

# Visual Oil Analysis



# Your Reservoir Oil's Best Friend

Eliminate the #1 Cause of Equipment Failure!

Esco's visual oil inspection products are designed for easy installation on almost all lubricating machinery oil reservoirs. Constructed of durable acrylic, they withstand most petroleum products to remain crystal clear and functional for years.

## BENEFITS

|                               | Drain Water | View Oil Clarity | Monitor Oil Level | Support High Temp Operation | Meet Space Limitations | View 360° |
|-------------------------------|-------------|------------------|-------------------|-----------------------------|------------------------|-----------|
| 3-D BullsEye™                 |             |                  | ●                 |                             | ●                      | ●         |
| Oil Sight Glass Vertical      | ●           | ●                |                   |                             |                        | ●         |
| Oil Sight Glass Horizontal    | ●           | ●                |                   |                             | ●                      | ●         |
| Hi-Temp Oil Sight Glass       | ●           | ●                |                   | ●                           |                        | ●         |
| Oil Level Indicator           |             | ●                | ●                 |                             |                        | ●         |
| Oil Sight Glass Level Monitor | ●           | ●                | ●                 |                             |                        | ●         |

PRODUCTS

## High Performance, Innovative Products that Protect Costly Reciprocating Machinery

Esco products:

- Install in minutes and last for years
- Manufactured in America of pressure welded durable cast acrylics and brass or stainless steel hardware
- Totally proven technology, fully proven in aggressive environments
- Used and recommended by hundreds of major companies
- Exceptionally cost effective

# 3-D BullsEye™

## A Better Oil Level Viewport

| NPT SIZES               | 1/4"  | 3/8"    | 1/2"    | 3/4"    | 1"      | 1 1/4"  | 1 1/2"  | 2"      |         |         |         |
|-------------------------|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Outside Diameter        | 1"  | 1.125"  | 0.875"  | 1.125"  | 1.375"  | 1.75"   | 2"      | 2.5"    |         |         |         |
| Length from last thread | 1.375"  | 1.375"  | 1"      | 1.375"  | 1.375"  | 1.375"  | 1.375"  | 1.5"    |         |         |         |
| METRIC SIZES            | M10X1.0   | M10X1.5 | M12X1.5 | M16X1.5 | M20X1.5 | M22X1.5 | M24X1.5 | M26X1.5 | M27X1.5 | M30X2.0 | M33X1.5 |
| Outside Diameter        | 0.875"  | 0.875"  | 0.875"  | 1"      | 1.25"   | 1.25"   | 1.375"  | 1.5"    | 1.5"    | 1.75"   | 1.75"   |
| Length from last thread | 1"  | 1"      | 1"      | 1"      | 1.062"  | 1.062"  | 1.125"  | 1.187"  | 1.187"  | 1.25"   | 1.25"   |
| Operating Range         | 180° F to 265 PSI<br>203° F to 66 PSI<br>230° F at atmospheric pressure |         |         |         |         |         |         |         |         |         |         |

\*\*Custom sizes available upon request



Old-fashioned sight plug make oil monitoring very difficult.



With Esco's 3-D BullsEye™, the reservoir oil can be inspected easily and accurately.



# Oil Sight Glass

## The Original Solution to Oil Inspection and Contamination Problems



VERTICAL



HORIZONTAL



HIGH TEMPERATURE



### MAGNET OPTION

Can be equipped with a rare earth magnet that attracts ferrous particles in your oil.

| STANDARD         | 1 oz. Oil Sight Glass   | 3 oz. Oil Sight Glass |
|------------------|---|-----------------------|
| Outside Diameter | 1.75"   | 2.5"                  |
| Length           | 2.38"   | 2.38"                 |
| Operating Range  | 180° F to 265 PSI<br>203° F to 66 PSI<br>230° F at atmospheric pressure   |                       |
| Specifications   | <ul style="list-style-type: none"> <li>• Commercial grade acrylic</li> <li>• Brass drain valve</li> <li>• 1/4", 3/8" or 1/2" NPT brass nipples</li> <li>• Vertical and horizontal styles</li> <li>• Available in 16 oz. and 32 oz. sizes</li> <li>• Stainless steel hardware available</li> </ul> |                       |

