

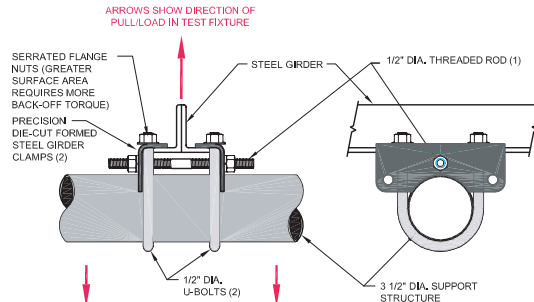
BACKSTOP COMPONENT TESTING GUIDE

LOAD RATING DATA

(First Edition)

STANDARD GIRDER CLAMP TESTING DATA

This clamp assembly is utilized for clamping to Joist and "I"-Beam lower flanges, to support backstop (and curtain) superstructures provided by Porter.



SAFETY FACTOR

Load Rating Safety Factor of 60 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.
Report No.: 8897
Test Date: March 26, 1993
Tested For: Porter Athletic Equipment Company

EXPLANATION OF GIRDER CLAMP TESTING & USAGE

GIRDER CLAMP ASSEMBLY SUPPORTED A DEAD LOAD OF 10,700 POUNDS BEFORE THE FLANGE OF THE TEST GIRDER SAMPLE DEFORMED TO A POINT THAT THE TESTING WAS HALTED.

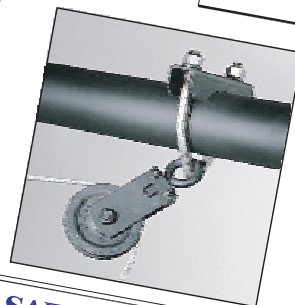
NORMAL BACKSTOP SUPPORT STRUCTURES ARE DESIGNED WITH A MINIMUM OF FOUR ATTACHMENT POINTS (GIRDER CLAMP ASSEMBLIES) WHICH WOULD RESULT IN A MINIMUM SUPPORT LOAD OF 42,800 POUNDS.

A NORMAL BACKSTOP INSTALLATION AT A 25' ATTACHMENT HEIGHT WOULD WEIGH A MAXIMUM OF 700 POUNDS, WHICH WOULD RESULT IN A MINIMUM 60 to 1 SAFETY FACTOR.

REVISION	DATE	Porter No.	NO. XCLP 58001 002 GIRDER CLAMP LOAD TESTING DATA	porters®	DRAWING BY
A				WORLD LEADER IN QUALITY SPORTS EQUIPMENT	JW
				2500 S. 20th AVENUE	CHECKED BY
				BROOKVIEW, ILLINOIS 60155	ES
				www.porters.com	PAGE NO.
					7

STANDARD SWIVEL PULLEY TESTING DATA

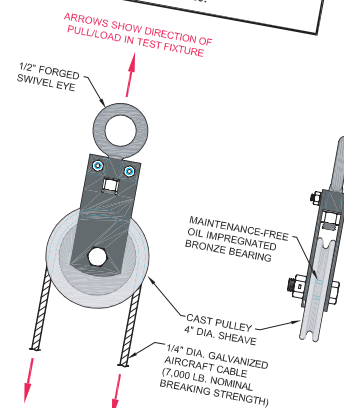
This swivel pulley is utilized to hoist backstops via a 1/4" diameter (7 wire, 19 strands per) galvanized aircraft cable.



SAFETY FACTOR

Load Rating Safety Factor of 13.5 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.
Report No.: 9277
Test Date: June 28, 1993
Tested For: Porter Athletic Equipment Company



EXPLANATION OF SWIVEL PULLEY TESTING & USAGE

SWIVEL PULLEY WAS PULLED IN A TEST FIXTURE WITH A 1/4" CABLE IN PLACE OVER THE PULLEY SHEAVE TO A LOAD OF 9,500 POUND LOAD, AT WHICH TIME THE SIDE PLATES SHEARED AT THE TWO TOP ASSEMBLY BOLT HOLES. THIS LOAD EXCEEDS THE NOMINAL BREAKING STRENGTH (7,000 POUNDS), OF THE 1/4" HOIST CABLE BY 2,500 POUNDS, OR 36%.

