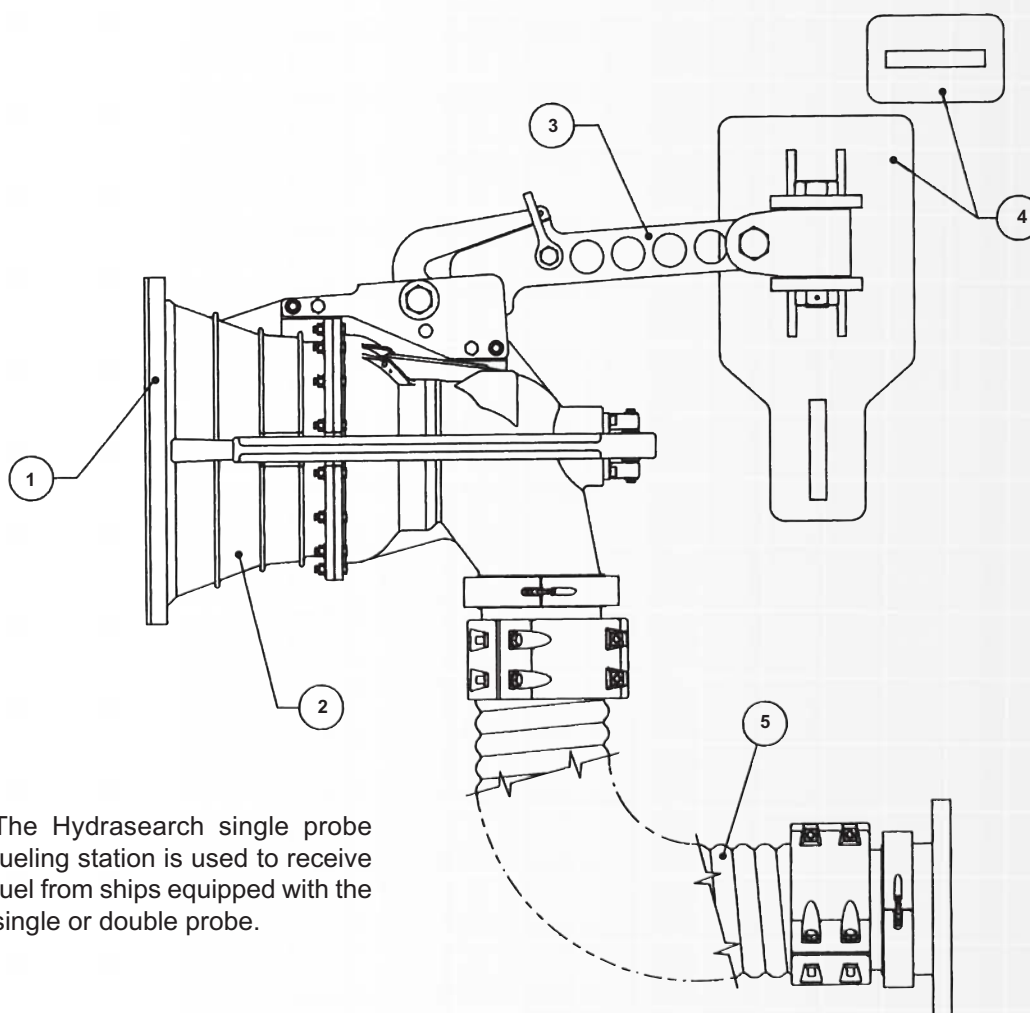


# Underway Replenishment Products

R

## RECEIVING STATION - SINGLE PROBE FUELING

Receivers



The Hydrasearch single probe fueling station is used to receive fuel from ships equipped with the single or double probe.

46

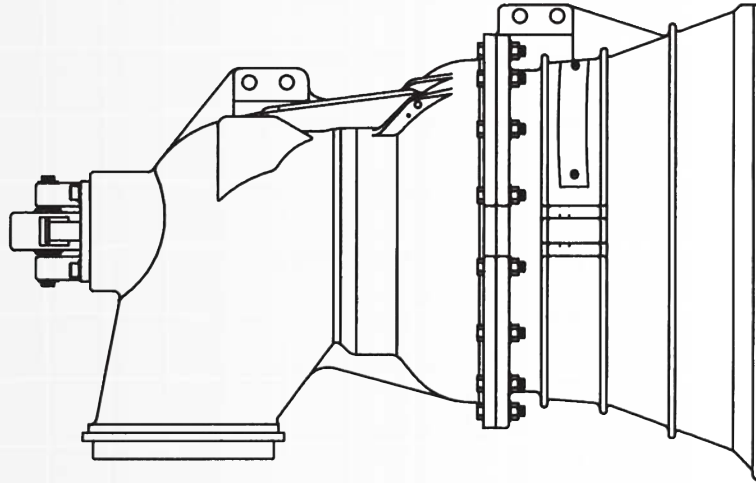
H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
STA-S/P/REC	805-2213794	550

### Components

Description	H.S. Part Number	NAVSEA Dwg. No.	Page No.
① Cover Plate	A-COV/PLT-PR/R	805-2217230	49
② Single Probe Receiver B-S/P/REC		805-2255761	47
③ Swivel Arm	ST-ARM/SW-S/P/REC	805-2213160	50
④ Swivel Joint	ST-JNT/SW-S/P/REC	805-2213159	50
⑤ Receiver Hose Ass'y	H/A-7-REC-104L	805-2213794	34

## RECEIVER- SINGLE PROBE

**Material:** Bronze & Aluminum



47

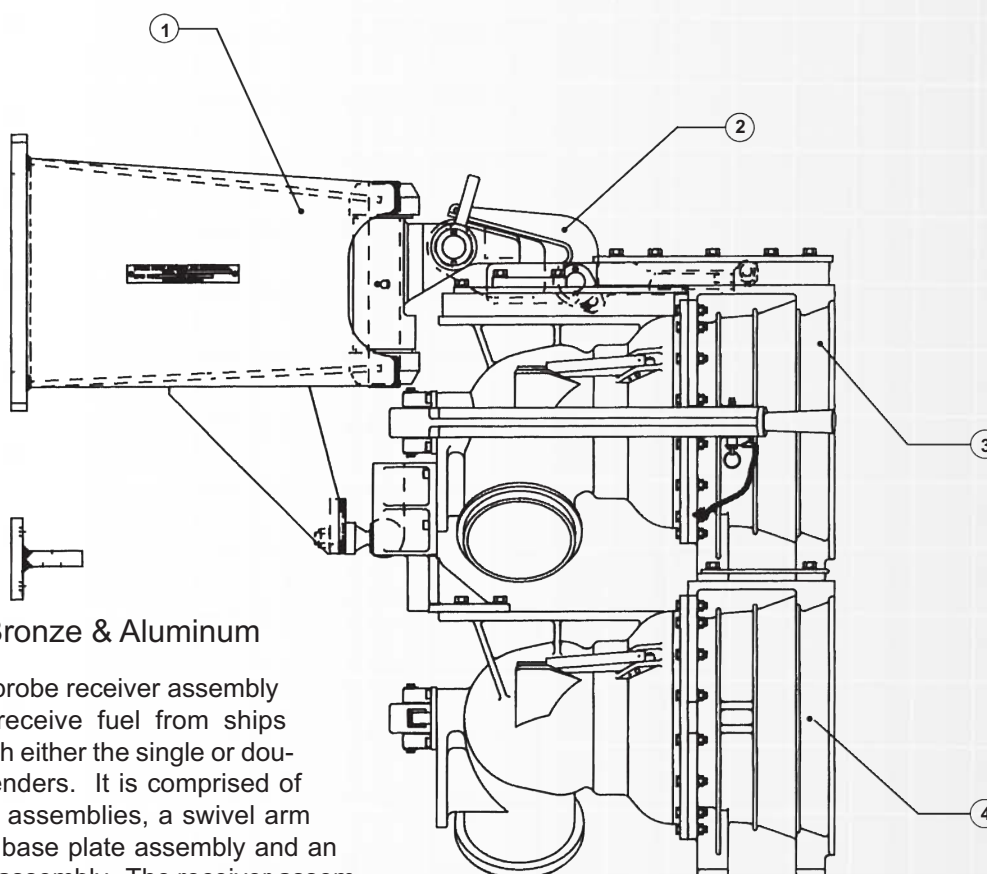
The single probe receiver is used to receive fuel from ships equipped with either the single or double probe senders. The single probe receiver has internal tapering surfaces which provide a self aligning feature for proper engagement of the probe. Two spring loaded flags provide visual indication of proper engagement of the probe and the receiver. The end of the receiver is configured to connect to one end of the probe receiver hose and pads are provided for attachment to the swivel arm.

Rebuild kits and spare parts kits are available upon request.

H.S. Part Number	NAVSEA Dwg. No.	Length	Width	Height	Est. Weight, Lbs.
B-S/P/REC	810-2255761	30"	20"	20"	129

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## RECEIVER - DOUBLE PROBE



### Material: Bronze & Aluminum

The double probe receiver assembly is used to receive fuel from ships equipped with either the single or double probe senders. It is comprised of two receiver assemblies, a swivel arm assembly, a base plate assembly and an inhaul block assembly. The receiver assemblies are functionally the same as the single probe receiver but contain surfaces for bolting the units together. The double probe receiver assembly is available in three configurations, left hand type "A", right hand type "B", and left hand & right hand type "C". The configuration is determined by the discharge side when looking inboard into the receiver.

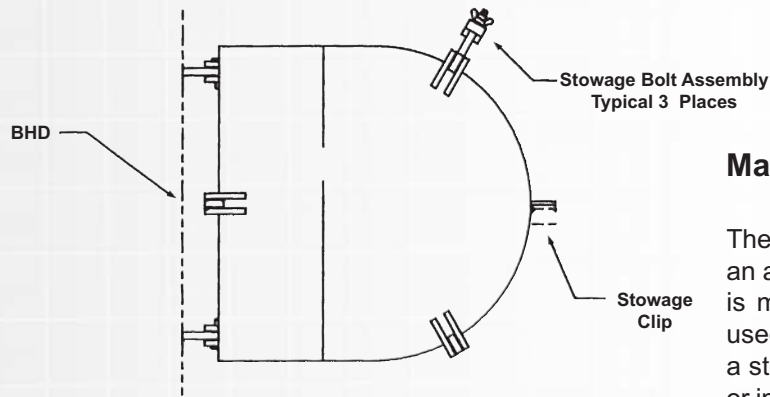
H.S. Part Number	Type	NAVSEA Dwg. No.	Length	Width	Height	Est. Weight, Lbs.
B-D/P/REC-A	"A" Left Hand	805-2223301	53"	22"	62"	684
B-D/P/REC-B	"B" Right Hand	805-2223301	53"	22"	62"	684
B-D/P/REC-C	"C" Left & Right	805-2223301	53"	22"	62"	684

### Components

Description	H.S. Part Number	NAVSEA Dwg. No.
① Base Ass'y	D17141	805-2223301
② Arm Ass'y	D17173	805-2223301
③ Left Hand Rec.	D17613	---
④ Right Hand Rec.	D17612	---

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## RECEIVER COVER - SINGLE

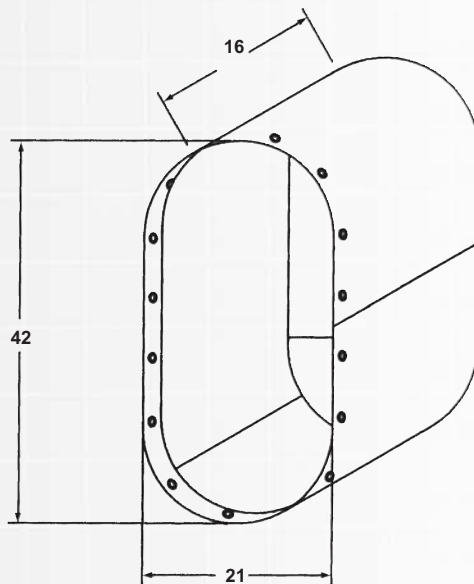
**Material:** Aluminum

The cover for the single probe receiver is an aluminum plate hinged on one end that is mounted to the side of the ship. It is used to secure the single probe receiver in a stowed position and to prevent moisture or impurities from entering the fuel system.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-COV/PLT-PR/R	805-2217230	20

