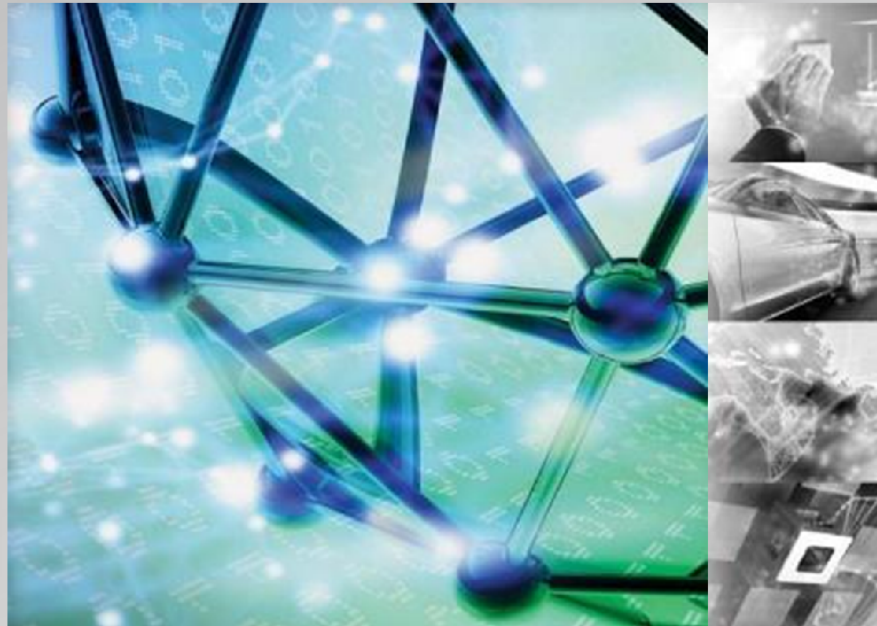


## Sequence IVB Test



# Golden Stand Audit Checklist

## Sequence IVB

CHTM, Revision 1.0

**Lubrizol**



# Data Acquisition System

# Temperature Measurements



Parameter Name	Filter Time (sec)	Measured Time Constant (sec)	Comments
Blowby Gas			
Water at Blowby Heat Exchanger Outlet			
Fuel			
Engine Coolant Inlet			
Engine Coolant Outlet			
Load Cell			
Oil Gallery			
Oil Sump			
Intake Air			

# Temperature Measurements (continued)



Parameter Name	Filter Time (sec)	Measured Time Constant (sec)	Comments
RAC Coolant Inlet			
RAC Coolant Outlet			
Exhaust			
Other:			
Other:			
Other:			
Other:			
Other:			
Other:			



# Pressure Measurements



Parameter Name	Filter Time (sec)	Measured Time Constant (sec)	Comments
Intake Air			
Barometric			
Crankcase			
Engine Coolant			
Exhaust Backpressure			
Intake Manifold			
Oil Gallery			
Fuel			
Other:			



# Other Measurements



Parameter Name	Filter Time (sec)	Measured Time Constant (sec)	Comments
Air-to-Fuel Ratio			
Dyno Speed			
Engine Coolant Flow			
Fuel Flow			
Rocker Arm Coolant Flow			
Intake Air Humidity			
Blowby Flow			
Other:			
Other:			

A close-up, grayscale photograph of an engine oil cap and dipstick. The cap is in the foreground, with the words "ENGINE OIL" and a crown logo embossed on it. The dipstick is partially visible behind the cap. The background is dark and out of focus, showing parts of the engine.

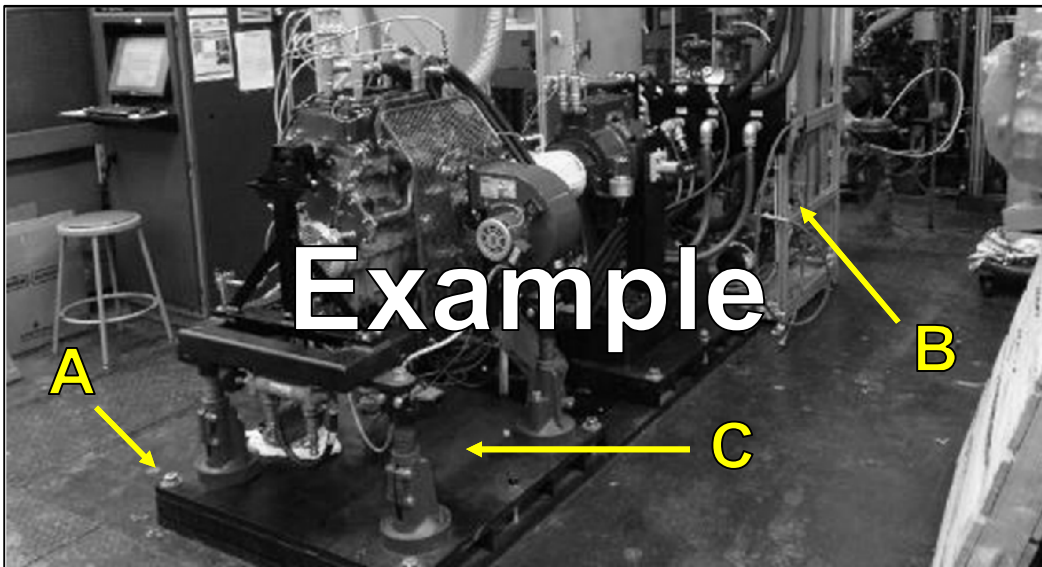
# Engine Installation

# Mounting Plate



## Instructions:

1. Submit a wide angle photograph that shows the complete main platform assembly.
2. Name the photograph *bedplate\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Number of securing bolts:	
<b>B</b>	Location of rack (circle one):	Side      Back
<b>C</b>	Part number of bed plate:	



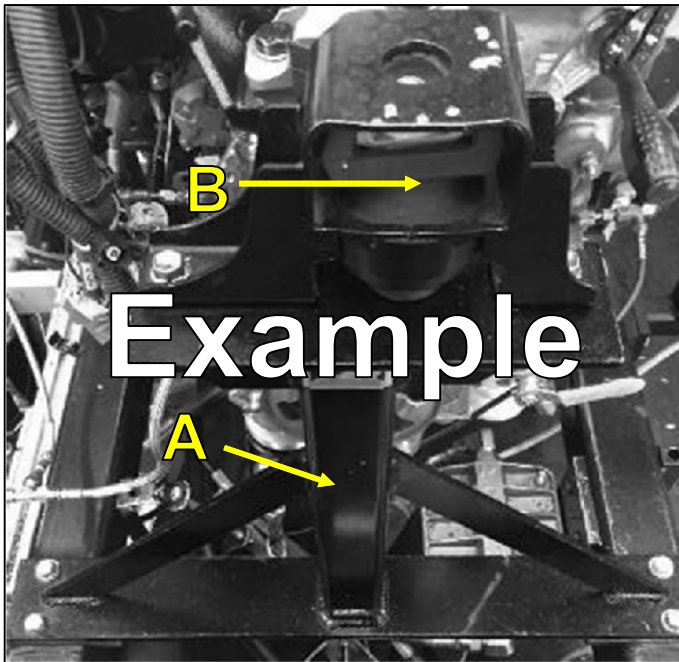


# Front Engine Mount



## Instructions:

1. Submit a photograph that shows the front engine mount pedestal assembly.
2. Name the photograph **fempa\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Part number:	
<b>B</b>	Part number:	

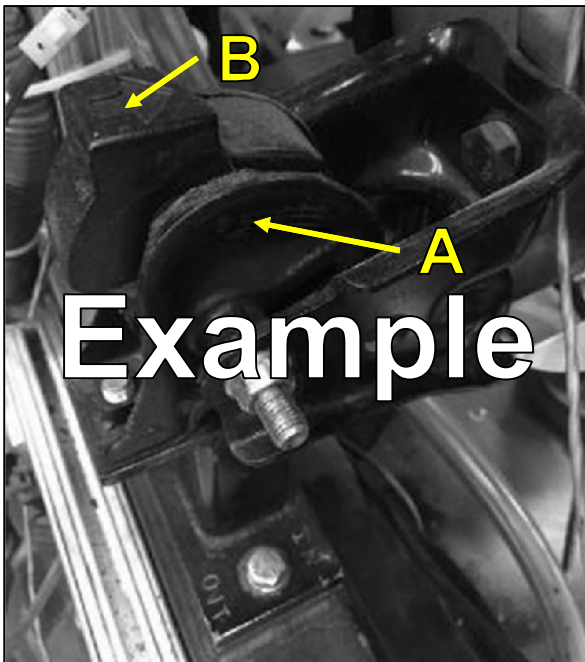


# Intake-Side Engine Mount



## Instructions:

1. Submit a photograph that shows the intake-side engine mount.
2. Name the photograph *isem\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Part number:	
<b>B</b>	Arrow direction (circle one)	<b>Toward Engine</b> <b>Away from Engine</b>