THE HOIST LOAD ON A BASKETBALL BACKSTOP FRAME RARELY EXCEEDS 700 POUNDS, WHICH RESULTS IN A MINIMUM SAFETY FACTOR OF 13.5 TO 1 ON THE SWIVEL PULLEY USAGE.

REVISION	DATE	Porter No.	NO. XPUL 57401 002 CLAMP LOAD TESTING DATA	porters®	DRAWING BY
A				WORLD LEADER IN QUALITY SPORTS EQUIPMENT	JW
				2500 S. 20th AVENUE	CHECKED BY
				BROOKVIEW, ILLINOIS 60155	ES
				www.porters.com	PAGE NO.
					11

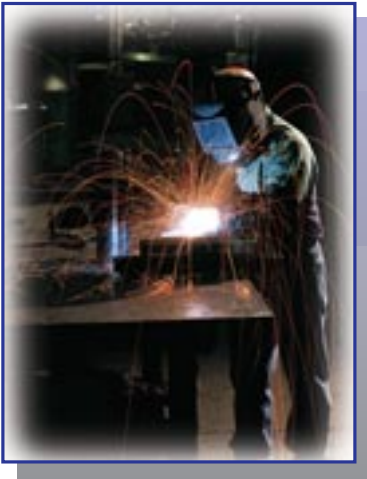
LOAD TESTING INDEX

Page No.	Description
5	Introduction
7	Girder Clamp (No. XCLP 58001 002) Load Testing
9	Pipe Eye Clamp (No. XCLP 97001 002) Load Testing
11	Swivel Pulley (No. XCLP 57401 000) Load Testing
13	3-to-2 Tee (No. XTEE 79001 002) Load Testing
15	Mast Hanger (No. XHNG 50405 002) Load Testing
17	Mast Hanger (No. XHNG 50401 002) Load Testing



PRODUCT INTEGRITY

The integrity of the Porter product line is something that we take very seriously. The trust you place in Porter when selecting our product is something that we must earn every day in gymnasiums and athletic facilities around the world. The materials, manufacturing methods and engineering that go into each custom basketball backstop determine the quality and longevity of the product.



Porter's long-time commitment to state-of-the-art innovation and research and development has enabled us to continue in our tradition of producing products of the highest quality, durability, functionality and adaptability. All of Porter's welders are certified to meet the Structural Welding Code – Steel Standards of the American Welding Society.

In keeping with Porter's commitment to provide the safest equipment in the industry, Porter has recently upgraded all of our Hex Cap Screws and Carriage Bolts to a minimum of Grade 5. All plated Hex Cap Screws and Carriage Bolts are now mechanically plated rather than electroplated. Mechanical plating is porous, allowing the hydrogen to escape, minimizing the potential for hydrogen embrittlement.

STRUCTURAL LOAD TESTING

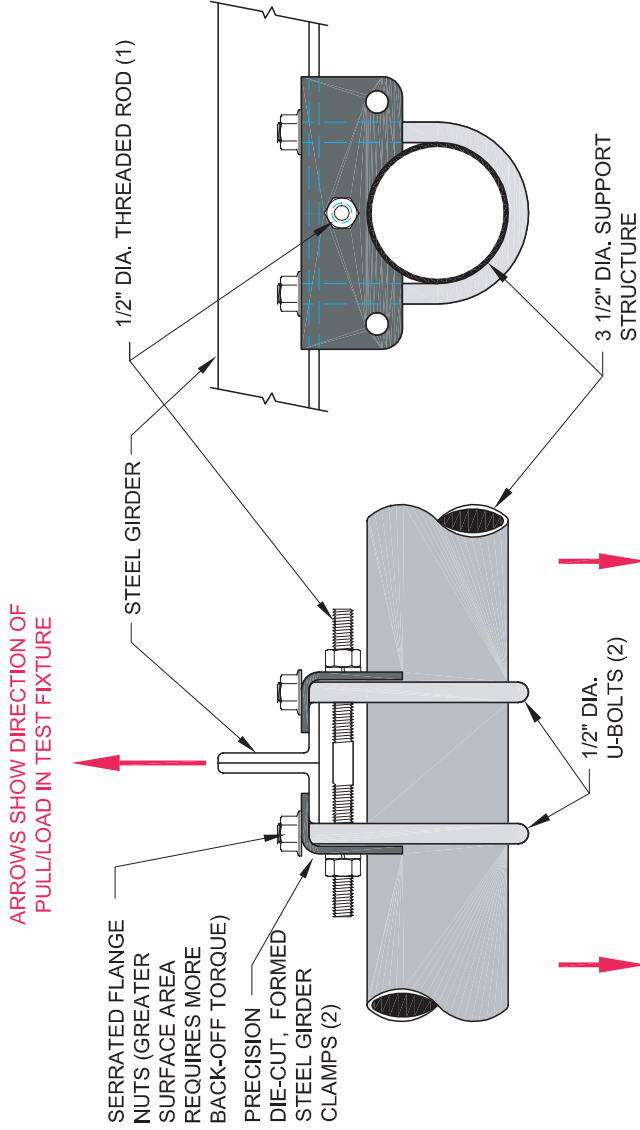
To substantiate the integrity built into the Porter line of overhead supported backstops, we retained an independent testing lab to perform destructive tests on selected critical backstop components. The results of these tests have proven the superior structural integrity of these fittings as used in overhead support systems. Examples are given for each fitting to approximate an "in-use" safety factor for each assembly as incorporated in the backstop support/hoist systems.