## RECEIVER COVER - DOUBLE

49

**Material:** Canvas

The cover for the double probe receiver is a canvas bag designed to fit over the bellmouths of the double receiver. It prevents moisture or impurities from entering the fuel system.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CN-COV-DP/REC	810-2224082	7

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

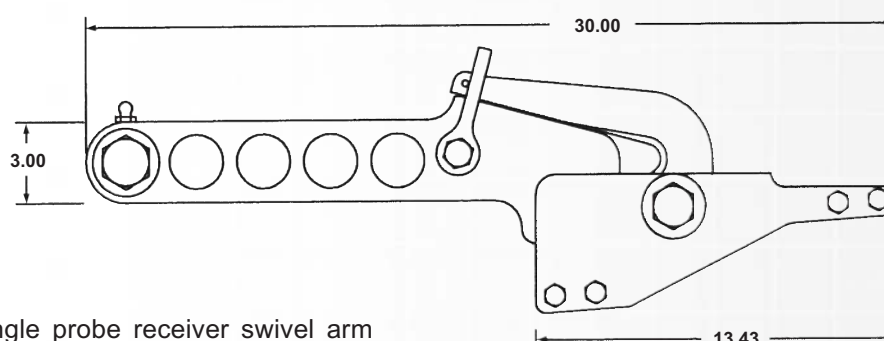
# Underway Replenishment Products

R

Receivers

## RECEIVER SWIVEL ARM - SINGLE PROBE

**Material:** Steel

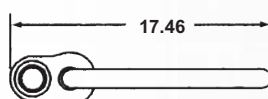
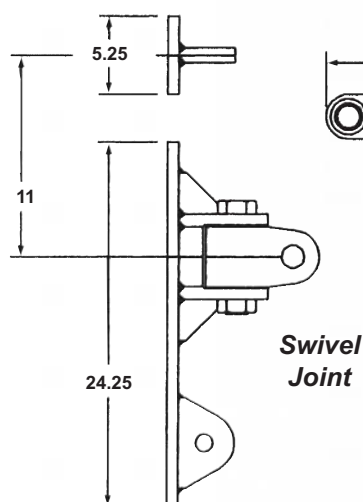


The single probe receiver swivel arm provides a means of attaching the probe receiver to the swivel joint.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-ARM/SW-S/P/REC	805-2213160	40

## RECEIVER SWIVEL JOINT - SINGLE PROBE

*Inhaul Padeye  
For Probe Fueling*



*Conventional  
Link Adapter*

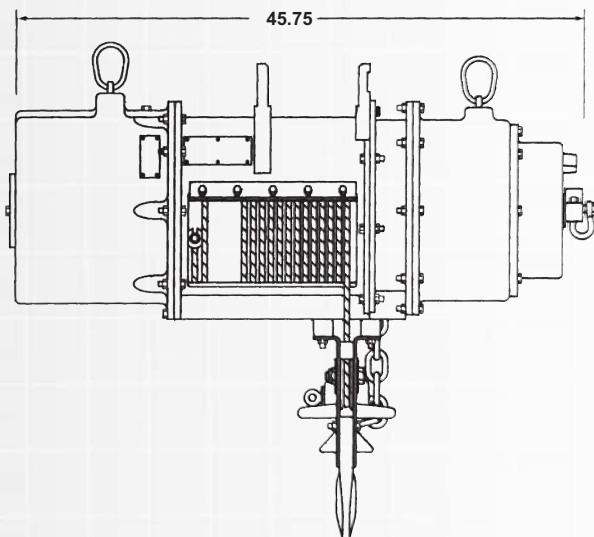
**Material:** Steel

The single probe receiver swivel joint assembly consists of a swivel joint, a conventional link adapter, and an inhaul padeye. In conjunction with the swivel arm, it is required as the means of attaching the single probe receiver to a ship's supporting structure. The swivel joint and inhaul padeye are attached to the ship's supporting structure by welding, bolting or riveting. The swivel joint assembly may also be used with other fueling at sea systems by using the conventional link adapter.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-JNT/SW-S/P/REC (Welded)	805-2213159	112
ST-JNT/RVT-S/P/REC (Riveted/Bolted)	805-2213159	112

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## REEL - CARGO DROP, MKII

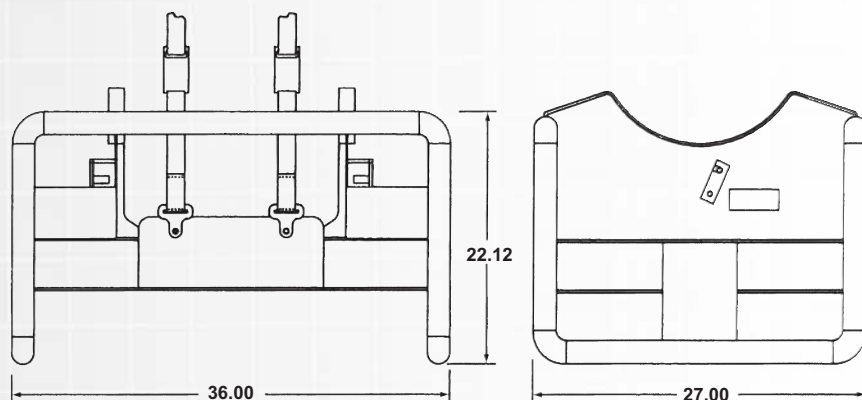


The MKII cargo drop reel is a self-contained, spring-driven mechanical device designed to lower a cargo load at a designed rate of descent to the deck of a receiving ship not equipped with a sliding padeye. It is bolted to the stream trolley and is stored on a stand when not in use.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
REEL/AY-CGO/DP	80064-2580100	680

## REEL STAND - CARGO DROP REEL, MKII

51



**Material:** Steel

The MKII cargo drop reel stowage stand is a steel fabrication with nylon securing straps. It provides stowage, handling, and maintenance of MKII cargo reel when not in use.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
STOW-CGO/REEL	80064-2580150	160

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

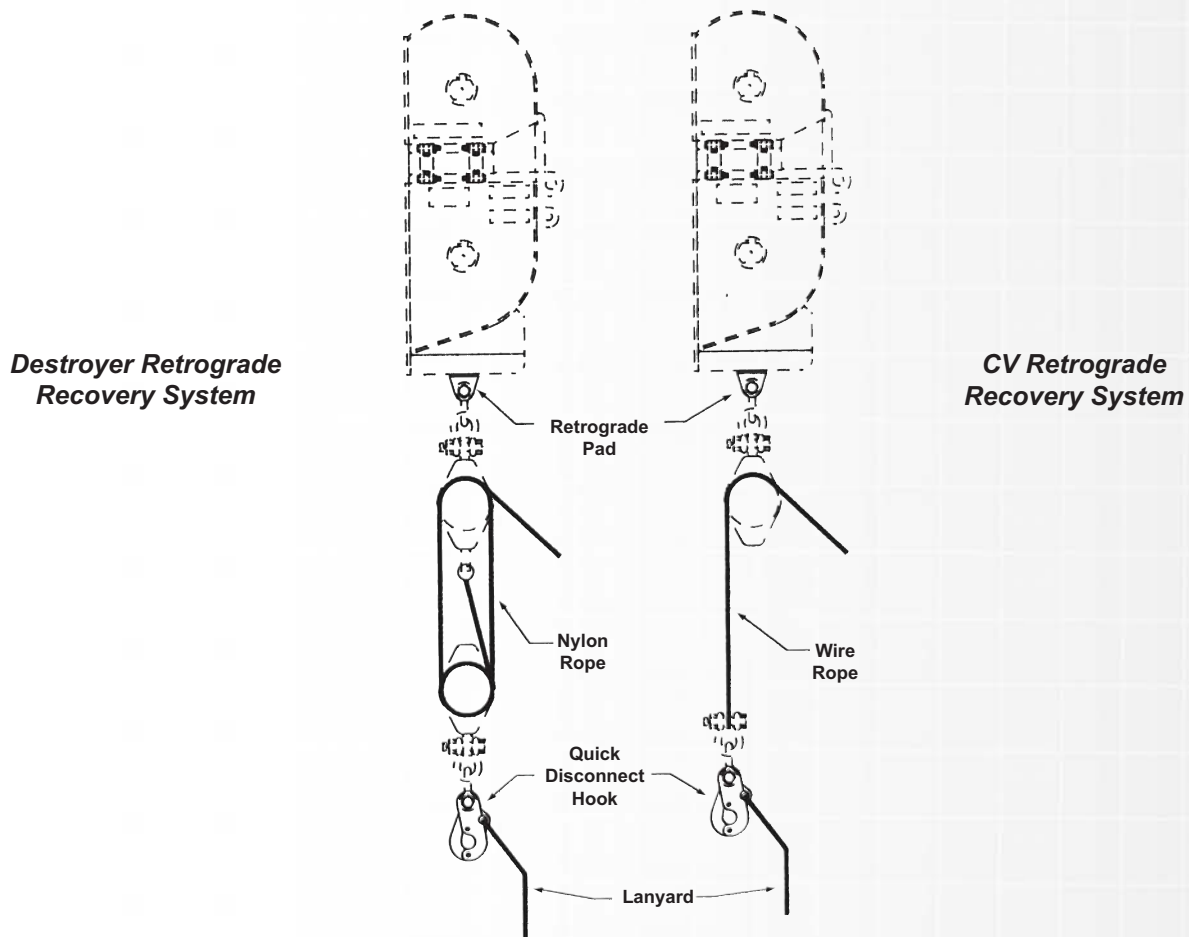


# Underway Replenishment Products

R

## REEL - CARGO DROP, THREEFOLD RETROGRADE

Reels



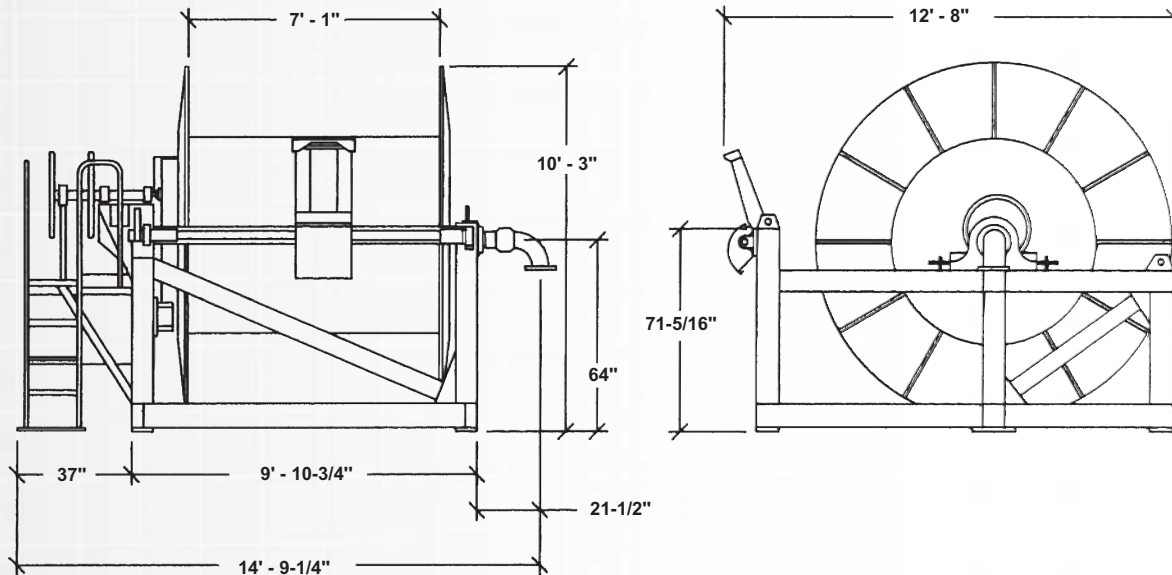
**Note:** Assembly consists only of wire and nylon rope, lanyard, retrograde pad and quick disconnect hook. Threefold blocks, shackles, traveling surf, and cargo drop reel not included.

