





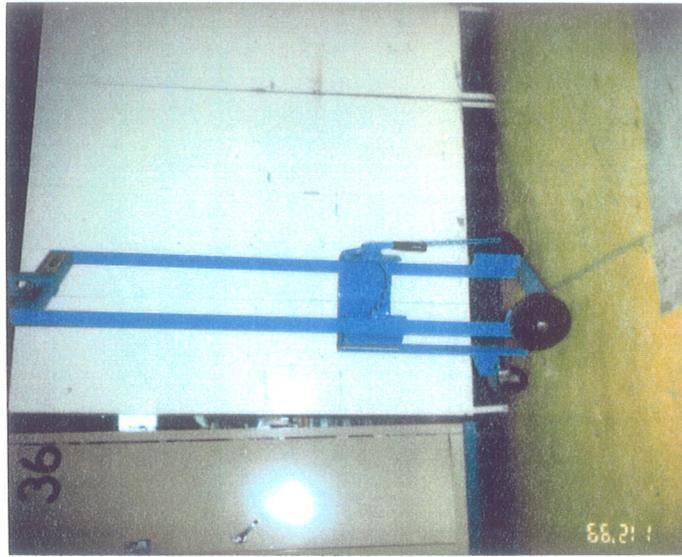
## Engineering Note for the Below-the-Hook Argon/Ethane Gas Cylinder Lifter, Morse serial number 171912.

J. Whalen

1/8/99

This device, made by Morse Manufacturing Co. Inc. for CDF, is intended specifically for lifting 15 inch diameter Argon/Ethane gas cylinders. Its main purpose is to transport cylinders to and from the 743 foot level in the Assembly Hall, and the Alcove Catwalk. This note is formatted according to current ES&H requirements for engineering notes of commercially manufactured lifting fixtures. Included is a copy of the manufacturer's certificate of test, operating procedures, and inspection and maintenance instructions. Stress calculations are not required. The operating procedures, inspection and maintenance instructions are written following the ASME guidelines for structural and mechanical lifting devices(ASME B30, Ch 20-1, 1996).

*Reviewed by  
James H. Kulmer  
3/24/99*





The Specialist in Drum Handling

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**CERTIFICATE OF RATED LOAD TEST FOR  
MORSE BELOW-THE-HOOK DRUM LIFTERS**  
Performed by Morse Mfg. Co., Inc.

**DRUM HANDLER:**

Model # 855 Serial # 171912  
Rated Load (for full drum): 800 LB

**TEST DRUM:**

Size and Type (55 gallon steel drum unless otherwise specified):  
TEST OBJECT TO SIMULATE CYLINDER  
\*Weight of Test Drum: 1100 LBS

**TEST INFORMATION:**

Height of Lift (Height in inches): \_\_\_\_\_ Pass   
OR  This model does not have a specific dispensing height.  
Rotation of Drum (Angle in degrees): \_\_\_\_\_ Pass   
OR  This model does not tilt drums.

**OPERATIONAL TEST:**

Inspect moving parts, latches, and drum holder mechanism  
for proper operation: \_\_\_\_\_ Pass

**CERTIFICATION:**

The Morse drum handler identified above has been tested by means of lifting a test drum a sufficient distance to assure that the load was supported by the lifter, or if appropriate, to the specified maximum height.

**TESTED & INSPECTED BY:**

**DATE:**

[Signature] \_\_\_\_\_ 10, 14, 97  
[Signature] \_\_\_\_\_  
Robert R. Andrews, President

\*Factory recommended test drum loads for Morse below-the-hook drum lifters:

Rated Load of Unit	2000lb	1500lb	1000lb	800lb	750lb
Test Drum Load	2500lb	1875lb	1250lb	1000lb	950lb

# Argon/Ethane Cylinder Lifter Operating Procedures

J. Whalen

1/8/99

Below are the procedures that are to be followed when using the Argon/Ethane Bottle Lifter, Morse serial number 171912.

1. Only trained crane operators are to use the crane for transporting the lifter, and are to be accompanied by gas systems personnel to ensure that maintenance instructions and operating procedures are carried out.
2. The lifter is only to be used with Airgas size 350 or 150 cylinders or an equivalent cylinder, whose diameter must be between 15 and 14 inches (see attached conversion chart). At no time should the weight limit of 800 pounds be exceeded.
3. Before lifting or carting, the cylinder must be properly secured to the lifter as follows:
  - a) place the cylinder all the way to the back of the lifter
  - b) close the binder against the cylinder and place the chain in the tensioner
  - c) snug the binder
  - d) wrap excess chain around the hinge side rail
  - e) pull the slack out of the chain and lock it to itself with the provided padlock
4. The following lifting practices must be followed.
  - a) Before lifting, the operator must make sure that the sling ropes or chains are not kinked, and that multiple part lines are not twisted about each other.
  - b) The sling is to be centered over the load in such a manner as to minimize swinging.
  - c) The sling must only be attached at the proper lifting point.
  - d) Care must be taken that there is no sudden acceleration or deceleration of the load.
  - e) Do not allow the load or the lifter to come into contact with any obstruction.
  - f) The operator must avoid carrying the load over people.
  - g) The lifter is to be carted directly adjacent to the west rail of the assembly pit before lifting or lowering cylinders to or from the 743 foot floor, as to minimize the area over which the cylinders are carried with the crane.
5. The lifter is not to be carted (wheeled) while attached to the crane.
6. When not in use, the lifter should be stored on the Alcove Catwalk.