Should you have any questions as to how the tests were performed, or questions regarding the Porter product line, do not hesitate to contact Porter or your Porter representative.



STANDARD GIRDER CLAMP TESTING DATA

This clamp assembly is utilized for clamping to Joist and "I"-Beam lower flanges, to support backstop (and curtain) superstructures provided by Porter.



SAFETY FACTOR

Load Rating Safety Factor of 60 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.

Report No.: 8897

Test Date: March 26, 1993

Tested For: Porter Athletic Equipment Company

EXPLANATION OF GIRDER CLAMP TESTING & USAGE

GIRDER CLAMP ASSEMBLY SUPPORTED A DEAD LOAD OF 10,700 POUNDS BEFORE THE FLANGE OF THE TEST GIRDER SAMPLE DEFORMED TO A POINT THAT THE TESTING WAS HALTED.

NORMAL BACKSTOP SUPPORT STRUCTURES ARE DESIGNED WITH A MINIMUM OF FOUR ATTACHMENT POINTS (GIRDER CLAMP ASSEMBLIES) WHICH WOULD RESULT IN A MINIMUM SUPPORT LOAD OF 42,800 POUNDS.

A NORMAL BACKSTOP INSTALLATION AT A 25' ATTACHMENT HEIGHT WOULD WEIGH A MAXIMUM OF 700 POUNDS, WHICH WOULD RESULT IN A MINIMUM 60 to 1 SAFETY FACTOR.



REVISION	DATE	Porter's No.
A		
A		
© COPYRIGHT 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED		DATE 8.20.01

NO. XCLP 58001 002 GIRDER CLAMP LOAD TESTING DATA

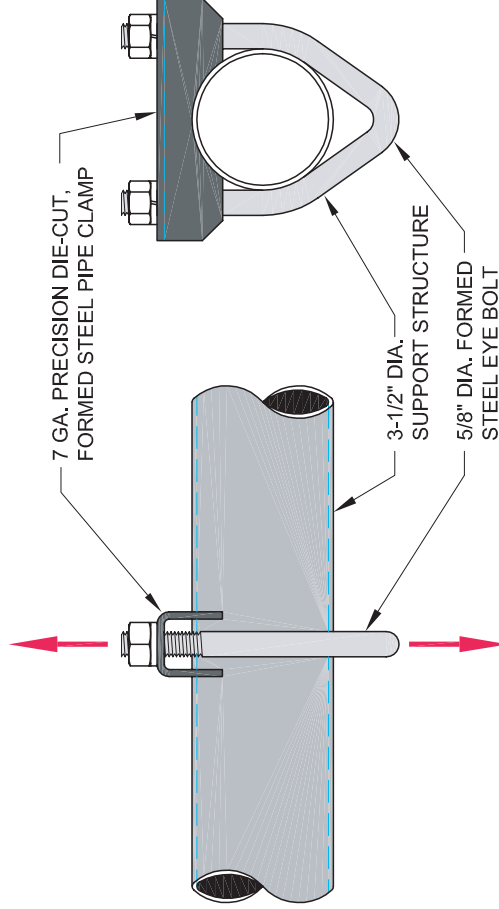
LTD - GirderClamp
THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND
MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

Porter
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

DRAWING BY
JW
CHECKED BY
ES
PAGE NO.
7

PIPE EYE CLAMP TESTING DATA

This clamp assembly is utilized for clamping to pipe superstructure, securing a swivel pulley utilized to hoist backstop. Superstructure is provided by Porter.