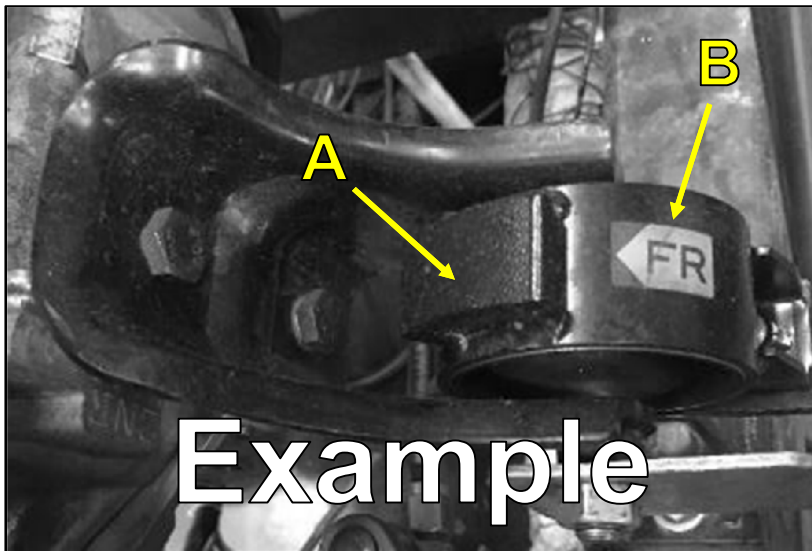


# Exhaust-Side Engine Mount



## Instructions:

1. Submit a photograph that shows the exhaust-side engine mount.
2. Name the photograph **esem\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Part number:	
<b>B</b>	Arrow direction (circle one)	<b>Toward Engine</b>  <b>Away from Engine</b>

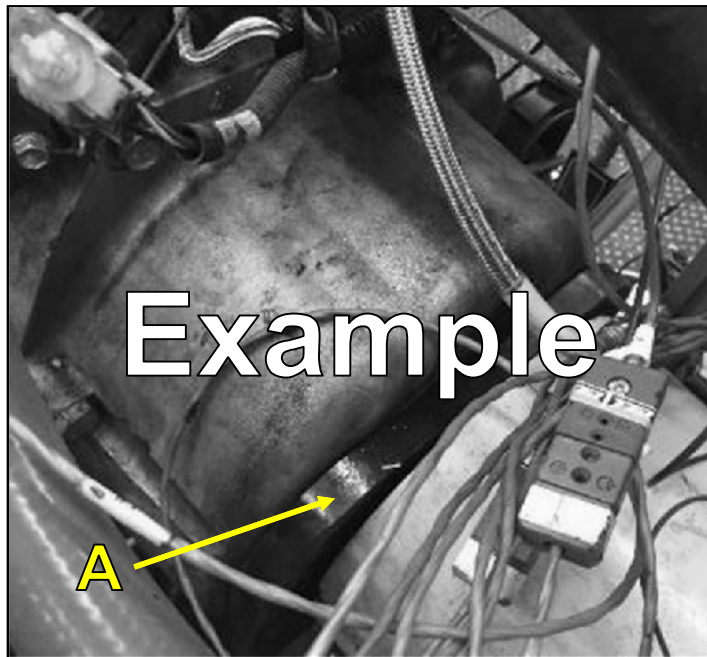


# Rear Bell Housing



## Instructions:

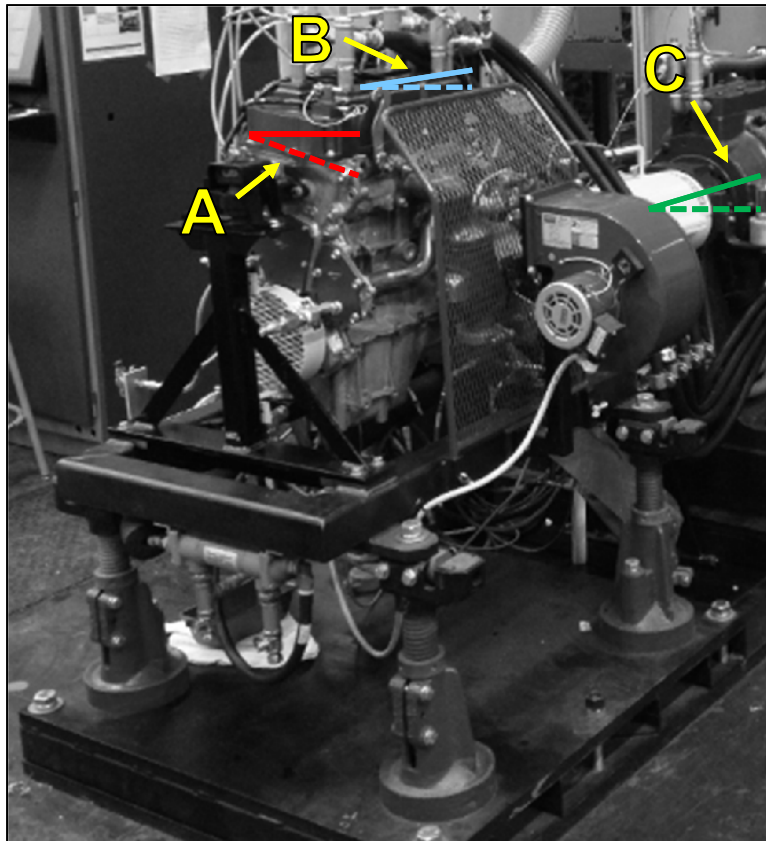
1. Submit a photograph that shows a top-down view of the rear bell housing.
2. Name the photograph *bell\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



A	Part number:	
---	--------------	--



# Engine Installation Angle



<b>A</b>	Side-to-Side Angle:  (Positive angle indicates downward slope toward exhaust side of engine)	
<b>B</b>	Front-to-Back Angle:  (Positive angle indicates downward slope toward dyno)	
<b>C</b>	Driveshaft Angle:  (Positive angle indicates downward slope toward dyno)	





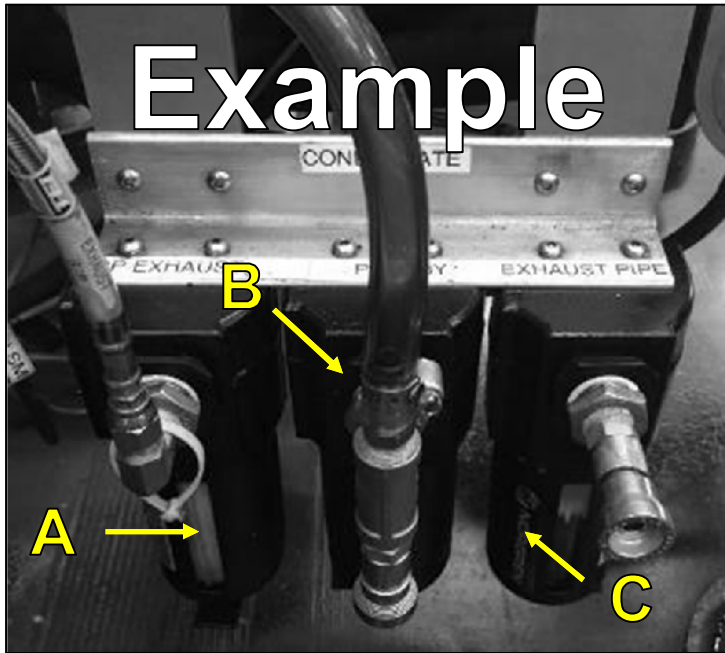
# Condensation Traps

# Condensate Trap



## Instructions:

1. Submit a photograph of the condensate trap rail.
2. Name the photograph *con\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



