

UNIVERSITY OF NEBRASKA - LINCOLN

Parts Manual

Ground Water Well Model

**Dr. Bruce Dvorak
Sharon Skipton
Allison Potter**

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Pumps

OASE Submersible Fountain Pump

Supplier: Surplus Center
120 VAC 35-70 GPH Submersible Pump
Item #: 2-1254
Cost: \$5.99
Use: For filling model



Variable-Speed Metering Pump

Blue-White ChemFeed Diaphragm Metering Pump
Supplier: Burt Process
115V/60Hz
Series #: C1500N
Item #: C15N4011000V00
Cost: \$433.75
Use: For drawing water from wells



Hand Pump (manual alternative to Variable Speed Metering Pump)

Thermo Scientific Nalgene Repairable Hand-Operated Vacuum Pump
Supplier: Fisher Scientific
Pumping Rate/Stroke: 15cc
Catalog #: 01-07
Cost: \$154.85 Each or \$412.91 for Case of 4
Use: Manual alternative to Variable Speed Metering Pump



Tubing

1/4" 3-A Sanitary Clear PVC Tubing

Supplier: McMaster-Carr

1/4" ID, 3/8" OD Tubing

Part Number: 5231K331

Cost: \$0.32/foot

Use: To connect network for inlet tubing and for mechanical variable speed pump

3/8" 3-A Sanitary Clear PVC Tubing

Supplier: McMaster-Carr

3/8" ID, 1/2" OD Tubing

Part Number: 5231K355

Cost: \$0.42/foot

Use: For overflow from model, connects to rigid tubing on overflow

1/2" 3-A Sanitary Clear PVC Tubing

Supplier: McMaster-Carr

1/2" ID, 5/8" OD Tubing

Part Number: 5231K371

Cost: \$0.63/foot

Use: For connecting to inlet pump

Rigid White Polypropylene Tubing

Supplier: McMaster-Carr

1/4" ID, 3/8" OD, 1/16" Wall Thickness

Part Number: 5392K14

Cost: \$0.55/foot

Use: Connects to compression fitting for overflow, flexible 3/8" ID tubing connects to it

Flexible Tube Connectors

Single Barbed 90° Plastic Elbows

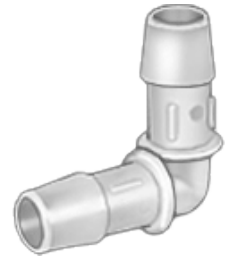
Supplier: McMaster-Carr

¼" Tube ID

Part Number: 53415K148

Cost: \$7.37/pack of 10

Use: Elbow is used to create a right angle where tubing enters model's overflow cavity for filling



PVDF Single Barbed Plastic Wye

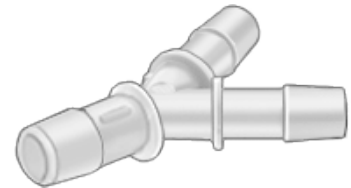
Supplier: McMaster-Carr

¼" Tube ID

Part Number: 53055K155

Cost: \$3.15

Use: To divide the inlet line into two sections for filling model



Nylon Single Barbed Flexible Tubing Reducer

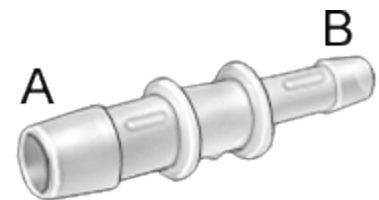
Supplier: McMaster-Carr

½" to ¼" tube ID

Part Number: 2974K267

Cost: \$7.37/ pack of 10

Use: To reduce inlet flow from pump to ¼" inlet lines



Fittings

3/8" NPT Hex Head Plug

Supplier: McMaster-Carr
Part Number: 4589K152
Cost: \$3.82 Each
Use: To plug the bottom two 3/8" holes on model sides



3/8" Elbow Compression Tube Fitting

Supplier: McMaster-Carr
3/8" Tube OD X 3/8" NPT Male Pipe
Part Number: 5533K644
Cost: \$5.71 Each
Use: To create an overflow mechanism on the overflow cavity of the model. These fit into the top two holes on model sides and attach to rigid then flexible tubing.



