Northwest Territories Canada

Department of Public works

PROJECT NO: 90-4306-6

PROJECT : WATER STORAGE TANK

CAPE DORSET, N.W.T.

OLIVER, MANGIONE, MCCALLA & ASSOCIATES LIMITED

(ENGINEER)

BY: CONSTRUCTIONS GAÉTAN GRENIER INC

October 1992

Water Storage Tank

Cape Dorset, NWT

table of contents

Where is the description + Location of the tank

Northwest Territories

memo

To: Consultants

Subject: Comments on O&M manual

Date: Nov 17th 1992

(1) Where are the climatic conditions described Operation of tank in conjunction with the Truckfill / Supply line + ~~Lake~~ Tee Lake

(2) Location - reasoning behind storage tank 3 Day storage, One operating cell + Fire fighting DMP

(3) Explain water Truck Delivery System within community and need for the new tank General History of water system etc.

NWT 1396/0786

Water storage Tank, Cape Dorset, N.W.T.

Owner:

Public Works , NWT Mr. Dave MacPherson phone: 819-979-5150

P.O. Bag 1000

Iqaluit, N.W.T

XOA OHO

Engineer:

Oliver, Mangione, McCalla & As. Mr. Steven Burden phone: 613-225-9940

154, Colonnade Road South

Nepean, Ontario

K2E 7J5

General contractor:

Constructions Gaétan Grenier Inc Mr. Gaétan Grenier phone: 819-548-5424

106 Colette Street Mr. Réjean Jacques phone: 819-897-8434

St-Ludger, Québec

GOM IWO

Sub-contractors:

Universal Industries Limited
5014, 65 St
P.O. Box 1590
Lloydminster Sask., Alberta
S9V 1K5

Mr. Gary Ward

phone: 403-875-6161

Isolations Grenier Inc
106, Colette Street
St-Ludger, Québec
GOM IWO

Mr. Luc Doyon

phone: 819-548-5397

Suppliers

Peinture I.C.I. Canada
2580 rue Dalton
Ste-Foy, Québec
G1P 3S4

Mr. André Trudel

Phone: 418-657-6772

VicWest steel Inc
707 Industrial Boul. East
Victoriaville, Quebec
G6P 6T2

Mr. Jean-Marc Anger

phone: 800-463-4694

Not ready yet

Water strorage tank

Cape Dorset, NWT

Drawing index:

Tank exterior treatment / 04225	**Tank primer**
	Tank rigid insulation
	Protective coating
	Cladding
Metal tank / 04250	**Design requirements**
Internal protective coating / 04275	**Internal coating**
Mechanical / 04400	**see section *5* Mechanical**

Glidden

PROTECTIVE MAINTENANCE COATINGS DATA

Alkyd Rust-Inhibitive Primer For Industrial Use Only

GLID-GUARD® Tank & Structural Metal Primer Nos. 5205/5206/5207

For Interior-Exterior Metal

PRODUCT DESCRIPTION

A high solids, rust-inhibitive, interior-exterior alkyd primer for ferrous and non-ferrous metal, including galvanized. May be topcoated with epoxy, vinyl, urethane and chlorinated rubber coatings as well as conventional oil, alkyd and latex products. Excellent for use as a barrier coat when applied over sound old oil or alkyd finishes which are to be topcoated with heavy-duty coatings. This product has exceptional resistance to exterior weathering, making it especially suitable for use as a shop primer. Typical uses include structural steel, tank exteriors, piping, machinery and fences.

PRODUCT FEATURES

- May be used on both ferrous and galvanized metal
- Rust inhibitive — excellent corrosion resistance
- High volume solids
- Fast dry
- Will withstand two years exterior exposure without a topcoat
- May be topcoated with heavy-duty coatings — an excellent tie coat
- Lead and chromate free
- VOC less than 420 grams per litre (3.5 lbs. per gallon)
- Flash point above 40°C (100°F.)

PRODUCT LIMITATIONS

Do not use for immersion or direct food contact service. Do not use in Type A-Aggressively Corrosive environments. May be used in Type C-Corrosive environments only if topcoated with a product suitable for the environment (such as an epoxy, vinyl, etc.)
Will withstand 93°C. (200°F.) continuous dry heat. The color may change as this limit is approached, but the film will remain in tact.

PRODUCTS AVAILABLE

GLID-GUARD Tank & Structural Primer, Red No. 5205
GLID-GUARD Tank & Structural Primer, Gray No. 5206
GLID-GUARD Tank & Structural Primer, White No. 5207

SURFACE PREPARATION

All surfaces must be clean, dry and free of all contaminants.

Ferrous Metal Surfaces

Remove dirt and dust. Remove oil and grease with solvents such as mineral spirits or xylene in compliance with SSPC-SP1-82 Solvent Cleaning. Further clean the surface by one of the following methods depending upon the service environment. See Glidden Surface Preparation Data Sheet No. 5 "Ferrous Metal/Iron & Steel" for more information.

Type C-Corrosive

This exposure is characterized by moderately aggressive chemical fumes, mists or dusts that combine with moisture and high humidity to corrode zinc at rates less than one mil per year. Type A-Aggressively Corrosive exposures may, in some instances, become Type C exposures outside a radius of about 50 yards from the source of contamination for a limited further distance. For Type C-Corrosive environments, Near-White Sandblasting SSPC-SP10 is recommended.

TECHNICAL DATA

***Product Numbers** - 5205
Generic Type - Alkyd
Colours - Red
Gloss - 15 maximum @ 60°
Type of Cure - Oxidation
Percent Solids by Volume - 52% ± 1%
Theoretical Coverage per 1.0 dry mil (1.9 mils wet)
834 sq. ft./gallon. (20.3m ^{2}/L)
****Recommended Film Thickness & Coverage (Calculated, Unreduced)**
Minimum — 2.0 mils dry (4.0 mils wet) — 417 sq. ft./gallon (10 m^2/L)
Recommended — 2.0-2.5 mils dry (4.0-5.0 mils wet) 334-417 sq. ft./gallon (8-10m^2/L)
Maximum 3.0 mils dry (6.0 mils wet) 278 sq. ft./gallon (7 ^{2}/L)
When computing working coverage, allow for application losses, surface irregularities, any solvent addition, etc.
Percent Solids by Weight — 71 ± 1%
Percent Vehicle by Weight — 24% ± 1%
Percent Pigment by Weight — 47% ± 1%
Percent Solvent by Weight — 29% ± 1%
Viscosity — 70-80 KU
Weight per Gallon — 11.8 lbs. (5.4 kg)
Flash Point (Closed Cup) — 42°C. (108°F.)
VOC — 3.45 lbs/gallon (414 gm/litre) unreduce; 3.79 lbs/gal (454 gm/litre), reduced 10% by volume with xylene; 3.73 lbs/gal (447 gm/litre), reduced 10% by volume with mineral spirits
Drying Time - (20°C, 50% .H.)
Touch - 20 minutesHandle - 30 minutes
Recoat - 2 hours Full Cure - 8 hours
Reduction Solvent — Xylene (spray) or mineral pirits brush/roll)
Clean-up Solvent — Xylene or methylethyl ketone
Tinting — DO NOT TINT

* Compositional data for other products in this series may differ slightly.

**As measured over the peaks of any blast profile or surface irregularities.

Type M-Moderate
This exposure is generally outdoors and is characterized by normal weathering and/or light or moderate concentrations of chemical fumes that combine with humidity and condensed moisture to corrode carbon steel at rates less than three mils per year. Zinc in this exposure is virtually free of corrosion. Light to moderate chemical fume concentrations in indoor areas without excessive humidity may produce similar conditions. For Type M-Moderate environments, Commercial Blast Cleaning SSPC-SP6 is recommended. Where exposure is normal weathering only, Brush-Off Blast Cleaning SSPC-SP7 or power Tool Cleaning SSPC-SP3 will provide excellent service.

SURFACE PREPARATION

Type P-Protected (Architectural)
Surfaces are generally indoors in the normal humidity range and are not subjected to chemical contaminants which will attack paint or steel. For Type P-Protected environments, Brush-Off Blast Cleaning SSPC-SP7, Power Tool Cleaning SSPC-SP3, or Hand Tool Cleaning SSPC-SP2 will provide the sound substrate needed for proper adhesion.

Galvanized Metal and Aluminum Surfaces
Remove oil, grease, dirt, dust and chemical contaminants using the prescribed cleaning methods. See Glidden Surface Preparation Data Sheet No. 4 "Aluminum" or No. 6 "Galvanized Metal" for more information.

NOTE: Many new galvanized surfaces are chemically treated (passivated) by the supplier to prevent wet storage staining (also know as "white rust"). This is especially true for galvanized metal in sheet or coil form. Such treatment may interfere with the bonding of paint films, and their removal by brush abrasive blast prior to the application of this product will result in maximum adhesion. Other types of chemical treatments may not lessen paint adhesion. Consult the metal supplier for specific surface preparation recommendations.

Previously Painted Surfaces
Hard or glossy finishes should be dulled by sanding, sandblasting or other abrasive method to ensure adhesion. Clean thoroughly. Remove any loose old coating. Spot prime any exposed non-metal substrate with a primer recommended for that substrate. If more than 25% of the previous coating has failed, if the previous coating can be easily scraped off the surface, or if a test application of this product lifts or wrinkles the previous coating, it should be completely removed.

APPLICATION
Apply by spray (airless or conventional) or brush or roller. **Do not apply when surface temperature is below 10°C. (50°F.)**

SPRAY APPLICATION
Airless Spray
Fluid tip: 617
Pressure 1900-2100 psi

COVERAGE
Recommended coverage (calculated, unreduced) is 335-417 sq. ft./gallon at 2.0-2.5 mils dry (4.0-5.0 mils wet). Maximum film thickness is 3.0 mils dry (6.0 mils wet) 278 sq. ft./gallon, minimum 2.0 mils dry (4.0 mils wet) 417 sq. ft./gallon. When computing working coverage, allow for any solvent addition, application losses, surface irregularities, etc. **NOTE:** When this product is to be topcoated with heavy-duty coatings such as epoxies, vinyls, etc., it is very important that the maximum recommended film thickness of 3.0 mils dry not be exceeded.

DRYING
Dries to touch in 20 minutes, to handle in 30 minutes, to recoat in 2 hours, to full cure in 8 hours at 20°C. (70°F.), 50% R.H. Allow longer drying times under cooler or more humid conditions.

FORCE CURING
Drying time can be shortened by exposing the painted surface to elevated temperatures. Suggested schedule is 2-3 minutes flash-off followed by 15 - 30 minutes at 93°C. (200°F.). Additional cure time may be required if immediate topcoating with heavy-duty coatings is desired. The flash-off time may be omitted for convection ovens. Allow the part to cool to room temperature before topcoating, handling or stacking. **NOTE:** Thoroughly test any proposed force cure schedule on the actual application site to verify that degree of cure, film hardness, and recoatability are acceptable.

CLEAN-UP
Clean all equipment immediately after use with xylene or methyl ethyl ketone.

TOPCOATS
May be topcoated with epoxy, urethane, vinyl and chlorinated rubber coatings as well as conventional oil, alkyd and latex products. **NOTE:** The use of any alkyd primer under heavy-duty coatings such as epoxy, urethane, vinyl and chlorinated rubber may compromise the chemical or physical resistance properties of the overall coating system.

Glidden

PROTECTIVE MAINTENANCE COATINGS DATA

Alkyd Rust-Inhibitive Gloss Enamel

GLID-GUARD® Alkyd Industrial Enamel No. 4550 Series

For Interior-Exterior Metal, Masonry, Plaster & Gypsum Wallboard

PRODUCT DESCRIPTION

An exceptionally durable interior/exterior urethane fortified alkyd gloss enamel for structural steel and general maintenance use. Provides maximum protection to structural steel tanks, signs, piping, fences and other metal surfaces.

PRODUCT FEATURES

- Available in safety colours
- May be brushed, rolled or sprayed
- Good exterior gloss retention
- Available in any colour
- Qualified CGSB Standards: 1-GP-59, 1-GP-60
- Meets or exceeds CGSB 1-GP-61 requirements

PRODUCT LIMITATIONS

- Not recommended for immersion
- Not recommended for direct food contact service

PRIMERS, FILLERS, SEALERS

For Ferrous Metals —
GLID-GUARD Alkyd Metal Primer No. 595 Red Oxide
GLID-GUARD Universal Fast Dry Metal Primer No. 5205 Red Oxide

For Galvanized and Aluminum Metals —
GLID-GUARD All-Purpose Metal Primer No. 5229 White
GLID-GUARD Universal Fast Dry Metal Primer No. 5205 Red Oxide

For Masonry, Poured Concrete, Brick, Concrete Block —
Smooth Surfaces
Interior/Exterior — Ultra Primer-Sealer No. 36600 White
Rough Surfaces (Block or Brick with voids)
Interior — ULTRA Interior Block Filler No. 36250 White
Exterior — ULTRA Acrylic Latex Block Filler No. 5317-0 White

For Wood —
Interior — ULTRA Undercoater No. 9431-0 White or GLID-GUARD Alkyd Industrial Enamel
Exterior — ULTRA Basecoat No. 9421-0

For Plaster, Gypsum Wallboard —
ULTRA Primer-Sealer No. 36600

Consult your Glidden representative for job specific recommendations.

SURFACE PREPARATION

Surfaces must be dry, clean and free of all contaminants. Remove dust and dirt with stiff bristle or wire brushes and compressed air. Remove oil and grease with solvents such as turpentine, mineral spirits or xylene in compliance with SSPC-SP1-82 — Solvent Cleaning.

TECHNICAL DATA

Product Number — 4550*

Generic Type — Alkyd

Colour — White

Sheen — High Gloss

Type of Cure — Oxidation

Percent Solids by Volume — 44%

Theoretical Coverage @ 25 microns (one mil) — 17.5 M²/L (847 sq. ft./gal.)

Recommended Dry Film Thickness Per Coat — 50 microns (2 mils)

Total Solids by Weight — 61%

Vehicle Solids by Weight — 33%

Solvent by Weight — 10%

Density — 1.12

Flash Point — 40°C

Dry Time — 25°C, 50% R.H.
Touch — 4 hours
Recoat — 16 hours

Reducer — Mineral Spirits for brush & roll, VM&P Naphtha for spray

Clean-up — Mineral Spirits

*Compositional Data for other colours in this product series will differ slightly.

This data is not intended to cover specific applications. Consult your Glidden representative for assistance in making recommendations for specific situations.

SURFACE PREPARATION (continued)

Metal Surfaces

All rust and mill scale must be removed by sandblasting, power tool cleaning, sanding or scraping. Wash with mineral spirits or xylene to remove oil or grease. See Glidden Coatings Data Sheets "Surface Preparation" Nos. 2, 5 and 6 for more details.

Masonry Surfaces

Level any surface projections and mortar spatters by grinding, stoning or scraping. Rake mortar joints clean. Remove oil, grease, dirt, dust and chemicals with prescribed methods. See Glidden Maintenance Coatings Data Sheet "Surface Preparation" No. 3 for more details. Masonry block should be filled free of voids, pinholes.

Wood Surfaces

Sand smooth and apply primer as specified. Holes, splits and scratches should be puttied or spackled smooth after applying the primer. See Glidden Maintenance Coatings Data Sheet "Surface Preparation" No. 9 for more details.

Plaster Surfaces

Plaster nibs should be scraped and sanded smooth. Cracks should be spackled, smoothed and sealed. No paint or sealer should be applied on plaster when the moisture content exceeds 8% as determined by a reliable electronic moisture meter. See Glidden Maintenance Coatings Data Sheet "Surface Preparation" No. 8 for more details.

Gypsum Wallboard Surfaces

Tape joints and spackled nailheads should be sanded smooth and dusted. See Glidden Maintenance Coatings Data Sheet "Surface Preparation" No. 8 for more details.

Previously Painted Surfaces

The performance of any coating system applied over previously painted surfaces is directly influenced by the type, age and condition of the old coating. If the previous coating can be easily scraped off the surface or if it lifts upon application of first new coat, it should be completely removed. Hard or glossy paints should be dulled by sanding, sandblasting, or other abrasive methods to assure maximum adhesion.

Consult your Glidden representative for more specific surface preparation recommendations.

MATERIAL PREPARATION

Mix thoroughly before using. Thin, if necessary, with mineral spirits for brush and rol application and VM&P Naphtha for spray (approx. 6:1). Do not add other thinners or driers or mix with other paints.

APPLICATION

Apply by brush, roller or spray. Do not apply when air or substrate temperature is below 10°C.

EQUIPMENT RECOMMENDATIONS

Airless Spray

Fluid Tip: 513
Pressure: 2100 - 2400 psi.

Conventional Spray

— Material pressure pot with separate gauges for air & fluid
— Air supply required - 80 P.S.I. at 20 CFM at the gun
— Gun - Devilbiss MBC, JGA, or equivalent
— 765 Cap "E" needle and tip
— Air hose 5/16" or 3/8" I.D.
— Material hose - 1/2" I.D. solvent resistant

DRYING

Dries to touch in one hour, overnight for recoating at 25°C, 50% R.H. Allow longer drying time under cooler, more moist conditions.

For further information concerning this and other Glidden products as well as recommendations for specific coating purposes, contact your Glidden representative.

FOR BEST RESULTS AND SAFEST USAGE, USER IS SPECIFICALLY DIRECTED TO CONSULT THE CURRENT MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT. EMERGENCY PHONE: (416) 669-1020.

WARNING! FLAMMABLE. HARMFUL IF INHALED. CAUSES IRRITATION.

Keep away from heat, sparks and flame. Vapors may cause flash fire. Do not breathe vapors or spray mist. Do not get in the eyes, on skin or on clothing. Wear appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are bleow applicable limits. Follow respirator manufacturer's directions for respirator use.

FIRST AID: IN CASE OF SKIN CONTACT, wash thoroughly with soap and water. FOR EYES flush immediately with plenty of water for 15 minutes. Call a physician. IF INHALED, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

Keep closures tight and upright to prevent leakage. Keep containers closed. In case of spillage, absorb and then dispose of in accordance with local applicable regulations.

USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN.

NOTICE: Reports have assiciated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

ICI PAINTS (CANADA) INC.
CONCORD, ONTARIO L4K 2A5

Polyurethanes

HEATLOK R279

TECHNICAL DATA SHEET

- [] 2.0 lb/ft3 General Purpose Spray Foam
- [] Has successfully passed CAN-4-S102-M83 and ULC-S127-M82 <500 Flame Spread
- [] Cold Weather Application – 10C to 10C
- [] Use with ICI Iso 276 below 0C

FOR MORE INFORMATION:

1-800-668-0929 (English)
1-800-668-2237 (French)

ICI Polyurethanes warrants that its products, when delivered, shall conform to the specifications applicable thereto in its product data sheets. This warranty is in lieu of all other warranties, express or implied. No warranty is made as to merchantability or fitness for any particular purpose.

Reaction times, etc., and characteristics of finished product, will vary with mix conditions, equipment type, stream temperatures, and other factors. As final application is under user's exclusive control, user must test for suitability of a formulation in any particular application. Adjustments may be required in certain cases.

Caution: Finished product is combustible. Do not expose to flame or other ignition sources. Can present fire hazard if not adequately protected against ignition.

ICI SPRAY SYSTEM

ICI System 279 is a polyurethane chemical foam system consisting of two components
ICI Resin 279 and ICI Isocyanate 100 / 276

TYPICAL PROPERTIES AS SHIPPED

	Iso 100 (A–Component)	Resin (B–Component)
.color	brown	amber
.viscosity @ 23oC (cPs)	250	275
.specific gravity (oC)	1.24	1.10
.flash point (oC)	>200	>200
.Isocyanate equivalent weight	133	N/A
.NCO content %	31.5	N/A
.acidity, % as HC	0.03	N/A

TYPICAL PHYSICAL PROPERTIES

Property	Gusmer Hll	ASTM
.Reaction Profile(sec.)		
Cream Time	1	N/A
Tack Free Time	2	
.Density core		
(lb/ft3)	2.0	D1622
(kg/m3)	32.7	

The following properties were measured on core samples with the above recommended in–place densities.

.Thermal Properties	R–Value	K–Value (Btu.in/ft2hroF)	C518
Initial	8.70	0.115	
Aged (28 days @ 100oC)	6.92	0.145	

.Dimensional Stability	% Volume Change @ 28 Days	D1621
29oC	-0.43	
100oC	+7.20	
70oC.>97%R.H.	10.10	

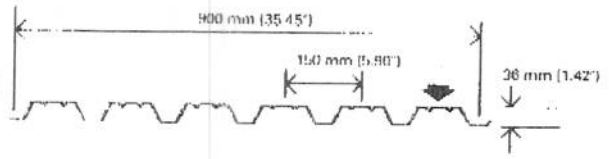
Compressive Strength (10% compression) (lb/in2)	27	D1621
Tensile Strength (lb/in2)	44	D1623
Open Cell Content %	8.0	D2856
Water Absorption (by volume) %	2.9	D2842
Water Vapour Permeance (ng/Pa.s.m2)	N/A	E 96

Storage Recommendations	Resin	Isocyanate
.Shelf Life(months)	6	12
.Temperature Range (oC)	10–24	16–38

MAR 92

This data is based on laboratory tests conducted by ICI. Results in the field will be influenced by the precise conditions of each application.

Steel cladding CL 6025R



VicWest Steel
Les Aciers VicWest

PHYSICAL PROPERTIES

This table has been compiled in accordance with Canadian Standards Association Specification S 136 1974. Properties for one metre width.