ARROWS SHOW DIRECTION OF
PULL/LOAD IN TEST FIXTURE

SAFETY FACTOR

Load Rating Safety Factor of 23.5 To 1

Tested By: Q.C. Metallurgical Laboratory, Inc.
Report No.: 9277
Test Date: June 28, 1993
Tested For: Porter Athletic Equipment Company

EXPLANATION OF PIPE EYE CLAMP & USAGE

PIPE DEFORMATION AT 11,000 POUNDS. TEST DISCONTINUED AT THE STROKE LIMIT OF TEST MACHINE - 13,500 POUNDS. ADDITIONAL TEST PERFORMED WITH A REINFORCED 3-1/2" DIA. SUPPORT STRUCTURE - TESTED TO 16,500 POUNDS AT WHICH TIME THE TEST BRACKET (NOT ILLUSTRATED) FAILED. INSPECTION OF EYE CLAMP SHOWED NO VISIBLE EVIDENCE OF DEFORMATION.

HOIST LOAD ON A BASKETBALL BACKSTOP FRAME RARELY EXCEEDS 700 POUNDS, WHICH RESULTS IN A MINIMUM SAFETY FACTOR OF 23.5 TO 1 ON THE EYE PIPE CLAMP USAGE.



REVISION	DATE	PORTER No.
1	.	CUSTOMER No.
2	.	DATE
© COPYRIGHT, 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED		

NO. XCLP 97001 002 PIPE EYE CLAMP

LOAD TESTING DATA

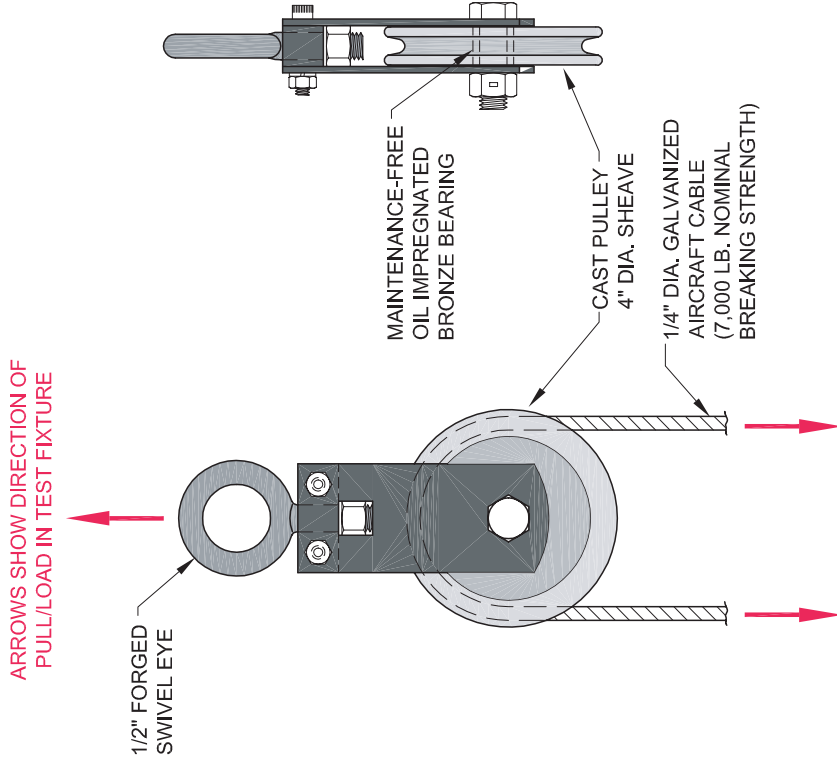
LTD-PipeEyeClamp
THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND
MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

Porter
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

DRAWING BY
JW
CHECKED BY
ES
PAGE NO.
9

STANDARD SWIVEL PULLEY TESTING DATA

This swivel pulley is utilized to hoist backstops via a 1/4" diameter (7 wire, 19 strands per) galvanized aircraft cable.