The cargo drop reel threefold retrograde system mounts to the bottom of the traveling surf. It works in conjunction with the cargo drop reel to lift loads from the deck of the receiving ship. The cargo drop reel hook is attached to the load and the threefold is attached to the cargo drop reel hook. Line handlers haul in on the threefold to lift the load while a cargo drop reel reels in the cargo drop reel hook.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
REEL/AY-TFD/RG	53711-5328494	110

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## REEL - HOSE - ASTERN FUELING



**Material:** Steel

53

The astern fueling hose reel is used to pay out and retrieve the 6" x 750' astern fueling hose. It is driven by an electric motor but also can be operated manually in case of power failure. It is mounted on the stern of the sending ship.

**General Specifications:**

**Prime Mover:** 100 H.P. Electric Motor

**Voltage:** 440 Volts \* 3 PH., 60 HZ

**Hose Capacity:** 750 FT.-6" Type B  
(Astern Fueling Hose)

**Line Pull:** 1200 LBS.

**Brake:** Electrical

**Manual-Haul In/Pay Out Capability**  
(Additional Details On Request)

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
REEL/AY-HOS-AF	571-4734252	10,000

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



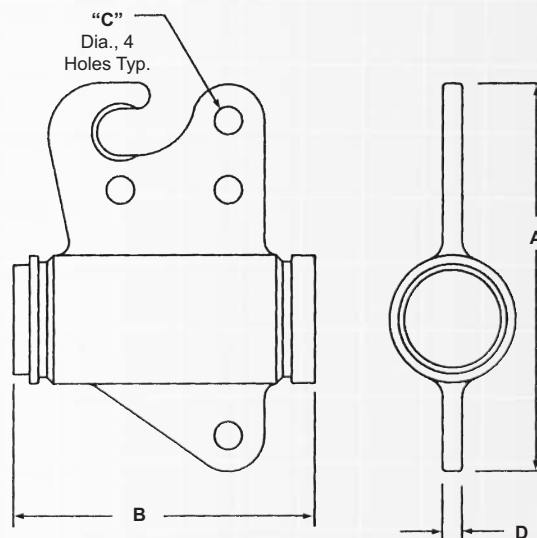
## RIDING LINE FITTING, FLOW THROUGH

**Material:** Aluminum

The flow through riding line fitting is a casting with a male split clamp coupling on one end and a female split clamp coupling on the other. It is used to join hose lengths and provide a means to suspend them from a trolley. It also provides a hook over which a riding line is passed to haul in the end of the hose rig during conventional fueling.

To be used with aluminum split clamps shown on page 13.

*O-Ring must be order separately.  
See Page 74.*



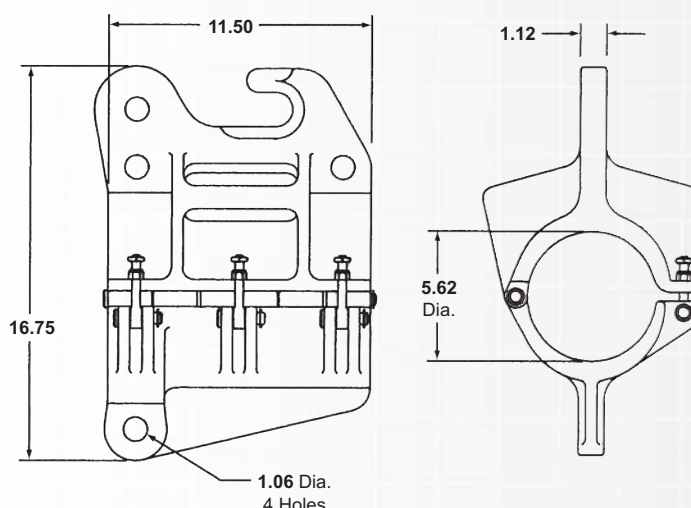
H.S. Part Number	Size	NAVSEA Dwg. No.	Dimensions				Est. Weight, Lbs.
			A	B	C	D	
A-FIT/RL-25-FLT	2-1/2"	803-2260819	12.42	10.83	.94	.75	9
A-FIT/RL-4-FLT	4"	805-4472630	14.71	11.50	1.06	.75	11
A-FIT/RL-6-FLT	6"	803-1385968	16.73	11.50	1.06	1.06	18
A-FIT/RL-7-FLT	7"	803-1385969	17.63	11.50	1.06	1.31	20

## RIDING LINE CLAMP

54

**Material:** Aluminum

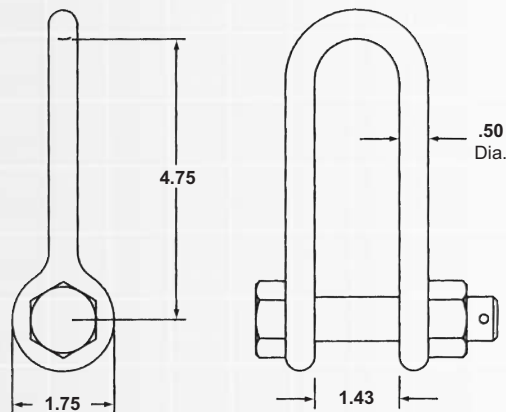
The 4" clamp type riding line fitting clamps outside of a 4" pigtail hose and provides an attachment point for the inhaul line.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CLMP-4-R/L	805-4472631	20

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## RIDING LINE SUPPORT SHACKLE - SPECIAL FAS

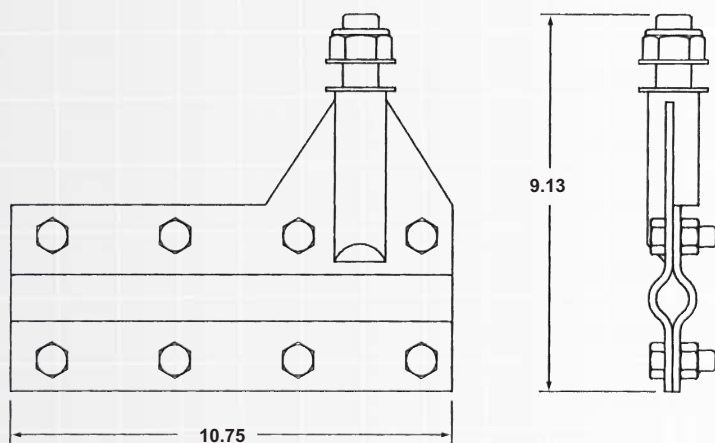
**Material:** Steel

The fueling at sea special shackle is a forged steel chain shackle with a throat opening of 7/8" shackle and the elongated body of a 1/2" shackle. It is required to attach the riding line to its supporting hardware.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-SHKL-SP/FAS/1/2	805-2556884	1.75

## SADDLE SUPPORT - INBOARD

55

**Material:** Stainless Steel

The inboard saddle support is a stainless steel fabrication used to support the inboard 2-1/2" saddle from the 7" saddle on the 2-1/2" auxiliary hose rig.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
SS-SADLSUP-INBD	803-2260820	18

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## SADDLE - FLOW THROUGH, TYPE A

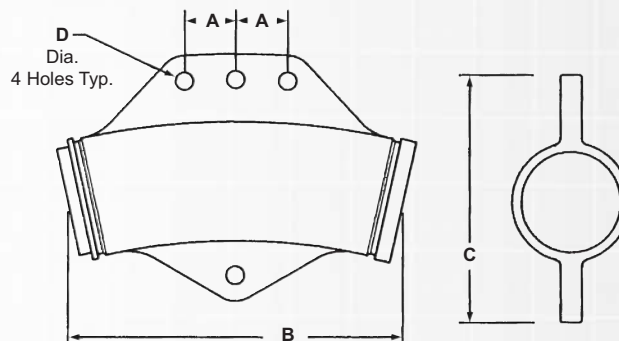
### Lower or Single Rig

**Material:** Aluminum

The Type "A" flow through hose saddle is an aluminum casting with a male split clamp fitting on one end and a female split clamp fitting on the other. It is used to join two sections of fueling at sea hose and provides an attachment point from which the hose rig is supported.

To be used with aluminum split clamps shown on page 13.

*O-Ring must be order separately.  
See Page 74.*



H.S. Part Number*	Size	NAVSEA Dwg.	Dimensions				Est. Weight, Lbs.
			A	B	C	D	
A-SADL-25-FLT-A/L	2-1/2"	803-2260818	2.50	11.86	9.37	.94	10
A-SADL-4-FLT-A/L	4"	805-4472629	3.00	19.34	11.80	1.06	11.75
A-SADL-6-FLT-A/L	6"	803-1385962	3.00	19.44	13.88	1.06	26
A-SADL-7-FLT-A/L	7"	803-1385957	3.00	19.61	14.75	1.06	31

\*Order A-SADL1-"SIZE"-FLT-A/L to include o-ring and split clamp assembly.

## SADDLE - FLOW THROUGH, TYPE B

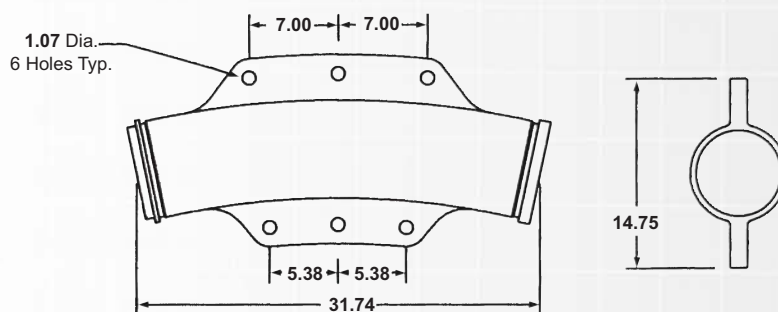
### Upper or Double Rig

**Material:** Aluminum

The Type "B" flow through hose saddle is an aluminum casting with a male split clamp fitting on one end and a female split clamp fitting on the other. It is used to join two sections of fueling at sea hose and provides an attachment point from which the hose rig is supported.

To be used with aluminum split clamps shown on page 13.

*O-Ring must be order separately.  
See Page 74.*

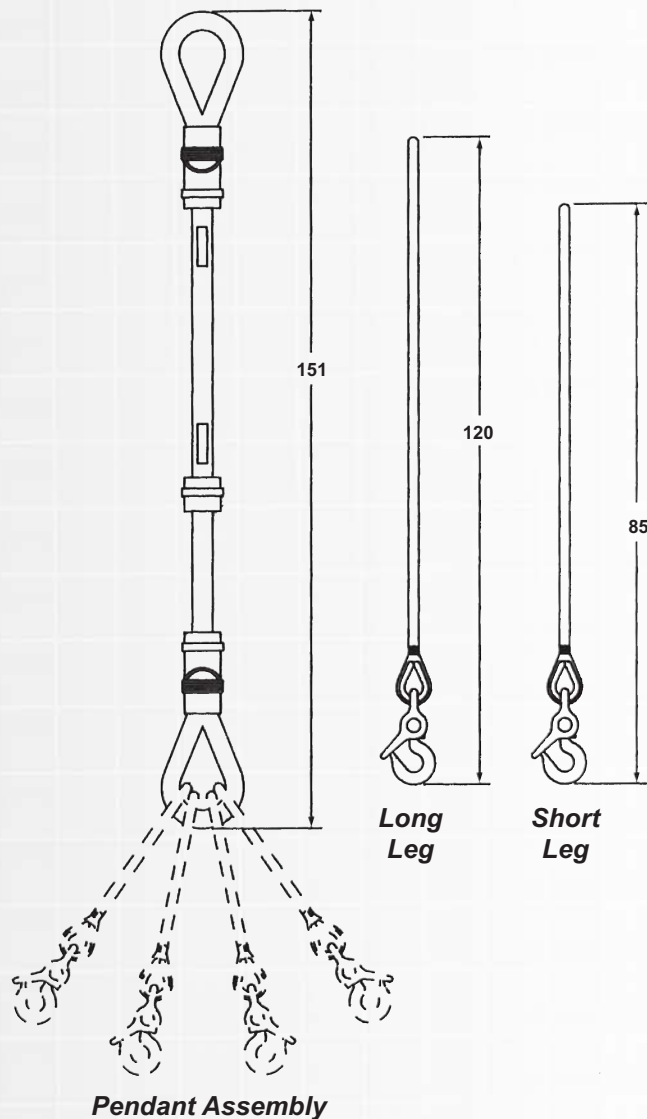


H.S. Part Number*	Size	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-SADL-7-FLT-B/U	7"	803-1385957	41

\*Order A-SADL1-7-FLT-B/U to include o-ring and split clamp assembly.