METRIC

BASE STEEL NOMINAL THICKNESS (mm)	NOMINAL THICKNESS Z275 COATING (mm)	MASS FOR Z275 COATING (kg/m²)	MIDSPAN SECTION MODULUS ($mm^3 \times 10^3$)	SUPPORT SECTION MODULUS ($mm^3 \times 10^3$)	MIDSPAN MOMENT OF INERTIA ($mm^4 \times 10^3$)	ALLOWABLE SUPPORT REACTIONS	
						END (kN)	INTERIOR (kN)
0.46	0.50	5.334	4.51	4.74	89.5	–	–
0.61	0.65	6.898	6.73	7.19	132.3	–	–
0.76	0.80	8.490	8.61	9.20	181.6	–	–
0.91	0.95	10.082	10.54	10.97	236.1	–	
1.22	1.26	–	–	–	–	–	–

LOADING TABLE

Uniformly distributed load in kPa (kN/m^2)

SUPPORT SPACING (mm)		1-SPAN					2-SPAN					3-SPAN				
		BASE STEEL NOMINAL THICKNESS (mm)					BASE STEEL NOMINAL THICKNESS (mm)					BASE STEEL NOMINAL THICKNESS (mm)				
		0.46	0.61	0.76	0.91	1.22	0.46	0.61	0.76	0.91	1.22	0.46	0.61	0.76	0.91	1.22
1200	B	3.6	5.4	6.9	8.4		3.8	5.7	7.3	8.8		4.7	7.2	9.2	11.0	
	D	f	f	f	f		f	f	f	f		t	t	f	f	
1400	B	2.6	3.9	5.1	6.2		2.8	4.2	5.4	6.4		3.5	5.3	6.7	8.0	
	D	f	f	f	f		f	f	f	f		f	f	f	f	
1600	B	2.0	3.0	3.9	4.7		2.1	3.2	4.1	4.9		2.7	4.0	5.2	6.2	
	D	1.9	2.8	3.8	f		f	f	f	f		f	f	f	t	
1800	B	1.6	2.4	3.1	3.7		1.7	2.6	3.3	3.9		2.1	3.2	4.1	4.9	
	D	1.3	2.0	2.7	3.5		f	f	f	f		f	f	f	f	
2000	B	1.3	1.9	2.5	3.0		1.4	2.1	2.6	3.2		1.7	2.6	3.3	3.9	
	D	1.0	1.4	2.0	2.6		f	f	f	f		f	f	f	f	
2200	B	1.1	1.6	2.0	2.5		1.1	1.7	2.2	2.6		1.4	2.1	2.7	3.3	
	D	0.7	1.1	1.5	1.9		f	f	f	f		f	2.0	f	f	
2400	B		1.3	1.7	2.1			1.4	1.8	2.2		1.2	1.8	2.3	2.7	
	D		0.8	1.1	1.5			f	f	f		1.1	1.6	2.2	f	
2600	B		1.1	1.5	1.8			1.2	1.6	1.9		1.0	1.5	2.0	2.3	
	D		0.7	0.9	1.2			f	f	f		0.8	1.2	1.7	2.2	
2800	B			1.3	1.5			1.1	1.3	1.6			1.3	1.7	2.0	
	D			0.7	0.9			f	f	f			1.0	1.4	1.8	
3000	B			1.1	1.3				1.2	1.4			1.1	1.5	1.8	
	D			0.6	0.8				f	f			0.8	1.1	1.4	
3200	B				1.2				1.0	1.2			1.0	1.3	1.5	
	D				0.6				f	f			0.7	0.9	1.2	
3400	B				1.0					1.1				1.1	1.4	
	D				0.5					f				0.8	1.0	

Top Side (Prepainted)

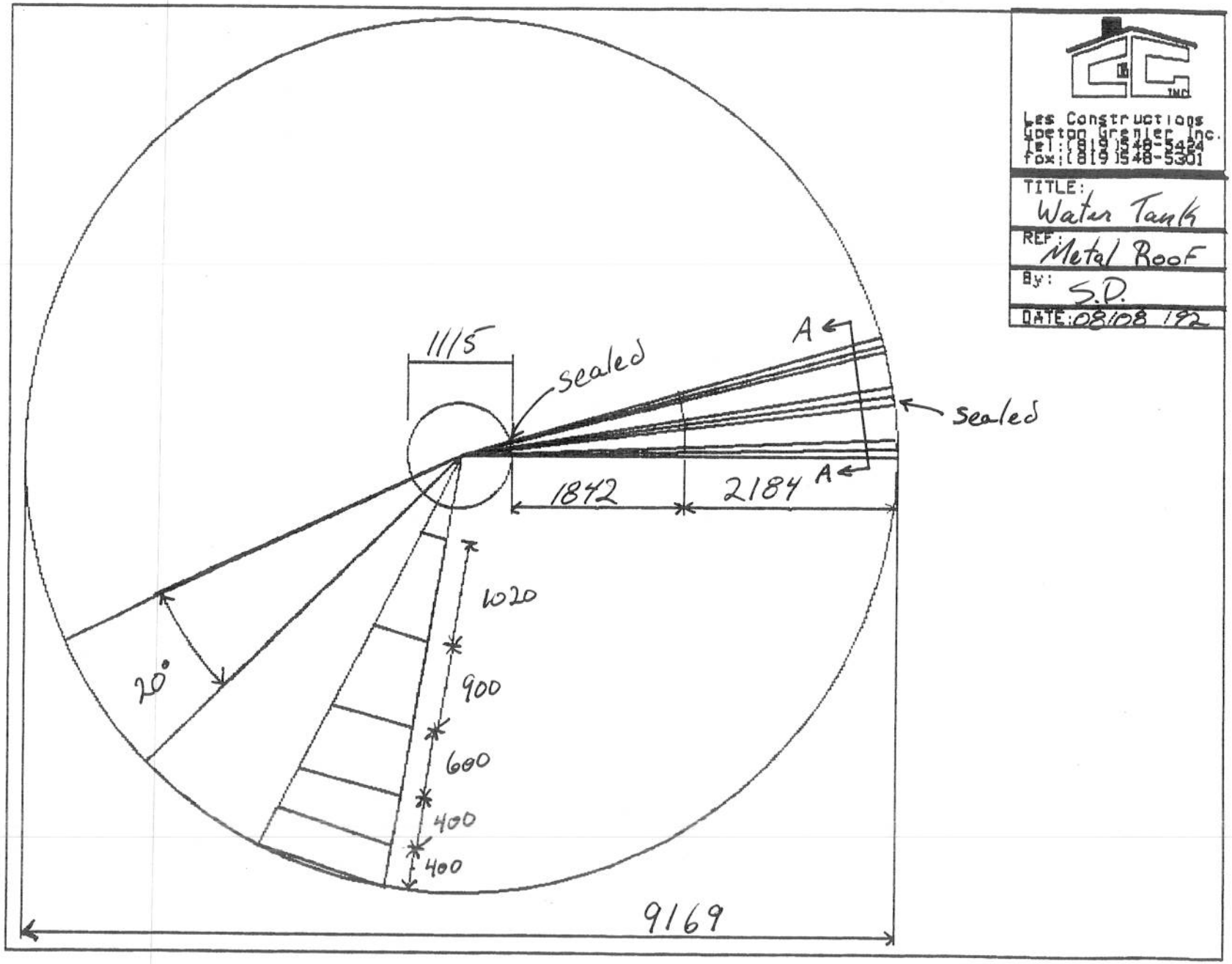
Grade A Steel having a minimum yielding stress of 230 MPa (33 000 psi) and a working stress of 144 MPa (20 625 psi) has been assumed for the above properties and loads.

Figures in row "B" denote total loading for allowable working stress. "*" Values have been reduced for Web Crippling.

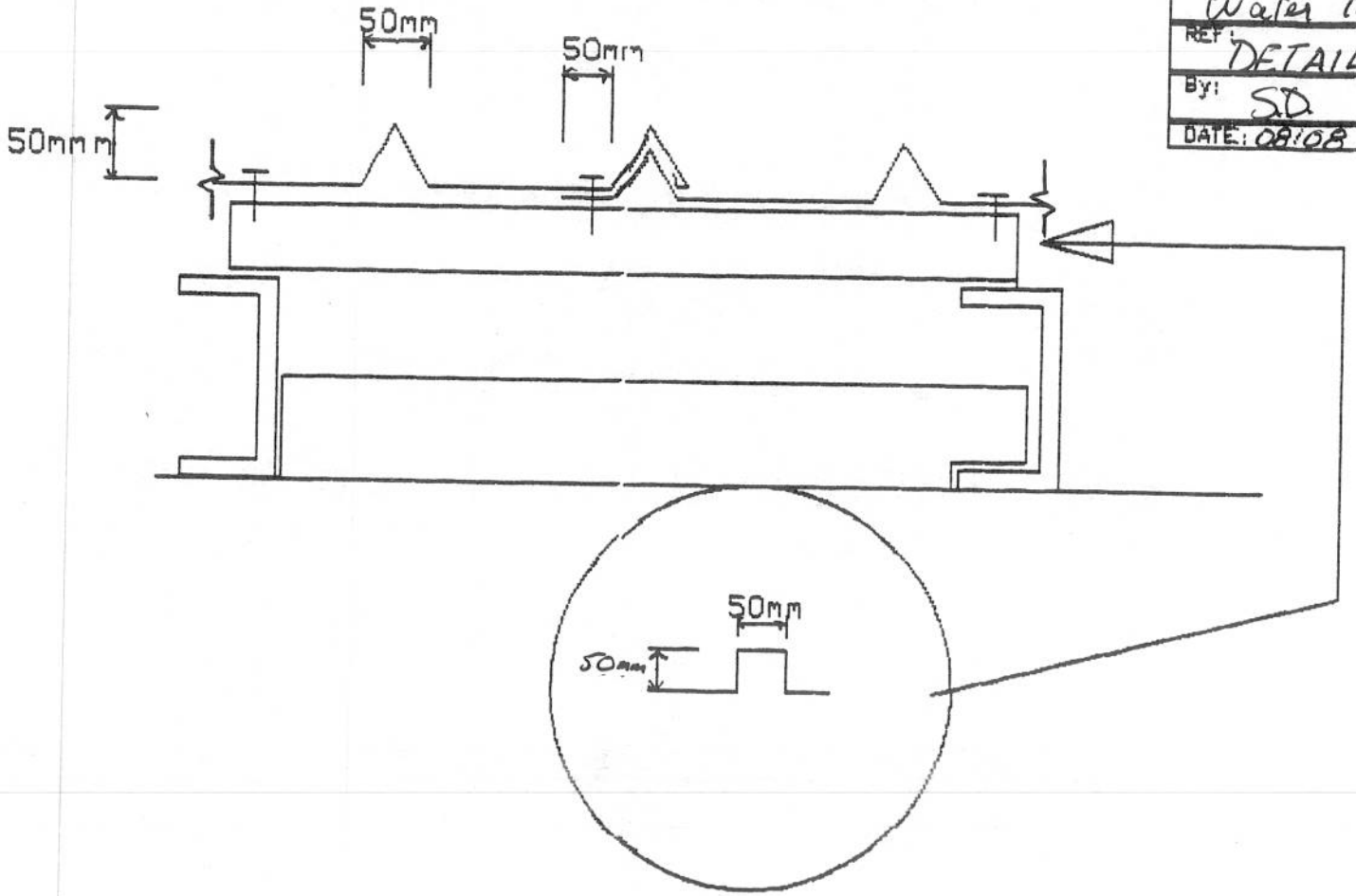
Figures in row "D" denote total loading for allowable deflection of 1/180th span. "f" indicates the load for stress to govern.

For allowable deflection limits of 1/90th span, use the lesser of

VicWest Steel
Branches coast-to-coast


Les Constructions
Yvetpo Grenier Inc.
Tel: (819) 548-5424
Fax: (819) 548-5301
TITLE:
Water Tank
REF:
Metal Roof
By:
S.D.
DATE: 08/08/92
1115
sealed
A
sealed
A
1842
2184
1020
900
600
400
400
20°
9169

METAL ROOFING FIXATION



Les Constructions
Gaetan Grenier Inc.
Tel: (819)548-5424
Fax: (819)548-5301

TITLE: Water Tank

REF: DETAIL "A"

By: SD

DATE: 09/08/92

Glidden

PROTECTIVE MAINTENANCE COATINGS DATA

Converted Epoxy Coating System
For Industrial Use Only & Professional Application Only

GLID-GUARD® Potable Water Epoxy No. 5230 Series

For Potable Water Service

PRODUCT DESCRIPTION

GLID-GUARD Potable Water Epoxy is a two component polyamide epoxy coating tested and approved by the National Sanitation Foundation (NSF) for direct contact with potable water, including immersion service. It is available in white or light gray.

For potable water applications, two or three coats of this product untinted are used without a separate primer. Use of an unauthorized primer or the addition of any tinting colorants will void NSF acceptance of the coating system.

GLID-GUARD Potable Water Epoxy has excellent moisture, abrasion, and chemical resistance. It is suitable for use on metal, masonry, and wood. May be applied directly to ferrous metal, aluminum, and galvanized metal (see SURFACE PREPARATION below).

PRODUCT FEATURES

* Approved by NSF
* Long term flexibility
* Hard and abrasion resistant
* Easy 1:1 mixing ratio
* Excellent alkali and solvent resistance
* Resistant to fresh and salt water immersion
* Tolerant of surface moisture

PRODUCT LIMITATIONS

Will withstand 120°C. (250°F.) continuous and 150°C. (300°F.) intermittent dry heat. Some discoloration may occur as these limits are approached, but the coating will remain intact.

Will chalk and lose gloss on exposure to direct sunlight.

PRODUCTS AVAILABLE

GLID-GUARD Potable Water Epoxy White No. 5230 (Component A)
GLID-GUARD Potable Water Epoxy Light Gray No. 5233 (Component A)
GLID-GUARD Potable Water Epoxy Curing Agent No. 5453 (Component B)
GLID-GUARD Potable Water Epoxy Reducer No. 5569

SURFACE PREPARATION

Surfaces to be painted should be internally dry and cleaned free of dirt, grease, wax, soap or powdery residue, rust or mill scale, and any other contaminants.

TECHNICAL DATA

All data shown is for a mixed (converted) gallon unless otherwise noted.

***Product Number** - 5230/5453
Generic Type - Polyamide epoxy
Colour - White
Sheen - Approximately 80 @ 60°
Type of Cure - Converted
Percent Solids by Volume - 44 ± 1%
Theoretical Coverage per 1.0 dry mil (2.3 mils wet) — 706 sq. ft./gallon U.S.
****Recommended coverage (Calculated)**
Minimum 3.0 mils dry (7.0 mils wet) — 235 sq. ft./gallon U.S.
Maximum 5.0 mils dry (11.5 mils wet) - 141 sq. ft./gallon U.S.
When computing working coverage, allow for application losses, surface irregularities, any solvent addition, etc.

Percent Solids by Weight - 58 ± 1%
Percent Vehicle (Solids) by Weight - 36 ± 1%
Percent Pigment by Weight - 22 ± 1%
Percent Solvent by Weight - 42 ± 1%
Viscosity - 65-70 KU
Weight per Gallon - 9.4 lbs.
Flash Point - (Closed Cup) - Base 5230 - 9°C
Curing Agent 5453 — 20°C
VOC - 3.9 lbs/gallon (470 gm/litre) unreduced
Drying Time - (25°C, 50% R.H.)
Touch - 3 hours Handle- 8 hours Recoat - 16 hours
Full Cure - 7 days (21 Days @ 15°C., 4 days @ 32°C.)
Reduction Solvent - GLID-GUARD Potable Water Epoxy Reducer No. 5569 (if needed)
Clean-up Solvent - GLID-GUARD Potable Water Epoxy Reducer No. 5569
Mixing Ratio (Base: Curing Agent) by Volume - 1:1
Induction Before Use - 30 minutes @ R.H. Less than 70% or surface/material temperature less than 25°C.
60 minutes @ R.H. more than 70% or surface/material temperature 18° - 24°C.
90 minutes @ surface/material temperature 10° - 17°C.
Pot Life - 7 hours @ 27°C., 3 hours @ 38°C.
Tinting - DO NOT TINT

* Compositional data for other products in this series may differ slightly.
** As measured over the peaks of any blast profile or surface projections.

Ferrous Metal Surface
For immersion service or other aggressive environments, abrasive blast ferrous metal to White Metal (SSPC-SP5-82) or Near White Metal (SSPC-SP10-82). Commercial Blast (SSPC-SP6-82) Power Tool Cleaning (SSPC-SP3-82), or Hand Tool Cleaning (SSPC-SP2-82) may be used in mild exposure conditions. **NOTE:** Unless ground smooth, irregular weld seams should be double primed. Treat with a brush coat of 5230/5453 reduced 25% with Glid-Guard Potable Water Epoxy Reducer No. 5569 just prior to spray application of first coat. **Do not add any other thinner or reducer.**

Non-Ferrous Metal (Galvanized, Aluminum)
Non-ferrous metals must be cleaned free of dirt, oil, grease, and any other contaminants. Abrasive blasting is not necessary.

Wood
Sand smooth and dust clean.

Poured Concrete
Verify that surface projections have been leveled by grinding, stoning, or scraping. Remove weak or powdery surfaces. Clean to remove form release oil or parting compound. Patch voids and cracks with patching material approved for potable water service. **NOTE:** Prime poured concrete with this product reduced 25% by volume with GLID-GUARD Potable Water Epoxy Reducer No. 5569. **Do not add any other thinner or reducer.**

Previously Painted Surfaces
The performance of this coating over previously painted surfaces is directly influenced by the type, age, and condition of the old coating. For best results in immersion situations, completely remove any old coating. For non-immersion service, remove all blistered, loose, or peeling old coating. Hard or glossy finishes should be dulled by sanding or other abrasive means. Apply to a test area; If wrinkling or lifting occurs after overnight drying, remove the old coating.

MATERIAL PREPARATION

Do not tint with DRAMATONE® or any other colorants. Combine White No. 5230 (Component A) or Light Gray No. 5233 (Component A) with Curing Agent No. 5453 (Component B) in equal parts by volume using power agitation. Allow the mixed material to stand 30 minutes before use. Extend this induction (standing) time to 60 minutes if the relative humidity is above 70% or the surface or material temperature is 18° - 24°C is (65° - 70°F.) and to 90 minutes if the surface or material temperature is 10° - 17°C (50° - 64°F.) Thinning is not recommended for brush or roller application. If necessary to obtain satisfactory application properties when spray applying, use GLID-GUARD Potable Water Epoxy Reducer No. 5569 only, not exceeding 10% by volume of converted (mixed) material. **The addition of reducers other than No. 5569 will void the NSF approval for the coating, as will the use of other curing agents or mixing with other paints.** Pot life is 7 hours at 27°C (80°F.), 3 hours at 38°C (100°F.) **NOTE:** Application after the pot life has been exceeded will result in unacceptable sag resistance.

APPLICATION

May be applied by brush, roller, or airless spray. **Do not apply when surface or material temperature is below 10°C. (50°F.)**

For bare metal, three coats of No. 5230/5453 at 3.0 dry mils per coat or two coats of No. .5230/5453 at 5.0 dry mils per coat are required for immersion service. For bare poured concrete, one reduced prime coat of No. 5230/5453 **(see SURFACE PREPARATION-Poured Concrete above)** followed by two coats of No. 5230/5453 at 5.0 dry mils per coat are recommended. Coats of alternating colors (Light Gray and White) should be used since the color contrast will help prevent holidays and thin spots. The color of the first coat should be selected to provide maximum contrast to the color of the substrate. **Other primers are not required and cannot be used for potable water service.**

IMPORTANT NOTE: Polyamide epoxy coatings may yellow excessively and/or dry with substandard gloss under certain application and drying conditions. To minimize the possibility of this happening, always:

1. Use power agitation when combining Nos. 5230 and 5453 (do not box or stir).
2. Allow the mixed material to stand for 60 minutes before use if the relative humidity is above 70% or the surface or material temperature is 18° - 24°C. (65° - 75°F.) and for 90 minutes if the surface or material temperature is 10°-17°C. (50° - 64°F.).
3. Make any solvent addition after the induction (standing) period.
4. Avoid application at relative humidities above 75% when possible.
5. Avoid application in acid fume or gas fume environments (which often result from the use of portable kerosene heaters).
6. Avoid using if the pot life has been exceeded.

SPRAY APPLICATION

Airless Spray
Fluid Tip: 517
Pressure: 1600-1700 psi
All pumps must be kept well away from areas where vapors from this product may collect.

COVERAGE

Theoretical per coat coverage : 235 sq. ft./gallon at 3.0 mils dry (7.0 mils wet) or 144 sq. ft./gallon at 5.0 mils dry (11.5 mils wet). When computing working coverage, allow for application losses, surface irregularities, any solvent addition, etc.

DRYING

Dries to touch in 3 hours, to handle in 8 hours, to recoat in 16 hours, to full cure in 7 days at 25°C. (77°F.), 50% relative humidity. Allow longer drying times under cooler or more humid conditions. 21 days are required for full cure at 15°C. (60°F.)

RECOMMENDED CURING FOR POTABLE WATER SERVICE

1. Normally, full curing of this product will take place in 7 days at 25°C. (77°F.) More time is required at lower temperatures. For example, at 15° C (60°F.) 21 days are required to reach full cure.

2. Force curing is recommended when the coating is to be used for potable water service in order to insure the complete removal of solvents and odor. Force curing is strongly recommended if the surface temperature is in the range of 10°-17°C. (50°-64°F.) and for enclosed tanks. Force curing is required when the coat surface is to be immersed before the 7 day room temperature curing can take place.

3. Curing schedules to be used as a guide for time and work planning are listed below. Prior to subjecting the coat surface to the force curing metal temperature, the coating must be air dried for 2-5 hours at temperatures between 20°C. (70°F.) and 40°C. (100°F.). After the air dry period has elapsed, the temperature should be raised in increments of approximately 20°C. (40°F.) every 30 minutes until the desired force cure metal temperature is reached. "Curing Time" in the schedule below indicates the time required after the metal temperature is reached. It does not include the time spent bringing the metal to the force curing temperature.

Metal Temperature	Curing Time
150°F. (65°C.)	12 hours
175°F. (80°C.)	10 hours
200°F. (93°C.)	6 hours
225°F. (107°C.)	4 hours

4. Approximate final cure of the material is indicated when the surface is hard and cannot be marred by the fingernail. 10 minutes exposure to methyl isobutyl ketone (MIBK) should result in only slight softening.

5. Before filling potable water tanks, rinse thoroughly with fresh water to remove any traces of solvent. This will insure that the coating will not impart taste, odor, or color to the water.

CLEAN-UP

Clean all equipment immediately after use with GLID-GUARD Potable Water Epoxy Reducer No. 5569.

LIMITATION OF LIABILITY

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance but are subject to change without prior notice. We guarantee our product to conform to Glidden's specifications. WE MAKE NO OTHER WARRANTY OR GUARANTEE OF ANY KIND EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. Liability, if any, is limited to replacement of the product or refund of the purchase price. LABOR OR COST OF LABOR AND OTHER CONSEQUENTIAL DAMAGES ARE HEREBY EXCLUDED.

FOR BEST RESULTS AND SAFEST USAGE, USER IS SPECIFICALLY DIRECTED TO CONSULT THE CURRENT MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

EMERGENCY PHONE: (416) 669-1020

WARNING! FLAMMABLE. VAPOR HARMFUL — MAY IGNITE EXPLOSIVELY. CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.

Keep away from heat, sparks and flame. Do not smoke. Vapors may ignite explosively. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before use and until all vapors are gone. Vapors may spread long distances. When spray applying in confined or enclosed areas, use portable explosion-proof lighting and ventilating equipment connected to exterior self-contained power source. Non explosion-proof equipment must be placed well away from areas where vapors may collect. Use non-ferrous tools and wear conductive and non-sparking shoes in areas where explosion hazards exist. Keep closures tight and upright to prevent leakage. Keep container closed when not in use. Store below 40°C. (100°F.) **Do not** incinerate closed containers as they may explode when exposed to extreme heat or fire. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Avoid contact with eyes and skin. Impervious clothing, footwear and equipment including gloves and splash-proof goggles should be worn, especially when spray applying. **Do not** take internally.

Avoid breathing of vapor, spray mist or sanding dust. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. Follow respirator manufacturer's directions for respirator use.

FIRST AID: In case of skin contact, wash off **quickly** with plenty of water, then soap and water; remove contaminated clothing. For eye contact, flush **immediately** with large amounts of water, especially under lids, for at least 15 minutes. **Obtain emergency medical treatment.** If swallowed, **GET MEDICAL ATTENTION IMMEDIATELY.** If inhalation causes physical discomfort, remove to fresh air. Restore and support continued breathing. Have trained person give oxygen if necessary. If discomfort persists or any breathing difficulty occurs, **GET EMERGENCY MEDICAL ASSISTANCE.**

USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN.

NOTICE: Reports have associated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

CAPE DORSET WATER STORAGE TANK

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UNIVERSAL INDUSTRIES LTD.
BOX 1590, LLOYDMINSTER, SASK. ALTA. S9V 1K5 (403) 875-6161 FAX (403) 875-6169

CAPE DORSET WATER STORAGE TANK

GENERAL SPECIFICATIONS

Inside Diameter:	8,900 mm (29'2-3/8")
Shell Height:	9,000 mm (29'6-5/16")
Floor Material:	5/16" thick, A-36
Shell Material:	3/16" thick, A-36
Roof Material:	3/16" thick, A-36
Pipe:	A-53-B ERW sch. std.
Flanges:	A-105 150# flat faced

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CAPE DORSET WATER STORAGE TANK

LIST OF SUPPLIERS

Items Supplied	Supplier
Hattersley Valves	Westland Industrial Supply 3691 - 98th Street Edmonton, AB T6E 5N2 Phone: 1-800-661-0273
Dezurik Valves	Dezurik of Canada 385 Franklin Boulevard Cambridge, ON N1R 5V5 Phone: (519) 621-8980
Dupont Sclairpipe	Perma Engineering Sales Ltd. Box 735 Martinsville, SK S0K 2T0 Phone: (306) 931-2900
Grinnel Clamps	Grinnel Corporation Box 2285 11340 - 120th Street Edmonton, AB T5G 0W5 Phone: (403) 452-9841

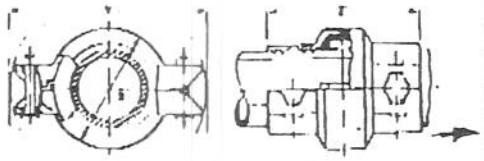
Victaulic® Couplings

Victaulic® couplings are a simple, mechanical method of joining SCLAIRPIPE without fusion providing reliable and leak-free joints. They allow for the joining of plain end pipe and fittings without preparation or special equipment. The two housings that make up the Victaulic coupling are cast in ductile iron and are bolted together, metal-to-metal with oval neck track head bolts allowing tightening of the nuts from one side with a single wrench until the housing bolt pads meet.

The Victaulic coupling has been designed to meet or exceed the maximum working pressure of the pipe itself, and has been proven through extensive field testing and installation experience. The couplings are printed with orange enamel or optional zinc coating.