<b>A1</b>	What is condensate trap connected to?	
<b>A2</b>	Diameter of inlet line:	
<b>A3</b>	Diameter of outlet line:	
<b>B1</b>	What is the condensate trap connected to?	
<b>B2</b>	Diameter of inlet line:	
<b>B3</b>	Diameter of outlet line:	
<b>C1</b>	What is the condensate trap connected to?	
<b>C2</b>	Diameter of inlet line:	
<b>C3</b>	Diameter of outlet line:	

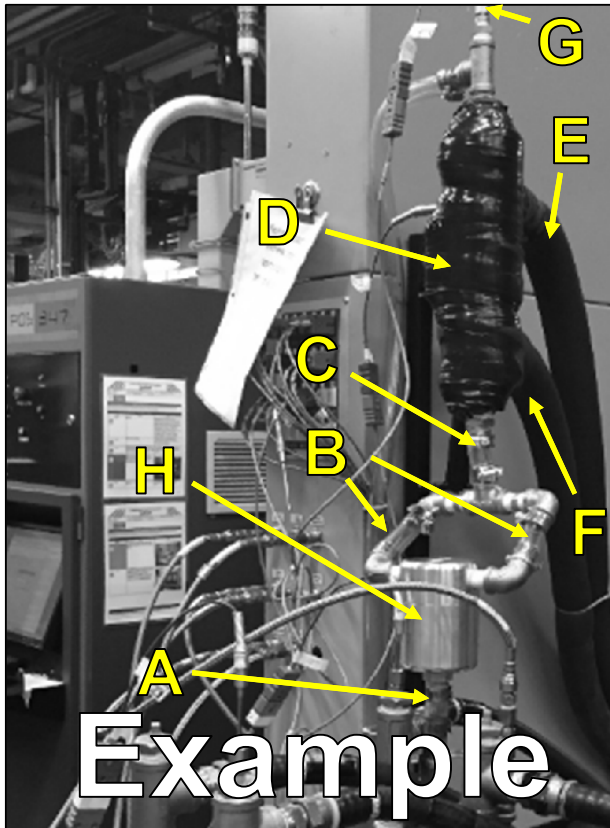




# External Blowby System



# Oil Separator and Heat Exchanger



## Instructions:

1. Submit a photograph of the oil separator and heat exchanger.
2. Name photograph ***oshx\_\*\*\*.jpg***.

<b>A</b>	Diameter of hose:	
<b>B</b>	Diameter of hose:	
<b>C</b>	Diameter of hose:	
<b>D</b>	Heat exchanger part number:	
<b>E</b>	Coolant inlet or outlet?	
<b>F</b>	Coolant inlet or outlet?	
<b>G</b>	T/C insertion depth:	
<b>H</b>	Oil separator part number:	

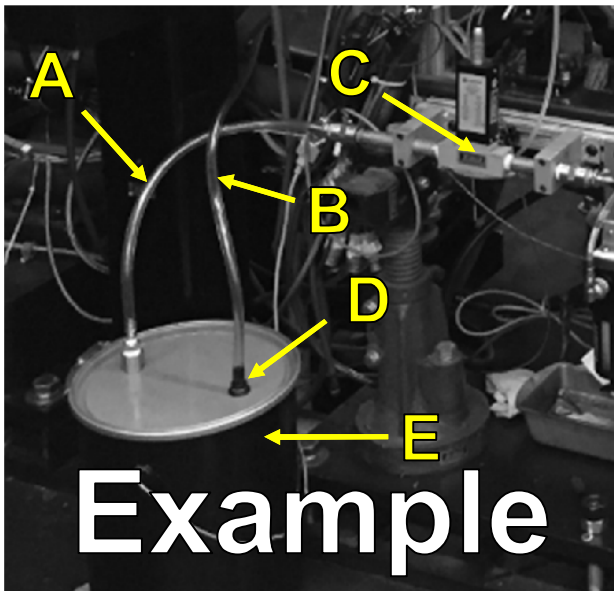
**Lubrizol**

# Blowby Expansion Chamber



## Instructions:

1. Submit a photograph of the blowby flow meter and blowby expansion chamber.
2. Name the photograph *barrel\_\*\*\*.jpg* (where "\*\*\*" will be a three digit code for the lab).



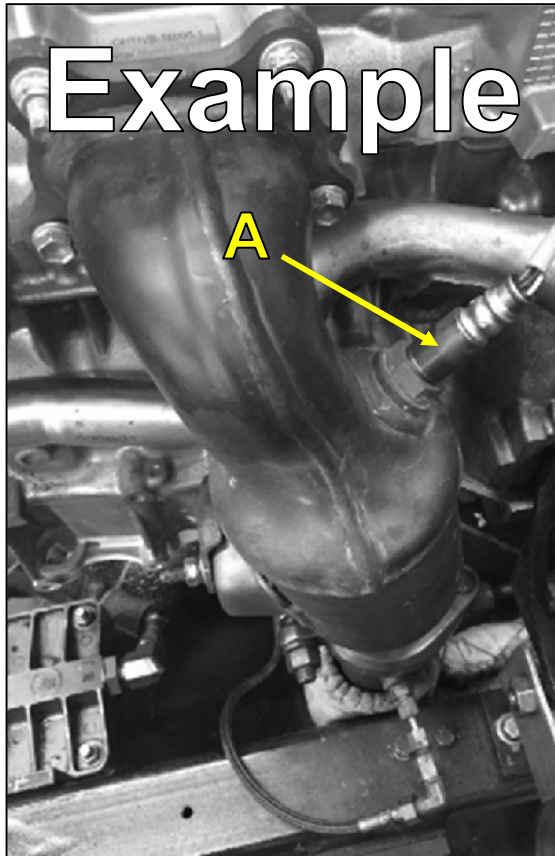
<b>A</b>	Diameter of hose:	
<b>B</b>	Diameter of hose:	
<b>C</b>	Part number of flow meter:	
<b>D1</b>	Identify the valve (circle one)	<b>PCV Valve</b> <b>1-Way Check Valve</b>
<b>D2</b>	Part number of valve:	
<b>E1</b>	Approximate volume of tank:	
<b>E2</b>	Is tank sealed with clamp (circle one)?	<b>Yes</b> <b>No</b>



A close-up photograph of an engine oil filler cap. The cap is dark-colored and has the words "ENGINE OIL" embossed on it in a light color. To the right of the text is a small crown icon. The cap is slightly tilted, and its shadow is cast on the surface below it. The background is dark and out of focus.

# Exhaust System

# Exhaust Manifold



## Instructions:

1. Submit a photograph of the exhaust manifold and top of turn-down pipe.
2. Name the photograph **exman\_\*\*\*.jpg**.

<b>A</b>	Part number of O <sub>2</sub> sensor:	
----------	---------------------------------------	--

# Exhaust Turn-Down Pipe



## Instructions:

1. Submit a photograph of the entire length of the turn-down pipe.
2. Name the photograph *turndown\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).
3. Populate the fields below:

The image shows a stainless steel exhaust turn-down pipe with five numbered callouts: 1 (bottom opening), 2 (side port), 3 (top elbow), 4 (blue cap), and 5 (top port). Below the pipe are five data entry boxes:

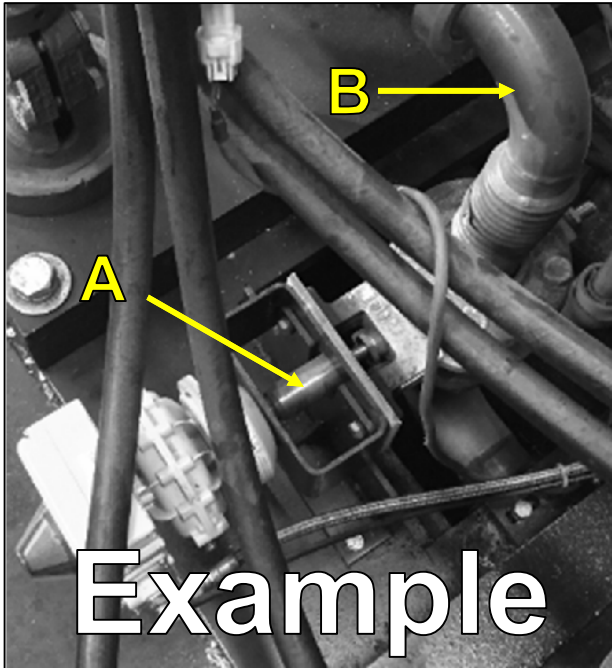
Part number of Horiba unit:	
What is this port connected to?	
T/C insertion depth?	
What is this port connected to?	