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## SLING - HOISTING, MK 105 MOD O



The MK105 MOD O hoisting sling (multi-leg pole pendant) consists of a pendant assembly and separate leg assemblies. The pendant assembly has a spliced eye at each end, a stiffening tube and a braided nylon rope. The leg assembly is a braided nylon rope with spliced eye at one end and a thimble and safety hook at the other end. Up to six legs may be attached to the lower pendant eye by means of choker hitches. The long legs are color coded green and the short legs are color coded orange.

The slings are used in vertical replenishment for transfer of all types of cargo.

**Note:** Legs must be ordered separately

H.S. Part Number	Description	NAVORD Dwg. No.	Capacity Pounds	Est. Weight, Lbs.
SLNG/AY-MK105	Pendant Assembly	2643482	6,000*	25
LEG/AY-MK105-120L	Long Leg Assembly	2643482	3,000	10
LEG/AY-MK105-85L	Short Leg Assembly	2643482	3,000	9

\* With two legs attached.

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



# Underway Replenishment Products

S

## SLING - HOISTING, MK 89, 90, 91, 92 MOD O

Slings

The MK 89, 90, 91, and 92 hoisting slings consist of braided nylon rope providing a lifting eye at one end for helicopter attachment and thimble safety hook at the other for load attachment. The upper portion of the pendant has a reach tube to permit raising the lift eye to the aircraft slings hook. The slings are color coded; MK89 red, MK90 aviation orange, MK91 green, and MK92 bright green. The basic difference is in the length of the reach tube and rope.

The slings are used in vertical replenishment at sea.



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H.S. Part Number	MK	NAVORD Dwg. No.	Reach Tube	Overall Length	Capacity Pounds	Est. Weight, Lbs.
SLNG/AY-MK89	89	DC2614972	60"	72"	4,000	15
SLNG/AY-MK90	90	DC2614973	84"	156"	4,000	20
SLNG/AY-MK91	91	DC2614974	84"	240"	4,000	23
SLNG/AY-MK92	92	DC2614975	12"	240"	4,000	20

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

Cat.709

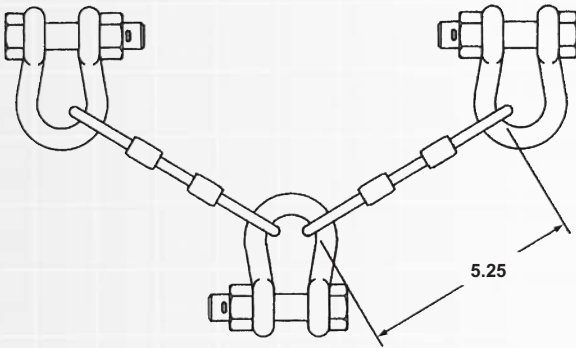
www.HYDRASEARCH.com

410.643.8900



# Underway Replenishment Products

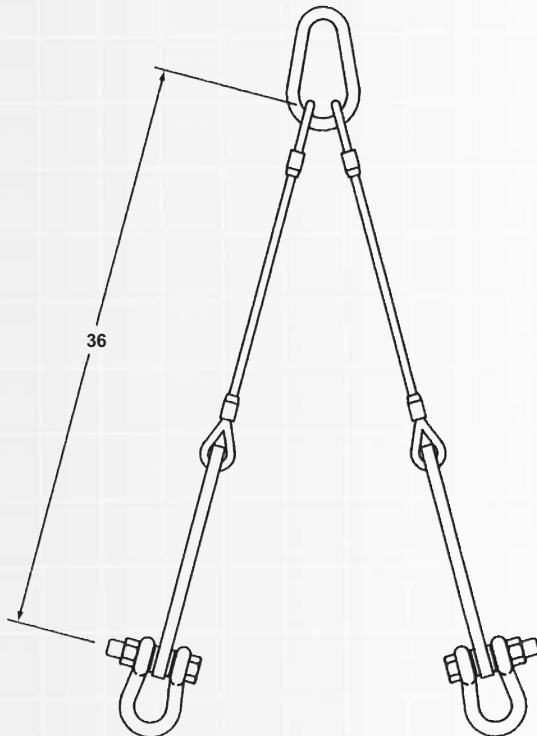
## SLING - 2-1/2" AUXILIARY RIG ASSEMBLY



The sling assembly is used with the 2-1/2" auxiliary rig to support the 2-1/2" fueling at sea hose beneath the probe assembly. It is connected to the probe assembly by the u-bolts found on page 77.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
WR-SLNG/AY-25R	803-2260820	3

## SLING - AIRCRAFT ENGINE TRANSFER ASSEMBLY



The aircraft engine transfer sling assembly consists of a pear link with two wire rope assemblies. Each wire rope assembly is connected to an adjusting link. a 7/8" safety anchor shackle connects the sling to the aircraft engine container. It is used in conjunction with the cargo stream strongback found on page 61 for underway replenishment of aircraft engines.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
SLNG/AY-ENG/TRAN	53711-5177045	10

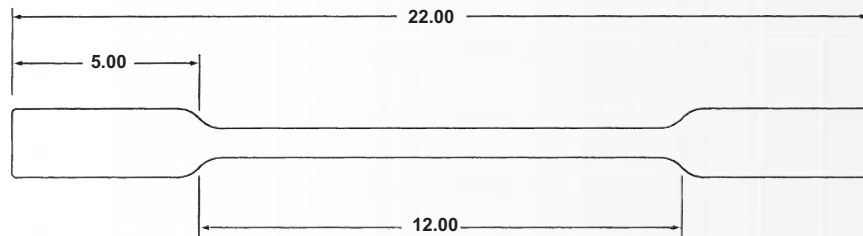
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

S

Strap & Stress Wire

## STRAP - ANTI-TOPPLING

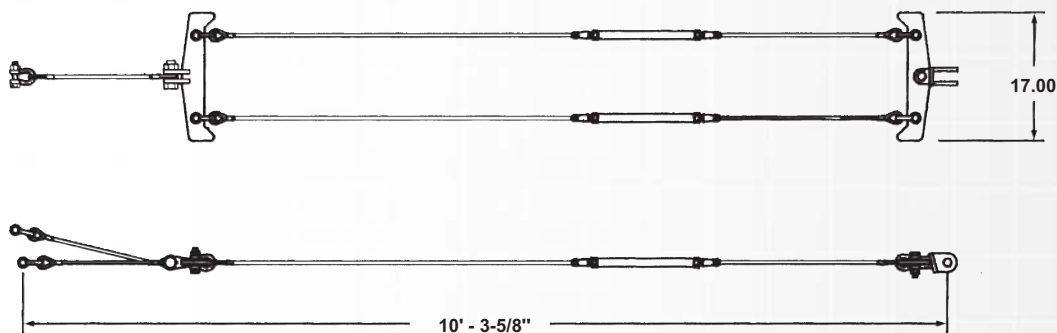


### Material: Steel

The anti-toppling strap for the yo-yo block is a 3/4" diameter steel rod flattened at each end. It is bent to the contour of the block cheeks and attached with 4 hex nuts or welded. It prevents the yo-yo block on the inboard saddle from turning over.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
STR-A/TPL	805-2556875	5

## STRESS WIRE - BRIDLE ASSEMBLY



### Material: Steel

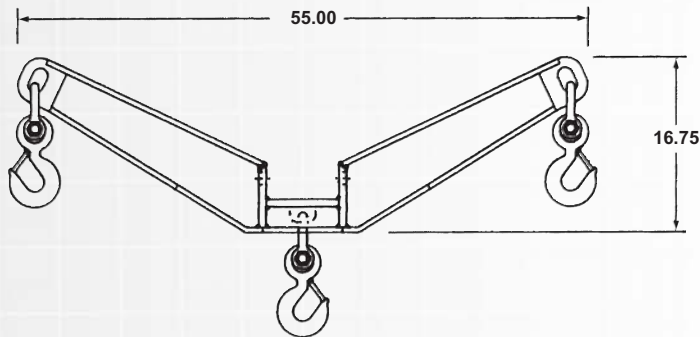
The stress wire bridle assembly is attached between the double probe outboard links and the number 1 trolley's riding line fitting. It prevents any stress from being applied to the hoses during inhaul or outhaul of the double probe assembly.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
STR/WRE-BRI/AY-D/PR	805-2227937	75

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## STRONGBACK - CARGO STREAM (GULLWING)

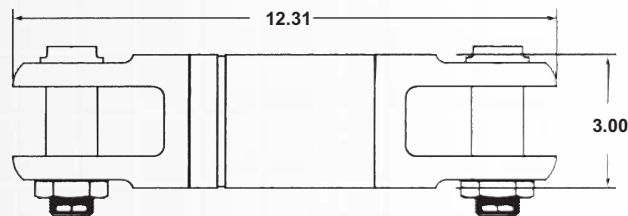


### Material: Steel

The cargo stream strongback is a weldment that bolts to the bottom of the stream trolley found on page 69. It has two outboard padeyes with a working load of 5,000 pounds each and a center padeye with a working load of 7,000 pounds. It is used to transfer single or double pallet loads or, when equipped with the aircraft engine transfer sling on page 59, transfer aircraft engine containers.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-STBK/CGO	53711-6166427	200

## SWIVEL - CARGO SAFETY HOOK, MK 1 MOD O



### Material: Steel

The MK 1 MOD O cargo safety hook swivel is a jaw and jaw swivel designed for the MK 2 MOD O cargo safety hook. It is used on the cargo hook, stream trolley adapter assembly and the hoisting assembly found on page 29.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-SW/CGO	593164	16

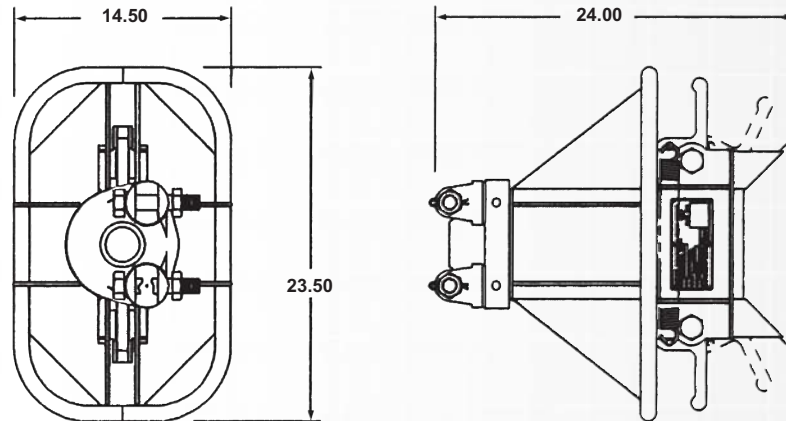
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

S

Surfs

## SURF – STAR LATCH



**Material:** Steel

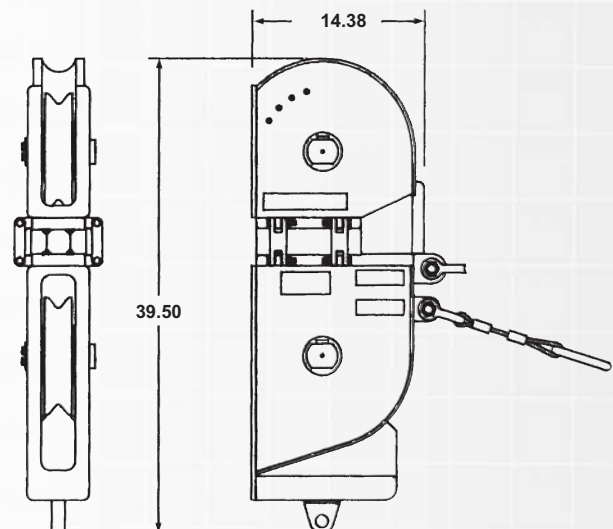
The star latch assembly provides an automatic hookup of the traveling surf at the receiving ship without having to send a rigger aloft. It is disconnected remotely from the deck level when the rig is ready to be returned.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-LCH/STAR	4629270	175

## SURF – TRAVELING

**Material:** Steel

The traveling surf is a specially designed steel block with two high speed roller bearing sheaves. It has two padeyes that provide attachment points for the surf hook pendant assembly or star latch assembly. A padeye on the bottom provides an attachment point for the threefold retrograde system found on page 52. It provides a return fairlead for the delivery ship's outhaul whip at the receiving ship.