TABLE 15

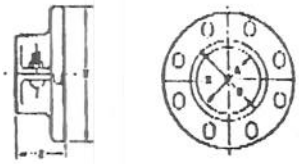
STYLE 995 VICTAULIC® COUPLING



Style 995 coupling is designed for joining plain end Sclairpipe together

Nominal Pipe Size	Pipe O.D.	COUPLING DIMENSION 'x' dia.	y	z	BOLT DIMENSIONS Number	Dia. x Length	Assembled Coupling Weight
2"	2.375"	3.640"	5.813"	3.620"	2	0.500" x 2.500"	3.6 lb.
3"	3.500"	4.625"	5.813"	4.560"	4	0.500" x 2.750"	7.7 lb.
4"	4.500"	5.875"	7.750"	5.750"	4	0.500" x 2.750"	11.6 lb.
6"	6.625"	8.000"	10.500"	5.875"	4	0.625" x 3.250"	16.4 lb.
8"	8.625"	10.188"	13.000"	6.000"	4	0.625" x 3.250"	24.9 lb.
10"	10.750"	12.375"	15.813"	6.500"	4	0.750" x 5.000"	37.4 lb.
12"	12.750"	14.375"	17.750"	7.000"	4	0.875" x 5.000"	49.0 lb.
14"	14.000"	16.250"	21.000"	7.750"	4	0.875" x 7.000"	81.0 lb.

STYLE 994 VICTAULIC® FLANGE

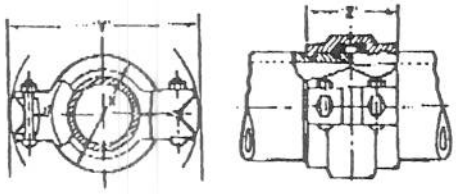


Flange Style 994 permit directly joining Sclairpipe to flanged valves, pumps and other equipment. Housing teeth grip into Sclairpipe as assembled. Flange face mates to ANSI Class 125 or 150 flanges using standard Victaulic Flange pressure responsive gasket (supplied).

FLANGE NOMINAL SIZE Inches	DIMENSIONS BOLTS AND NUTS COUPLING SIZE Inches	NO. REQ'D.	FLANGE TO FLANGE SIZE Inches	NO. REQ'D.	VICTAULIC® FLANGE 'X' Inches	'Z' Inches	SEALING SURFACE (MAX.) 'A'	(MIN.) 'B'	APPROX. WT. EA. lbs.
4	5/8 x 1 3/4	2	5/8 x 2 3/4	8	9	3 3/8	4 1/2	5 25/32	12.5
6	3/4 x 2 1/4	2	3/4 x 3	8	11	4	6 5/8	7 31/32	17.3
8	3/4 x 2 1/4	2	3/4 x 3	8	13 1/2	4 1/2	8 5/8	10	30.8

1. Standard flange bolts not supplied with Victaulic Flange.
2. Victaulic Flange uses Victaulic Pressure Responsive Gasket, Standard Flange Gasket not required.
3. Minimum/Maximum sealing surface on mating flange *must* be available for proper gasket sealing. Entire area must be flat. Heavy serrated (Phonograph Record) finishes are not acceptable. When used with rubber seated Water Butterfly Valves, a flat metal adapter plate is needed. Contact KWH Pipe for details.

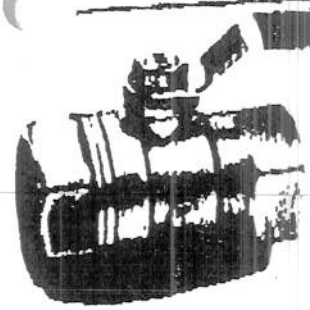
STYLE 995T TRANSITION COUPLING



Style 995T coupling provides a transition from Sclairpipe to steel pipe or fittings. The key section on the steel side of the housing engages a specially grooved fitting. No. 43HT or No. 42HT shown below.

Nominal Size Inches	Pipe-Inches Outside Diameter	Coupling Dimensions X	Y	Z Inches	Approx. Wgt. Ea. Lbs.
2	2.375	3 1/8	6 13/16	3 1/8	3.5
3	3.500	4 1/8	6 13/16	4 9/16	7.7
4	4.500	5 7/8	7 3/4	5 3/4	11.8
6	6.625	8	10 1/2	5 7/8	16.4
8	8.625	10 3/16	13	6	24.9
10	10.750	12 3/8	15 13/16	6 1/2	37.4
12	12.750	14 3/8	17 3/4	7	49.0

SUPERBALL from NEWMAN HATTERSLEY LTD., CANADA



The SUPERBALL is a super ball valve with all the most-wanted features usually found in only more expensive valves. Features such as:

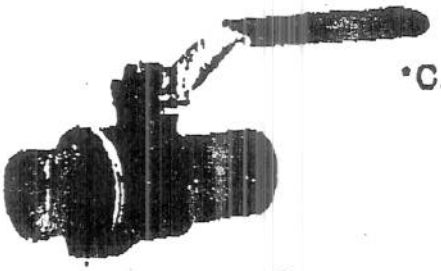
- **Large ports** to minimize pressure drop, turbulence.
- P.T.F.E. seats, stem packing seal, and thrust washer to assure long life.
- SUPERBALLS have a bottom loaded, pressure-retaining stem of rugged construction.
- Each SUPERBALL is tested twice: air under water; in the open and in the closed position.
- Self-cleaning chrome-plated brass ball for erosion resistance and durability.
- Fast, quarter-turn operation.
- Non-heat vinyl grip on cadmium plated steel handle.
- Can be installed with flow in either direction.
- Compact design for installation ease.

*1969 THREADED ENDS

Fig. 1969 CGA - THREADED ENDS

*C.G.A. APPROVED FOR USE WITH NATURAL AND PROPANE GAS

-30°C to 65°C at 125 P.S.I.G. MAX. (1/2" - 2")

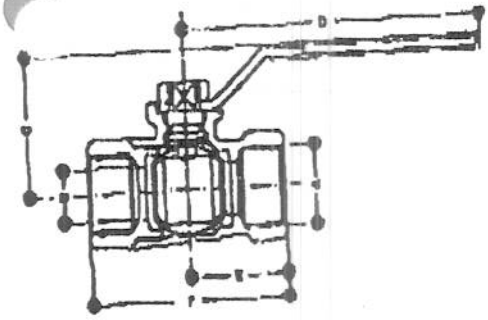


*1979 SOLDER ENDS

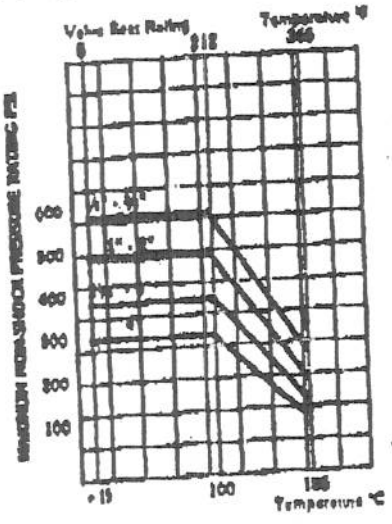
Dimensions in Inches

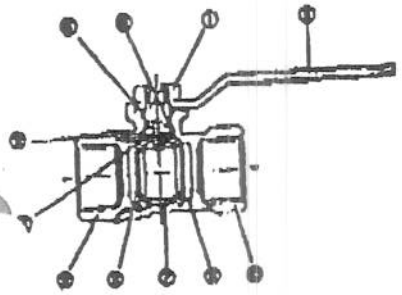
Valve	*1969 A	B	C	D	E	F	*1979 A	B	C	D	E	F	Cv Factor Imperial
1/4"	.315	1.028	1.733	.768	1.535	1/4"							7.66
3/8"	.394	1.260	3.031	.886	1.772	3/8"							7.79
1/2"	.500	1.327	3.070	1.063	2.126	1/2"	.500	1.327	3.070	1.184	2.848		11.87
3/4"	.687	1.791	3.386	1.280	2.441	3/4"	.687	1.791	3.386	1.575	3.150		51.41
1"	.891	1.913	3.386	1.476	2.953	1"	.891	1.913	3.386	1.911	3.822		69.8
1-1/4"	1.109	2.114	3.386	1.654	3.307	1-1/4"	1.109	2.114	3.386	2.126	4.250		86.6
1-1/2"	1.378	2.244	4.843	1.831	3.661	1-1/2"	1.378	2.244	4.843	2.437	4.874		121.2
2"	1.772	2.540	4.843	2.106	4.213	2"	1.772	2.540	4.843	2.990	5.980		184.99
2-1/2"	2.264	3.476	5.827	2.815	5.630	2-1/2"	2.264	3.476	5.827	3.500	7.000		279.3
3"	2.677	3.811	5.827	3.071	6.142	3"	2.677	3.811	5.827	4.800	8.000		313.1
4"	3.543	4.461	5.827	4.016	7.992	4"							534.6

The Cv Factor is the Gallons of water per minute passed through the valve with 1 PSI pressure drop.



	Material Specification	
1	Lever nut	Zinc plated steel
2	Lever	Zinc plated steel vinyl coated
3	Stem packing	P.T.F.E.
4	O-Ring	Viton
5	Stem thrust	P.T.F.E.
6	Stem	Brass OT 58 UNI 5705-65 (BS 2872 CZ 122)
7	Ball	Diamond finished brass, nickel chrome plated
8	Seats	P.T.F.E.
9	End Connector	Forged brass OT 58 UNI 5705-65 (BS 2872 CZ 122)
10	Body	Forged brass OT 58 UNI 5705-65 (BS 2872 CZ 122)





Pressure Rating

1/4"-3/4"	600 lbs. W.O.G. non-shock
1"-2"	500 lbs. W.O.G.
2-1/2"-3"	400 lbs. W.O.G.
4"	300 lbs. W.O.G.

All sizes rated at 150 W.S.P.

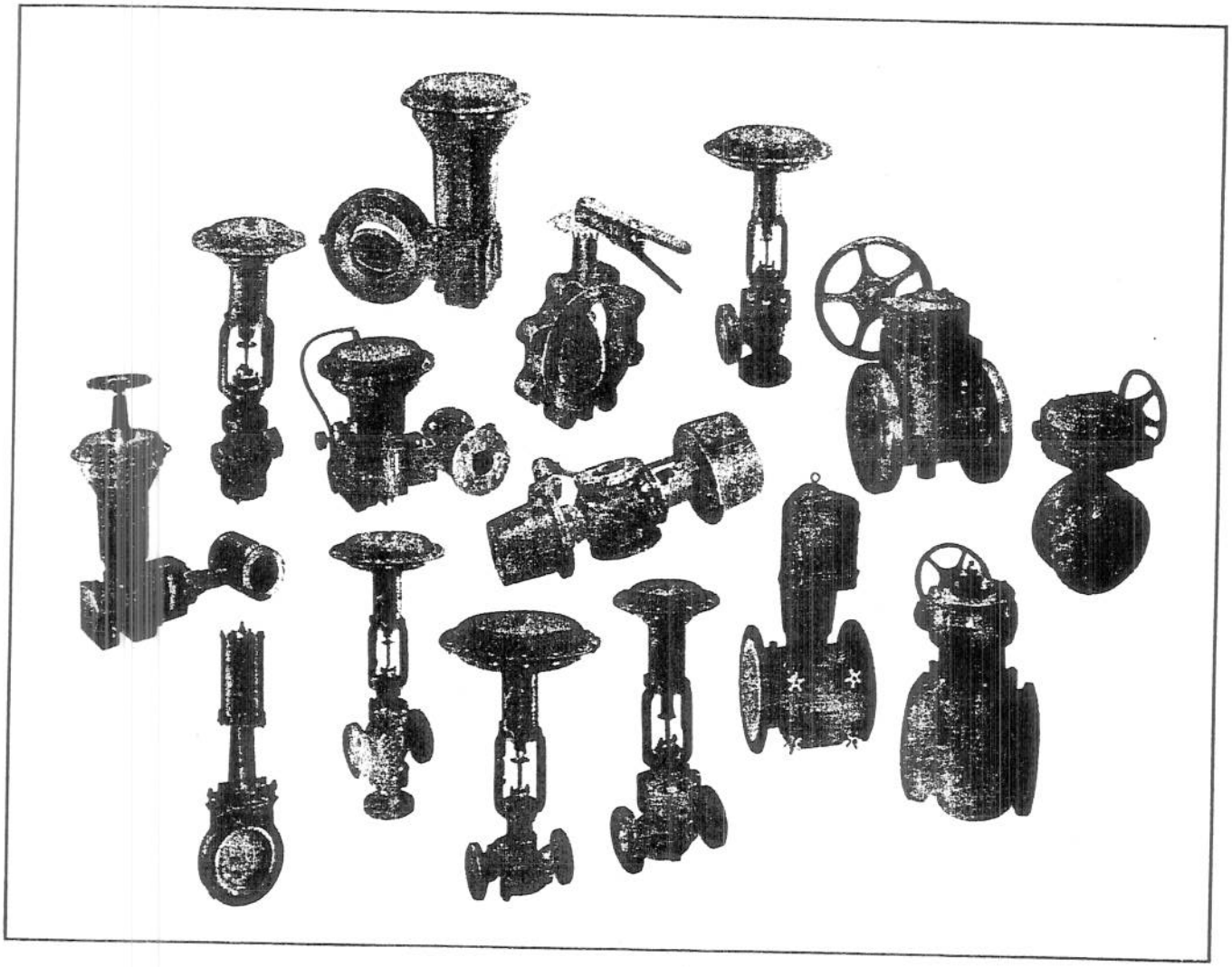
HEAD OFFICE
#1, 9738 - 61 Avenue
EDMONTON, Alberta
T6E 0A6

#205, 259 Midpark Way S.E.
CALGARY, Alberta
T2X 1M2
(403) 278-0222

#46, 2400 Lucknow Drive
MISSISSAUGA, Ontario
L5S 1V2
(416) 676-2670

4379 Gilles Street
PIERREFONDS, PQ
H9H 2N1
(514) 624-4388
FAX (514) 624-4389

DeZURIK® DRAWINGS



DeZURIK
250 Riverside Avenue
Sartell, MN 56377
Phone 612/259-2000
Fax 612-259-2227

DeZURIK Canada Ltd.
P.O. Box 1300
Cambridge, Ontario NIR 5V5
Canada
Phone 519/621-8980
Fax 519-621-3006

DeZURIK GS
A UNIT OF GENERAL SIGNAL

THESE DR GS CERTIFIED FOR

A UNIT O. ERIK ENERAL SIGNAL

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E 1

479251-0 2
UNIVERSAL INDUSTRIES
P.O. BOX 1590

YOUR ORDER NO P4438
DEZ ORDER NO 095716 REV-

LLOYDMINSTER AB S9V-1

DEZ ITEM	CUST ITEM	QTY	PRODUCT DESCRIPTION	PART NO. 9229556
01-C		2	0600,FIG632,L,D,RS66,3,KWG3N,MSX003.	

SIZE	0600	6 INCH
FIGURE NUMBER	FIG632	RESILIENT SEATED BUTTERFLY VALVE,CAST IRON CONSTRUCTION
END STYLE	L	LUGGED (2-20 INCH SINGLE FLANGE) (24-36 INCH DOUBLE FLANGED)
PACKING 2	D	NORDEL (TERPOLYMER OF ETHYLENE PROPYLENE)
RUBBER MATL	RS66	NORDEL (TERPOLYMER OF ETHYLENE PROPLENE)
TRIM	3	316 SST DISC, 316 SST SHAFT, TFE COATED SST BRGS IN2"-20", REINFORCED TFE BRGS IN 24"-36"
ACTUATOR	KWG3N	2 INCH SQUARE NUT;WEATHERPROOF
PROD. MOD.	MSX003	TYPE 416 STAINLESS STEEL SHAFT 225 PSI CWP (AND TO INCLUDE FIG655 FLANGE SEALS 4 IN AND LARGER)

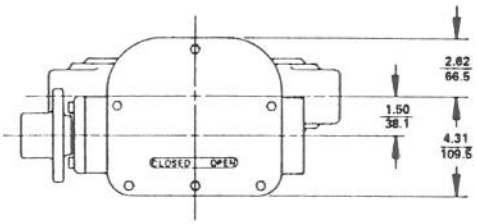
DRAWING NUMBER	DRAWING DESCRIPTION
A22063	DWG INST L G3N
A20806	DWG VALVE ASSY L RS BFLY
A21219	DWG ACT G3H-W-L-N
D10035	IM VALVE RS BFLY
D10004	IM ACT MAN ROTARY T-BOX

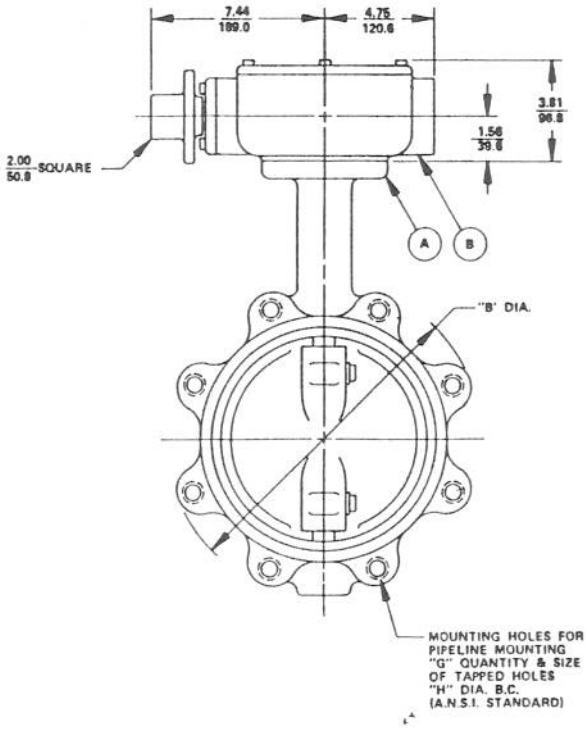
VALVE SIZE	DIMENSIONS INCHES / MILLIMETERS									
	A	B	C	D	E	F	G	H	J	K
2	1.56 / 39.6	6.00 / 152.4	2.94 / 74.7	5.50 / 139.7	.50 / 12.7	5.06 / 128.5	4 / 5/8 – 11 UNC	4.75 / 120.6	NOT REQ'D	NOT REQ'D
2 1/2	1.75 / 44.4	6.75 / 171.4	3.19 / 81.0	6.12 / 155.4	.50 / 12.7	5.69 / 144.5	4 / 5/8 – 11 UNC	5.50 / 139.7	NOT REQ'D	NOT REQ'D
3	1.75 / 44.4	7.25 / 184.2	3.50 / 88.9	6.50 / 165.1	.50 / 12.7	6.06 / 153.9	4 / 5/8 – 11 UNC	6.00 / 152.4	.25 / 6.4	3.44 / 87.4
4	2.00 / 50.8	8.75 / 222.2	4.12 / 104.6	7.12 / 180.8	.62 / 15.7	6.62 / 168.1	8 / 5/8 – 11 UNC	7.50 / 190.5	.25 / 6.4	4.38 / 111.3
5	2.06 / 52.3	10.00 / 254.0	4.75 / 120.6	7.12 / 180.8	.75 / 19.0	6.56 / 166.6	8 / 3/4 – 10 UNC	8.50 / 215.9	.12 / 3.0	5.44 / 138.2
6	2.06 / 52.3	11.00 / 279.4	5.50 / 139.7	8.62 / 218.9	.75 / 19.0	8.06 / 204.7	8 / 3/4 – 10 UNC	9.50 / 241.3	.12 / 3.0	6.44 / 163.6

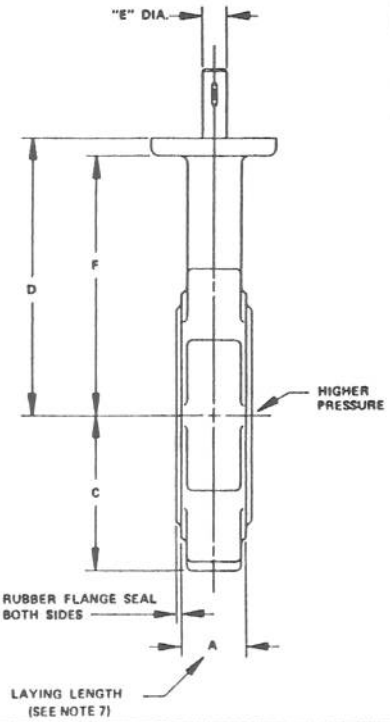
A	VALVE ASSEMBLY
B	ACTUATOR

NOTES:

1. VALVE FITS CLASS 125 AND 150 A.N.S.I. STANDARD FLANGES.
2. FOR FLANGES OTHER THAN A.N.S.I. STANDARD SEE A-17173 FOR DIMENSIONS.
3. DO NOT USE GASKETS BETWEEN VALVE AND MATING FLANGES.
4. FLOW MAY BE IN EITHER DIRECTION. INSTALL VALVE WITH THE HIGHER PRESSURE AT THE END SHOWN ON DRAWING.
5. WHEN USING NOMINAL TUBE SIZE PIPING USE HARD ASBESTOS GASKETS TO PROVIDE DISC SWING CLEARANCE. GASKETS TO BE "J" THICK WITH "K" I.D.
6. 9 TURNS OF WRENCHING SQUARE TO OPEN VALVE.
7. WHEN FIG. 655 FLANGE SEALS ARE USED WITH VALVE, LAYING LENGTH (DIMENSION "A") INCREASES BY .19 INCHES (4.8 MILLIMETERS).







ACTUATOR MOUNTING POSITIONS

STANDARD POSITION SHOWN ON THIS DRAWING

90° POSITION

180° POSITION

270° POSITION

USED ON

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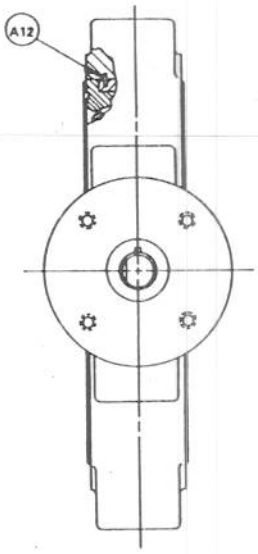
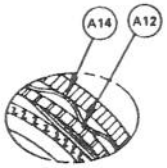
CRAWLINGTON, ENGLAND

2-6 LUGGED FIG. 632 R.S. BUTTERFLY VALVES
K_G3N NUT ACTUATED

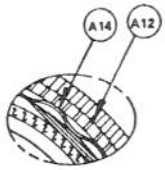
DOCT. CODE	DRAWN	APPROVED	A-22063
1	CHECKED	DATE	
	DH	RKB	
	TWB	11-15-80	

NO.	PART NAME	QTY.
A1	BODY	1
A2	DISC	1
A3	SHAFT	1
A4	SEAT	1
A5	BEARING	3
A6	SEAL	3
A7	PIN (2 – 3 VALVES)	1
A7	PIN (4 – 20 VALVES)	2
A8	WASHER (4 – 20 VALVES)	2
A9	NUT (4 – 20 VALVES)	2
A10	PLUG	1
A11	KEY	1
A12	SEAT RETAINING RING (2 – 10 VA.)	2
A12	SEAT RETAINING RING (12 – 20 VA.)	1
A13	BACK-UP RING	2
A14	SPRING (2 – 10 VALVES)	2
A14	SPRING (12 – 20 VALVES)	1

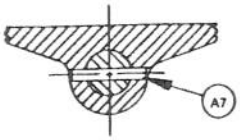




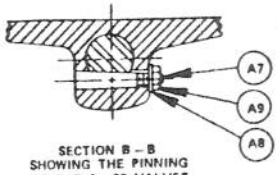
DETAIL "C"
SHOWING 2 – 10 VALVE
CONSTRUCTION



DETAIL "C"
SHOWING 12 – 20 VALVE
CONSTRUCTION



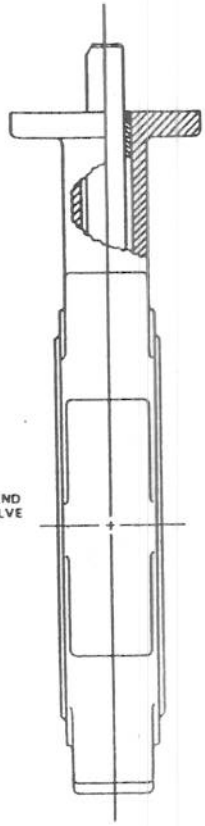
SECTION B – B
SHOWING THE PINNING
OF THE 2, 2 1/2 & 3 VALVES



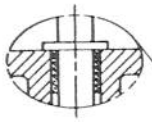
SECTION B – B
SHOWING THE PINNING
OF THE 4 – 20 VALVES

NOTES:

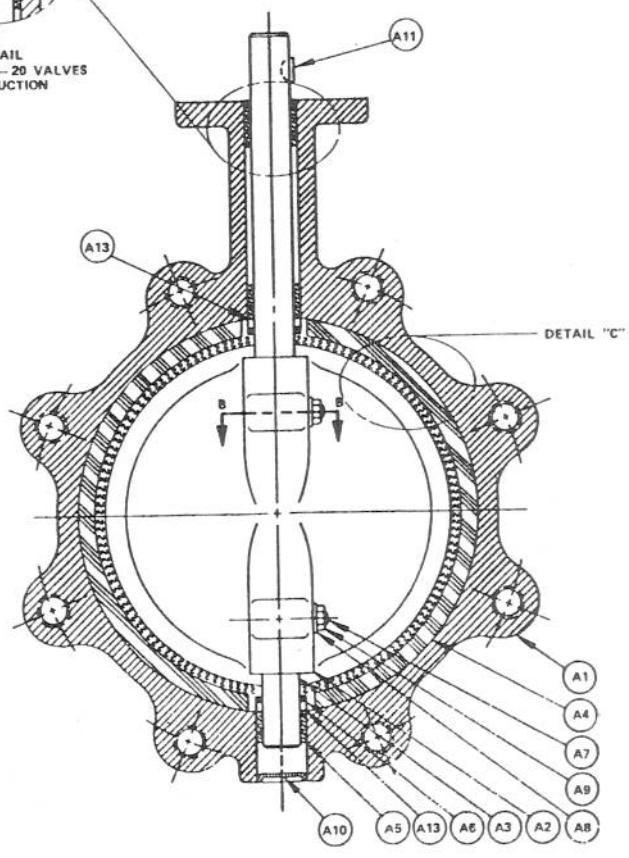
1. RECOMMENDED SPARE PARTS ARE ITEMS NO. A4 NO. A6, NO. A12, NO. A13, & NO. A14.
2. WHEN ORDERING PARTS, GIVE VALVE SIZE AND MODEL NUMBER. ALSO GIVE DRAWING NUMBER WITH PART NAME, ITEM NUMBER AND QUANTITY.