EXPLANATION OF SWIVEL PULLEY TESTING & USAGE

SWIVEL PULLEY WAS PULLED IN A TEST FIXTURE WITH A 1/4" CABLE IN PLACE OVER THE PULLEY SHEAVE TO A LOAD OF 9,500 POUND LOAD, AT WHICH TIME THE SIDE PLATES SHEARED AT THE TWO TOP ASSEMBLY BOLT HOLES. THIS LOAD EXCEEDS THE NOMINAL BREAKING STRENGTH (7,000 POUNDS), OF THE 1/4" HOIST CABLE BY 2,500 POUNDS, OR 36%.

THE HOIST LOAD ON A BASKETBALL BACKSTOP FRAME RARELY EXCEEDS 700 POUNDS, WHICH RESULTS IN A MINIMUM SAFETY FACTOR OF 13.5 TO 1 ON THE SWIVEL PULLEY USAGE.

SAFETY FACTOR

Load Rating Safety Factor of 13.5 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.

Report No.: 9277

Test Date: June 28, 1993

Tested For: Porter Athletic Equipment Company



REVISION	DATE	PORTER No.
Δ	.	CUSTOMER No.
Δ	.	DATE
© COPYRIGHT, 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED.		

NO. XPUL 57401 002 CLAMP LOAD TESTING DATA

THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

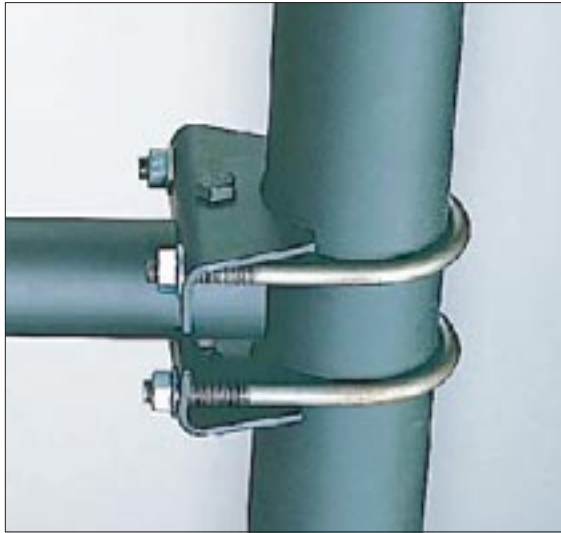
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