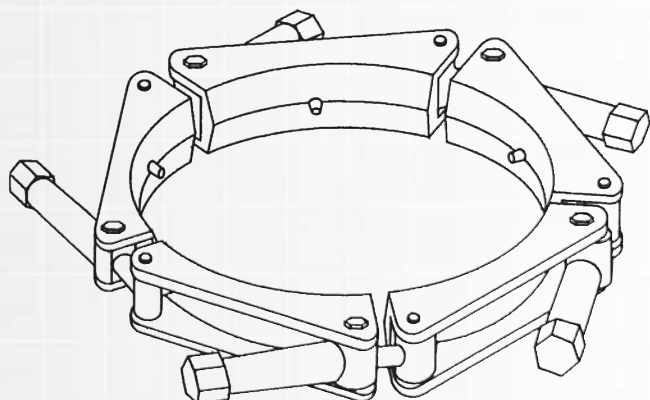


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-SURF/TVL	805-2580257	250

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## TOOL - COUPLING ASSEMBLY, FC91



**Material:** Steel

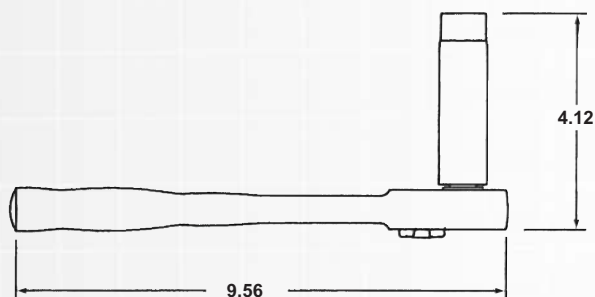
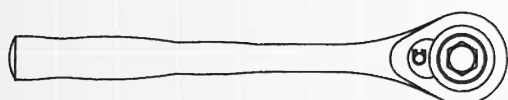
The FC91 coupling assembly tool is a specially designed tool for installing the Hydrasearch FC91 fueling couplings on page 17.

*See page 79 for assembly instructions.*

H.S. Part Number	Est. Weight, Lbs.
ST-TL/AY-7-FC91	22

## TOOL - COUPLING ASSEMBLY, SEGMENTAL 81

63



**Material:** Steel

The segmental '81 coupling assembly tool is a heavy duty socket wrench for installing and removing the 2-1/2", 4", 6", and 7" segmental '81 couplings found on page 15, and 16.

*See page 78 for assembly instructions.*

H.S. Part Number	Est. Weight, Lbs.
ST-TL/AY-25-7-S81	2

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.





# Underway Replenishment Products

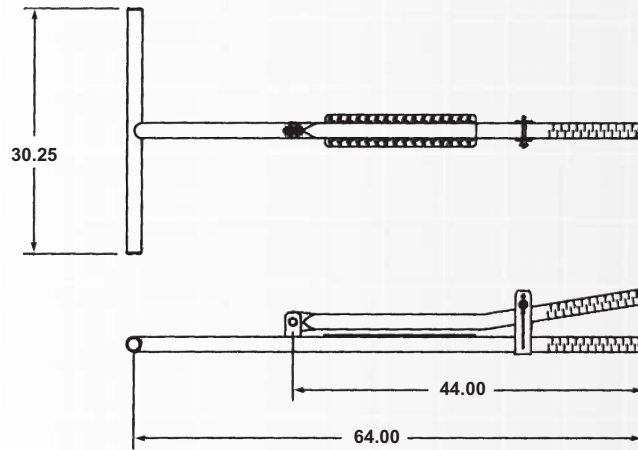
T

Tools

## TOOL - CRIMPER, HOSE

**Material:** Steel

The hose crimper is fabricated from galvanized steel pipe and plate. It is designed to clamp off a section of fuel hose when changing an end fitting and prevents any residual fuel in the hose from leaking during the operation.

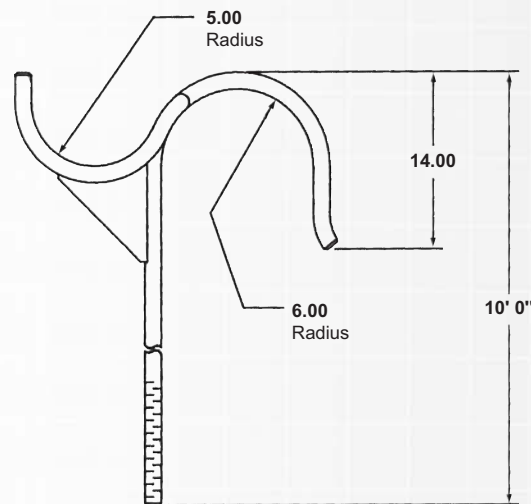


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-CRMP-HOS	805-2554813	42

## TOOL - CROOK, HOSE

**Material:** Aluminum

The hose crook is fabricated from aluminum tubing and plate and is used by the fueling station personnel to aid in handling the hose rig on the delivery ship.

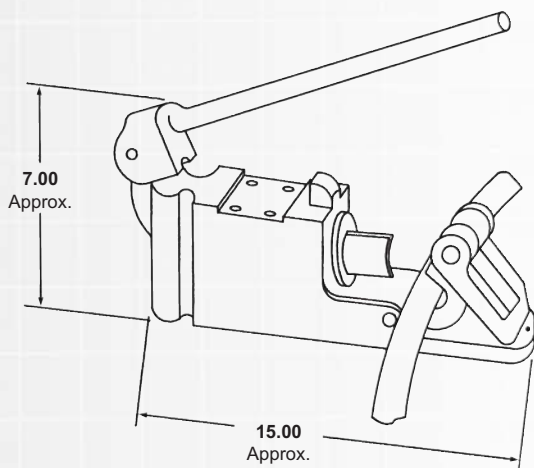


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CRK-HOS	805-2554182	15

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## TOOL - CUTTER, WIRE ROPE - HYDRAULIC



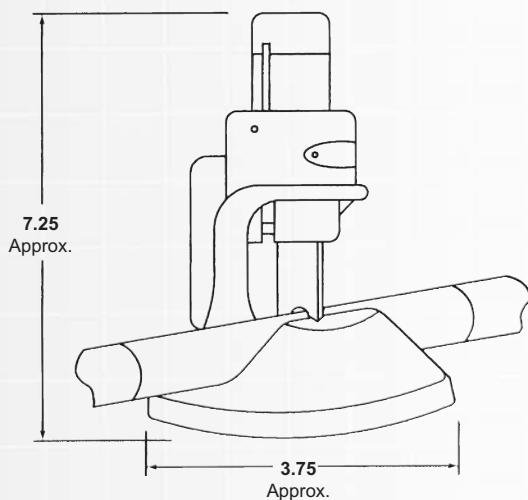
**Material:** Steel

The hydraulic wire rope cutter is a hand operated wire rope cutter used for general purpose non-emergency cutting of wire rope. The wire rope is cut as the hydraulic cylinder is pressurized.

H.S. Part Number	Specification	Est. Weight, Lbs.
CTR-WR/imp	GGG-C-800 TYPE 1, CLASS 1, SIZE 2	32

## TOOL - CUTTER, WIRE ROPE - IMPACT

65



**Material:** Steel

The impact wire rope cutter is used for general purpose non-emergency cutting of wire rope. It is operated by striking the top with a heavy sledge or hand hammer.

H.S. Part Number	Specification	Est. Weight, Lbs.
CTR-WR/HYD	GGG-C-800 TYPE III, SIZE 1	10

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

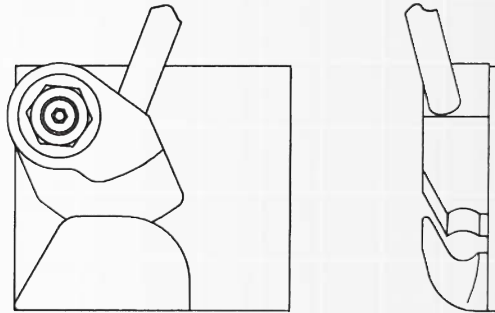
T

Tools

## TOOL - GRIPPER, BULWARK

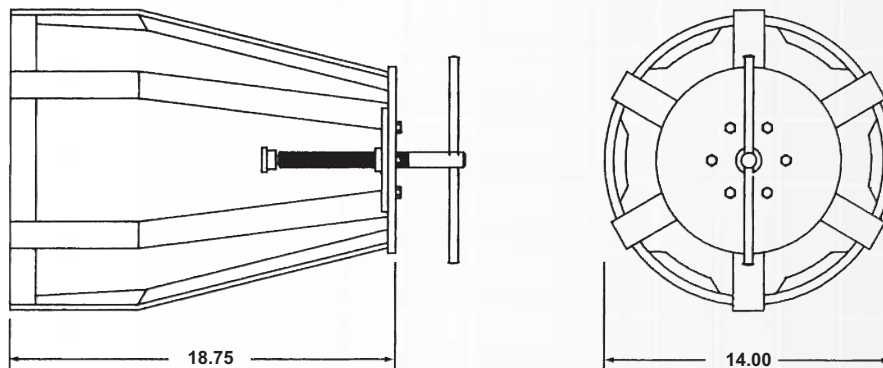
**Material:** Steel

The bulwark gripper is a manually operated tool which is mounted to the ship's bulwark. It is configured for starboard or port use and is designed to temporarily secure or hold wire lines during rigging operations.



H.S. Part Number	Side	NAVSEA Dwg. No.	Length	Width	Height	Est. Weight, Lbs.
ST-BWG-PORT	Port	805-2580327	5.50	6.25	3.00	12
ST-BWG-STBD	Starboard	805-2580326	5.50	6.25	3.00	12

## TOOL - PROBE RELATCHING



**Material:** Aluminum

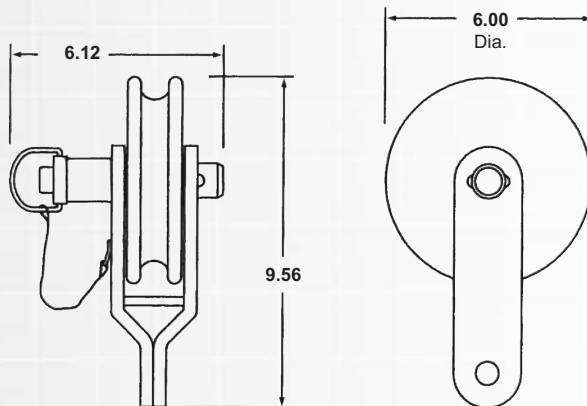
The probe relatching tool is an aluminum fabrication with a threaded spindle in the top. It works in the same manner as a bearing puller and resets the probe locking mechanisms. It is also used to conduct pre-operational inspection of the probe.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-TL/PR-RELACH	805-2250560	15

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## TROLLEY - FREE

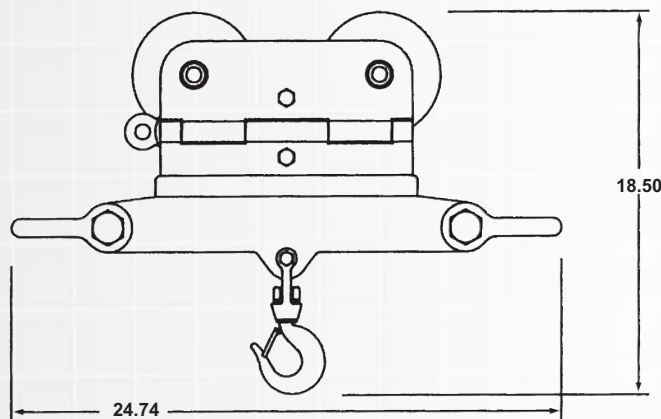


**Material:** Aluminum Frame  
Urethane Sheave

The free trolley consists of two frame side plates and a sheave which is secured by a quick release pin. This pin allows the trolley to be installed or removed from the spanwire. The free trolley is required for the support of the outboard end of the F.A.S. hose when using end fittings other than the probe.