SEAT END
OF VALVE



DETAIL
SHOWING 16 – 20 VALVES
CONSTRUCTION



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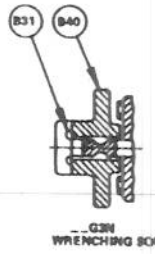
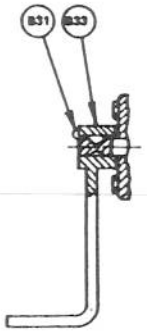
7 – 20 LUGGED VALVE ASSEMBLY
FIG. 632 BUTTERFLY VALVES

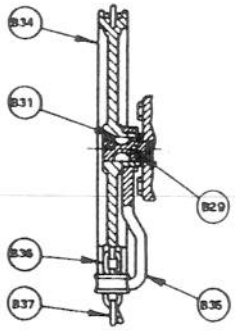
DOCT. CODE	DRAWN TC	APPROVED Rust	A-20806
	CHECKED TWD	DATE 3/26/79	



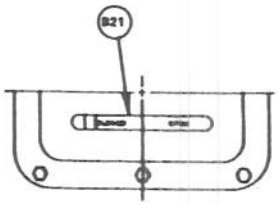
__G3N
WRENCHING SQUARE



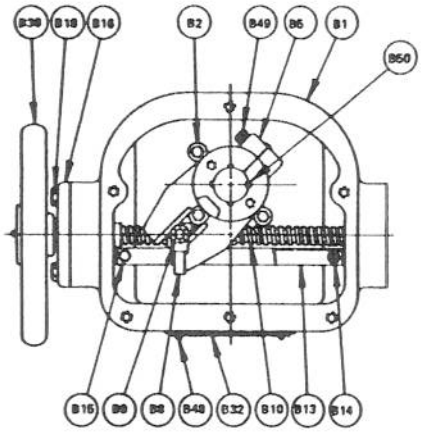
__G3L
CRANK ACTUATOR

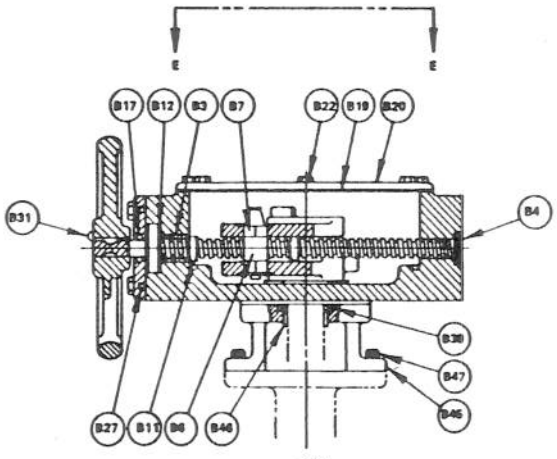


__G3W
CHAINWHEEL ACTUATOR



VIEW E-E





__G3H
HANDWHEEL ACTUATOR

	PART NAME	QTY
	HOUSING	1
B2	SCREW	4
B3	BEARING (HOUSING)	1
B4	EXPANSION PLUG	1
B5	YOKE	1
B6	YOKE NUT	1
B7	BEARING	2
B8	POINTER	1
B9	RETAINER	2
B10	SHAFT	1
B11	STOP NUT	2
B12	THRUST BEARING	2
B13	GUIDE RAIL	1
B14	SPACER	2
B15	SCREW	2
B16	THRUST PLATE	1
B17	O- RING (EXCEPT _EG3_ ACT'R)	1
B18	SCREW	4
B19	GASKET (_WG3_ & _BG3_ ACT'R)	1
B20	COVER (SEE NOTE)	1
B21	WINDOW (EXCEPT _BG3_) (SEE NOTE)	1
B22	SCREW (_EG3_ACT'R) (SEE NOTE)	3
B22	SCREW (_WG3_ACT'R) (SEE NOTE)	6
B23		
B24		
B25		
B26		
B27	O-RING (EXCEPT _EG3_ ACT'R)	1
B28		
B29	PIN	1
B30		
B31	KEY (_G3L, _G3H & _G3W ACT'R)	1
B31	KEY (_G3N ACT'R)	2
B32	DATA PLATE	1
B33	CRANK	1
B34	CHAINWHEEL	1
B35	CHAIN GUIDE	1
B36	CHAIN	–
B37	CLOSING LINK	1
B38	HANDWHEEL	1
B39	SEAL (MWG3_ & MBG3_ ACT'R) (NWG3_ & NBG3_ ACT'R)	1
B40	WRENCHING SQUARE	1
B45	BRACKET (M_G3_ ACTUATOR) (N_G3_ ACTUATOR)	1
B46	BEARING (M_G3_ ACTUATOR) (N_G3_ ACTUATOR)	1
B47	SCREW (N_G3_ ACTUATOR)	4
B47	SCREW (M_G3_ ACTUATOR) (SEE NOTE 4)	4
B48	DRIVE SCREW	2
B49	SCREW	1
B50	KEY (M_G3_ ACTUATOR) (SEE NOTE 5)	1

NOTES:
1. RECOMMENDED SPARE PARTS ARE ITEMS NO. B17, B19, B27, B31 & B38.
2. ITEMS NO. B20, B21 & B22 ARE OMITTED WHEN SWITCH ACCESSORIES ARE FURNISHED.
3. WHEN ORDERING PARTS REFER TO VALVE SIZE AND MODEL NUMBER ON DATA PLATE. ALSO GIVE DRAWING NUMBER WITH PART NAME, ITEM NUMBER AND QUANTITY.
4. ON THE 1–4 FULL BORE VALVES AND 1 1/2–6 (EXCEPT 3 & 4 FIG. 661, 662) STANDARD BORE VALVES ITEM NO. B47 (SCREW) IS NOT REQUIRED. BRACKET MOUNTS TO VALVE USING GLAND BOLTS (ITEM NO. A23) ON VALVE ASSEMBLY.
5. ON VALVE PRODUCT LINES OTHER THAN V-PORT BALL VALVES, KEY IS STOCKED WITH VALVE ASSEMBLY.

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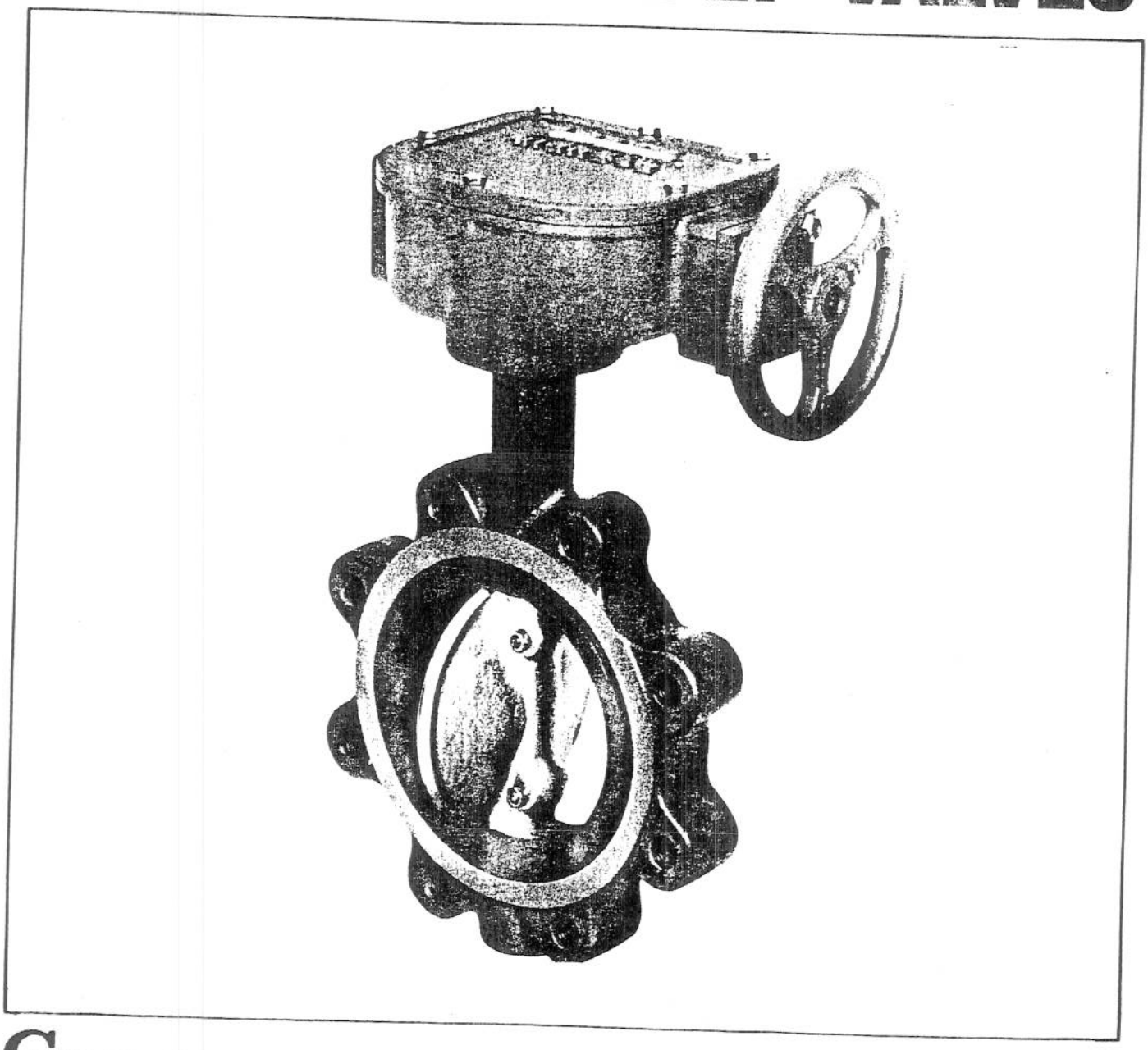
G3 MODULAR ACTUATOR
W/HANDWHEEL, CHAINWHEEL, CRANK AND NUT

DOCT. CODE	DRAWN	APPROVED
1	CHECKED	DATE 10-27-80

A-21219

INSTRUCTION MANUAL FOR DeZURIK® 2"—20" FIG 632 BUTTERFLY VALVES



DeZURIK
A UNIT OF GENERAL SIGNAL

D-10035
March 1991
Rev C

INTRODUCTION

The 2" thru 20" DeZurik FIG 632 Butterfly valves are quarter turn butterfly valves designed to provide reliable service. Each DeZurik valve is tested at the factory to some of the most stringent standards in the industry.

A copy of these instructions should be made available to the personnel responsible for the installation and maintenance of this equipment. Refer to the applicable sales bulletin and to the valve data plate regarding materials of construction and product limitations.

The following instructions are written following a modular concept. Each separate major assembly in this product will have a separate instruction. Thus the basic valve will have a separate instruction, as will the actuator and any accessories your unit may have. The assembly drawings you receive also follow this concept. This concept was created to make the entire product seem less complicated by breaking it down into smaller, easier to understand modules.

INSPECTION

This equipment has been adequately packaged and protected for shipping; however, due to improper handling, the possibility of damage in transit exists. When the valve arrives at its final destination, it should be carefully inspected for damage and equipment malfunction.

STORAGE

Because the rubber seat in this valve may deteriorate if it is not protected from dust, freezing water, sunlight or other ultraviolet rays, store the valve in a clean, dry, cool location with the flange protectors intact. The valve should be stored with the disc horizontal and partially open.

If it is necessary to store the valve outdoors, it should be wrapped in plastic and stored high enough off the ground to ensure it will not be immersed in water or buried by snow. The plastic plugs in the cylinder or positioner (if equipped) must be replaced with pipe plugs.

REPLACEMENT PARTS

It is advised that one set of Recommended Spare Parts be inventoried for each valve size and type. Recommended Spare Parts are identified on the Assembly Drawing.

When ordering parts, please include the valve size and part number (7-digit) from the data plate. If possible, also include the Assembly Drawing number, Part Name, Balloon Number and Quantity of parts as shown on the Assembly Drawing.

DESCRIPTION The DeZURIK FIG. 632 Butterfly valve is a resilient seated valve featuring a double seat design. After normal cycle life of the first seat, the disc can be rotated 180 degrees to utilize the second seating surface.

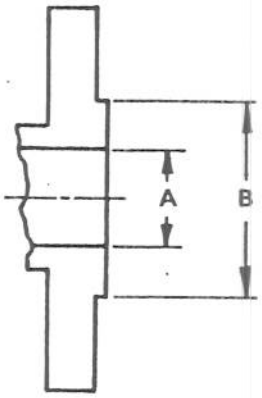
INSTALLATION Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the valve and pipeline. Handle the valve carefully so that the flange seals are not damaged. Refer to the Installation drawing for dimensional information and gasket requirements.

Use ANSI Class 125 or 150 flanges, and ensure that the flanges conform to the dimensions in Table A. DeZURIK Figure 655 flange seals must be used with the following flanges and/or piping:

- 5" and larger Slip-on flanges
- Cast iron pipe with integral flanges
- Cast iron pipe with threaded flanges
- Schedule 5S and 10S thin wall tubing (Figure 655 flange seals recommended but not required)

Pipeline flow may be in either direction. Install the valve so that the higher pressure will be against the flat side of the closed disc.

For proper flange sealing, ensure that the valve and the pipeline flanges are concentric. Before final tightening of the pipeline flange bolts or studs, open the valve slowly to ensure that adequate clearance exists between the open disc and the pipeline. Tighten the flange bolts or studs in a crisscross pattern.



VALVE SIZE	DIMENSION A FLANGE INSIDE DIAMETER (inches)		DIMENSION B MINIMUM OUTSIDE DIAMETER OF FLANGE CONTACT SURFACE (inches)
	MINIMUM	MAXIMUM	
2	2.07	2.44	3.76
2.5	2.42	2.94	4.22
3	3.00	3.57	4.70
4	3.93	4.57	5.62
5	4.88	5.66	6.68
6	5.84	6.72	7.72
8	7.79	8.72	9.71
10	9.75	10.88	11.86
12	11.60	12.88	13.88
14	12.84	14.14	15.12
16	14.78	16.16	17.17
18	16.73	18.18	19.28
20	18.66	20.20	21.21

DIMENSIONS FOR MATING FLANGES FOR FIG 632 BUTTERFLY VALVES
TABLE A

TOOLS REQUIRED This valve is assembled using only standard SAE fasteners. To service this valve, you should have a full set of combination wrenches, a pin punch, a dead blow hammer and a hacksaw to remove the old seat. A small torch may be required when Loctite bonds must be broken.

MAINTENANCE Periodic lubrication is not necessary with the basic valve. See the Actuator and Accessory Instruction Manuals for any lubrication requirements these assemblies may have.

If the valve is disassembled, lubricate the valve as follows:

OXYGEN SERVICE VALVES — Lubricate the quad ring seals, the seal grooves in the seat, and the inside and outside diameters of the bearings with Hooker Fluorolube GR-362, no substitutes are acceptable.

ALL OTHER APPLICATIONS — Valves with RS66 Seat Material — Lubricate the quad ring seals, the seal grooves in the seat, and the inside and outside diameters of the bearings with a silicone based lubricant such as Dow Corning Molycote 44.

Valves with RS18, RS47, RS49, RS50 or RS63 Seat Material — Lubricate the quad ring seals, the seal grooves in the seat, and the inside and outside diameters of the bearings with a medium aluminum complex lubricant such as Keystone Nevastane.

CLOSED POSITION The valve is in the closed position when the disc is parallel to the flange face. The actuator stops have been adjusted at the factory to stop valve rotation in the proper closed position. See the Actuator Instruction Manual for details on adjusting the Open and Closed Position Stops.

DISC POSITION INDICATOR A chamfer corresponding with the flat side of the disc is machined on top of the valve shaft to show the position of the disc when the disc is not visible. The location of the indicator mark is shown on the valve assembly and installation drawings.

USING THE SECOND SEATING SURFACE After normal cycle life of the first seating surface, the disc can be rotated 180 degrees to utilize the second seating surface. To rotate the disc, follow these steps:

1. Discontinue flow thru the pipeline.
2. Remove the actuator from the valve. A detailed procedure on actuator removal is presented in the Actuator Instruction Manual.
3. Rotate the valve shaft 180 degrees.
4. Install the actuator on the valve. See the Actuator Instruction Manual for step-by-step instructions.
5. Check the actuator Open and Closed Position Stops and readjust if necessary. See the Actuator Instruction Manual for details.

NOTE: It is normally recommended that the higher pipeline pressure be against the flat side of the disc. This will require the valve be removed from the pipeline, rotated 180 degrees and reinstalled. See the VALVE REMOVAL FROM PIPELINE section of this instruction for the proper valve removal procedure.

6. After reinstalling the valve, pipeline flow and pressure can be reinstated.

SEAT, SEAL AND BEARING REPLACEMENT

To replace the seat, seal, and/or bearings, you will need the following: a full set of combination wrenches, a pin punch, a dead blow hammer, a hacksaw, Loctite 222 and a lubricant (as described in the MAINTENANCE section of this instruction). A small torch may be required to break the Loctite seal which retains the bearings.

1. Relieve pipeline pressure and drain the portion of the system where the valve is located.
2. Remove the valve from the pipeline. See the VALVE REMOVAL FROM PIPELINE section of this instruction.
3. Remove the actuator; see the Actuator Instruction Manual for a detailed procedure on actuator removal.
4. Lay the valve in a horizontal position, seat side down. Place support blocks under the disc so it will not drop when the shaft is removed.
5. Remove the plug from the bottom of the valve body.
6. Remove the disc pin(s) as follows:

2" thru 3" Valves — Drive the pin out using the punch and dead blow hammer.

4" thru 20" Valves

a) Remove the nut and washer from each disc pin.

b) Drive out the tapered disc pin using the dead blow hammer.

7. Remove the shaft from the valve body.
8. Lift the disc from the valve.
9. Remove the seat from the valve as follows:

2" thru 12" Wafer Valves — With the disc and shaft removed, the seat can be slid out of the valve body. It may be necessary to pry the seat to loosen any oxidation adhering it to the valve body.

14" thru 20" Wafer Valves and All Lugged Valves — On these valves, the seat is held in place with a retaining ring. See Figure 1.

a) Using a hacksaw, cut thru the seat in the bearing area.

b) Pry one end of the seat into the valve opening until it is free of the retaining ring, then pull the seat out of the valve.

10. Heat the bearing areas to break the Loctite seals, then slide the bearings out of the valve body.
11. Apply Loctite 222 to the outside diameters of the replacement bearings. See the Loctite container for proper application of the adhesive.

7. Screw the shaft into the yoke nut, placing a stop nut on each side of the yo' nut.
8. Install the thrust plate and secure it with four screws.
9. Install the guide rail(s) and secure in place.
10. Install the operator on the shaft and install the pin or key to retain it.
11. Perform the Open and Closed Position Stop Adjustments as described in the appropriate Section of this Instruction.
12. Apply a layer of grease approximately 1/2" thick to the appropriate surfaces described in the LUBRICATION Section of this Instruction.
13. If your actuator has a window in the cover, locate the pointer so it indicates valve position.
14. Install the cover gasket (used with cast iron covers only), then fasten the cover in place.

ACTUATOR DISASSEMBLY To properly disassemble this actuator, follow the Steps in the ACTUATOR REMOVAL Section of this Instruction.

ACTUATOR REASSEMBLY To properly assemble this actuator, follow the Steps in the ACTUATOR INSTALLATIC Section of this Instruction.

CHANGING ACTUATOR MOUNTING POSITIONS The actuator may be mounted in 90 degree increments around the valve shaft. To change actuator mounting positions, remove the actuator from the valve, position it in the desired position, then reinstall it on the valve. Detailed removal and installation procedures are described in this manual.

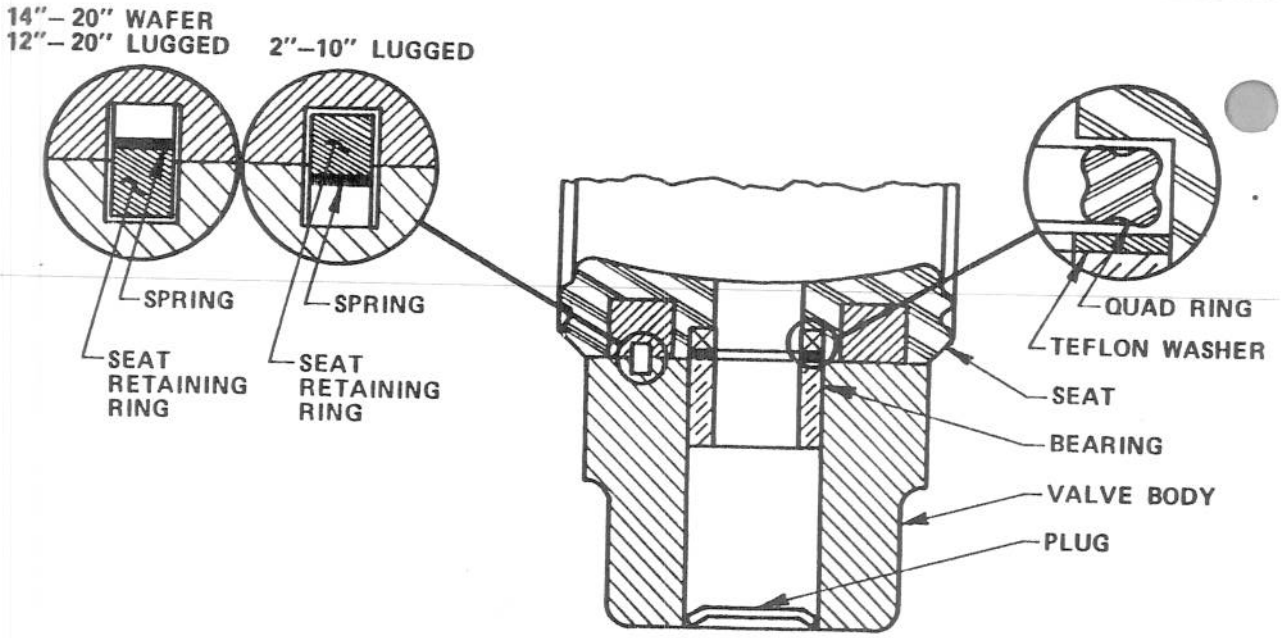


FIG 632 COMPONENT LOCATION
FIGURE 1

12. Insert the replacement bearings into the bores. The two bearings in the seat area should be flush with the seat bore in the valve body; the upper bearing in the valve body neck should be pushed into the valve body just far enough so a quad ring seal can be completely pushed into the bore after the bearing.

    NOTE: All three bearings are identical.

13. Lubricate the seal grooves in the seat, the quad ring seals and the inside diameters of the bearings with the lubricant described in the MAINTENANCE section of this instruction.