# Exhaust Valve



## Instructions:

1. Submit a photograph of the exhaust valve.
2. Name the photograph **exvalve\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Describe the exhaust valve/system being used.	
<b>B</b>	Approximate length of exhaust pipe between valve and cylinder head:	



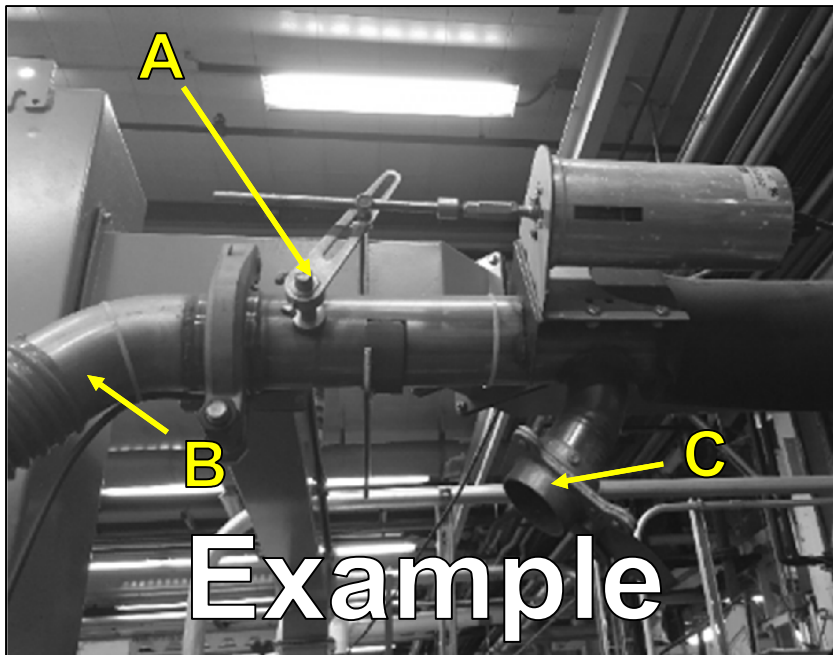
# Air Intake and Throttle System

# Intake Air Control Valve



## Instructions:

1. Submit a photograph that shows the intake air control valve.
2. Name the photograph *intvalve\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).

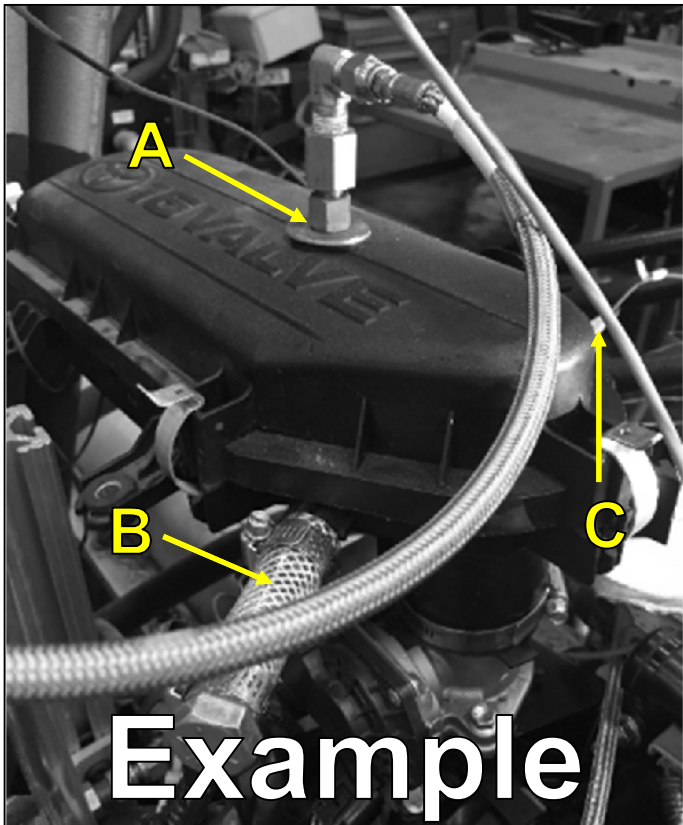


<b>A</b>	Describe the intake valve being used:	
<b>B</b>	Approximate length of hose between valve and air cleaner box:	
<b>C</b>	Describe any bleed-off gates or valves being used:	





# Air Cleaner Box



## Instructions:

1. Submit a photograph that shows a close-up of the air cleaner box and throttle body.
2. Name the photograph *aircleaner\_\*\*\*.jpg* .

<b>A</b>	Describe how the intake air pressure port is sealed to the air cleaner box:		
<b>B</b>	Is the stock PCV connection blocked off (circle one)?	<b>Yes</b>	<b>No</b>
<b>C1</b>	T/C insertion depth:		
<b>C2</b>	Is OHTIVB-17700-1 T/C plate being used (circle one)?	<b>Yes</b>	<b>No</b>

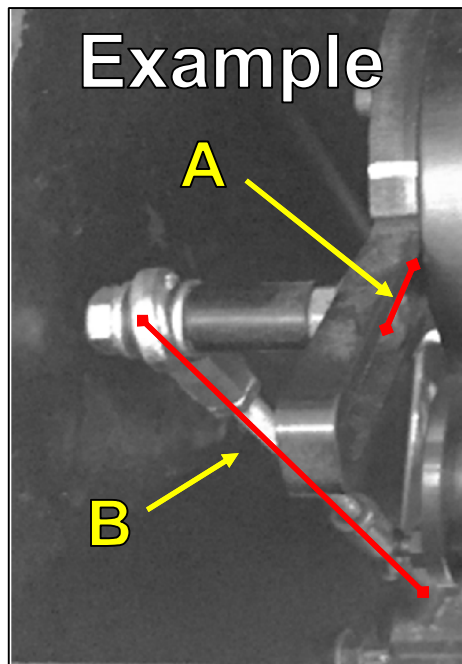


# Throttle Body Linkage



## Instructions:

1. Submit a photograph that shows a close-up of the throttle linkage.
2. Name the photograph *tlink\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).

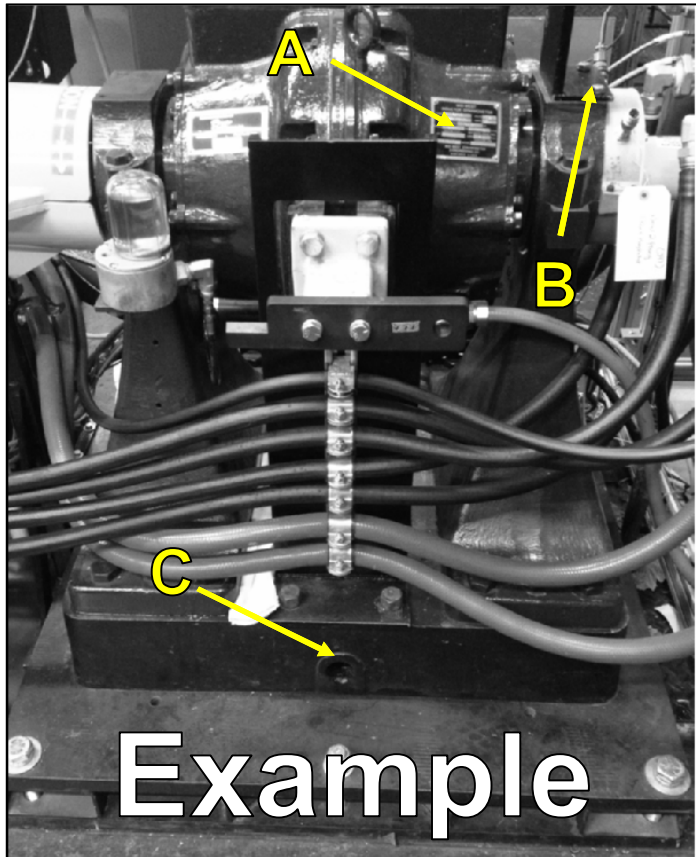


<b>A</b>	Distance between linkage bolt and DyneSystems actuator:	
<b>B</b>	Length of threaded linkage:	



# Dynamometer and Load Cell

# Dynamometer



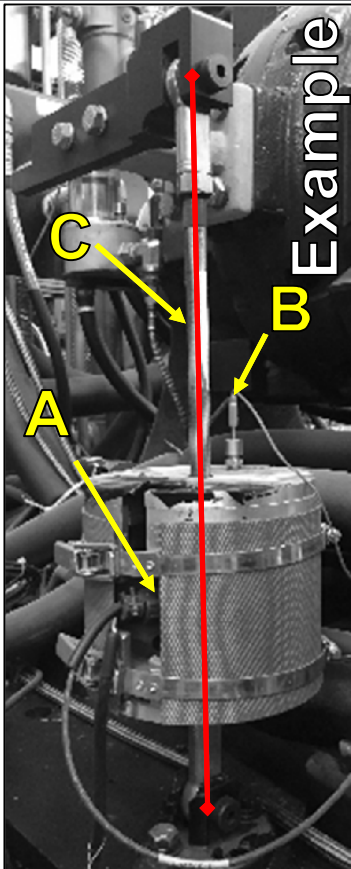
## Instructions:

1. Submit a photograph that shows a wide-angle view of the side of the dynamometer without the load cell.
2. Name the photograph ***dyno\_\*\*\*.jpg*** .