H.S. Part Number	NAVSEA DWG. No.	Est. Weight, Lbs.
A-TROL/FREE	803-2557585	4

## TROLLEY - MANILA HIGHLINE



**Material:** Steel

The manila highline trolley is used in transferring personnel at sea via a transfer chair, or transferring light cargo. A 7/8" safety shackle is attached to each end of the hauling plate to provide attachment point for the inhaul/outhaul lines. A swivel hook is attached to the bottom of the hauling plate. It is designed for maximum fiber rope circumference of five inches.

H.S. Part Number	Description	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-TROL-MN/HL	w/ 3 Ton Swivel Hook	805-2555040	100
ST-TROL-IT-MN/HL	w/ 1 Ton Swivel Hook	---	100

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

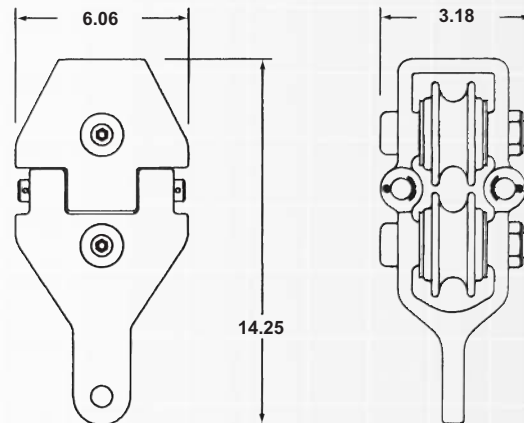
# Underway Replenishment Products

T

## TROLLEY - SADDLE

**Material:** Bronze

The saddle trolley consists of a shell with an upper and lower half which are attached to each other with removable pins. The trolley is installed on the spanwire by removing one of the pins and hinging the two halves apart. The sheaves are aligned with the spanwire and the pin is reinstalled. The saddle trolley is used to support the saddles and riding line fittings during the F.A.S. operation.

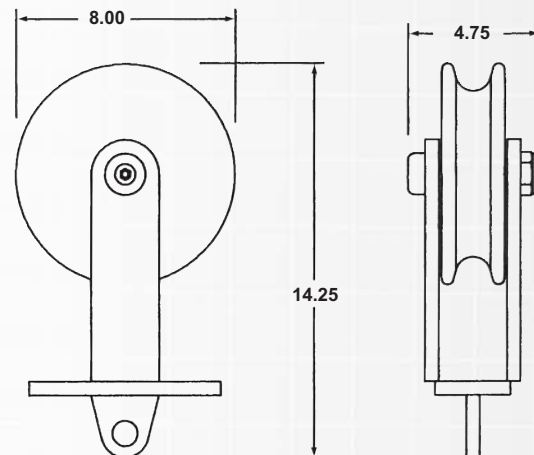


H.S. Part Number	NAVSEA DWG. No.	Est. Weight, Lbs.
B-TROL/SADL	805-2219047	35

## TROLLEY - SPANLINE

**Material:** Stainless Steel Frame  
Bronze Sheave

The spanline trolley consists of a single sheave between two side plates with a padeye below. It is used to support the 2-1/2" fueling rig below a synthetic spanline.

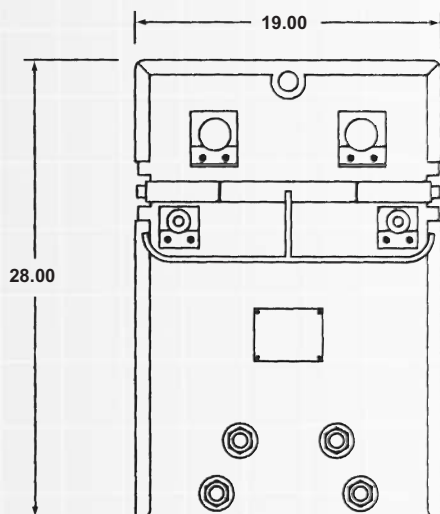


H.S. Part Number	NAVSEA DWG. No.	Est. Weight, Lbs.
TROL-SP/L-25R	803-2260816	24

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## TROLLEY - STREAM, UNREP



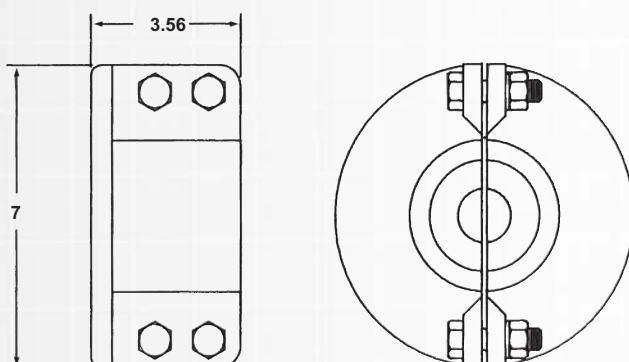
**Material:** Steel

The stream unrep trolley is a steel weldment consisting of an upper and lower assembly, inhaul and outhaul attachment points, and adapter bolt bosses. Carriage sheaves are contained in the upper assembly and stabilizing sheaves in the lower. It is used in conjunction with the cargo hook adapter assembly, the cargo drop reel, the stream strongback, or the missile stream strongback to transfer missiles or general cargo from stream station.

H.S. Part Number	NAVSEA DWG.	Est. Weight, Lbs.
TROL-STRM/UNRP	803-5184095	245

## TROLLEY STOPPER

69



**Material:** Steel

The trolley stopper is a steel weldment cut into two parts. It is designed to fit over the conventional highline end fitting to stop a trolley at the end of the wire highline on cargo stream rigs.

H.S. Part Number	NAVSEA DWG.	Est. Weight, Lbs.
ST-STP/TROL	805-2580274	12

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



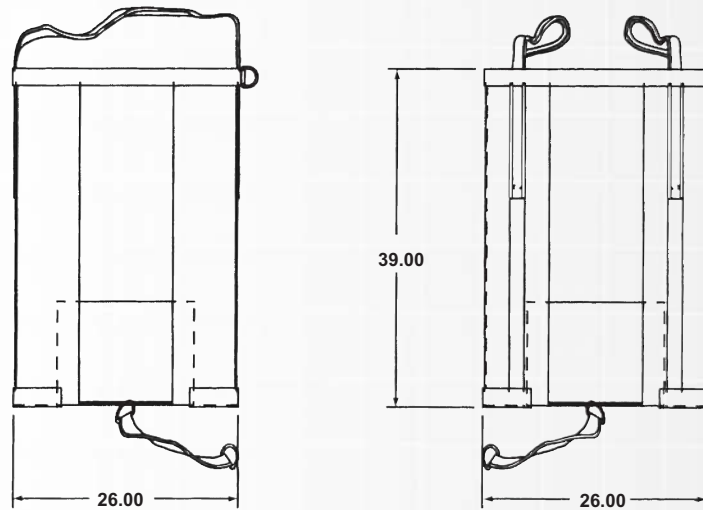
# Underway Replenishment Products

Misc.

## BAG - CARGO

### Material: Canvas

The canvas cargo bag is a square bottom bag reinforced with cotton webbing, webbing slings and becket. It is used for underway transfer of material.

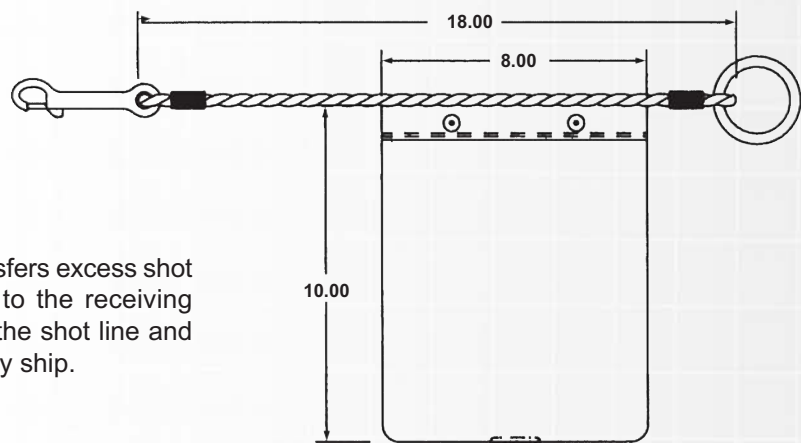


H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CN-BG/CGO	805-2556865	15

## BAG - SHOT LINE RETURN

### Material: Cloth

The shot line return bag transfers excess shot line from the delivery ship to the receiving ship, and then transfers all the shot line and projectile back to the delivery ship.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
CN-BG/SLR	805-2556883	5

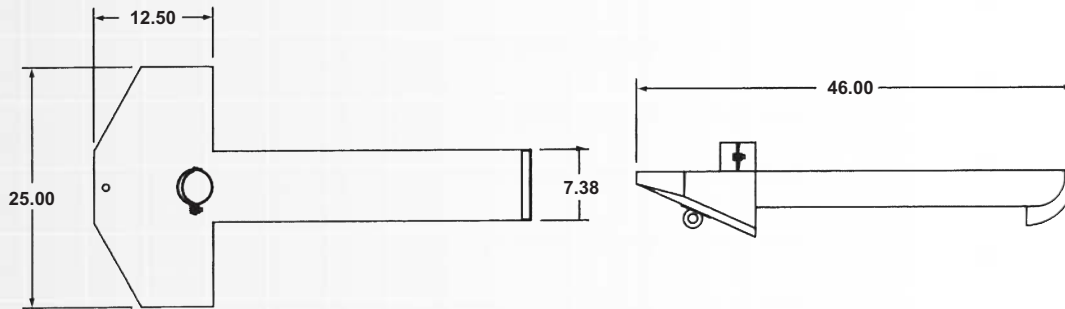
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## HOSE MESSENGER/POSITION, SPOUT TYPE

### Astern Fueling

Material: Steel



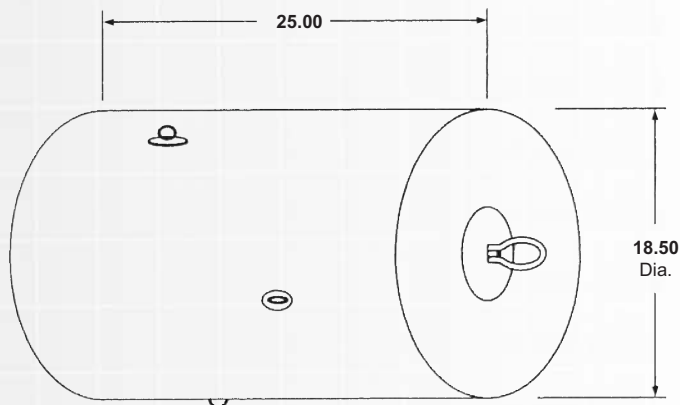
The hose messenger/position buoy is used in pairs in astern fueling. One buoy is towed at the end of the hose messenger to provide a visual indicator of the end of the hose rig. The other buoy is towed at the end of the position buoy line to provide a reference point for the receiving ship to maintain station.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-BUO-HM/POS-AF	803-2257587	57

## HOSE MESSENGER/POSITION, BARREL TYPE

### Astern Fueling

71



Material: Polyurethane

The hose messenger/position buoy is used in pairs in astern fueling. One buoy is towed at the end of the hose messenger to provide a visual indicator of the end of the hose rig. The other buoy is towed at the end of the position buoy line to provide a reference point for the receiving ship to maintain station.