Porter®
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT

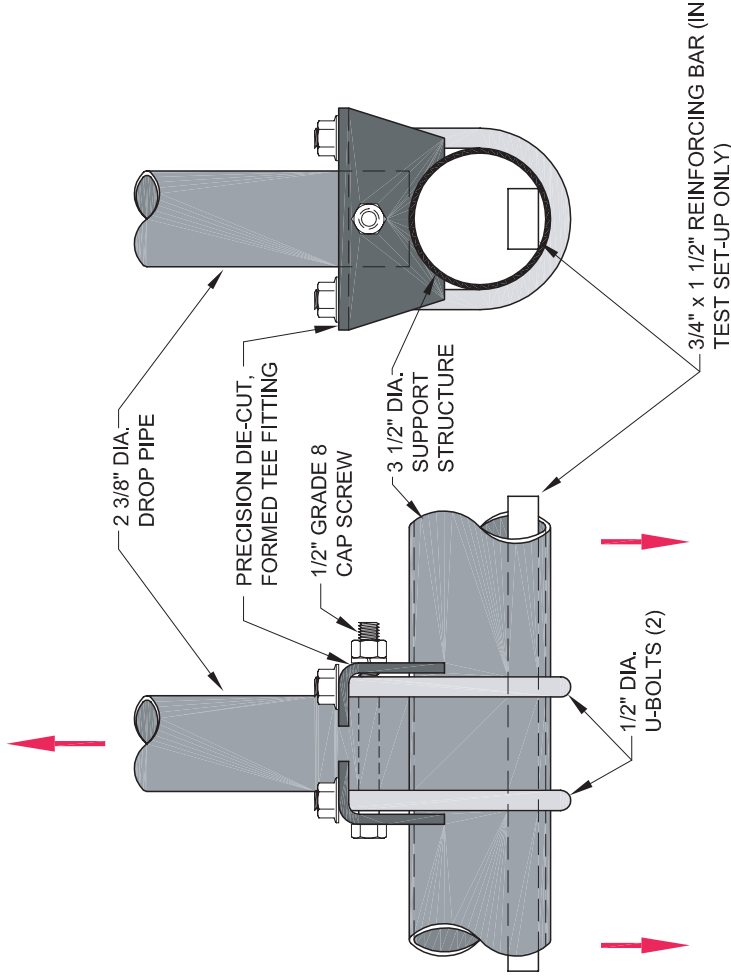
DRAWING BY
JW
CHECKED BY
ES
PAGE NO.
11

3 1/2" To 2 3/8" TEE ASSEMBLY TESTING DATA

This clamp assembly is utilized for connecting 2 3/8" o.d. support (drop) pipes to 3 1/2" o.d. span pipes in a typical superstructure. Superstructure is provided by Porter.



ARROWS SHOW DIRECTION OF
PULL/LOAD IN TEST FIXTURE



EXPLANATION OF 3 1/2" TO 2 3/8" TEE ASSEMBLY TESTING & USAGE

THE TEE ASSEMBLY WAS SECURED TO A 2 3/8" DROP (VERTICAL) PIPE AND A 3 1/2" DIA. SUPPORT (HORIZONTAL) PIPE, AND PULLED IN THE DIRECTION AS INDICATED BY THE ARROWS (SEE DRAWING ABOVE) UNTIL THE BOLT WHICH EXTENDS THROUGH THE DROP PIPE DEFORMS TO A POINT THAT THE TEST WAS DISCONTINUED AT A MAXIMUM LOAD OF 10,400 POUNDS.

DEPENDING ON THE USE OF THE TEE ASSEMBLY (HALF OR FULL CRADLES), THE SAFETY FACTOR OF THIS ASSEMBLY WOULD BE EQUIVALENT TO THE GIRDER CLAMP ASSEMBLY (PART NO. XCLP 58001 002).

SAFETY FACTOR

Load Rating Safety Factor of 50 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.

Report No.: 9277

Test Date: June 28, 1993

Tested For: Porter Athletic Equipment Company



REVISION	DATE	PORTER No.
A	.	CUSTOMER No.
B	.	
© COPYRIGHT, 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED		DATE 8.20.01

NO. XTEE 79001 002 3 1/2" TO 2 3/8" TEE LOAD TESTING DATA

LTD-3to2tee
THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND
MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

DRAWING BY JW	CHECKED BY ES	PAGE NO. 13
------------------	------------------	----------------

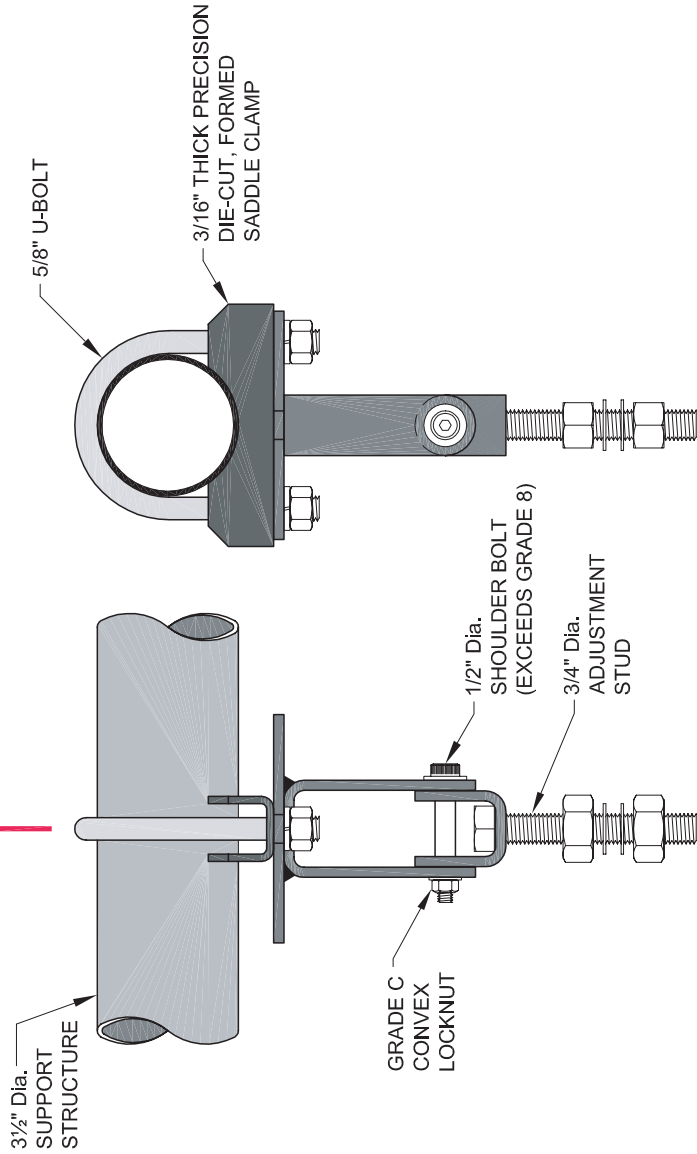
Porter
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