| HIGH TEMPERATURE      | 1 oz. Oil Sight Glass   | 3 oz. Oil Sight Glass |
|-----------------------|---|-----------------------|
| Outside Diameter      | 2.75"   | 3.50"                 |
| Length                | 2.50"   | 2.50"                 |
| Maximum PSI           | 225   | 225                   |
| Operating Temperature | 450° F<br>232° C  | 450° F<br>232° C      |
| Specifications        | <ul style="list-style-type: none"> <li>• Heavy-walled Pyrex glass</li> <li>• Teflon™ end plates</li> <li>• Stainless steel nuts &amp; bolts</li> <li>• Viton O-rings</li> <li>• Brass drain valve</li> <li>• 1/4", 3/8" or 1/2" NPT brass nipples</li> <li>• Vertical style only</li> <li>• Stainless steel hardware available</li> </ul> |                       |



# Oil Level Indicator

Monitors Oil Level with Heights up to 30"

|                  | Male  | Female                  |
|------------------|---|-------------------------|
| NPT              | 1/2"  | 1/2"                    |
| Outside Diameter | .875"   | 1.75"                   |
| Length           | 3", 6", 9", 12"   | 15", 18", 24", 27", 30" |
| Operating Range  | 180°F to 265 PSI<br>203°F to 66 PSI<br>230°F at atmospheric pressure                    |                         |
| Specifications   | • Top has NPT thread for optional 2 micron breather or adapter for closed loop systems. |                         |



THE OLD WAY



THE ESCO WAY

# Oil Sight Glass Level Monitor

**All in One – Inspect, Analyze,  
Remove Contaminants and  
Manage Oil Levels**



|                  |   |
|------------------|---|
| Outside Diameter | 1.75"   |
| Length           | 3", 6", 9", 12", 15", 18", 24" or custom available.                     |
| Operating Range  | 180° F to 265 PSI<br>203° F to 66 PSI<br>230° F at atmospheric pressure |

#### Specifications

- Commercial grade acrylic
- Brass drain valve
- 3/8" NPT brass nipples
- Available in dual port version with a second 3/8" NPT port
- Stainless steel hardware available
- Top has NPT thread for optional 2 micron breather or adapter for closed loop systems.



# Frequently Asked Questions

## Care, Cleaning and Life Span of the Visual Oil Analysis Products

### How do I clean the Oil Sight Glass, 3-D BullsEye or any of the Visual Analysis Products?

The best way to clean is with soap and warm water. Commercial cleaning products containing alcohol or ammonia (including Windex) should be avoided, as they may cause crazing that can expedite staining and/or compromise the bond strength.

### How often should the Visual Oil Analysis Products be replaced?

Under normal operating conditions, the life spans of the 3-D BullsEye, Oil Sight Glass, and Oil Level Indicator are not limited. Repeated exposure to caustic chemicals can cause staining and small surface cracks called crazes, which can lead to larger cracks and bonding failure. Environmental factors such as long periods of direct sunlight and radical swings in temperature can expedite staining or crazing. Designed to withstand normal industrial lubrication applications, Esco's product line can work for years without failure or degradation, but operators should watch for staining, crazing or microscopic oil seepage that may arise and replace the unit immediately to insure safe and effective oil management.

## 3-D BullsEye

### What material is the 3-D BullsEye made of and how resistant and strong is it?

The 3-D BullsEye is machined from one solid piece of impact resistant, high strength, stain-resistant cast acrylic. It has excellent resistance to hydrocarbon and petroleum-based products, hydraulic fluids, most silicone fluids, and fuels. A detailed chemical resistance chart is available upon request.

### How should the 3-D BullsEye be installed?

Installers should apply pipe dope or Teflon tape to the threads of the 3-D BullsEye. The 3-D BullsEye should be hand tightened and then turned ¼ turn with a chain wrench or arc joint pliers. If there is any evidence of oil leakage, tighten ¼ turn and re-inspect. Continue the ¼ turn followed by inspection until there is no oil leakage. When installed properly, the 3-D BullsEye can withstand equipment vibration.

### What is the temperature range for extremely hot or cold applications?

The material that the 3-D BullsEye is made of can withstand exceedingly low temperatures and temperatures as high as 230°F (110°C) at atmospheric pressure.

### Are other thread specifications and sizes available?

Although Esco only currently stocks Metric and American standard NPTs, most thread sizes can be machined to meet customer specifications. Contact us today with your requirement.

### I just received my new 3-D BullsEye. Why does the inside surface look cloudy?

Polishing is not necessary for the interior walls of the 3-D BullsEye. Once installed and lubricating fluid is introduced, the view will become crystal clear and the cloudiness will disappear.