<b>A</b>	Submit a separate photograph of the dyno serial number plate ( <b><i>dynosn_***.jpg</i></b> ).	
<b>B</b>	Part number of dyno speed sensor:	
<b>C</b>	Describe dyno base plate:	



# Load Cell



## Instructions:

1. Submit a photograph that shows the load cell and threaded rod.
2. Name the photograph *lc\_\*\*\*.jpg* .

<b>A</b>	Load cell part number:	
<b>B</b>	T/C insertion depth:	
<b>C1</b>	Length of threaded rod:	
<b>C2</b>	Are eyelets of threaded rod in the same plane?	Yes      No

# Load Cell Calibration Points



Calibration Point Description	Actual Mass (kg)	Actual Torque (N-m)
<i>Example: Hanger and Small Weight</i>	2.535	9.94





# Rocker Arm Cover Coolant

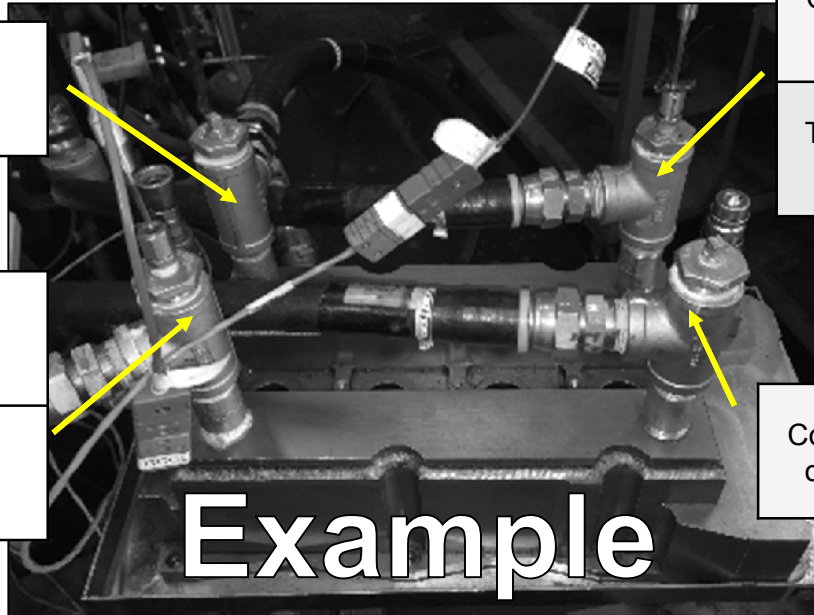
# Rocker Arm Cover Plumbing



## Instructions:

1. Submit a close-up photograph of the rocker arm cover.
2. Name the photograph **RAC\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).
3. Populate the fields below:

Coolant Inlet or Outlet?	
--------------------------	--



Coolant Inlet or Outlet?	
T/C insertion depth:	

Coolant Inlet or Outlet?	
T/C insertion depth:	

Coolant Inlet or Outlet?	
--------------------------	--

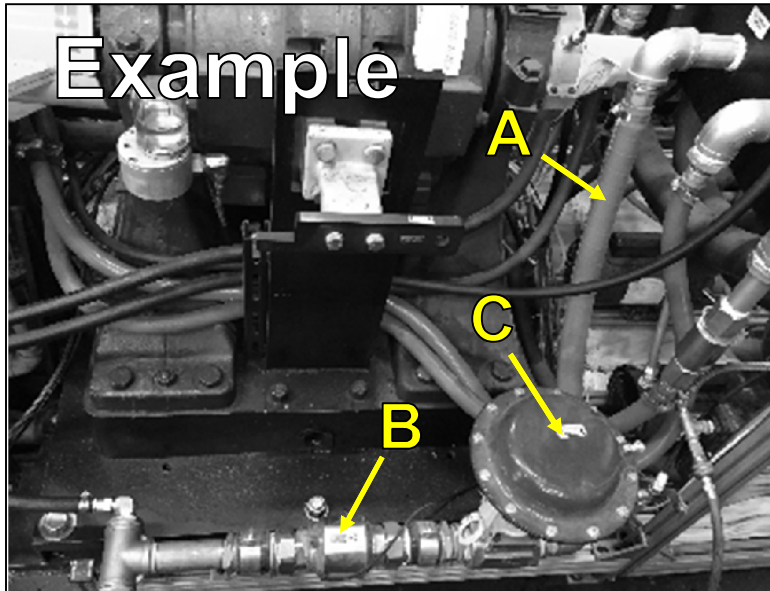


# RAC Coolant Flow Meter



## Instructions:

1. Submit a photograph that shows the RAC coolant flow meter (and associated plumbing).
2. Name the photograph *racfm\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Diameter of pipe at outlet of flow meter:	
<b>B</b>	Part number of RAC coolant flow meter:	
<b>C</b>	Part number (or size) of flow valve:	



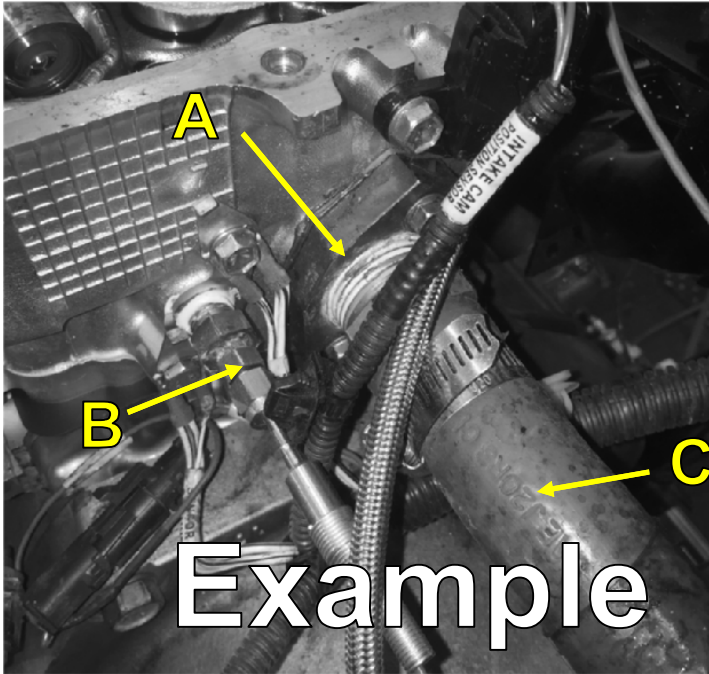
# Engine Coolant

# Back of Cylinder Head



## Instructions:

1. Submit a photograph that shows the back of the cylinder head.
2. Name the photograph **backcyl\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Coolant inlet or outlet (circle one):	<b>Inlet</b>	<b>Outlet</b>
<b>B</b>	T/C insertion depth:		
<b>C</b>	Diameter of line:		