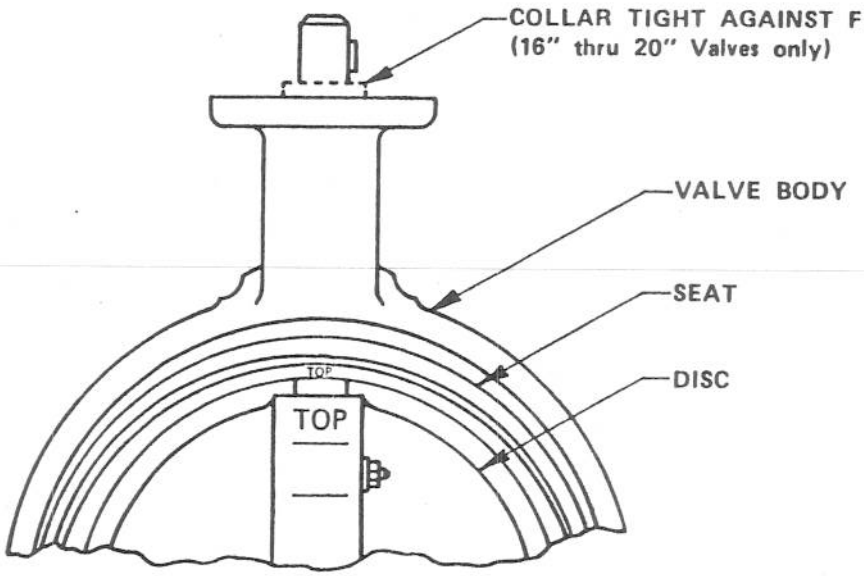
14. Slide the quad ring seals into the seal grooves in the seat.

15. Place a PTFE back-up ring over the quad ring seals.

16. Place the spring and seat retaining ring in the seat as follows:

2" thru 12" Wafer Valves	These sizes do not use springs and seat retaining rings.
2" thru 10" Lugged Valves	Place a spring, then a seat retaining ring in the groove in each side of the body; center the spring and retaining ring in the groove.
14" thru 20" Wafer and 12" thru 20" Lugged Valves	Place the spring, then the seat retaining ring in the groove in the outside diameter of the seat.

17. Slide the seat into the body. Position the seat so the word TOP (molded in the rubber seat) is toward the top of the valve; see Figure 2. On va utilizing springs and seat retaining rings, you will hear the retaining r snap into the groove.



CORRECT SEAT AND DISC POSITIONS
FIGURE 2

18. Position the disc so the word TOP (stamped in the disc) lines up with the word TOP (molded in the rubber seat), then lower the disc into place in valve body.

19. Prepare the shaft for installation by lightly greasing the bottom chamfer and the flat spots for the pins with a flow media compatible lubricant.

20. Slide the shaft into place with a rotary motion to prevent damage to the valve seals.

21. Line up the flat spots or holes in the shaft with the holes in the disc.

22. Insert the disc pin(s) into the holes. Pins with threaded ends must be installed with the threads to the right (see Figure 2). Lightly tap the pins to seat them before tightening the nuts to the torques shown in Table B.

23. Slide the new upper quad ring seal down the valve shaft until it contacts the upper bearing.

VALVE SIZE	TORQUE (ft. lbs.)
4	2
5 thru 8	6
10 thru 14	11
16 thru 18	20
20	31

DISC PIN NUT TORQUE
TABLE B

24. Install the plug in the bottom of the valve body.

25. Install the actuator. See the Actuator Instruction Manual for the correct procedure.

26. Check the actuator Open and Closed Position Stop adjustments and readjust if necessary.

27. With the valve in the closed position, install it in the pipeline as described in the INSTALLATION section.

NOTE: If the valve is to be stored, it must be left in the partially open position.

28. Pipeline flow and pressure can now be restored.

VALVE REMOVAL FROM PIPELINE

To remove the entire valve assembly from the pipeline, follow these steps carefully.

1. Relieve pipeline pressure and drain the portion of the system where the valve is located.
2. Close the valve.
3. Turn off the supply air and/or electricity if the valve has a powered actuator, then disconnect the piping and/or wiring from the valve assembly.
4. Support the valve assembly, then remove the flange bolts.
5. Remove the valve from the pipeline.

GUARANTEE: Products, auxiliaries and parts thereof, of DeZURIK's manufacture, are guaranteed for a period of one year from date of shipment against defective workmanship and material only, when properly installed, operated and serviced in accordance with DeZURIK's recommendations. Replacement for items of DeZURIK's manufacture will be made free of charge if proved to be defective within such time. No claim for transportation, labor or special or consequential damages shall be allowed. Purchaser shall be solely responsible for determining suitability for use and in no event shall DeZURIK be liable in this respect. Equipment or parts manufactured by others but furnished by DeZURIK will be repaired or replaced, but only to the extent provided in the original manufacturer's warranty to DeZURIK. DeZURIK does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZURIK guarantee a minimum length of service. Failure of purchaser to give prompt written notice of any alleged defect under this guarantee forthwith upon its discovery, or use and possession thereof after an attempt has been made and completed by someone other than DeZURIK or an authorized representative to remedy the defects therein, or failure to return product or parts for replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by DeZURIK, or failure to pay entire contract price when due, shall be a waiver by purchaser of all rights under these representations. The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as, but not limited to, an actuator, is attached to the item by anyone other than DeZURIK Factory Service personnel. All orders accepted shall be deemed accepted subject to this guarantee, which shall be exclusive of any other or previous guarantee, and this shall be the only effective guarantee or warranty binding on DeZURIK, anything to the contrary contained in the purchase order or represented by any agent or employee of DeZURIK, in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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PRODUCTS

Eccentric Plug Valves – Sizes 0.5" through 72" in a wide choice of materials and resilient plug facings.

HP Butterfly Valves – Sizes 2" through 48" for applications to 740 psi plus fire tested and metal seated models.

V-Port Ball Valves – Sizes 1" through 20", pressures to 740 psi and temperature ratings to 1000°F.

Resilient Seated Butterfly Valves – Sizes 2" through 36" in two styles with 150, 175 and 225 psi pressure ratings and wafer and lugged body styles.

AWWA Butterfly Valves – Sizes 4" through 120". Meets AWWA C504 standards.

3 & 4 Way Plug Valves – Sizes 3" through 16" for shutoff and switching applications plus a variety of body materials.

Precision Electric Control Valves – Unmatched control accuracy provides 2000 discrete repeatable throttling positions in 90° plug rotation. Accepts analog or digital signals. Sizes 4" through 20".

Permaseal® Plug Valves – Sizes 0.5" through 6" in ANSI Class 150 and 300 ratings. Body styles include 2-Way, 3-Way, jacketed, double block and bleed and flush through for corrosive and high temperature applications.

Knife Gate Valves – Rugged design for corrosive and abrasive service on liquids, slurries and dry materials. Pressures to 150 psi and sizes 2" through 72".

Consistency Transmitters – Light sensor, rotating sensor, blade sensor, open type and pan type for pulp and paper consistency control applications.

Cage Guided Control Valves – Sizes 1" through 8", ratings to ANSI 2500 plus balanced construction and noise reducing trim.

Cage Retained Globe Valves – Sizes 0.5" - 3", top entry, double stem guided, and no threaded internal parts for corrosive services.

Top & Bottom Guided Globe Control Valves – Sizes 0.5" through 20", single or double seated designs, pressures to ANSI 2500 and balanced construction.

3-Way Globe Control Valves – Sizes 0.5" through 12" for mixing and diverting service.

Split Body Globe Control Valves – Sizes 0.5" through 4", ratings to ANSI 600, temperatures to +800°F and easily replaceable seat and trim.

K-Max™ Rotary Control Valves – Sizes 1" - 8", ratings to ANSI 600, flanged or flangeless bodies and bi-directional shutoff.

Synflo™ Valves – Available in 316 or 347 stainless steel construction with tungsten carbide trim for high temperature/pressure applications in synthetic fuel processing.

SALES AND SERVICE

DeZurik representatives are located in major cities throughout the world. For the name of the representative nearest you, phone or write:

DeZURIK
250 Riverside Ave.
Sartell, MN 56377
Phone 612/259-2000
Telex 29-0505
Fax 612-259-2227

DeZURIK SERVICE CENTER
5927 South Loop East
Houston, TX 77033
Phone 713/643-3107
Fax 713-643-8086

DeZURIK SERVICE CENTER
600 Kirk Road N.W
Suite B
Marietta, GA 30060
Phone 404/425-6493
Fax 404-425-6545

DeZURIK OF CANADA, LTD.
P.O. Box 1300
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Telex AA33732 DeZIK
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DeZURIK INTERNATIONAL
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Cramlington
Northumberland NE23 9BJ
England
Phone: 44-670-714111
Telex: 537198 DZURIK G
Fax: 0670-737813

DeZURIK JAPAN, LTD.
1-11, Ueno 6-Chome
Taito-ku, Tokyo 110
Japan
Phone 81-3-8363918
Telex 22153
Cable Valve Tokyo
Fax 81-3-8363929

DeZURIK INDIA, LTD.
Plot 73 Industrial Estate
Perungudi
Madras 600096
India
Phone 91-44-411449/419223
Telex 41-21090 URIK IN

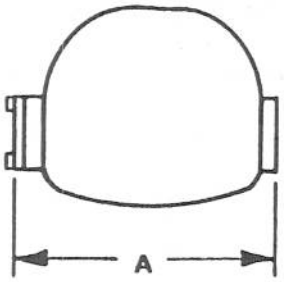
DeZURIK
A UNIT OF GENERAL SIGNAL

DeZURIK® MANUALLY OPERATED T-SERIES ACTUATOR

DESCRIPTION

The DeZurik manually operated T-Series actuator is an economical operator capable of providing a long lasting, dependable means of valve operation. The T-Series actuator is available in three sizes: The Size 3, Size 5 and Size 7. The actuator has been sized to achieve optimum performance from your valve.

Figure 1 provides the information needed to identify your actuator.



ACTUATOR SIZE	DIMENSION "A"
SIZE 3	9 1/2"
SIZE 5	12"
SIZE 7	15 1/8"

ACTUATOR IDENTIFICATION

FIGURE 1

ACTUATION

Clockwise rotation of the valve operator (handwheel, chainwheel, crank or nut) will move the valve in the closed direction. Counterclockwise rotation will open the valve. To actuate the valve from fully open to fully closed (or vice-versa), the Size 3 requires 9 revolutions, the Size 5 requires 15 revolutions and the Size 7 requires 24 revolutions.

LUBRICATION

The T-Series actuator does not require lubrication as regular maintenance. If this actuator is disassembled, lubricate the following components during reassembly with a light grease such as Keystone Zeniplex 1 **except** if the actuator is mounted on a DeZurik Metal Seated HP Butterfly valve. If the actuator is mounted on a DeZurik Metal Seated HP Butterfly valve, lubricate the parts with a high temperature grease such as Chemplex 710/GR. See the Assembly drawing for parts identification.

- The bearing at each end of the shaft.
- The shaft collar counterbore.
- The inside of the thrust plate where it contacts the thrust bearing.
- The threads on the shaft.
- The stop nuts.
- The slots in the yoke.
- The sides of the yoke bearings.
- The side of the guide rail.

After the actuator is fully assembled, a layer of grease approximately 1/2" thick should be applied to the surfaces described above which are accessible and inside the housing.

OPEN AND CLOSED POSITION STOP ADJUSTMENTS

1. Cycle the valve to determine the need for stop adjustment.
2. Remove the actuator cover.

3. Guide Rails

   Sizes 3 and 5 — **Loosen** the guide rail screw closest to the cylinder, and **remove** the other screw.

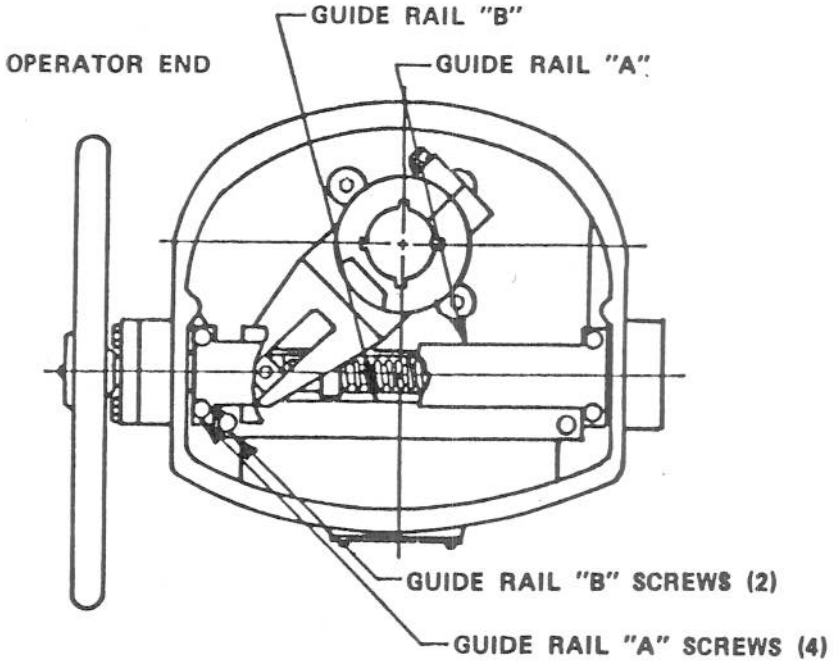
   Size 7 — **Loosen** the two Guide Rail "B" screws as shown in Figure 2.

4. Move the valve to midstroke, then turn the appropriate stop nut(s) to acheive the desired stop settings. The stop nut closest to the operator end is the closed position adjustment.

5. Actuate the valve to check the adjustments. Readjust if necessary.

6. Tighten the guide rail screws.

7. Install the cover gasket (when used) and cover.



GUIDE RAIL IDENTIFICATION (SIZE 7 ACTUATORS ONLY)
FIGURE 2

ACTUATOR REMOVAL

1. Discontinue pipeline flow.

2. Place the valve in the closed position.

3. Remove the cover screws and cover.

4. Loosen the screw clamping the yoke onto the valve shaft.

5. Remove the valve operator (handwheel, chainwheel, etc.) as follows:

   *Chainwheel — Remove the pin, then pull the chainwheel off the shaft.

   *All other operators — Straighten the key, then pull the operator off the shaft.

6. Remove the four thrust plate screws, then separate the thrust plate from the housing.

7. Remove the shaft from the housing by turning it until it is completely backed out. Retrieve the two stop nuts from inside the actuator housing.

8. Guide Rails

   Sizes 3 and 5 — Remove the two guide rail screws.

   Size 7 — Remove the four guide rail "A" screws (see Figure 2).

9. Remove the guide rail.

10. Remove the yoke from the actuator. Do not lose the yoke nut or the two bearings.

11. Remove the four screws (inside the actuator) securing the actuator to the bracket, then separate the actuator from the bracket.

ACTUATOR INSTALLATION

1. Close the valve.

2. Set the actuator on the valve. If the actuator has a cast iron cover, apply a thin layer of Permatex to the machined surface on the bottom of the actuator housing.

3. Apply a hand tool removable fastening agent such as Loctite 242 to the mounting screws, then fasten the actuator to the valve with these screws. Tighten the screws to the torque specified in Table A.

BOLT SIZE	BOLT TORQUE
1/4-20	75-100 inch lbs (6-8 foot lbs)
3/8-16	205-350 inch lbs (18-30 foot lbs)
1/2-13	625-850 inch lbs (50-70 foot lbs)
3/4-10	1600-2100 inch lbs (135-175 foot lbs)

T-SERIES MOUNTING SCREW TORQUES
TABLE A

4. Lubricate the actuator components as described in the LUBRICATION Section of this Instruction.

5. Install the yoke, yoke nut bearings and yoke nut. Position the yoke so it points toward the operator end of the actuator as shown in Figure 2.

6. Tighten the screw to clamp the yoke onto the valve shaft.

7. Screw the shaft into the yoke nut, placing a stop nut on each side of the yo nut.
8. Install the thrust plate and secure it with four screws.
9. Install the guide rail(s) and secure in place.
10. Install the operator on the shaft and install the pin or key to retain it.
11. Perform the Open and Closed Position Stop Adjustments as described in the appropriate Section of this Instruction.
12. Apply a layer of grease approximately 1/2" thick to the appropriate surfaces described in the LUBRICATION Section of this Instruction.
13. If your actuator has a window in the cover, locate the pointer so it indicates valve position.
14. Install the cover gasket (used with cast iron covers only), then fasten the cover in place.

ACTUATOR DISASSEMBLY To properly disassemble this actuator, follow the Steps in the ACTUATOR REMOVAL Section of this Instruction.

ACTUATOR REASSEMBLY To properly assemble this actuator, follow the Steps in the ACTUATOR INSTALLATIO Section of this Instruction.

CHANGING ACTUATOR MOUNTING POSITIONS The actuator may be mounted in 90 degree increments around the valve shaft. To change actuator mounting positions, remove the actuator from the valve, position it in the desired position, then reinstall it on the valve. Detailed removal and installation procedures are described in this manual.

DeZURIK
A UNIT OF GENERAL SIGNAL

DeZURIK RECOMMENDED SHORT AND LONG-TERM STORAGE PROCEDURES

LONG TERM STORAGE

1. All resilient seated valves shall be stored in the open (unseated) position.
2. All valves with adjustable packing glands should have the packing gland loosened prior to storage.
3. Valves shall be separately packaged in a sealed polyethylene plastic enclosure with a minimum of one package of desiccant inside, dependent upon valve size.
4. Prepared valves shall be warehoused in a clean, dry, indoor facility on concrete or raised racks, with temperature ranging from +35°F to +95°F.
5. Valves shall not be stored near electric motors or other equipment which may emit Ozone which can cause deterioration of elastomers used for valve and actuator components.
6. The valves shall be inspected periodically to replace the desiccant if required, and to repair any damage to the polyethylene plastic enclosures.
7. Valves with cylinder operators and control valves which are stored for extended periods may be subject to cylinder blow-by caused by permanent distortion of any of the seals. Valves should be operated prior to installation and damaged seals replaced.
8. Valves with electric motor operators shall be stored in accordance with the individual motor manufacturer's recommended long-term storage procedures in addition to Paragraphs 1, 2 and 3 above.
9. All electrical components, if applicable, should be inspected and all electrical contacts cleaned before operation.
10. Valves shall be enclosed in fully sheathed wooden crates or boxes.

SHORT TERM STORAGE

1. Valve should be protected from the weather, avoid exposure to excessive moisture or dirt. Store at temperatures ranging from +35°F to +95°F.

STK-- 2" STD ERW

ipsco inc.

MILL CERTIFICATE — REGINA MILLS

CERTIFICATE NUMBER 0214 R

CUSTOMER Grinnell Corporation

SPECIFICATION ASTM A53B-89a

MILL ORDER NO. 70-2997

CUSTOMER ORDER NO. 001551-S

DATE April 7, 1992

O.D. 2 3/8" mm

WALL .154" mm

HEAT NO. / PIPE NO.	HEAT TREATMENT	BODY TEST/TWT: YIELD STRENGTH psi kPa	TENSILE STRENGTH psi kPa	ELONG. %	Y/T	WELD	HEAT (LADLE) CHEMISTRY / PRODUCT CHECK CHEMISTRY: C	Mn	P	S	Si	Cu	Ni	Cr	V	Cb	Mo	Al	Ca	B	N	W	Sn	Cbn
525302	1.0	63300	67600	22	93		.06 .064	.68 .70	.006 .006	.009 .008	.14 .13	.29 .31	.11 .12	.07 .08	.001 .003	.004 .006	.03 .034	.019 .019	.002 .0014	.0000 .0000	.001 .002	.009 .009	.0000 .0000	.15 .15
525302	1.0	66800	68600	26	97		.06 .064	.68 .69	.006 .006	.009 .008	.14 .13	.29 .30	.11 .12	.07 .08	.001 .002	.004 .004	.03 .033	.019 .019	.002 .0013	.0000 .0000	.001 .002	.009 .009	.0000 .0000	.15 .15
525304	1.0	64900	69400	30	93		.06 .065	.68 .70	.006 .007	.008 .009	.14 .13	.29 .30	.11 .12	.07 .08	.001 .002	.004 .005	.03 .034	.019 .021	.002 .0014	.0000 .0000	.001 .002	.009 .009	.0000 .0000	.15 .15
526123	1.0	61100	63200	38	97		.07 .071	.73 .73	.006 .006	.010 .010	.14 .12	.30 .31	.13 .13	.08 .08	.002 .002	.004 .004	.04 .039	.031 .035	.002 .0011	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.17 .17
526123	1.0	60000	62000	31	97		.06 .064	.70 .71	.010 .008	.005 .006	.16 .16	.36 .37	.12 .12	.07 .07	.000 .003	.002 .002	.03 .033	.043 .043	.0025 .0031	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526123	1.0	58600	62000	29	94		.06 .065	.70 .72	.010 .008	.005 .007	.16 .16	.36 .37	.12 .13	.07 .08	.000 .003	.002 .003	.03 .037	.043 .040	.0025 .0033	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526123	1.0	58000	60600	32	96		.06 .060	.70 .72	.010 .007	.005 .007	.16 .17	.36 .34	.12 .11	.07 .08	.000 .000	.002 .006	.03 .042	.043 .028	.0025 .0027	.0000 .0003	.002 .002	.008 .008	.0000 .0000	.15 .16
526123	1.0	61100	63700	29	96		.06 .061	.70 .72	.010 .008	.005 .008	.16 .16	.36 .38	.12 .12	.07 .08	.000 .001	.002 .005	.03 .035	.043 .043	.0025 .0023	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526123	1.0	62400	66900	31	94		.06 .064	.70 .72	.010 .008	.005 .007	.16 .17	.36 .40	.12 .13	.07 .08	.000 .001	.002 .005	.03 .036	.043 .045	.0025 .0023	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526123	1.0	64200	67000	24	96		.06 .064	.70 .73	.010 .008	.005 .007	.16 .17	.36 .38	.12 .13	.07 .08	.000 .003	.002 .005	.03 .036	.043 .048	.0025 .0017	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526122	1.0	59200	62100	27	95		.06 .063	.70 .73	.010 .008	.005 .007	.16 .17	.36 .38	.12 .13	.07 .08	.000 .003	.002 .004	.03 .035	.043 .049	.0025 .0021	.0000 .0000	.002 .002	.008 .008	.0000 .0000	.15 .16
526122	1.0	60200	62300	28	97		.06 .064	.71 .72	.004 .004	.008 .009	.16 .17	.31 .33	.14 .15	.08 .10	.000 .002	.003 .005	.04 .045	.021 .024	.0026 .0023	.0000 .0000	.001 .002	.010 .010	.0000 .0000	.16 .16
526122	1.0	63400	64900	28	98		.06 .063	.71 .73	.004 .004	.008 .008	.16 .16	.31 .36	.14 .15	.08 .09	.000 .003	.003 .005	.04 .043	.021 .022	.0026 .0016	.0000 .0000	.001 .002	.010 .009	.0000 .0000	.16 .16
526122	1.0	61100	63100	28	97		.06 .066	.71 .74	.004 .005	.008 .010	.16 .17	.31 .34	.14 .15	.08 .10	.000 .002	.003 .004	.04 .048	.021 .025	.0026 .0023	.0000 .0000	.001 .002	.010 .010	.0000 .0000	.16 .18
							.06 .067	.71 .73	.004 .003	.008 .009	.16 .17	.31 .32	.14 .15	.08 .09	.000 .002	.003 .004	.04 .048	.021 .024	.0026 .0025	.0000 .0000	.001 .002	.010 .010	.0000 .0000	.16 .17

HYDROTEST PRESSURE 3000 PSI kPa TIME: 10 SEC.

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED ABOVE PASSED ALL OF THE TESTS REQUIRED BY THE SPECIFICATIONS.

Jim Loam

TECHNICAL SUPERVISOR(S)

22794A

ALGOMA STEEL

The Algoma Steel Corporation, Limited
Sault Ste. Marie, Ontario, Canada

RECEIVED
JUL 22 1991
UNIVERSAL

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	SHIPPERS NUMBER	CARRIER		PAGE NO.	MILL ORDER
3904	JUN 09/91	91-07-13	03-347799	DWC	-608392	1	3864

CHARGE TO CUSTOMER NAME AND ADDRESS
UNIVERSAL INDUSTRIES LIMITED
PO BOX 1590
LLOYDMINSTER ALBERTA
S9V 1K5

SHIP TO CUSTOMER NAME AND ADDRESS
UNIVERSAL INDUSTRIES LIMITED
5208-51ST STREET
LLOYDMINSTER ALBERTA

CUSTOMER SPECIFICATION
HR PLATE - CARBON - CSA STD G40.21 44W (1987) - SHEARED

SUPPLEMENTARY INSTRUCTIONS
FAX S/M TO 403-875-6169 ATTN B MILKE

NSP T/R MILL SM/TR

CUST USE TANKS

MILL TEST REPORTS

THE ALGOMA STEEL CORPORATION LIMITED HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN HEREIN AND AS CONTAINED IN THE CORPORATION RECORDS.