H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
UR-BUO-HM/POS-AF	4734260(NATO)	72

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



# Underway Replenishment Products

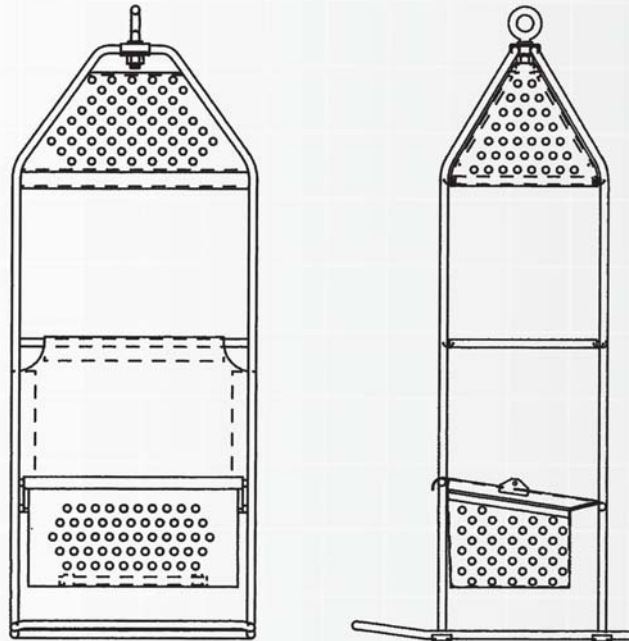
Misc.

## CHAIR - ONE MAN TRANSFER

**Material:** Aluminum

The one man transfer chair is used to transfer personnel between ships at sea using the manila highline transfer method.

Overall dimensions 26" long x 30" wide x 62" high.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
A-CHR/TRAN-1MAN	805-2555037	100

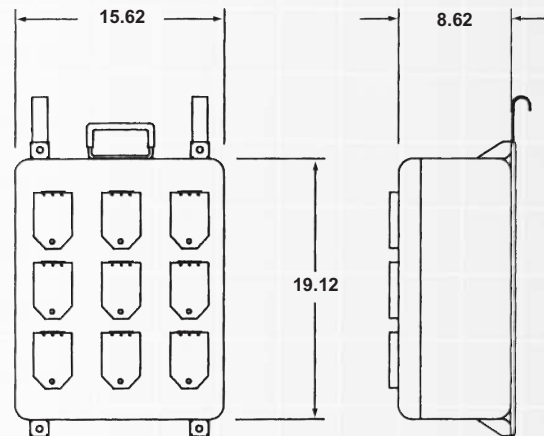
## LIGHT BOX - STATION MARKER

**Material:** Steel

The station marker light box consists of a box with nine 2 inch holes fitted with a red lens and a hand operated hinged shutter.

Two light fixtures with 25 watt bulbs are mounted inside the box. It is used during night replenishment operations to indicate by code the commodity being transferred.

The code is set up by opening various combinations of shutters to allow the light to show.

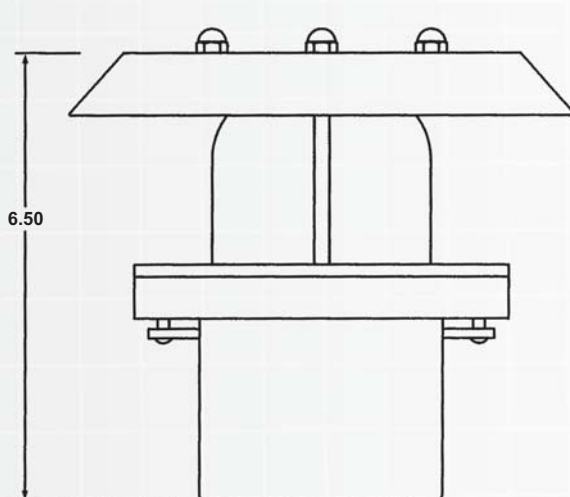


H.S. Part Number	Specification No.	Est. Weight, Lbs.
LT-SM/BOX	MS17287	40

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## LIGHT - CONTOUR HULL



I. A. W. MIL-L-24560/3

The hull contour light is circular and contains two 25 watt lights. The lights are shown by the control ship during the approach and while the receiving ship is alongside.

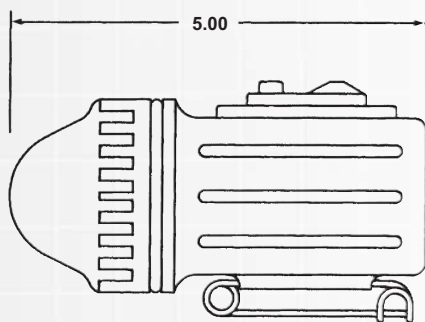
H.S. Part Number	Specification No.	Lighting Symbol No.	Est. Weight, Lbs.
LT-HUL/CNTR	MIL-L-24560/3	164.3	60

## LIGHTS - MARKER

73

## DISTRESS AND NIGHT REPLENISHMENT

I. A. W. MIL-C-573



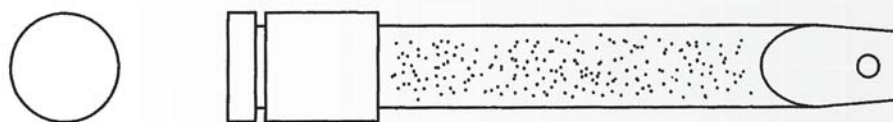
**Material:** Plastic

The distress and night replenishment marker light is a single D cell waterproof flashlight fitted with a red or green lens. These lights are used to mark objects or obstructions on the ship and various items such as probes, trolleys, and cargo hooks on the stream rigs.

H.S. Part Number	Specification No.	Color	Est. Weight, Lbs.
LT-DM/NR-R	MIL-C-573	RED	.25
LT-DM/NR-G	MIL-C-573	GREEN	.25

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

## LIGHTS - CHEMICAL



The chemical light wand is a chemiluminescent system that, when activated, produces a bright light which does not require an energy source or oxygen and does not give off heat. The red and blue lights may be used to illuminate objects or obstructions on the ship and various items such as probes, trolleys, and cargo hooks on stream rigs. The green wand is used on kapok life jackets and shot line projectiles.

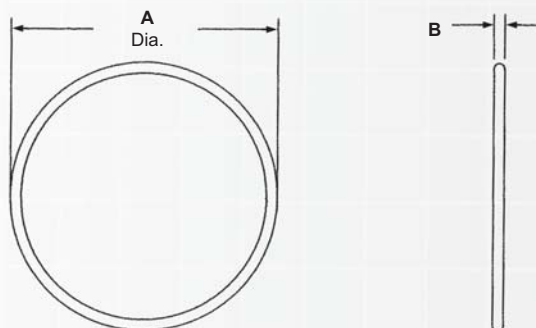
H.S. Part Number	Length	Color	Illumination Time	Est. Weight, Lbs.
B-CM/LT-8HR	6"	Blue	8 Hours	.3
G-CM/LT-12HR	4"	Green	12 Hours	.2
R-CM/LT-12HR	6"	Red	12 Hours	.3



## "O"-Rings

**Material:** Nitrile (BUNA-N)

The "O" ring seal is a molded round, circular, gasket made of synthetic rubber. It is used to provide a seal when the male and female split clamp coupling are joined together. It fits the circular groove of the female split clamp fittings i.a.w. MIL-C-24356 on pages 15-16.

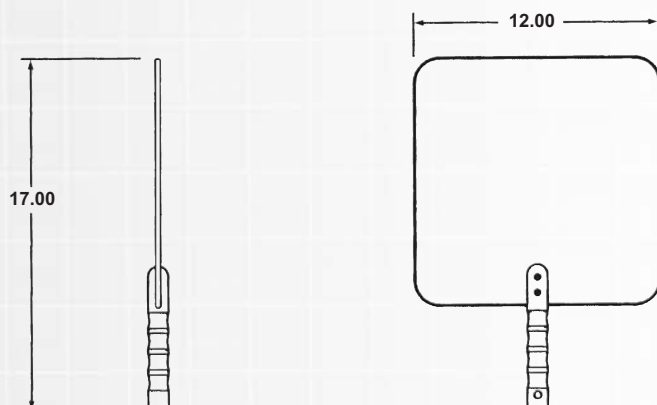


H.S. Part Number	Female Size	NAVSEA Dwg.	Dimensions		Est. Weight, Lbs.
			A	B	
R-RNG/0-25-234	2-1/2"	803-2260817	3.75	2.25	.02
R-RNG/0-4-346	4"	805-4316751	4.81	2.96	.04
R-RNG/0-6-438	6"	805-4316751	7.10	3.06	.06
R-RNG/0-7-442	7"	805-4316751	8.10	3.06	.07

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# Underway Replenishment Products

## SIGNAL PADDLE



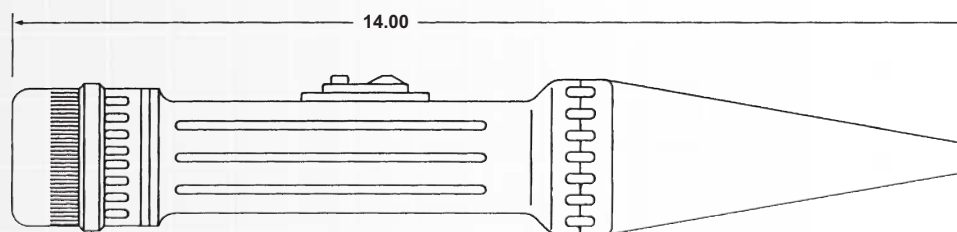
### Material: Plastic

The signal paddles are two similar paddles with a square plastic surface and a polypropylene handle. One paddle has a red colored surface on one side and a green colored surface on the opposite side. The other paddle has a green colored surface on one side and an amber color surface on the opposite side. Operating signals are provided on the surfaces of each paddle. The paddles are used to visually signal and direct operations during unrep.

H.S. Part Number	Navsea Dwg. No.	Color	Est. Weight, Lbs.
PDL-SGL-R/G	805-2580255	Red/Green	4
PDL-SGL-A/G	805-2580255	Amber/Green	4

## SIGNAL WAND

I. A. W. MIL-F-3747



### Material: Plastic

The signal wand is a flashlight with an illuminator wand that fits the lighted end. Colored lenses are provided to let the red, green, amber, or white light show. They are used during night conrep to signal between delivery and receiving ship stations. During vertrep they are used to signal the helicopter pilot.

H.S. Part Number	Specification No.	Est. Weight, Lbs.
WND-SGNL	MIL-F-3747	1

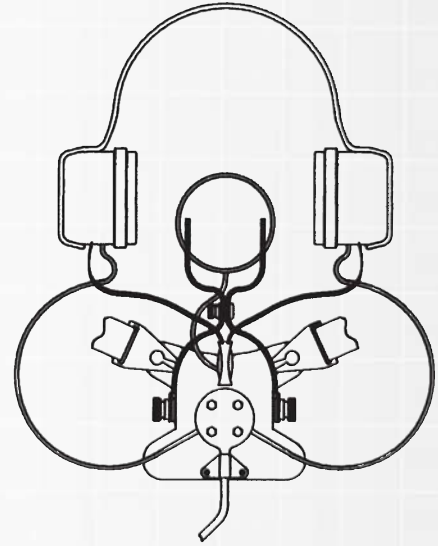
All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.