ADJUSTABLE MAST HANGER ASSEMBLY TESTING DATA

This hanger assembly is utilized to secure a backstop mast frame (to attachment heights of 32') to 3 1/2" dia. support structure.



ARROWS SHOW DIRECTION OF PULL/LOAD IN TEST FIXTURE



THE LOWER HINGE FRACTURED AT 20,000 POUNDS.

THE EXPLANATION OF MAST HANGER TESTING & USAGE

ON THE No. 900 LINE MASTS, TWO HANGERS ARE USED ON ATTACHMENT HEIGHTS UP TO 28'-0", AND THREE HANGERS BETWEEN 28'-0" AND 32'-0"

A NORMAL BACKSTOP INSTALLATION AT A 28'-0" ATTACHMENT HEIGHT WOULD WEIGH A MAXIMUM OF 800 POUNDS, WHICH WOULD RESULT IN A MINIMUM 50-to-1 SAFETY FACTOR.

SAFETY FACTOR

Load Rating Safety Factor of 50 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.

Report No.: 16972

Test Date: July 22, 1999

Tested For: Porter Athletic Equipment Company



REVISION	DATE	Porter No.
A	.	CUSTOMER No.
B	.	DATE
© COPYRIGHT, 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED		8.20.01

NO. XHNG 50405 002 MAST HANGER LOAD TESTING DATA

LTD-MastHanger
THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

Porter
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

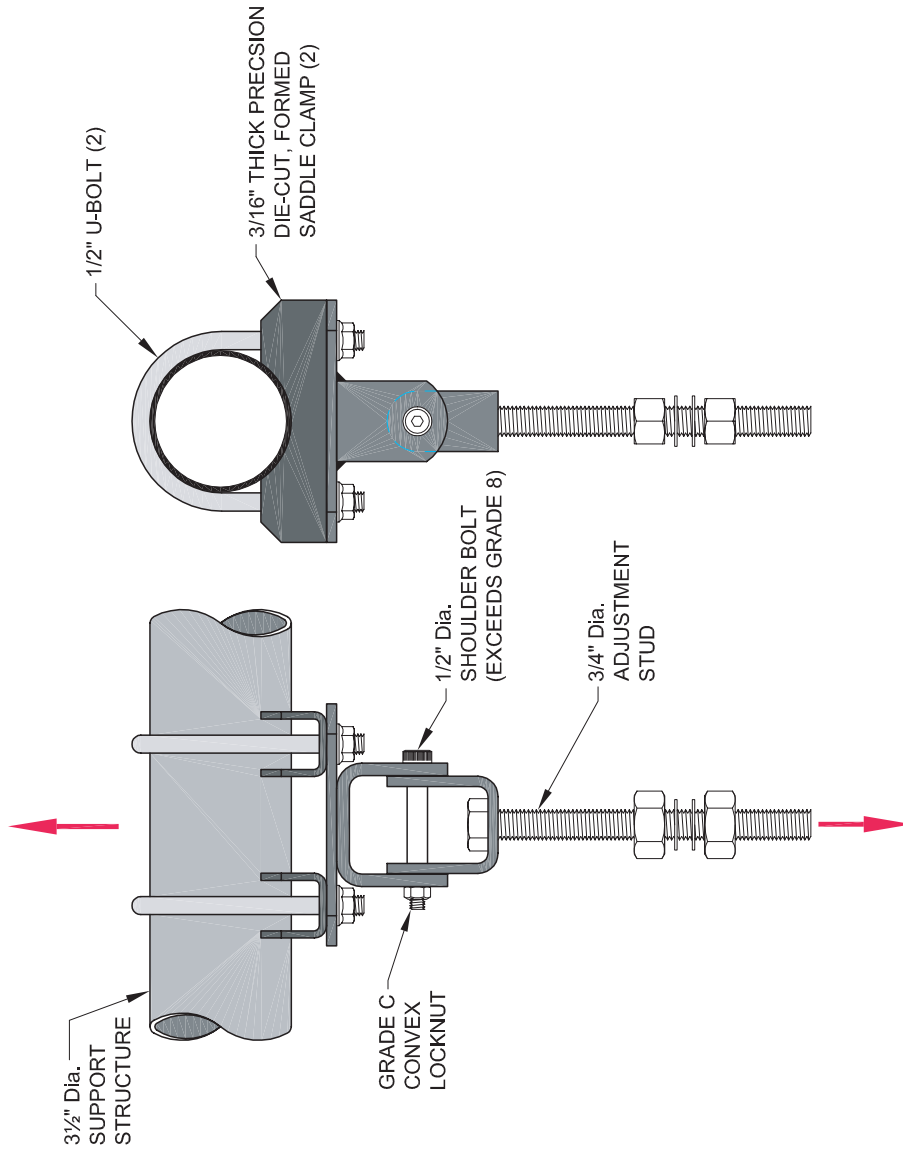
DRAWING BY
JW
CHECKED BY
ES
PAGE NO.
15

"W" SERIES ADJUSTABLE MAST HANGER ASSEMBLY TESTING DATA

This hanger assembly is utilized to secure a backstop mast frame (greater than 32' attachment height) to a 3 1/2" dia. support structure.