G. MONIN
SENIOR METALLURGIST

PRODUCT SHIPPED

CUSTOMER ITEM 6 OUR ITEM 006 DIMENSIONS .250 X 96 X 384 "

TAG NUMBER	HEAT		NO. PIECES	WEIGHT
788104	4602K	52	3	7840
788106A	4602K	02	2	5227
788107	4602K	02	3	7840
788108B	4602K	02	2	5227
788110	4602K	53	3	7840
788112	4602K	02	3	7840
788113B	4602K	02	1	2613
788115A	4602K	02	1	2613
788116	4602K	02	3	7840
788124	4602K	52	3	7840
788934	4602K	03	1	2613
788936	4602K	03	2	5227
788105	4602K	52	3	7840
788106B	4602K	52	1	2613
788108A	4602K	53	1	2613
788109	4602K	53	3	7840
788111	4602K	02	3	7840
788113A	4602K	52	2	5227
788114	4602K	52	3	7840
788115B	4602K	52	2	5227
788117	4602K	02	3	7840
788125	4602K	52	3	7840
788935	4602K	03	2	5227
788937	4602K	03	2	5227

MECHANICAL PROPERTIES

HEAT	SAMPLE GAUGE	SAMPLE LOC	TEST COND.	TEST METH.	TEST DIR.	YIELD KSI	TENSILE KSI	% ELONG 2"	% ELONG 8"
4602K	.2500	F	AR	DB	T	53.0	72.5		25
	.2500	M	AR	DB	T	47.3	68.0		24

CONTINUED ON NEXT

*** WARNING *** THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OR VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL FOR ANY PURPOSE (INCLUDING

ALGOMA STEEL

T... Steel Corporation, Limited
S... Marie, Ontario, Canada

CUSTOMER PURCHASE ORDER NUMBER	ENTRY DATE	SHIP DATE	SHIPPERS NUMBER	CARRIER	PAGE NO.
3904	JUN 09/91	91-07-13	03-347799	DWC -608392	2

CHARGE TO CUSTOMER NAME AND ADDRESS

UNIVERSAL INDUSTRIES LIMITED
PO BOX 1590
LLOYDMINSTER ALBERTA
S9V 1K5

SHIP TO CUSTOMER NAME AND ADDRESS

UNIVERSAL INDUSTRIES LIMITED
5208-51ST STREET
LLOYDMINSTER ALBERTA

CUSTOMER SPECIFICATION

HR PLATE - CARBON - CSA STD G40.21 44W (1987) - SHEARED

SUPPLEMENTARY INSTRUCTIONS

FAX S/M TO 403-875-6169 ATTN B MILKE

INSP T/R MILL SM/TR

CUST USE TANKS

MILL TEST REPORTS

THE ALGOMA STEEL CORPORATION LIMITED HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN HEREIN AND AS CONTAINED IN THE CORPORATION RECORDS.

G. MONIN
SENIOR METALLURGIS

* C H E M I C A L P R O P E R T I E S * * * * * * * * * * * * * * * * * *

HEAT	C	MN	S	P	SI	CR	NI	CU	MO	AL	CB	V	B	TI
4602K 02	.15	1.07	.011	.016	.21	.02	.01	.01	<.01	.054	<.01	.031		
4602K 03	.15	1.07	.011	.016	.21	.02	.01	.01	<.01	.054	<.01	.031		
4602K 52	.15	1.07	.011	.016	.21	.02	.01	.01	<.01	.054	<.01	.031		
4602K 53	.15	1.07	.011	.016	.21	.02	.01	.01	<.01	.054	<.01	.031		

*** WARNING *** THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE CHEMICAL ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OR VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL F ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE RELIED UPON FOR ANY PURPOSE (INCLUDING

IPSCO INC.

TEST CERTIFICATE — REDUCED MILL 6 STA .036

P6179 STA

CERTIFIC NUMBER

CUSTOMER WESTLUND INDUSTRIAL SUPPLY

SPECIFICATION ASTM A53B – 89a

MILL ORDER NO. 25-3593

CUSTOMER ORDER NO. 73-005874 #2

DATE NOVEMBER 22,1991

O.D. 6 5/8 in. WALL .280 in.

	BODY TEST/TEST						HEAT (LADLE) CHEMISTRY/PRODUCT (CHECK) CHEMISTRY													
	TEST NUMBER	YIELD STRENGTH psi	TENSILE STRENGTH psi	ELONG IN 8" OR 2" %	WT		C	Mn	S	P	Si	Cu	Ni	Cr	V	Cb	Mo	Sn	Al	Ti	B	CEQ
3	1	57,100	65,000	35	.88		.10	1.03	.007	.010	.16	.30	.09	.06	.000	.004	.03	.016	.031	.00	.0000	
91	RL 96, RL 13, RL 24						.10	1.01	.008	.010	.16	.29	.10	.06	.004	.005	.03	.016	.030	.00	.0000	
3							.10	1.03	.007	.010	.16	.30	.09	.06	.000	.004	.03	.016	.031	.00	.0000	
							.10	1.01	.007	.010	.16	.28	.10	.06	.000	.006	.03	.016	.030	.00	.0000	
3	1	60,000	66,800	36	.90		.10	1.03	.007	.010	.16	.30	.09	.06	.000	.004	.03	.016	.031	.00	.0000	
							.10	1.01	.007	.009	.16	.29	.10	.05	.004	.006	.03	.013	.030	.00	.0000	
83							.10	1.03	.007	.010	.16	.30	.09	.06	.000	.004	.03	.016	.031	.00	.0000	
							.10	1.02	.007	.010	.16	.30	.10	.06	.005	.006	.03	.014	.029	.00	.0000	
87	1	59,900	65,800	36	.91		.10	1.03	.007	.014	.16	.39	.10	.09	.000	.004	.04	.020	.031	.00	.0000	
97	RL 12, RL 25, RL 27						.10	1.01	.007	.013	.15	.39	.11	.10	.004	.005	.03	.018	.031	.00	.0000	
87							.10	1.03	.007	.014	.16	.39	.10	.09	.000	.004	.04	.020	.031	.00	.0000	
							.10	1.01	.008	.013	.15	.39	.11	.09	.005	.006	.03	.018	.027	.00	.0000	
87	1	58,400	68,000	36	.75		.10	1.03	.007	.014	.16	.39	.10	.09	.000	.004	.04	.020	.031	.00	.0000	
							.10	1.00	.008	.013	.15	.37	.11	.09	.000	.004	.03	.017	.030	.00	.0000	
87							.10	1.03	.007	.014	.16	.39	.10	.09	.000	.004	.04	.020	.031	.00	.0000	
							.09	1.02	.008	.012	.14	.40	.10	.09	.004	.006	.03	.017	.023	.00	.0000	

#53B

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED ABOVE PASSED ALL OF THE TESTS PERFORMED BY THE SPECIFICATIONS.

Todd Burkhart
MECHANICAL SUPERINTENDENT

FORM 111 — PSLA

Prodotti Industriali s.p.a.

CESANA BRIANZA (Como) ITALY
31) 655441
380052 METLFR I - Telefax 655149
PROVE ED ANALISI MATERIALI

P6836
5400

CLIENTE - CUSTOMER - CLIENT
SILBO INDUSTRIES
50 CHESTNUT RIDGE ROAD - SUITE 204
MONTVALE N.J.

ORDINE - ORDER - COMMANDE
75115/80

N. 9617
DATE 17/02
SHEET OF

FATTURA/INVOICE n. 1180
N° bol. 533 DATE 17/02

JUN 11 '92 15:49 WESTLUND EDM 462-0392

ANALISI CHIMICA - CHEMICAL COMPOSITION - COMPOSITION CHIMIQUE

Materiale Material/ Matériel	Colata Cast N° Coulée	Provino Specimen Eprouvette	QUANT.	DESCRIZIONE PRODOTTO PRODUCT DESCRIPTION DESCRIPTION DU PRODUIT	Carbon C %	Silicon Si %	Manganese Mn %	Sulfur S %	Phosphorus P %	Nickel Ni %	Chromium Cr %	Molybd. Mo %	Niobium Nb %	Vanadium V %	Copper Cu %
A.105	45262		396	S/O 150 RF 4"	0.180	0.270	0.950	0.030	0.018	00.060	00.120	0.020	0.001	00.005	00.160
A.105	020276		30	THRD 150 RF 2.1/2"	0.190	0.251	1.006	0.004	0.018	00.013	00.130	0.004	0.001	00.002	00.023
A.105	35863		100	THRD 150 RF 4"	0.210	0.230	0.980	0.018	0.017	00.100	00.100	0.020	0.002	00.005	00.230
A.105	020432		200	BLIND 150 RF 2"	0.220	0.241	1.009	0.022	0.020	00.012	00.114	0.008	0.002	00.002	00.029
A.105	46724		209	BLIND 150 RF 4"	0.200	0.270	0.970	0.020	0.012	00.100	00.150	0.030	0.004	00.003	00.180
A.105	7547 ✓		102	BLIND 150 RF 6" ✓	0.197	0.224	0.861	0.017	0.011	00.087	00.163	0.013	0.003	00.003	00.235
A.105	59889		150	S/W 150 RF 3/4" SO	0.210	0.260	0.860	0.030	0.019	00.050	00.170	0.010		00.001	00.190
A.105	45262		200	S/W 150 RF 1" SO	0.180	0.270	0.950	0.030	0.018	00.060	00.120	0.020	0.001	00.005	00.160

CARATTERISTICHE MECCANICHE - MECHANICAL TESTS - ESSAIS MECANIQUES

Fornitore Supplier Fournisseur	Colata Cast Coulée	Provino Specimen Eprouvette	Ø mm	Sezione Section	Lunghez. Length	TJ	Snervamento Yield point Kg/mm2 Req. 0.2%	Result 0.2%	Req. 1%	Result 1%	Resist. Tensile str. N/mm2 Req.	Result	Allungam. Elongation % Rich. Req.	Oss. Res.	Contrazione Red. of area Rich. Req.	Oss. Res.	Resilienza - Impact value - Resilience - Joule / cm2 Tipo Type	1.	2.	3.	Media	°C	Durezza Hardness HB
C. CARBONE	45262		12.70	126.60	50.80		250	329.00			485	532.00	22	33.00	30	51.00							156 16
VA S.P.A.	020276		12.70	126.60	50.80		250	328.00			485	515.00	22	32.00	30	67.00					—		140 16
C. CARBONE	35863		12.70	126.60	50.80		250	309.00			485	544.00	22	31.00	30	53.00							160 16
VA S.P.A.	020432		12.70	126.60	50.80		250	305.00			485	530.00	22	33.00	30	59.00							158 16
C. CARBONE	46724		12.70	126.60	50.80		250	312.00			485	535.00	22	31.00	30	63.00							163 16
METE	7547		12.70	126.60	50.80		250	342.00			485	539.00	22	33.00	30	61.00							163 17
C. TANARO	59889		12.70	126.60	50.80		250	321.00			485	530.00	22	32.00	30	55.00							141 16
C. CARBONE	45262		12.70	126.60	50.80		250	329.00			485	532.00	22	33.00	30	51.00							156 16

DIMENSIONS IN ACCORDANCE TO ANSI B16.5
VISUAL AND DIMENSIONAL INSPECTION:
SATISFACTORY

TRATTAMENTO TERMICO - HEAT TREATMENT - TRAITEMENT THERMIQUE
NORMALIZATION AT 920° C.

SIGLA PRODUTTORE
MARK OF THE MANUFACTURER
SIGLE DU PRODUCTEUR

FUNZIONE DELL'ESPERTO
INSPECTOR'S STAMP
FONCTION DE L'EXPERT

P. 1/1

POSIZIONE - ORIENTATION
Beginning; E = End; F = Face; K = Top; l = Longitudinal; transverse; t = tangential; r = radial; v = vertical

CERTIFICHIAMO CHE LA FORNITURA E' STATA CONTROLLATA ED E' CONFORME ALL'ACCETTAZIONE DELL'ORDINE.
WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

p. METALFAR S.p.A.

QUALITY CONTROL DEPT.
BUTTI LORENZO

ENTE COLLAUDAT

r: WESTLUND INDUSTRIAL SUPPLY

INSPECTION CERTIFICATE

Date : Feb. 8 , 199?

o. 71-43744

No. ED-20/92

C476

BENKAN

Specification for Material: ASTM A234 GR. WPB MADE FROM SEAMLESS PIPE NACE MR0175 - 90

Specification for Inspection : ANSI B16.5, B16.28 DIN 50049 3.18

Certificate No. T-206015

BENKAN No.	MFG No.	Product & Size (T:*1)	Quantity	Visual & Dimensional Inspection	HEAT TREATMENT (NOTE 1)	HARDNESS ACTUAL DATA
06-1A-160	1C039	90ES WPB 4 STD	100	GOOD	A	HB : 115 - 145
06-1A-161	1A035	90ES WPB 6 STD	60	GOOD	A	HB : 115 - 145
06-1A-162	18030	90ES WPB 8 STD	60	GOOD	A	HB : 115 - 145
06-1A-163	1A036	90ES WPB 10 STD	7/20	GOOD	A	HB : 120 - 150
06-1A-163	21031	90ES WPB 10 STD	13/20	GOOD	A	HB : 120 - 150

ecification	Chemical Composition %										Tension Test *2			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	YS	TS	E	
Min .	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 100	P.S.I		%	HARDNESS MAX
Max .		10	29								35,000	60,000	30	197 HB : GOOD
Heat No.	30		106	50	58									Material Manufacturer
36715	20	23	67	16	3	3	2	4	TR	TR	42,300	72,100	57	NKK CORPORATION
38978	18	17	43	11	9	1	2	2	TR	TR	46,900	68,900	45	NKK CORPORATION
35110	18	17	46	12	9	1	2	3	1	TR	49,700	66,500	44	NKK CORPORATION
05490	20	19	48	8	10	1	3	3	TR	TR	49,200	70,600	40	NKK CORPORATION
05491	19	19	46	17	5	1	3	3	TR	TR	53,700	70,500	36	NKK CORPORATION

A : HOT FORMED WITH FINAL
URE BETWEEN 780°C & 980°C. AIR COOLING
RELIEVING 660°C x 0.5 HR. AIR COOLING

N : NORMALIZING 910°C x 0.5 HR.
AIR COOLING
"CSA Z245 - 10"

hereby certify that the product described herein has been manufactured in accordance with the specifications concerned also with the purchaser's requirements and that the test results shown herein are correct.

"T" symbolised wall thickness in mm *2 : YS Yield strength, TS = Tensile strength, E = Elongation

T. Sasaki

Manager of Quality Assurance Section
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng.

need 1 copy

i P.G 913 - 5400

WESTLUND
INDUSTRIAL SUPPLY LTD.

3691 - 90 STREET
EDMONTON, ALBERTA
T6E 5N2
TELEPHONE 463-7473
TELEX 037-2967

TO:

ATTENTION:

REF:

This is to certify that the Hattersley 1" 1969 BALL VALVE you purchased from us June 23 1992 is manufactured to C.S.A. ; UL Approved and meets all chemical, yield and strength requirements of the above mentioned standard.

Regards,

WESTLUND INDUSTRIAL SUPPLY LTD.

Product MANAGER; VALVES.

GENERAL NOTES

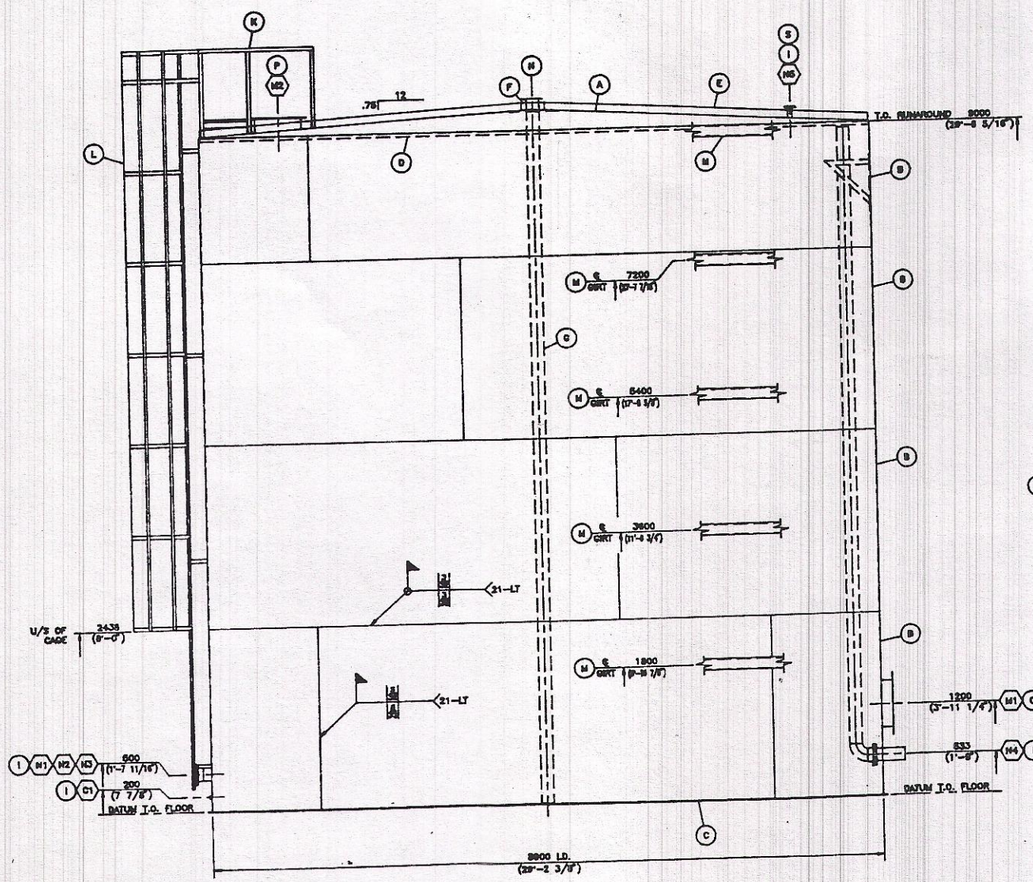
DESIGN DATA	MATERIAL SPECIFICATIONS	EXTERNAL FINISH	INTERNAL FINISH	TESTING
DESIGN CODE: AWWA D100 & API 650	ROOF: A-36 COUPLINGS: A-105			
DESIGN PRESSURE/VAC.: ATM	SHELL: A-36 FITTINGS: A-234-WPB			INSULATION
DESIGN TEMPERATURE: N/A	FLOOR: A-36 STUD BOLTS: A-325			
DESIGN SPECIFIC GRAVITY: 1.0	STRUCTURAL: G40.21-44W HEX NUTS: 2H-194-2H			
SEISMIC ZONE: N/A	PIPE: A-53-B GALVANIZED GASKETS: BUTYL RUBBER			
DESIGN WIND LOAD: 180 kmh (100 mph)	FLANGE: A181 GR1 HEAT COIL: N/A			
DESIGN LIVE ROOF LOAD: 36.79 psf				
CORROSION ALLOWANCE: 2mm(1/16")				
MAXIMUM FILLING HEIGHT: 8923 (29'-3 3/8")				

NOZZLE SCHEDULE

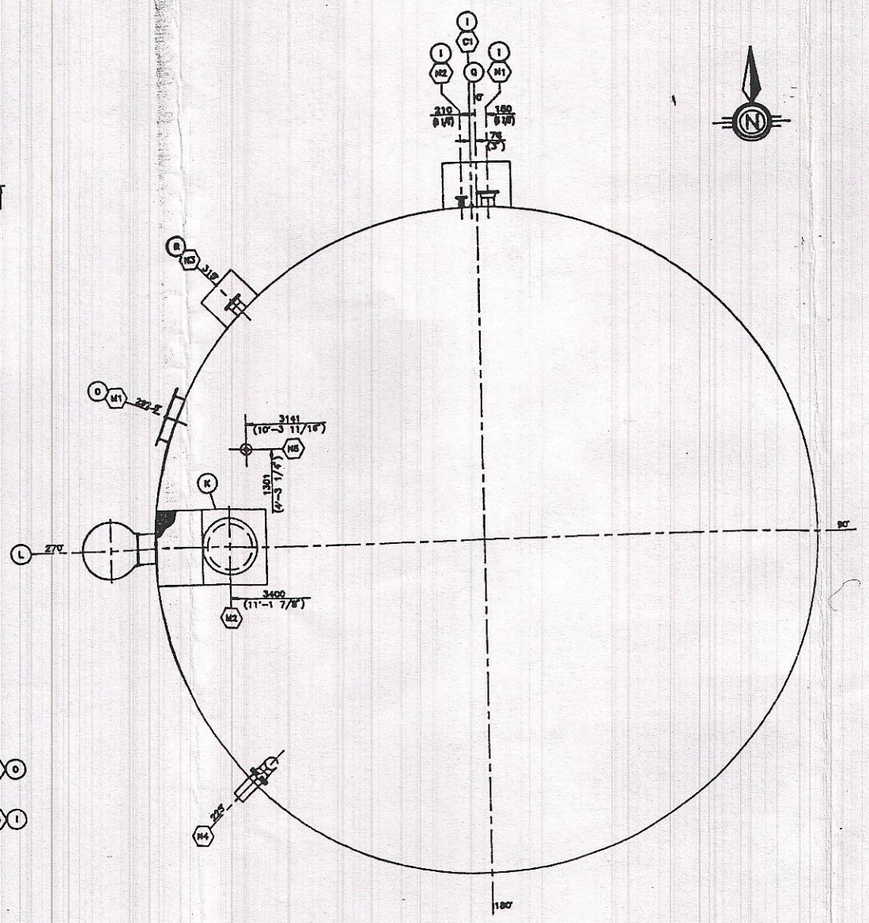
MK	NO	SIZE	SCH	RATE	TYPE	EXT. PROJ	REPAD YES	REPAD NO	DESCRIPTION
N1	1	168/6"	SCH STD	ANSI 150	FF30	300/11 7/8"	✓		SUCTION/FILL
N2	1	80/3"	SCH STD	ANSI 150	FF30	300/11 7/8"	✓		RETURN
N3	1	168/6"	SCH STD	ANSI 150	FF30	300/11 7/8"	✓		SUCTION/FILL
N4	1	168/6"	SCH STD	-	-	300/11 7/8"	✓		VENT/OVERFLOW C/W BIRD SCREEN
N5	1	80/3"	SCH STD	ANSI 150	FF30	300/11 7/8"	✓		LEVEL SWITCH C/W BLIND FLANGE
C1	1	25/1"	-	3000#	FULL COUP	HALF		✓	AIR LINE (FUTURE) C/W BALL VALVE & PLUG
M1	1	610/24"	-	API 650	FABR'D	150/6"	✓		SHELL MANWAY
M2	1	610/24"	-	API 650	FABR'D	150/6"	✓		ROOF MANWAY

MATERIAL LIST

MK	QTY.	DESCRIPTION	REFERENCE	WT
A		ROOF PLATE 3/16" THK.	A-36	
B		SHELL PLATE 3/16" THK.	A-36	
C		FLOOR PLATE 5/16" THK.	A-36	
D	1	RUNAROUND ANGLE 2" x 2" x 3/16" x 92'-6" LG	G40.21-44W	
E	18	ROOF CHANNEL C4 x 5.4#	REF. DWG.	
F	1	COMPRESSION RING	REF. DWG. T-5400-D104	
G	1	CENTER POLE SUPPORT	REF.DWG.	
H				
I	1 SET	NOZZLE SPOOL	REF.DWG. T-5400-D105	
J	1	ANCHOR BOLTS	REF.DWG.	
K	1	ROOF PLATFORM	REF.DWG.	
L	1	LADDER C/W CAGE	REF.DWG. T-5400-D103	
M	3	INSULATION RINGS	REF.DWG.	
N	1	PAINTERS POST	REF.DWG.	
O	1	SHELL MANWAY	REF.DWG.	
P	1	ROOF MANWAY	REF.DWG.	
Q	1	ISOLATION VALVE ENCLOSURE	REF.DWG.	
R	1	EMERGENCY CONNECTION ENCLOSURE	REF.DWG.	
S	1	LEVEL SWITCH		
T				
U				
V				
W				
X				
Y				
Z				
AA				
BB				
CC				
DD				
EE				
FF				
GG				
HH				
II				
JJ				
KK				
LL				
MM				
NN				



ELEVATION



ORIENTATION

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.
2. ALL NOZZLE FLANGE RATINGS TO BE ANSI B16.5-1988
3. ALL NOZZLE PROJECTIONS ARE GIVEN ALONG CENTERLINES.
4. DRILL AND TAP 8mm(1/4") DIA. TELL TALE HOLES IN REINFORCING PADS.
5. FLANGE AND BOLT HOLES TO STRADDLE PRINCIPLE CENTERLINES OF TANK.