## Oil Level Indicator

### Why use an Oil Level Indicator instead of a vented sight gauge?

The old style vented sight towers are made of regular glass that is prone to breakage. The brass housing provides some protection, but creates the problem of low to no visibility of the oil color, quality and level. The Esco Oil Level Indicator is made of strong cast acrylic that provides 360° of oil level viewing. Operators can visually monitor the oil for dirt and debris and take appropriate preventive action.

### How is the Oil Level Indicator installed?

Use an elbow to install the OLI at the drain port. It can be installed with the optional breather at the top ½" NPT port. If you require a closed loop, the ½" NPT can be used as a connector port to feed back into the system. For units longer than 12", use a support bracket for stability.

## Oil Sight Glass and Oil Sight Glass Level Monitor

### Which size Oil Sight Glass should I use?

For many systems the 1 oz. Oil Sight Glass is adequate. The 3 oz. OSG provides additional volume and should be used when the condensation or water spillover is excessive. Esco also offers 16 oz. and 32 oz. Oil Sight Glasses for special applications that require the ability to accumulate substantial volumes of water due to large oil reservoirs, high condensation problems or excessive water spillover. Even larger sizes and unique configurations are available for special applications.



### Where is the best place to install the Oil Sight Glass or Oil Sight Glass Level Monitor?

We recommend installing the Oil Sight Glass and Oil Sight Glass Level Monitor at the lowest point of the oil reservoir; typically the drain port. Water contamination will separate from high quality oils and migrate to the OSG where it can be purged from the system. Unwanted sediment and particles are visible in the OSG. Upon inspection, the user can determine the appropriate action to initiate.



### Why would I need to use the Oil Sight Glass Level Monitor?

When seeing and maintaining the level of oil in your reservoir is critical, the Oil Sight Glass and Level Monitor (OSGL) provides all the benefits of the OSG plus the ability to constantly monitor the level of the reservoir oil. The dual port model has a second 3/8" NPT thread at 180° to allow the installation of a drain valve or access to the oil reservoir utilizing a pitot tube and a pitot sample adapter. This all-in-one product provides continuous monitoring of the clarity, color, sediment, water contamination and level of the oil.

### Are there any special precautions for extremely cold applications?

The materials used can withstand temperatures as low as -40°F (-40°C). It is important that the water accumulation in the Oil Sight Glass is managed to prohibit it from completely displacing all of the oil. As little as a tablespoon (1/4" linear volume) of oil in the chamber will provide for the volumetric expansion required when the water freezes. If enough water accumulates to displace all of the oil from the chamber, the expansion that occurs when it freezes can fracture the OSG. Although Oil Sight Glasses are a valuable, dependable and safe tool to use in extremely cold environments, it is important that they are regularly monitored to avoid excess water accumulation. We do not recommend the installation of OSGs in hard to see places on equipment in freezing environments.

Go to [www.Esco-Inc.com](http://www.Esco-Inc.com) for case studies, chemical compatibility chart and other technical support.



### Why would I need to use the Horizontal Oil Sight Glass?

The Horizontal Oil Sight Glass is designed to be installed on equipment that has restricted vertical clearance in the area the OSG is mounted. The design has the mounting nipple and drain valve eccentrically machined and oriented 180° apart. This provides the same ability to discharge any accumulated water.

### What materials are the OSG and OSGL components made from and how resistant are they to corrosion?

The oil sight glass is manufactured from strong, stain-resistant cast acrylic. The drain valve is made from brass with a vulcanized rubber seal. Both materials have excellent resistance to hydrocarbon and petroleum-based products, hydraulic fluids, most silicone fluids, and fuels. A detailed chemical resistance chart is available upon request.

### Are alternate materials available for the hardware?

The brass hardware will provide excellent performance for most applications; however, 304 stainless steel hardware is available for environments that cannot accept brass.

### Why would we use the Magnet Drain Valve?

The strong pull from this rare earth magnet will attract and hold microscopic ferrous particles. Further analysis of these particles can help determine what component is failing for replacement. The Magnet Drain Valve is easily interchanged with the standard drain valve on any OSG or OSGL.

### When is a High Temperature Oil Sight Glass required?

When oil operating temperatures or radiant heat from adjacent equipment exceeds or is continually at or near the operating range upper limits, you should consider utilizing the Esco High Temperature Oil Sight Glass.

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