ARROWS SHOW DIRECTION OF
PULL/LOAD IN TEST FIXTURE



THE LOWER HINGE FRACTURED AT 18,650 POUNDS.

THE EXPLANATION OF MAST HANGER TESTING & USAGE

ON THE No. 900 "W" LINE MAST, AT 32'-0" TO 40'-0" ATTACHMENT HEIGHTS, THREE HANGERS ARE UTILIZED. A NORMAL BACKSTOP INSTALLATION AT A 32' ATTACHMENT HEIGHT WOULD WEIGH A MAXIMUM OF 1200 POUNDS, WHICH WOULD RESULT IN A MINIMUM 46-to-1 SAFETY FACTOR.

SAFETY FACTOR

Load Rating Safety Factor of 46 to 1

Tested By: Q.C. Metallurgical Laboratory, Inc.

Report No.: 17182

Test Date: October 11, 1999

Tested For: Porter Athletic Equipment Company



REVISION	DATE	PORTER No.
Δ	.	CUSTOMER No.
Δ	.	DATE
© COPYRIGHT, 2001 PORTER ATHLETIC EQUIPMENT CO. ALL RIGHTS RESERVED		8.20.01

NO. XHNG 50401 002 MAST HANGER LOAD TESTING DATA

LTD-MastHanger
THIS PRINT IS THE PROPERTY OF PORTER ATHLETIC EQUIPMENT COMPANY AND
MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION

porter®
WORLD LEADER
IN QUALITY SPORTS EQUIPMENT
2500 S. 25th AVENUE
BROADVIEW, ILLINOIS 60155
www.porter-ath.com

DRAWING BY
JW
CHECKED BY
ES
PAGE NO.
17

porter[®]

Porter Athletic Equipment Company

2500 South 25th Avenue, Broadview, IL U.S.A., 60155

Toll Free: (800) 947-6783 • Phone: (708) 338-2000 • Fax: (708) 338-2060

www.porter-ath.com