## TELEPHONE - SOUND-POWERED

### I. A. W. MIL-T-5514

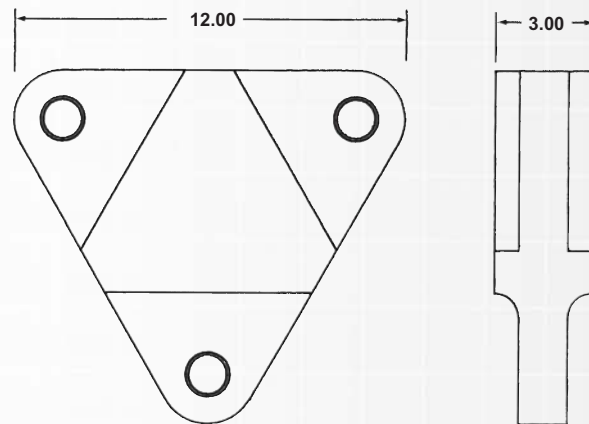
The sound powered telephone system is one in which the power is created by vibrations in your speech against the plate in the mouthpiece. No external electric power or batteries are needed. During unrep, sound powered phones are connected to bridge-to-bridge phone distance and station-to-station phone lines on pages 35 and 36 and provide communication between the sending and receiving ships.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
PHN-S/PWR	MIL-T-5514	5

## TIE PLATE - RIGGING

The rigging tie plate is a steel plate which is used with the MK 20 MOD O hoisting assembly found on page 29. It contains a machined area on each corner for attachment of the MK I MOD O cargo safety hook swivel.



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-RGN-T/P	593163	30

All Dimensions are in Inches.  
Dimensional information is for reference only.  
Variations from these dimensions, on actual parts, may occur as the result of engineering revisions.

# U-BOLT



H.S. Part Number	NAVSEA Dwg. No.	Est. Weight, Lbs.
ST-UBLT/AY-25K	803-2260820	2

**Notes:**

[illegible]

# Underway Replenishment Products

## SEGMENTAL '81™ COUPLINGS

Hydrasearch segmental '81™ hose couplings are manufactured i.a.w. MIL-C-24356 for use in conjunction with MIL-H-22240 hose used in refueling-at-sea operations. The only hand tool required for assembly is a 9/16" socket wrench. Please use the following instructions to ensure proper installation of these couplings.

### Step 1.

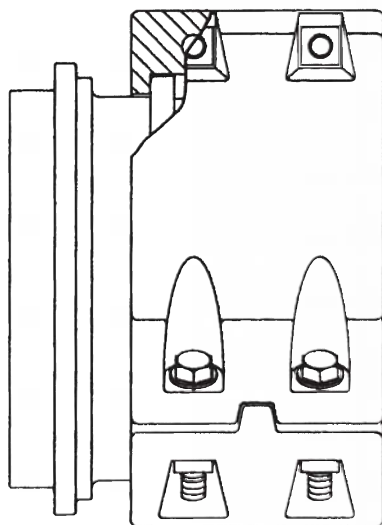
Cut hose squarely to length using a sharp knife.

### Step 2.

Insert coupling nipple into hose until the hose meets the shoulder of the nipple.

### Step 3.

Place segments around the hose so that the lip on the segments captures the shoulder on the nipple. Insert greased bolts with lock and flat washers through the holes in the segment marked (HEX). Place the square nut in the pocket marked (SQ), and start the bolt into the nut. This design allows the bolts to be tightened with one wrench for easier installation.



### Step 4.

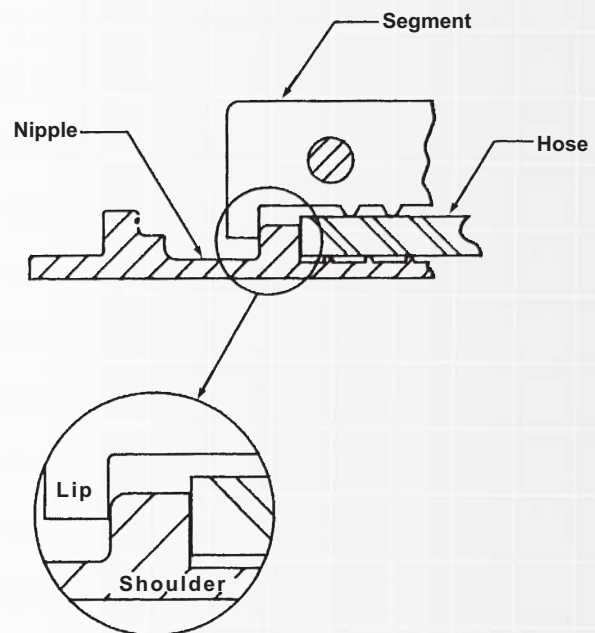
Using the socket wrench, tighten the bolts at random, taking care to maintain an even spacing between the segments. Never tighten one set of bolts completely without tightening the other bolts, to do so will cause uneven gripping of the hose and could lead to coupling failure.

### Step 5.

Maintain even spacing between segments until 35-40 foot pounds of torque has been applied to each bolt. Couplings should be re-torqued after 24 hours to compensate for the natural cold flow of rubber.

### Step 6.

Hydrostatically test hose assembly to proof pressure before being put into service.



All Dimensions are in Inches.  
Dimensional information is for reference only.  
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# Underway Replenishment Products

## FC91 COUPLINGS

Hydrasearch FC91 hose couplings are manufactured i.a.w. MIL-C-24356 for use in conjunction with MIL-H-22240 hose used in refueling-at-sea operations. The assembly tool found on page 63 is required to install this coupling.

### Step 1.

Cut hose squarely to length using a sharp knife.

### Step 2.

Place the flat segment retaining band on the hose.

### Step 3.

Place the segment retaining ring on the nipple and push the hose on the nipple until it bottoms squarely on the shoulder of the nipple. No lubrication is required.

### Step 4.

Turn the assembly upright, if possible, and hook the segments into the retaining ring and space them evenly around the hose.

### Step 5.

Place the assembly tool around the segment so the locating pin in each pad fits into the corresponding hole in each segment.

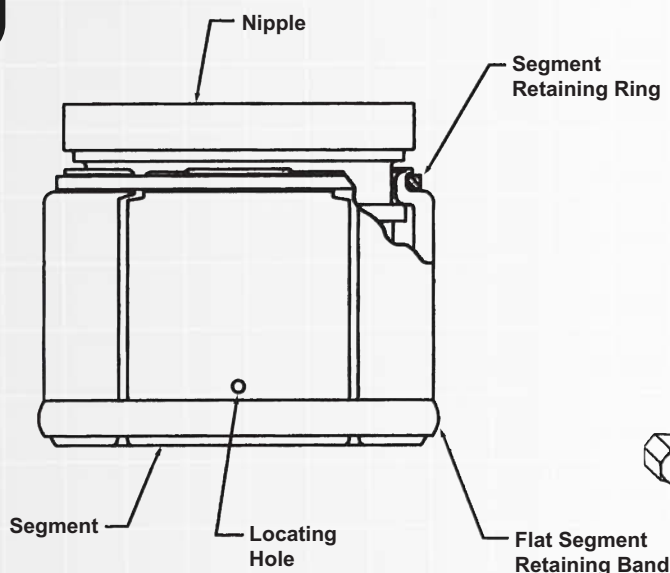
### Step 6.

Close the assembly and tighten nuts alternately to ensure segments are evenly drawn together.

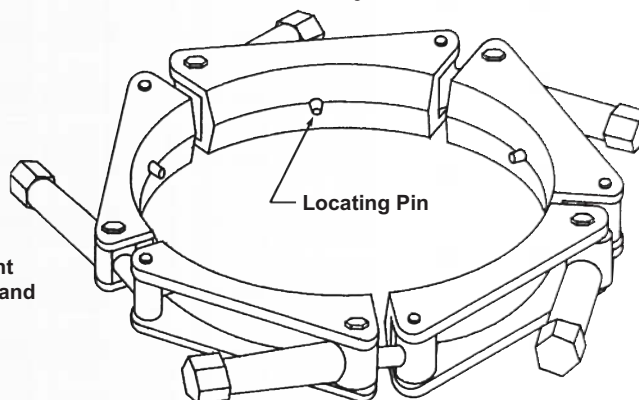
### Step 7.

Proper segment compression is reached when the flat segment retaining band can be slipped down over the segments. The convex I.D. of the band must mate squarely with the concave groove in the segments. If necessary, the band may be tapped lightly into place with a plastic or rubber mallet. Loosen the assembly tool nuts and remove the tool.

*Coupling Assembly*



*Assembly Tool*



All Dimensions are in Inches.  
Dimensional information is for reference only.  
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# Fraction-Decimal Conversion

	<u>Inches</u>	<u>Millimeters</u>		<u>Inches</u>	<u>Millimeters</u>
	$\frac{1}{64}$ .015625	.3969		$\frac{33}{64}$ .515625	13.0969
$\frac{1}{32}$	.03125	.7938	$\frac{17}{32}$	.53125	13.4938
	$\frac{3}{64}$ .046875	1.1906		$\frac{35}{64}$ .546875	13.8907
$\frac{1}{16}$	.0625	1.5875	$\frac{9}{16}$	.5625	14.2876
	$\frac{5}{64}$ .078125	1.9844		$\frac{37}{64}$ .578125	14.6844
$\frac{3}{32}$	.09375	2.3813	$\frac{19}{32}$	.59375	15.0813
	$\frac{7}{64}$ .109375	2.7781		$\frac{39}{64}$ .609375	15.4782
$\frac{1}{8}$	.125	3.1750	$\frac{5}{8}$	.625	15.8751
	$\frac{9}{64}$ .140625	3.5719		$\frac{41}{64}$ .640625	16.2719
$\frac{5}{32}$	.15625	3.9688	$\frac{21}{32}$	.65625	16.6688
	$\frac{11}{64}$ .171875	4.3656		$\frac{43}{64}$ .671875	17.0657
$\frac{3}{16}$	.1875	4.7625	$\frac{11}{16}$	.6875	17.4626
	$\frac{13}{64}$ .203125	5.1594		$\frac{45}{64}$ .703125	17.8594
$\frac{7}{32}$	.21875	5.5563	$\frac{23}{32}$	.71875	18.2563
	$\frac{15}{64}$ .234375	5.9531		$\frac{47}{64}$ .734375	18.6532
$\frac{1}{4}$	.250	6.3500	$\frac{3}{4}$	.750	19.0501
	$\frac{17}{64}$ .265625	6.7469		$\frac{49}{64}$ .765625	19.4470
$\frac{9}{32}$	.28125	7.1438	$\frac{25}{32}$	.78125	19.8438
	$\frac{19}{64}$ .296875	7.5406		$\frac{51}{64}$ .796875	20.2407
$\frac{5}{16}$	.3125	7.9375	$\frac{13}{16}$	.8125	20.6376
	$\frac{21}{64}$ .328125	8.3344		$\frac{53}{64}$ .828125	21.0345
$\frac{11}{32}$	.34375	8.7313	$\frac{27}{32}$	.84375	21.4313
	$\frac{23}{64}$ .359375	9.1282		$\frac{55}{64}$ .859375	21.8282
$\frac{3}{8}$	.375	9.5250	$\frac{7}{8}$	.875	22.2251
	$\frac{25}{64}$ .390625	9.9219		$\frac{57}{64}$ .890625	22.6220
$\frac{13}{32}$	.40625	10.3188	$\frac{29}{32}$	.90625	23.0188
	$\frac{27}{64}$ .421875	10.7157		$\frac{59}{64}$ .921875	23.4157
$\frac{7}{16}$	.4375	11.1125	$\frac{15}{16}$	.9375	23.8126
	$\frac{29}{64}$ .453125	11.5094		$\frac{61}{64}$ .953125	24.2095
$\frac{15}{32}$	.46875	11.9063	$\frac{31}{32}$	.96875	24.6063
	$\frac{31}{64}$ .484375	12.3032		$\frac{63}{64}$ .984375	25.0032
$\frac{1}{2}$	.500	12.7001	1	1.000	25.4001

All Dimensions are in Inches.  
 Dimensional information is for reference only.  
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# Notes

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ISO 9001



## **Additional Hydrasearch Literature**

Aerospace Hose & Fittings

Marine Hose & Fittings

Tech-O-Seal Valves & Fittings

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