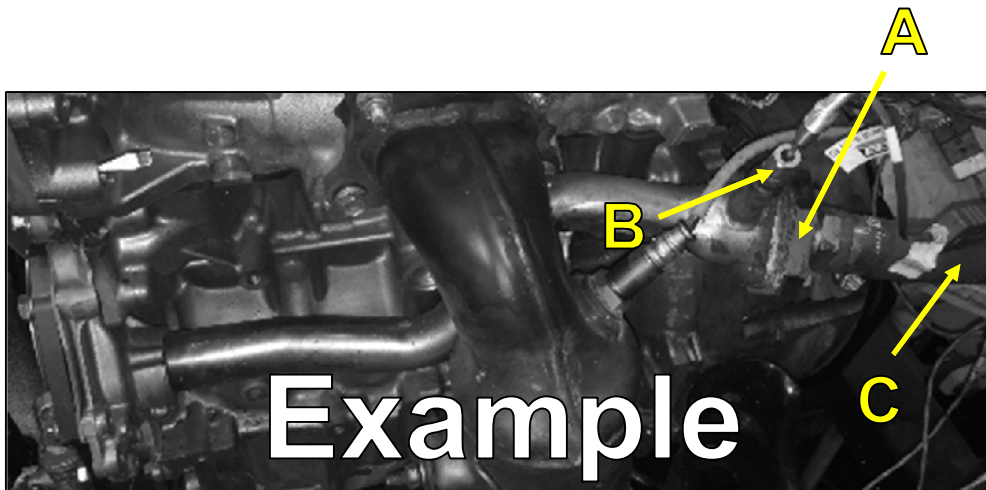


# Pipe to Water Pump



## Instructions:

1. Submit a photograph that shows the pipe going to the water pump.
2. Name the photograph *pmptube\_\*\*\*.jpg* (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Coolant inlet or outlet (circle one):	<b>Inlet</b>	<b>Outlet</b>
<b>B</b>	T/C insertion depth:		
<b>C</b>	Diameter of line:		

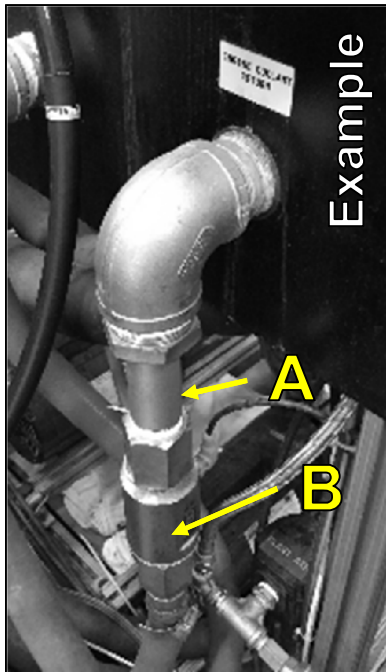


# Engine Coolant Flow Meter



## Instructions:

1. Submit a photograph that shows the engine coolant flow meter (and associated plumbing).
2. Name the photograph **enginefm\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Diameter of pipe at outlet of flow meter:	
<b>B</b>	Part number of engine coolant flow meter:	
	Part number (or size) of flow valve [not shown in image]:	



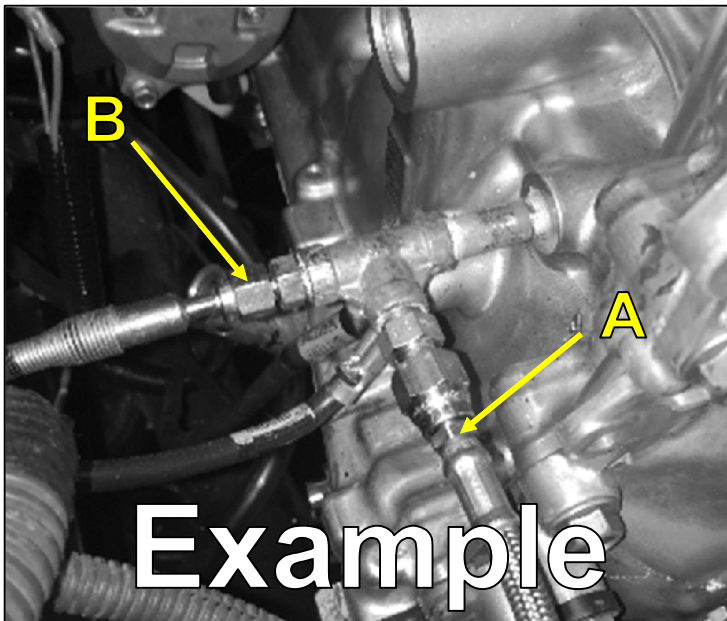
# Oil System

# Oil Gallery Port



## Instructions:

1. Submit a photograph that shows a close-up view of the oil gallery port.
2. Name the photograph **oilgal\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



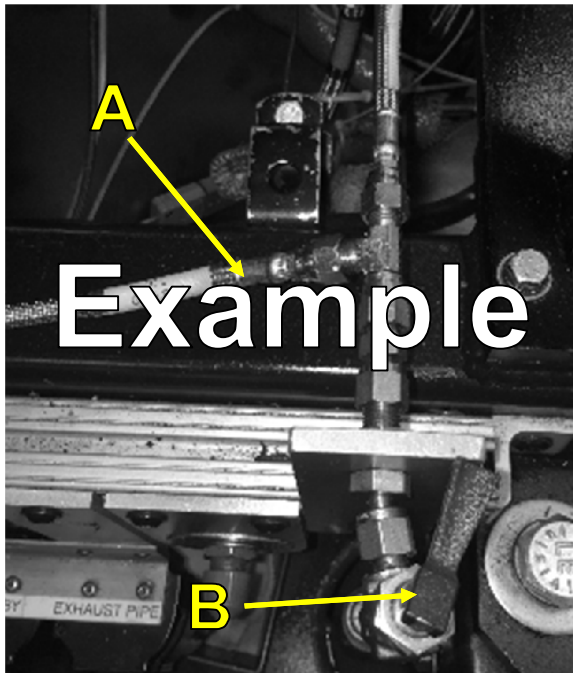
<b>A</b>	Diameter of oil sample line:	
<b>B</b>	T/C insertion depth:	

# Oil Sampling Valve



## Instructions:

1. Submit a photograph that shows a close-up view of the oil sampling valve.
2. Name the photograph ***oilsamp\_\*\*\*.jpg*** (where “\*\*\*” will be a three digit code for the lab).



<b>A</b>	Diameter of oil gallery pressure line:	
<b>B</b>	Part number of valve:	

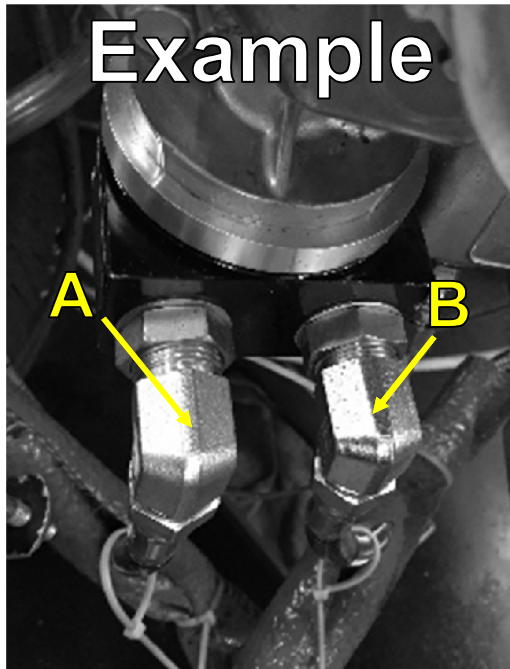


# Oil Filter Adaptor



## Instructions:

1. Submit a photograph that shows a close-up view of the oil filter adaptor.
2. Name the photograph **oilfilter\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



<b>A1</b>	Where does the left-side oil line go (as viewed from the front of the engine)?	
<b>A2</b>	Diameter of oil line:	
<b>B1</b>	Where does the right-side oil line come from (as viewed from the front of the engine)?	
<b>B2</b>	Diameter of oil line:	

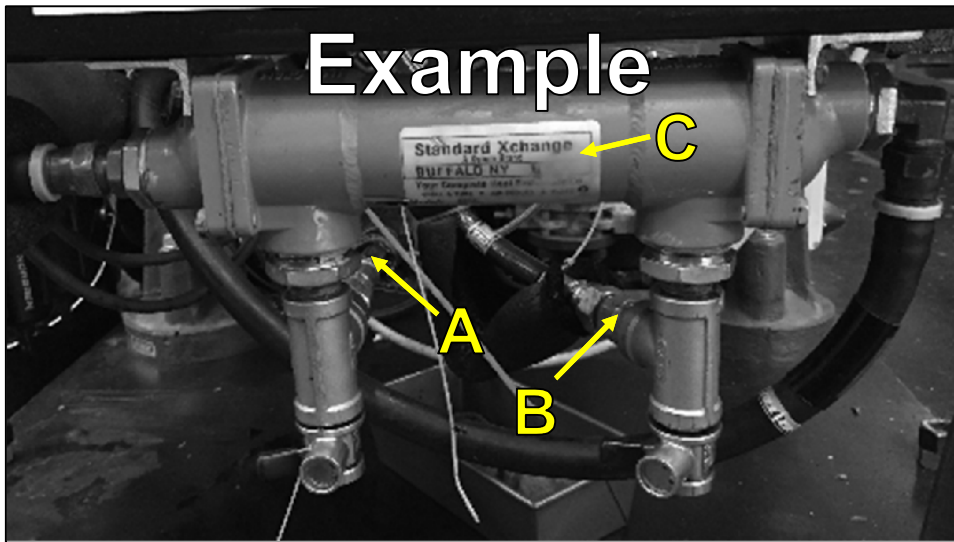


# Oil Heat Exchanger



## Instructions:

1. Submit a photograph that shows a close-up view of the oil heat exchanger.
2. Name the photograph ***oilhx\_\*\*\*.jpg*** (where “\*\*\*” will be a three digit code for the lab).