7. An operator is not to use the lifter when it is tagged "Out of Service" or otherwise marked as malfunctioning.
8. "Out of Service" tags on the lifter are not to be removed without the approval of the person placing them or an authorized person.
9. Caution should be taken that operating markings or tags are not removed or defaced. Those removed or defaced should be replaced.

## CYLINDER CONVERSION CHART

*Size (inches)	DOT Number	Airgas	Airco	Air Products	Praxair	Scott	Matheson	MG Industries
<b>HIGH PRESSURE STEEL</b>								
9 x 60	3AA2400	300	300	A	T	K	IL	300
9 x 56	3AA2265	200	200	B	K	A	IA	200
	or 3AA2015							
8½ x 31	3AA2015	80	80	C	Q	B	2	80
6 x 24	3AA2015	35	30	D1	G	C	3	35
4 x 20	3AA2015	10	12	D	F	D	4	10
4 x 15	3AA2015	7	6	-	-	-	6	7
2 x 15	3E1800	LB	2	LB	LB	LB	LB	LB
2 x 16	3E1800	LX	7X	LG	ELB	-	7X	LB
4½ x 31	3AA2015	E	E	Med. E	ANE	ER	-	E
<b>LOW PRESSURE STEEL</b>								
12 x 48	8AL	380	5	A	Lab 380	XF	1B	380
15 x 48	4BA240	350	-	A1	FX	XL	1F	350
15 x 52	4AA480	150	150	AA	FA	XG	1K	150
10 x 53	4BA300	65	-	A3	FC	XP	1J	65
9 x 16½	39NRC	D227	212L	-	TAP	Scotty III	-	Maxicyl
12½ x 18½	4BA240	25	-	-	-	-	-	25
<b>ALUCYLS</b>								
8 x 53	3AL2015	150A	150A	B(AL)	ALS	AL	1R	150AL
7 x 38	3AL2216	80A	80A	C(AL)	ALQ	BL	2R	80AL
7 x 21	3AL2216	33A	30A	DL(AL)	ALH	CL	3R	33AL

\*Including Cap

from Airgas Specialty Gases and Equipment Catalog, 1995

# Maintenance Instructions for the Argon/Ethane Cylinder Lifter

J. Whalen  
1/8/99

The maintenance of the Argon/Ethane Cylinder Lifter, Morse serial number 171912, is dependent upon the results of periodic inspections.

## **Frequent inspection:**

Must be completed before each use. Does not need to be recorded.

- inspect for structural deformation, cracks, or excessive wear of any part
- inspect for loose or missing pieces, including the nameplate
- check that the securing mechanism is in proper order

## **Yearly inspection:**

A recorded annual visual inspection of external conditions done by designated gas systems personnel.

- inspect for loose bolts or fasteners
- inspect for cracked or worn ratchets, chains, or hinges
- inspect for excessive wear or deformation at hooking points or load bearing members
- also look over items checked in the frequent inspection

Any deficiencies found during the inspection must be carefully examined. A determination as to whether or not they constitute a hazard must be made. Any hazards must be corrected before the lifter is put back into use. See attached chart for more inspection information.

TABLE 1 MINIMUM INSPECTION FOR BELOW-THE-HOOK LIFTING DEVICES

Item	Normal Service		Heavy Service		Severe Service	
	Visual, Monthly [Note (1)]	Record Yearly [Note (2)]	Visual, Weekly to Monthly [Note (1)]	Record Semiannually [Note (3)]	Visual, Daily to Weekly [Note (3)]	Record Quarterly [Note (3)]
Frequent inspection (refer to para. 20-1.3.2) — structural deformation, cracks, or excessive wear of any part of the lifter	X		X		X	
Loose or missing guards, fasteners, covers, stops, or nameplates	X		X		X	
All functional operating mechanisms and automatic hold and release mechanisms for misadjustments interfering with operation	X		X		X	
Periodic inspection (refer to para. 20-1.3.3) — loose bolts or fasteners		X		X		X
Cracked or worn gears, pulleys, sheaves, sprockets, bearings, chains, and belts		X		X		X
Excessive wear of linkages and other mechanical parts		X		X		X
Excessive wear at hoist hooking points and load support clevises, or pins		X		X		X

NOTES:

- (1) By operator or designated person with records not required.
- (2) Visual inspection by designated person making records of apparent external conditions to provide the basis for a continuing evaluation.
- (3) As in Note (2) unless external conditions indicate that disassembly should be done to permit detailed inspection.