Filling Media

Bentonite Chips

Holeplug 3/8" Coarse Grade Wyoming Sodium Bentonite
Bariod Industrial Drilling Products
Hand Ground to Grade: 2.00 MM (No. 10) U.S. Standard Series Sieve
Supplier: Nebraska Pump
Use: Packing New Standard Bentonite Well

Ground using a Waring commercial blender for 5 second intervals and separated using a No 10 U.S. Standard Sieve to get correct size grade for packing well.

Bentonite Powder

Wyoming Sodium Bentonite Powder
Bariod Industrial Drilling Products
Supplier: Nebraska Pump
Use: Used in creating Confining Layer

Gravel

Supplier: Funston Industrial Sands
Grade: 2.00 MM (No. 10) U.S. Standard Series Sieve
Use: Used in packing Old Standard Well and the bottom of the New Well Standard screen area

Pool Filter Sand

AquaQuartz Pool Filter Sand
Standard #20 Grade
Size: .45-.55 mm
Supplier: Wedron Silica
Use: Basic filling material of model

Black Sand

Black Magnum Coal Slag Abrasive
Supplier: US Minerals
Use: Used in creating Confining Layer and also to create a defining line between gravel screen area and bentonite in New Standard Well

Recipe for Confining Clay Layer:

4 parts Black Magnum

1 part Bentonite power

1 part Buff sand

Directions: Add each sand ingredient to a large tray and thoroughly mix together until homogenous. Begin spraying mixture with water (from a misting spray bottle) and turning the mixture so that it evenly saturates. Do this until mixture is damp and will clump together when squeezed in the palm of your hand. This media is then ready to be packed into the acrylic model.

Dye Supplies

Tracer Dye

Supplier: Risk Reactor
Item #: IFWB-K
Cost: \$49.78
Includes: 1 oz. of each of the 5 IFWB series dyes



4 oz. Dropper Squeeze Bottle

Supplier: McMaster-Carr
Part Number: 5772T32
Cost: \$5.59



Other

Lettering

Supplier: Miller Graphics
Size: ½" and 3/8"
Cost: \$80

Hose Clamps

Supplier: McMaster-Carr
316 SS Worm-Drive Hose Clamp
7/32" to 5/8"
Part Number: 5011T141
Cost: \$10.22/ pack of 10



Buckets

Local Hardware Store
Cost: \$4.00

Power Strip

10' Cord, 3-Prong, 3 Outlet Power Strip
Local Hardware Store
Cost: \$10.00

Towel

Local General Purpose Store
Super-absorbent non-abrasive towel
Cost: \$1.00

Suppliers

Burt Process

Burt Process Equipment, Inc.
PO Box 185100
Hamden, CT 06518
Phone: (203) 287-1985
Website: www.burtprocess.com

Fisher Scientific

300 Industry Drive
Pittsburgh, PA 15275
Phone: 1-800-766-7000
Website: <http://www.fishersci.com>

Funston Industrial Sands

4801 Feather River Boulevard #30C
Oroville, CA 95965-9692
Phone: (530) 534-5023

Miller Graphics

Michael S. Miller
501 Driftwood Drive
Lincoln NE, 68501
Phone: (402) 489-9886
E-mail: MillerGraphics@windstream.net

McMaster-Carr

P.O. Box 94930
Cleveland, OH 44101-4930
Phone: (330) 995-5500
Website: www.mcmaster.com

Nebraska Pump

3026 N 35th St. – Lincoln, NE 68504
Phone: (402) 466-1477
Website: <http://www.nebraskapump.com/>
Email: nebraskapump@hotmail.com

Risk Reactor

2676 South Grand Avenue
Santa Ana, California 92705
Phone: 714-641-3500
Website: www.riskreactor.com

Surplus Center

1015 West "O" Street
Lincoln, NE 68528
Phone: 800-488-3407
Website: <http://www.surpluscenter.com/>

US Minerals

Black Magnum Coal Slag Abrasive
www.us-minerals.com/

Wedron Silica

3450 E 2056th Rd.
Wedron, IL 60557
Phone: 1-800-255-7263