PROFESSIONAL ENGINEER ALBERTA
BRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY	APP
4	16/09/91	AS-BUILT	TWA	
3	30/08/91	ISSUED FOR CONSTRUCTION	LLC	
2	22/11/91	ISSUED FOR APPROVAL	CLG	

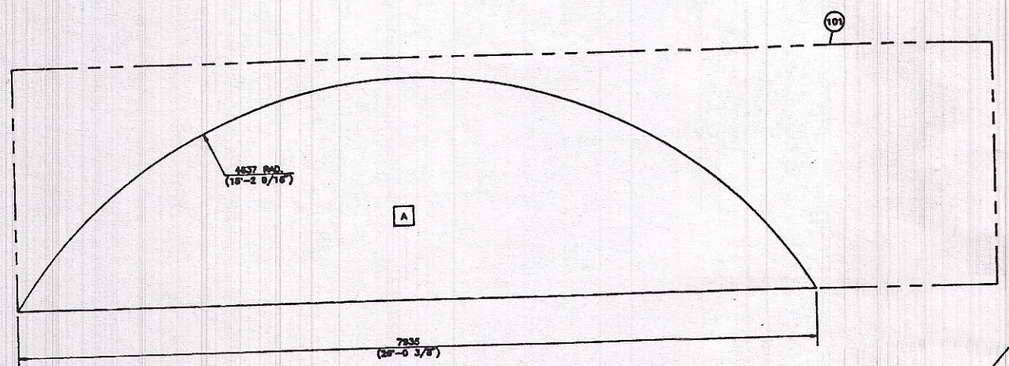
REVISIONS

UNIVERSAL INDUSTRIES LTD.
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

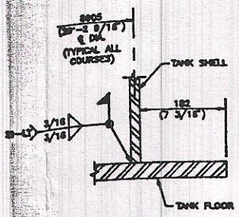
CLIENT: CAPE DORSET
NORTHWEST TERRITORIES

SUB. TITLE: WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16") HIGH
GENERAL ARRANGMENT

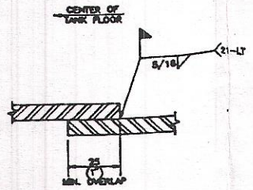
SCALE: 1:40	SUB. BY: C. GRISHER	DWG. NO. T-5400-D101	REV. NO. 4
DATE: 14/11/91	CHK'D: APP'D:		



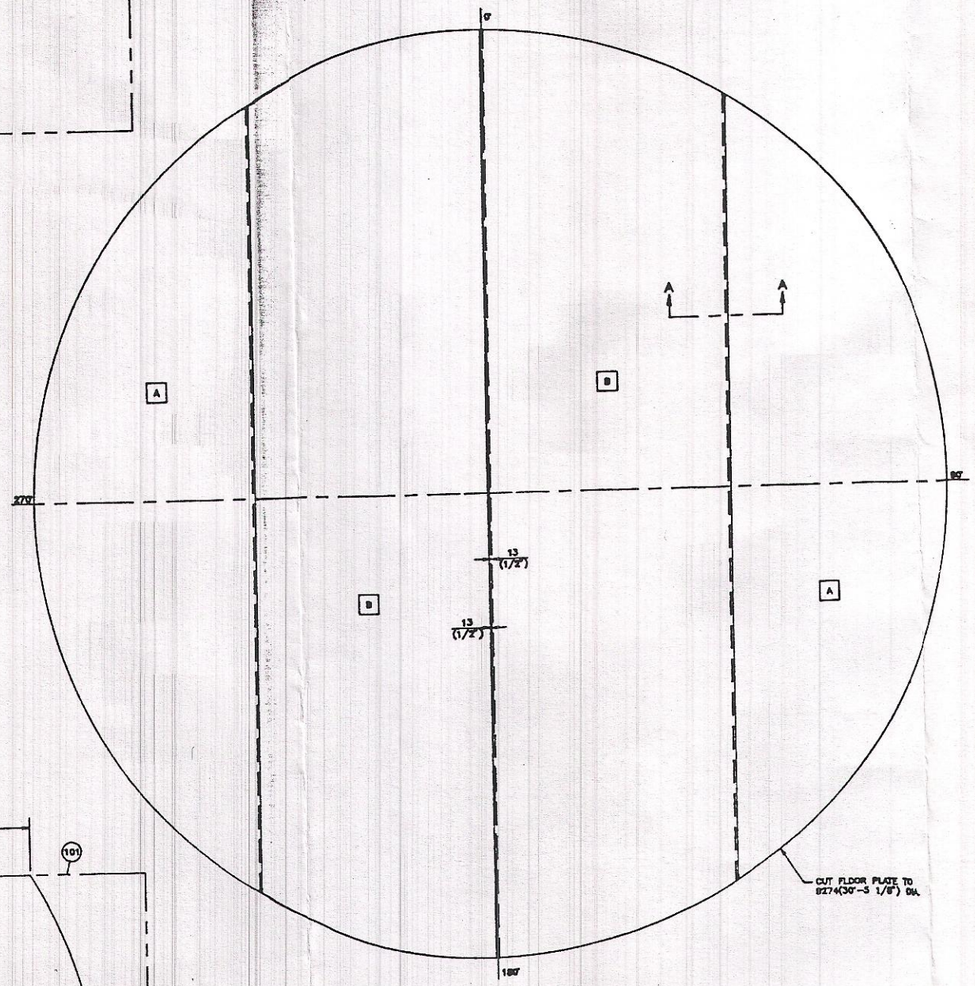
(101) SHEET LAYOUT
(8'-0" x 32'-0")
(2 REQ'D)



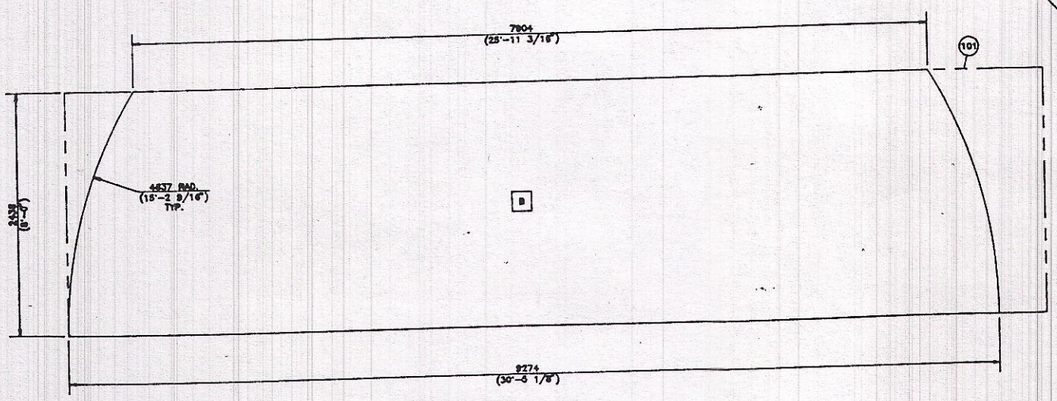
SHELL TO FLOOR CONNECTION DETAIL
SCALE: N.T.S.



SECTION "A-A"
SCALE: N.T.S.



FLOOR PLATE LAYOUT



(101) SHEET LAYOUT
(8'-0" x 32'-0")
(2 REQ'D)

MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL	WT.
101	4	PLATE 5/16" THK. x 8'-0" x 32'-0" LG.	A-36	1304
			SUBTOTAL	1304
			x 1.05	
			TOTAL	1369

NOTES:
1. DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.

PROFESSIONAL ENGINEER ALBERTA
BRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY	APP
3	15/08/92	AS-BUILT	TRB	
2	30/06/92	ISSUED FOR CONSTRUCTION	LLC	
1	10/01/92	ISSUED FOR APPROVAL	CLB	

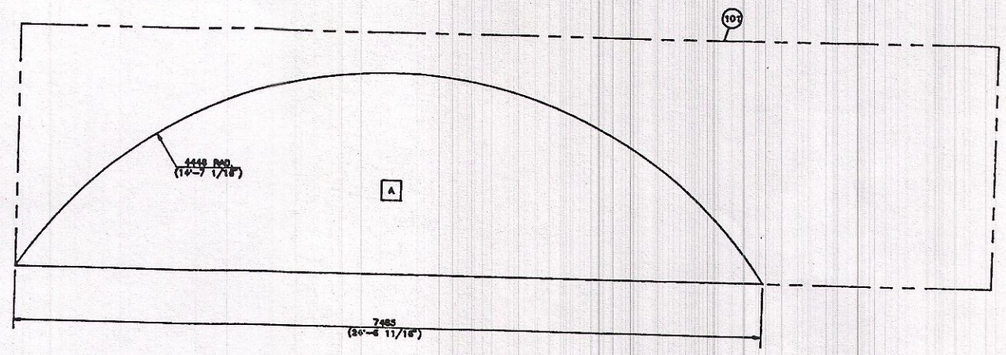
REVISIONS

UNIVERSAL INDUSTRIES LTD.
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

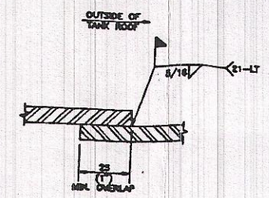
CLIENT
CAPE DORSET
NORTHWEST TERRITORIES

DWG. TITLE
WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16") HIGH
FLOOR PLATE LAYOUT

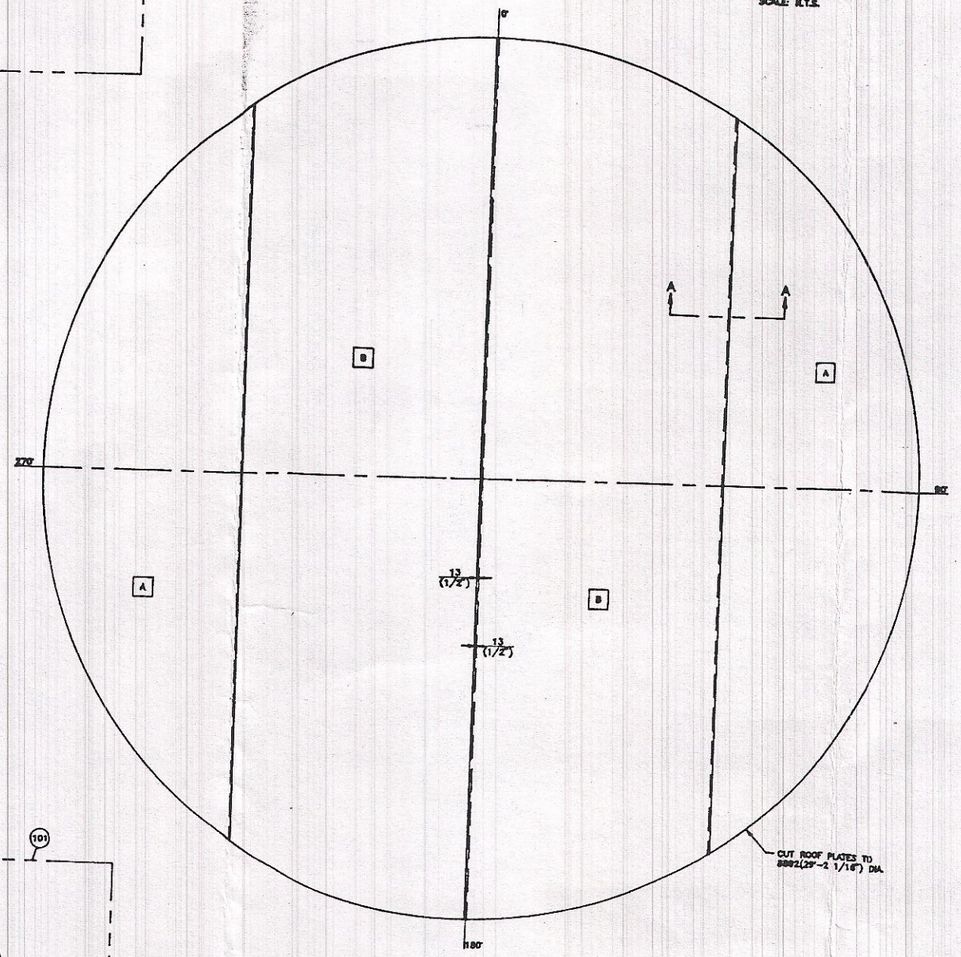
SCALE	DRN. BY	DWG. NO.	REV. NO.
1:30	C.GRESLER	T-5400-D102 SHT 1/2	1
DATE 18/11/91	CHK'D	APP.	



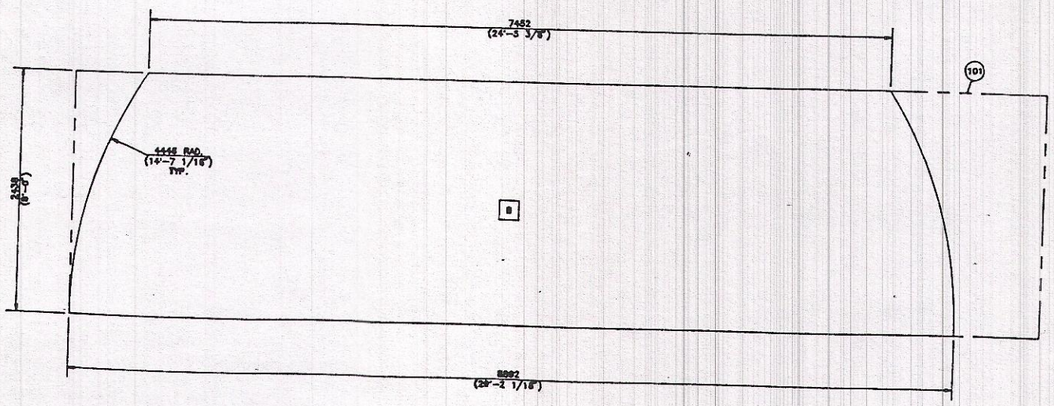
101 SHEET LAYOUT
(8'-0" x 32'-0")
(2 REQ'D)



SECTION "A-A"
SCALE: N.T.S.



ROOF PLATE LAYOUT



101 SHEET LAYOUT
(8'-0" x 32'-0")
(2 REQ'D)

MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL
101	4	PLATE 3/16" THK. x 8'-0" x 32'-0" LG.	A-36
102			
103			
104			SUBTOTAL
105			x 1.05
106			TOTAL
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.

PROFESSIONAL ENGINEER
BRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY
1	15/08/92	AS-BUILT	
2	30/06/92	ISSUED FOR CONSTRUCTION	
3	10/01/92	ISSUED FOR APPROVAL	

REVISIONS

UNIVERSAL INDUSTRIES L
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

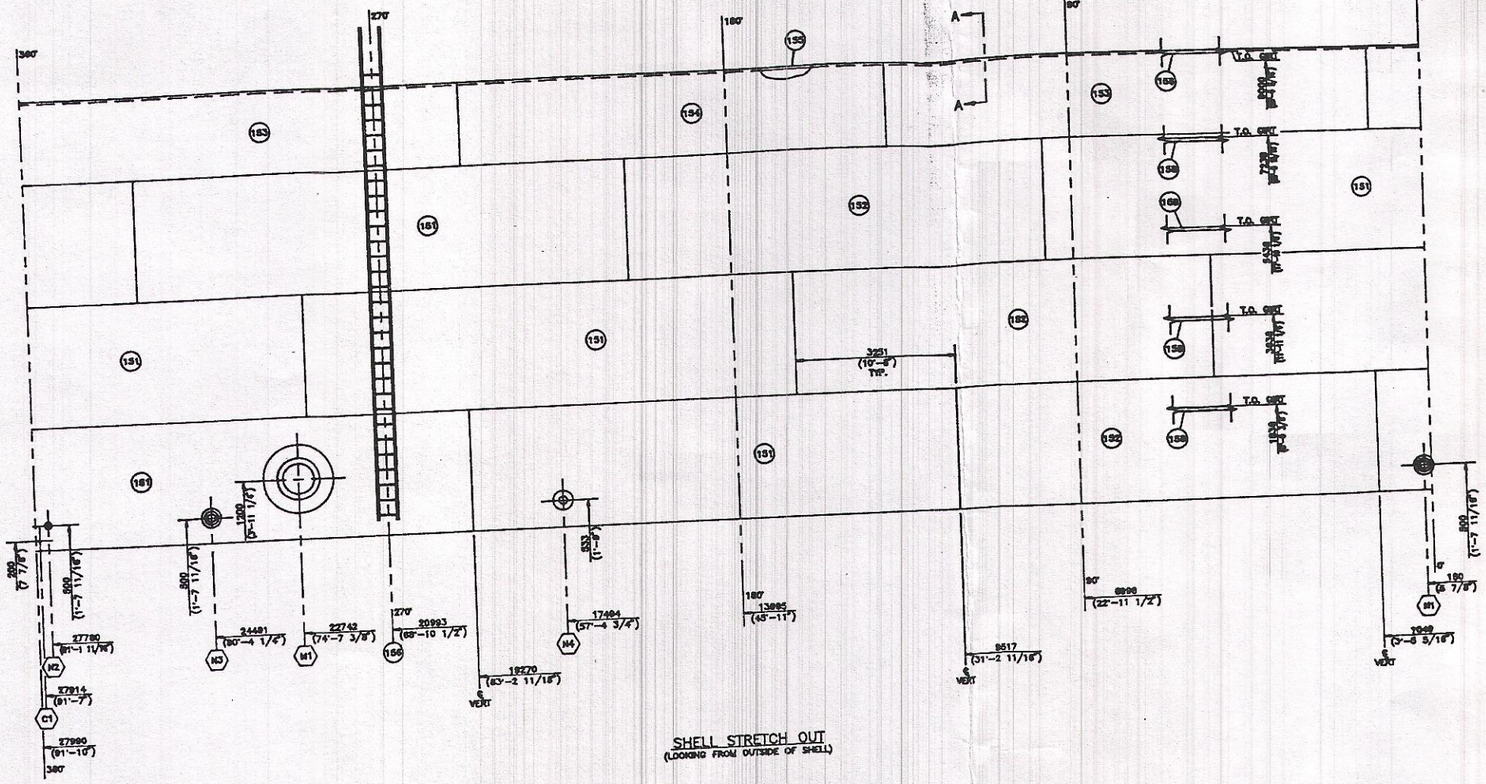
CLIENT

CAPE DORSET
NORTHWEST TERRITORIES

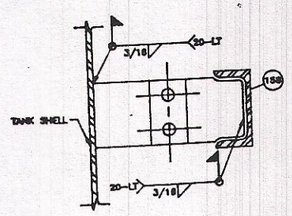
DWG. TITLE

WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16")
ROOF PLATE LAYOUT

SCALE	DWN. BY	DWG. NO.
1:30	C. GRESMER	T-5400-D102 SHT 2/2
DATE: 20/11/91	CHKD.	APPD.



SHELL STRETCH OUT
(LOOKING FROM OUTSIDE OF SHELL)



INSULATION CLIP WELD DETAIL
SCALE: N.T.S.

MK	QTY.	DESCRIPTION	MATERIAL
151	6	PLATE 3/16" THK. x 5'-0" x 32'-0" LG.	A-36
152	3	PLATE 3/16" THK. x 5'-0" x 27'-6 3/8" LG.	A-36
153	2	PLATE 3/16" THK. x 5'-0 1/8" x 32'-0" LG.	A-36
154	1	PLATE 3/16" THK. x 5'-0 1/8" x 27'-6 3/8" LG.	A-36
155	32'-6"	RUNAROUND ANGLE 2" x 2" x 3/16" THK.	A-36
156	1	LADDER	REF. DRG.
157	1	ANCHOR BOLTS	
158	5	INSULATION SUPPORTS	
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NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.
2. ALL VERTICAL DIMENSIONS ARE TAKEN FROM T.O. FLOOR PLATE.

PROFESSIONAL ENGINEER
BRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY
4	15/08/92	AS-BUILT	TMD
3	30/06/92	ISSUED FOR CONSTRUCTION	CLC
2	07/02/92	ISSUED FOR APPROVAL	CLC
1			

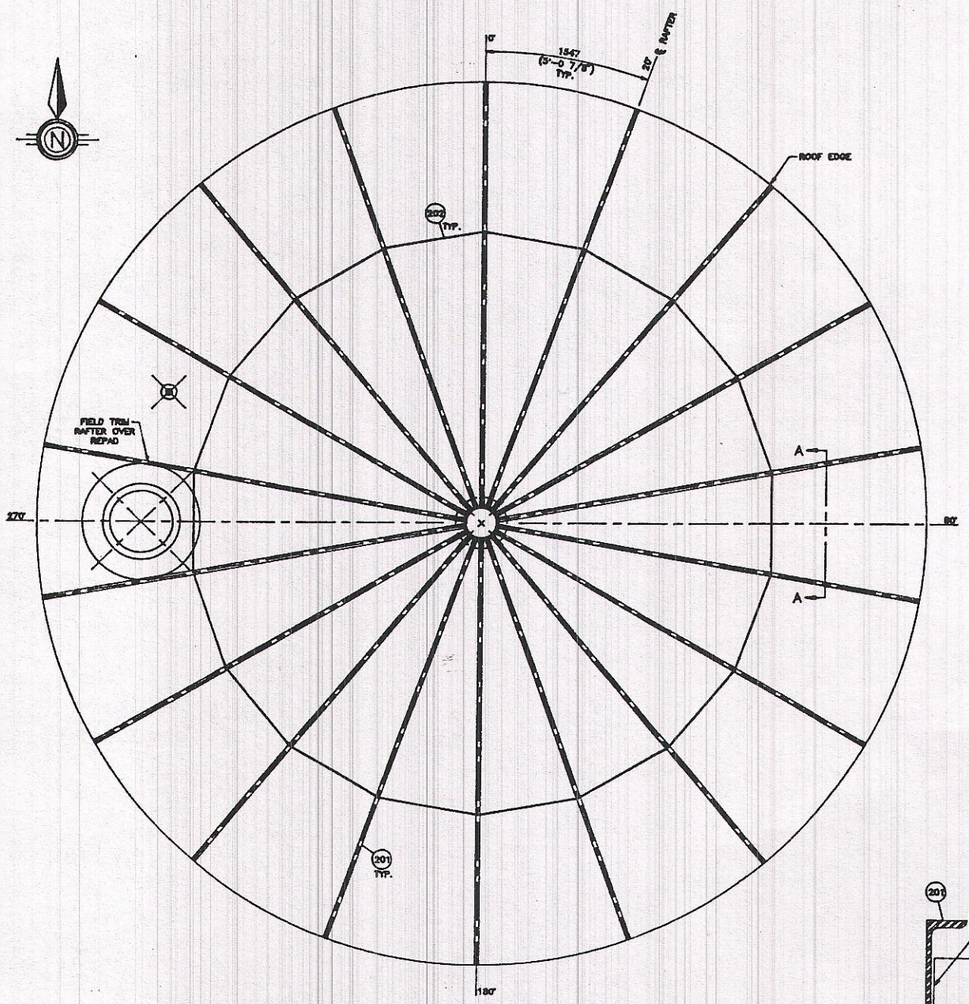
REVISIONS

UNIVERSAL INDUSTRIES L
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

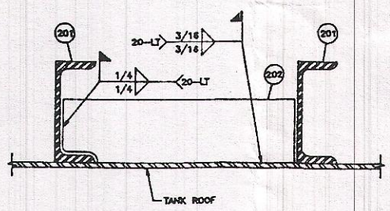
CLIENT
CAPE DORSET
NORTHWEST TERRITORIES

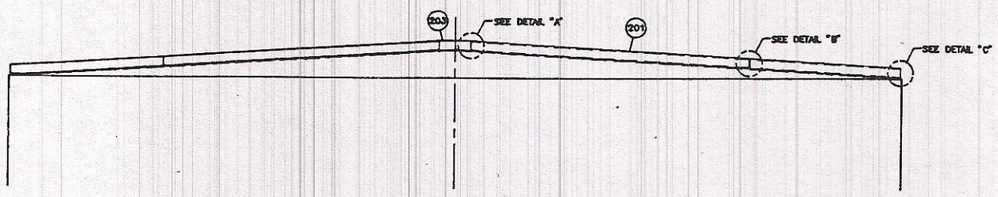
DWG. TITLE
WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16")
SHELL STRETCH OUT

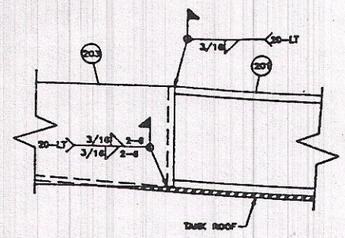
SCALE: 1:80	DRN. BY: C. DRESMER	DWG. NO. T-5400-D103
DATE: 20/11/91	CHK'D:	APP'D:

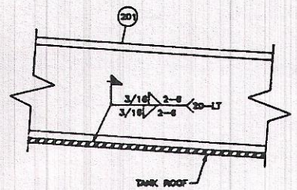


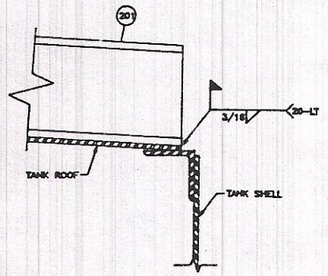
ORIENTATION

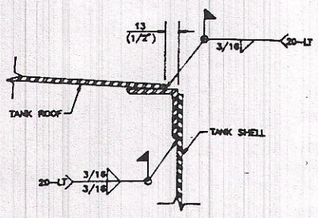












MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL
201	18	ROOF CHANNEL C4 x 5.4#	REF. DWG.
202	18	STIFFENER: FLATBAR 2 1/2" x 1/4" THK.	REF. DWG.
203	1	COMPRESSION RING: PLATE 3/16" x 4"	A-36
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.