A	Where does the left-side oil line come from (as viewed from the front of the engine)?	
B1	Where does the right-side oil line come from (as viewed from the front of the engine)?	
B2	Diameter of oil line:	
C	Part number of oil heat exchanger	

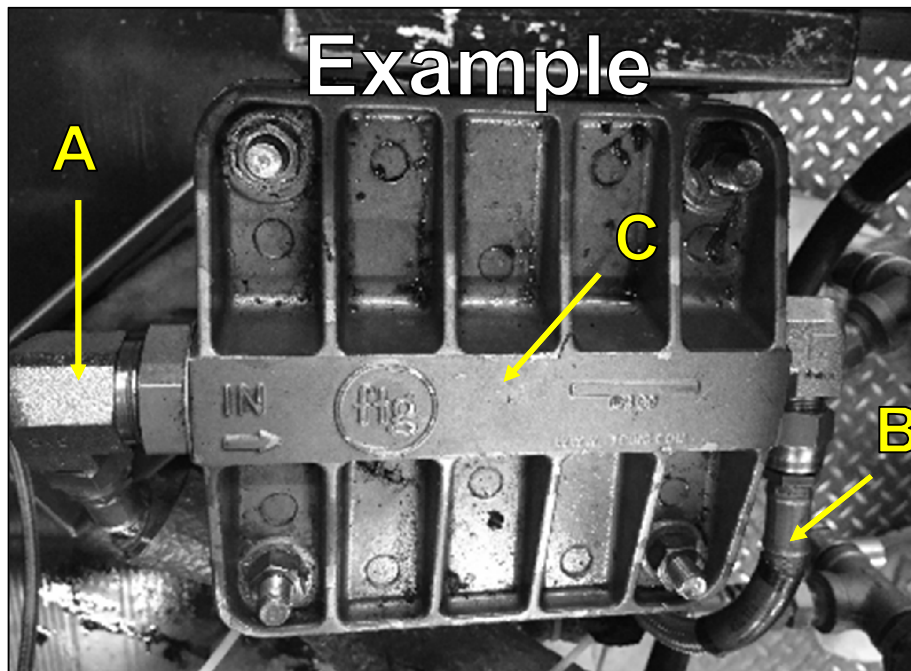


# Oil Oberg Filter



## Instructions:

1. Submit a photograph that shows a close-up / top-down view of the Oberg filter housing.
2. Name the photograph **oberg\_\*\*\*.jpg** (where “\*\*\*” will be a three digit code for the lab).



A	Where does the inlet oil line come from?	
B1	Where does the outlet oil line go to?	
B2	Diameter of outlet line:	
C1	Size of Oberg filter ( $\mu\text{m}$ )	
C2	OHT part number of Oberg housing being used:	

**Lubrizol**



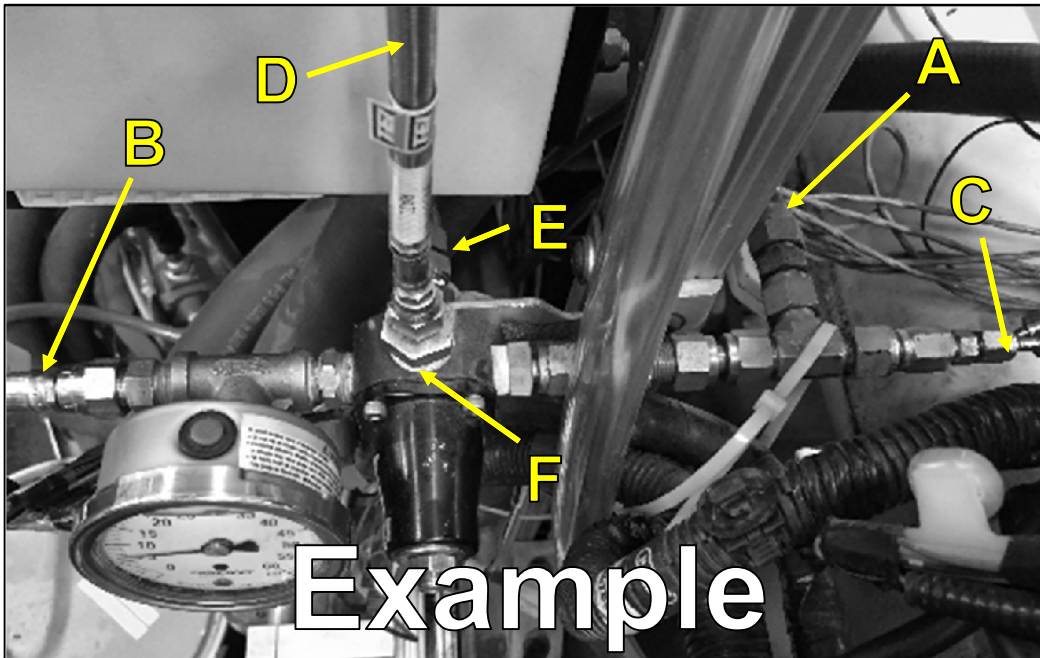
# Fuel System

# Fuel Rail Supply



## Instructions:

1. Submit a photograph that shows a close-up view of the fuel pressure regulator (top-down view).
2. Name the photograph *fuelreg\_\*\*\*.jpg*.



<b>A</b>	Diameter of fuel supply line to stand:	
<b>B</b>	Diameter of fuel supply line to engine:	
<b>C</b>	T/C insertion depth:	
<b>D</b>	Diameter of fuel pressure line:	
<b>E</b>	Diameter of fuel return line from pressure regulator:	
<b>F</b>	Part number of pressure regulator:	



# Fuel Injectors



## Instructions:

1. Complete the table below.

Color Coding for Fuel Injectors			
Cylinder 1 (Circle)	Cylinder 2 (Circle)	Cylinder 3 (Circle)	Cylinder 4 (Circle)
Red    Gray	Red    Gray	Red    Gray	Red    Gray

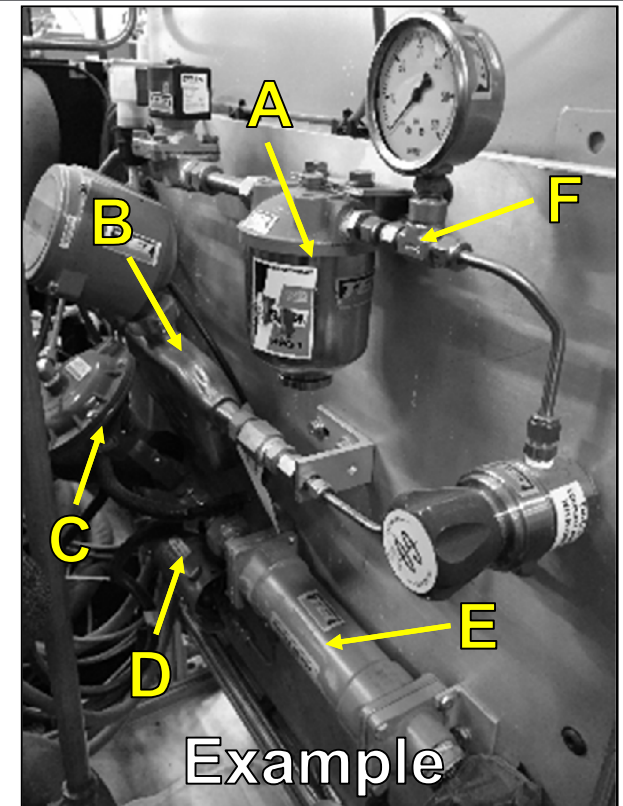
# Fuel System Accessories on Stand



## Instructions:

1. Submit a photograph that shows the fuel system accessories panel.
2. Name the photograph *fuelpanel\_\*\*\*.jpg*.

<b>A</b>	Part number of fuel filter:	
<b>B</b>	Part number of fuel flow meter:	
<b>C</b>	Part number (or size) of research valve:	
<b>D</b>	Part number of fuel pump:	
<b>E</b>	Part number of heat exchanger:	
<b>F</b>	Typical pressure of fuel supply to stand:	