PROFESSIONAL ENGINEER ALBERTA
ADRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY
△			
△			
△			
4	15/09/92	AS-BUILT	TMA
3	30/06/92	ISSUED FOR CONSTRUCTION	LLC
2	10/01/92	ISSUED FOR APPROVAL	CLD

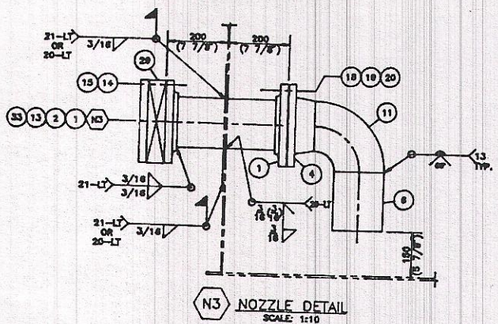
REVISIONS

UNIVERSAL INDUSTRIES LTD
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

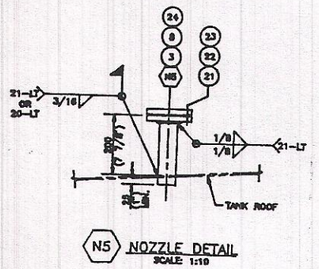
CLIENT
CAPE DORSET
NORTHWEST TERRITORIES

DWG. TITLE
WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16") HIGH
ROOF STRUCTURE DETAIL

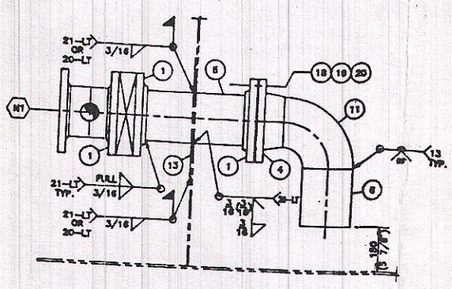
SCALE	DRN. BY	DWG. NO.	REV.
1:30	C. GRISMER	T-5400-D104	4
DATE	CHK'D		
20/11/91	APP'D		



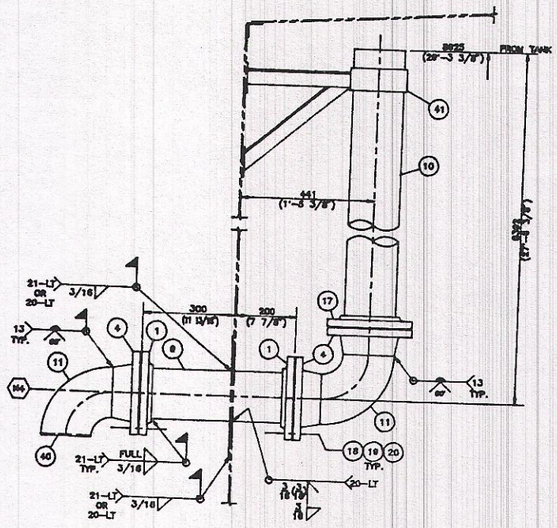
N3 NOZZLE DETAIL
SCALE: 1:10



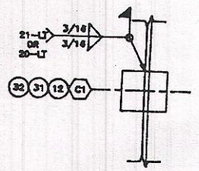
N5 NOZZLE DETAIL
SCALE: 1:10



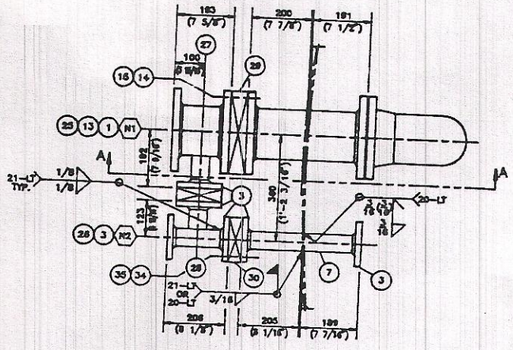
SECTION "A-A"
SCALE: 1:10



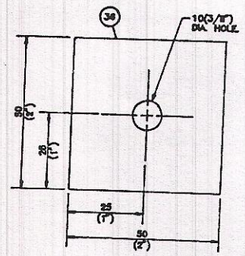
N4 NOZZLE DETAIL
SCALE: 1:10



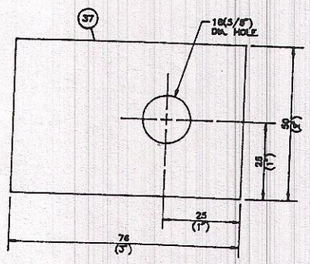
C1 CPLG DETAIL
SCALE: N.T.S.



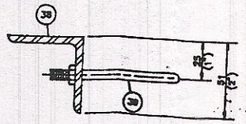
N2 N1 NOZZLE DETAIL
SCALE: 1:10

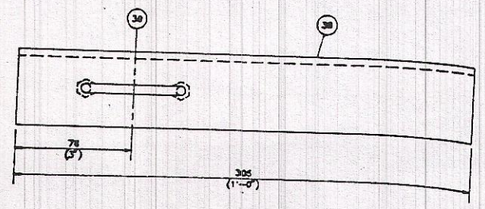


GROUND CLIP
SCALE: 1:1
(4 REQ'D)



ENCLOSURE CLIP
SCALE: 1:1
(24 REQ'D)





ENCLOSURE CLIP
SCALE: 1:2
(2 REQ'D)

MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL	WT.
1	8	FLANGE 6" ANSI 150 FFSO	A-105	90
2	1	BLIND FLANGE 6" ANSI 150 FF	CAST IRON	28
3	7	FLANGE 2" ANSI 150 FFSO	A-105	35
4	5	FLANGE 6" ANSI 150 FFRH x SCH STD BORE	A-105	66
5	1	PIPE 6" SCH STD x 1'-3 3/8" LG. ERW	A-53-B (GALV.)	23
6	2	PIPE 6" SCH STD x 7 13/16" LG. ERW	A-53-B (GALV.)	25
7	1	PIPE 2" SCH STD x 1'-3 5/8" LG. ERW	A-53-B	5
8	1	PIPE 2" SCH STD x 9" LG. ERW	A-53-B	3
9	1	PIPE 6" SCH STD x 1'-7 5/8" LG. ERW	A-53-B (GALV.)	31
10	1	PIPE 6" SCH 40 x 26'-6 3/4" LG.	PVC	308
11	4	ELBOW 6" SCH STD x 90° S.R.	A-234-WPB (GALV.)	54
12	1	FULL CPLG 1" 3000# F.S. SCR'D	A-105	1
13	3	REPAD: PLATE 3/16" x 6 3/4" I.D. x 1'-3 3/4" O.D.	A-36	25
14	16	STUDS 3/4" DIA. x 6" LG.	SA-193-B7	6
15	32	HEX NUTS 3/4" NOM.	SA-194-2H	2
16				
17	1	FLANGE 6" 150# SCH FF S.W.	PVC	10
18	56	STUDS 3/4" DIA. x 3 3/4" LG.	S.S.	5
19	112	HEX NUTS 3/4" NOM.	S.S.	3
20	8	GASKET 6" ANSI 150 FF x 1/8" THK.	RUBBER	1
21	4	STUDS 5/8" DIA. x 3" LG.	SA-193-B7	2
22	8	HEX NUTS 5/8" NOM.	SA-194-2H	1
23	1	GASKET 2" ANSI 150 FF x 1/8" THK.	RUBBER	1
24	1	BLIND FLANGE 2" ANSI 150 FF	A-105	4
25	1	PIPE 6" SCH STD x 7 1/16" LG. ERW	A-53-B (GALV.)	12
26	1	PIPE 2" SCH STD x 7 7/8" LG. ERW	A-53-B	3
27	1	PIPE 2" SCH STD x 6 9/16" LG. ERW	A-53-B	2
28	1	PIPE 2" SCH STD x 4 3/4" LG. ERW	A-53-B	2
29	2	BUTTERFLY VALVE - 6" DRESSERICK	--	54
30	2	BUTTERFLY VALVE - 2" DRESSERICK	-	25
31	1	CLOSE NIPPLE 1" SCH STD ERW	A-53-B	1
32	1	BALL VALVE 1" C/W PLUG	-	10
33	1	PIPE 6" SCH STD x 1'-3 9/16" LG. ERW	A-53-B (GALV.)	23
34	8	STUDS 5/8" DIA. x 5" LG.	SA-193-B7	3
35	16	HEX NUTS 5/8" NOM.	SA-194-2H	2
36	4	CLIP: PLATE 1/4" THK. x 2" x 2" LG.	A-36	1
37	24	CLIP: PLATE 1/4" THK. x 2" x 3" LG.	A-36	10
38	2	ANGLE 2" x 2" x 3/16" x 1'-0" LG.	A-36	5
39	2	U-BOLT 2 1/2" DIA.	S.S.	2
40	1	BIRDSCREEN 6" DIA.	-	
41	1	6" PIPE CLAMP & BRACE	-	
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NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.
2. DRILL AND TAP 8mm(1/4") DIA. TELLTALE HOLES IN REINFORCING PADS.
3. NOZZLES TO BE GALVANIZED.

PROFESSIONAL ENGINEER
BRIAN A. NORDQUIST
X-LOG
TOTAL

NO	DATE	REVISIONS	BY	APP
4	16/09/92	AS-BUILT	TMA	
3	12/06/92	ISSUED FOR CONSTRUCTION	LLC	
2	27/03/92	ISSUED FOR APPROVAL	CLS	
1				

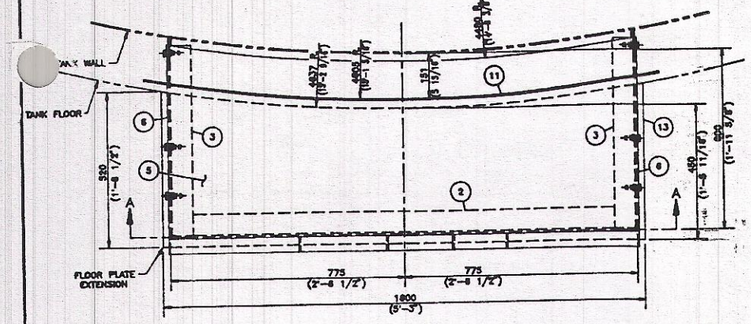
REVISIONS

UNIVERSAL INDUSTRIES LTD.
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

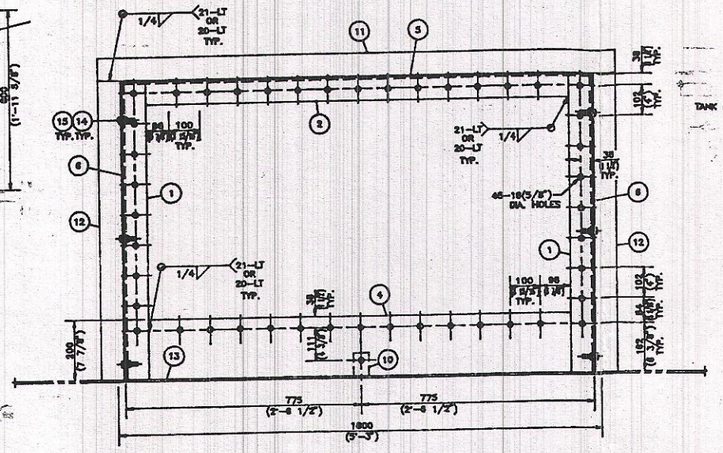
CLIENT
CAPE DORSET
NORTHWEST TERRITORIES

DWG. TITLE
WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16") HIGH
NOZZLE SPOOL & CLIP DETAILS

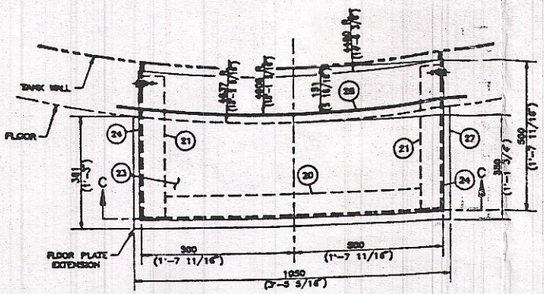
SCALE: AS SHOWN	DWG. BY: C. DRIEVER	DWG. NO. TA-5400-D105	REV. NO. 4
DATE: 17/11/91	CHK'D: APP'D:		



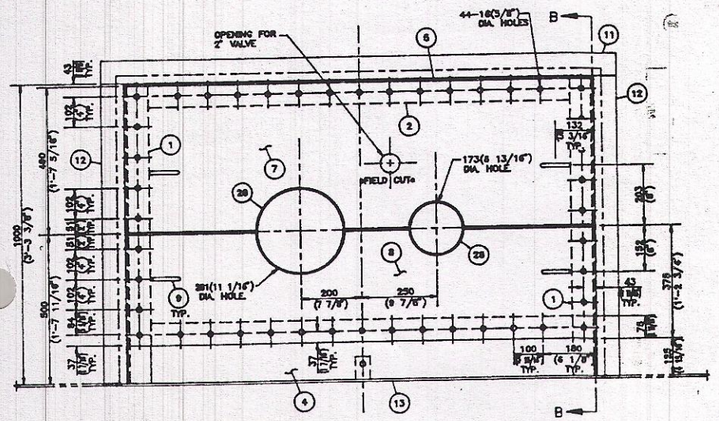
PLAN VIEW



SECTION "A-A"

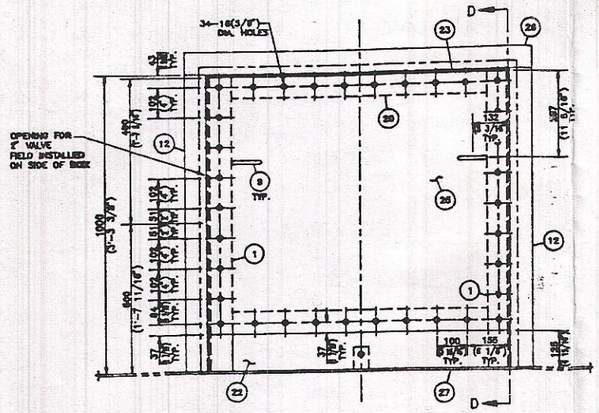


PLAN VIEW



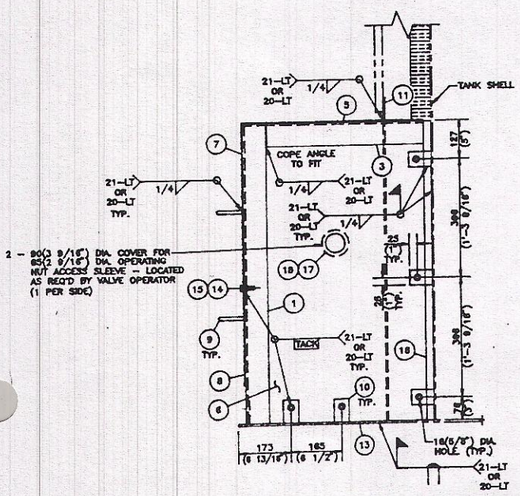
ELEVATION VIEW

ISOLATION VALVE ENCLOSURE

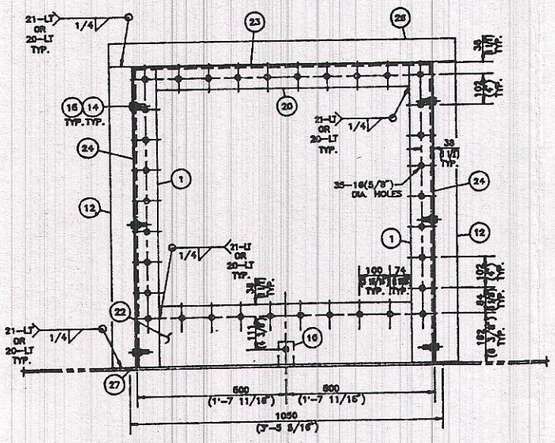


ELEVATION VIEW

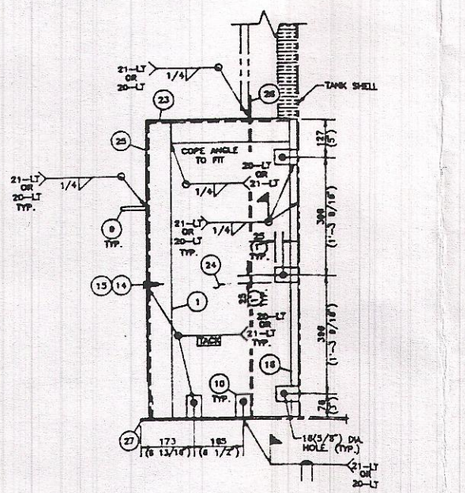
EMERGENCY CONNECTION ENCLOSURE



SECTION "B-B"



SECTION "C-C"



SECTION "D-D"

MATERIAL LIST

MK	QTY.	DESCRIPTION	MATERIAL	WT.
1	4	ANGLE 3" x 3" x 1/4" x 3'-3 3/16" LG.	G40.21-44W	84
2	1	ANGLE 3" x 3" x 1/4" x 4'-7" LG.	G40.21-44W	22
3	2	ANGLE 3" x 3" x 1/4" x 2'-1 3/16" LG.	G40.21-44W	21
4	1	PLATE 1/4" THK. x 7 7/8" x 4'-7" LG.	G40.21-44W	31
5	1	PLATE 1/4" THK. x 2'-1 1/4" x 5'-1 7/16" LG.	G40.21-44W	110
6	2	PLATE 1/4" THK. x 2'-1 1/4" x 3'-3 3/16" LG.	G40.21-44W	140
7	1	PLATE 1/4" THK. x 1'-7 8/16" x 5'-1 7/16" LG.	G40.21-44W	84
8	1	PLATE 1/4" THK. x 1'-2 3/4" x 5'-1 7/16" LG.	G40.21-44W	64
9	8	ROUND BAR 5/8" DIA. x 1'-0" LG.	G40.21-44W	6
10	22	FLATBAR 1/4" THK. x 2" x 3" LG.	G40.21-44W	9
11	1	FLATBAR 1/4" THK. x 3" x 5'-7 13/16" LG.	G40.21-44W	14
12	4	FLATBAR 1/4" THK. x 3" x 3'-3 3/8" LG.	G40.21-44W	34
13	1	PLATE 5/16" THK. x 1'-8 1/2" x 5'-3" LG.	G40.21-44W	114
14	100	BOLT 1/2" DIA. x 1 1/2" LG.	Gr. 5	19
15	100	HEX NUTS 1/2" NOM.	Gr. 5	6
16	4	FLATBAR 1/4" THK. x 1" x 3'-3 3/16" LG.	G40.21-44W	11
17	2	COVER: PLATE 1/4" THK. x 3 8/16" DIA.	G40.21-44W	2
18	8	SHEET METAL SCREWS 1/8" DIA. x 1" LG.	--	1
19				
20	1	ANGLE 3" x 3" x 1/4" x 3'-3 1/16" LG.	G40.21-44W	16
21	2	ANGLE 3" x 3" x 1/4" x 1'-7 1/16" LG.	G40.21-44W	16
22	1	PLATE 1/4" THK. x 7 7/8" x 2'-9 3/8" LG.	G40.21-44W	19
23	1	PLATE 1/4" THK. x 1'-8" x 3'-3 3/4" LG.	G40.21-44W	36
24	2	PLATE 1/4" THK. x 1'-8" x 3'-3 3/16" LG.	G40.21-44W	111
25	1	PLATE 1/4" THK. x 3'-3 3/4" x 2'-10 1/16" LG.	G40.21-44W	86
26	1	FLATBAR 1/4" THK. x 3" x 3'-0 7/8" LG.	G40.21-44W	10
27	1	PLATE 5/16" THK. x 1'-3" x 3'-3 5/16" LG.	G40.21-44W	33
28	2	FLATBAR 3/16" THK. x 2" x 3'-0 7/16" LG. TRIM TO FIT	G40.21-44W	10
29				
30				
31			SUBTOTAL	1132
32			x 1.06	
33			TOTAL	1200 lbs.
34				
35				
36				
37				
38				
39				
40				

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS IN BRACKETS ARE FOR REFERENCE ONLY.

PROFESSIONAL ENGINEER ALBERTA
BRIAN A. K. NORDQUIST

NO	DATE	REVISIONS	BY	APP
△				
△				
△				
3	10/08/92	AS-BUILT	TWA	
2	30/06/92	ISSUED FOR CONSTRUCTION	LLC	
1	28/05/92	ISSUED FOR APPROVAL	CLG	

REVISIONS

UNIVERSAL INDUSTRIES LTD.
P.O BOX 1590
LLOYDMINSTER, ALTA./SASK. S9V 1K5

CLIENT: CAPE DORSET
NORTHWEST TERRITORIES

DWG. TITLE: WATER STORAGE TANK
8900mm(29'-2 3/8") I.D. x 9000mm(29'-6 5/16") HIGH
ENCLOSURE DETAILS

SCALE: 1:10	DWG. BY: C. GRISSMER	DWG. NO. TA-5400-D112	REV. NO. 1
DATE: 21/05/92	CHK'D:	APP'D:	

DE BERARD Pour Ryan

NDT RECORD SHEET

UNIVERSAL INDUSTRIES LTD.
BOX 1590, LLOYDMINSTER, SASK./ALTA. S9V 1K5 (403) 875-6161

SAMPLE 15

S.O. # : _____ CUSTOMER: _____

DESCRIPTION: _____ LOCATION: _____

FOREMAN: _____ VESSEL # : _____

TANK ELEMENT	TEST	STANDARD	CUSTOMER	UIL	DATE
ANNULAR RING	RADIOGRAPHY	Q-RE-1.0			
BOTTOM	VACUM BOX	Q-VT-1.0	MA	[signature]	July 10/92
SHELL TO BOTTOM	OIL PENETRANT MAGNETIC PARTICLE	Q-SB-1.0			
FIELD INSTALLED FITTINGS, (LAYOUT) MA	VISUAL	Q-MP-1.0 UIL DWG. API 650	MA	[signature]	July 10/92
SHELL REPADS	AIR TEST	Q-AP-1.0	BG	[signature]	July 21/92
FLOOR SUMPS	MAGNETIC PARTICLE	Q-AP-1.0			
FIELD INSTALLED SHELL FITTINGS	MAGNETIC PARTICLE	Q-MP-1.0			
ROOF	VACUUM BOX	Q-VT-1.0			
FLOATING ROOF	OIL PENETRANT	Q-SB-1.0			
TANK TEST	Air ~~HYDROSTATIC~~	Q-HT-2.1.0	BG	[signature]	July 21/92
TANK GAUGING	STRAPPING				
ROOF DRAIN	AIR TEST				
PONTOONS	AIR TEST				

Northwest Territories

memo

To: Consultant

Subject: Comments

Date: Dec 17th 1992

(1) Overall Plan location of Tank (new one) in relation -ship to Hamlet and Tree Lake. show it.

NWT 1396/0786