Example

**Lubrizol**



# Panoramic Images

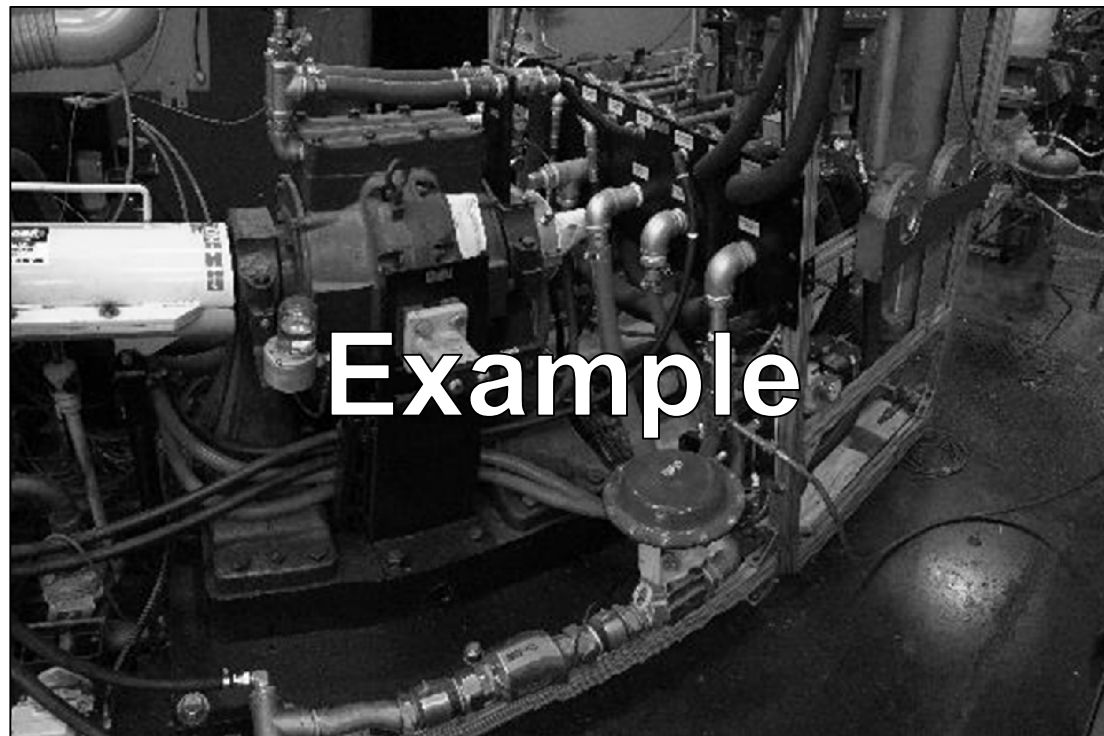


# Panoramic Image #1



## Instructions:

1. Take a panoramic image of the front of the rack (panofront\_\*\*\*.jpg).

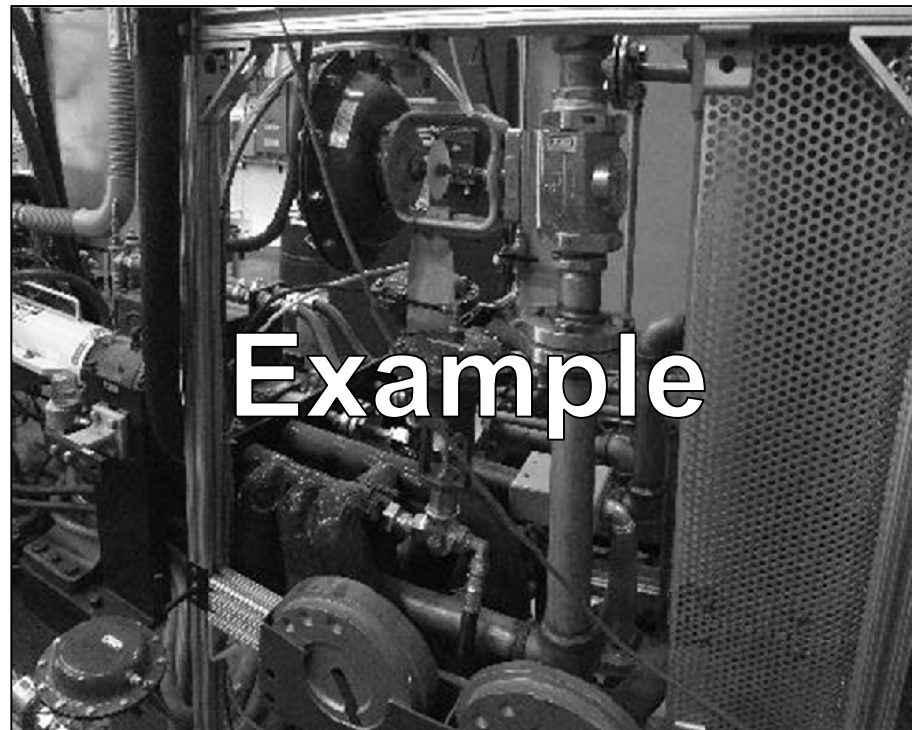


# Panoramic Image #2



## Instructions:

1. Take a panoramic image of the side of the rack (panoside\_\*\*\*.jpg).

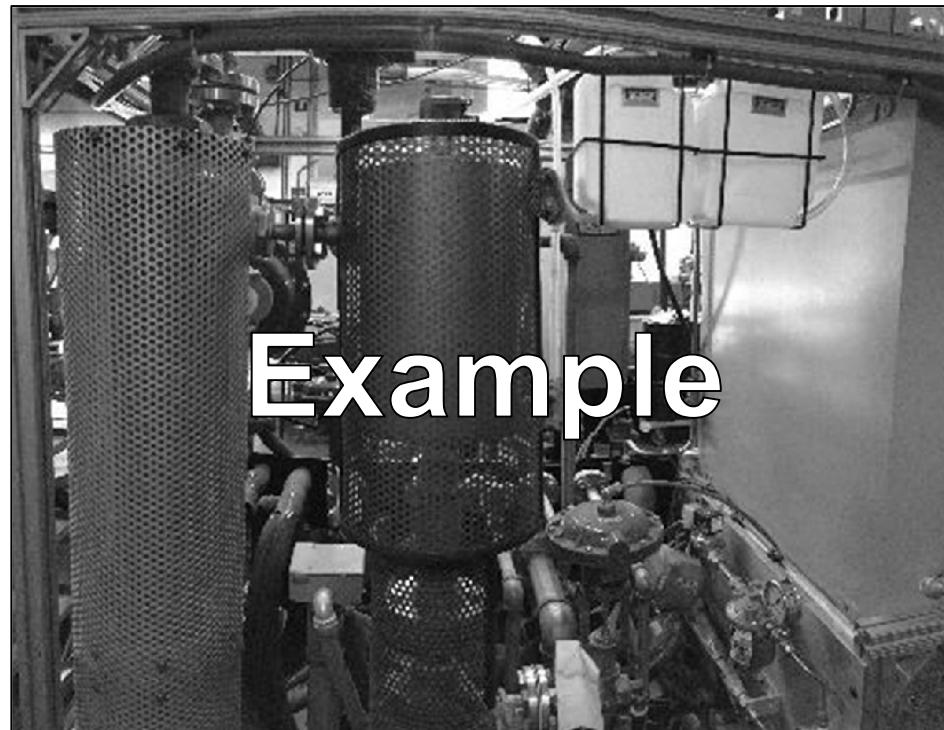


# Panoramic Image #2



## Instructions:

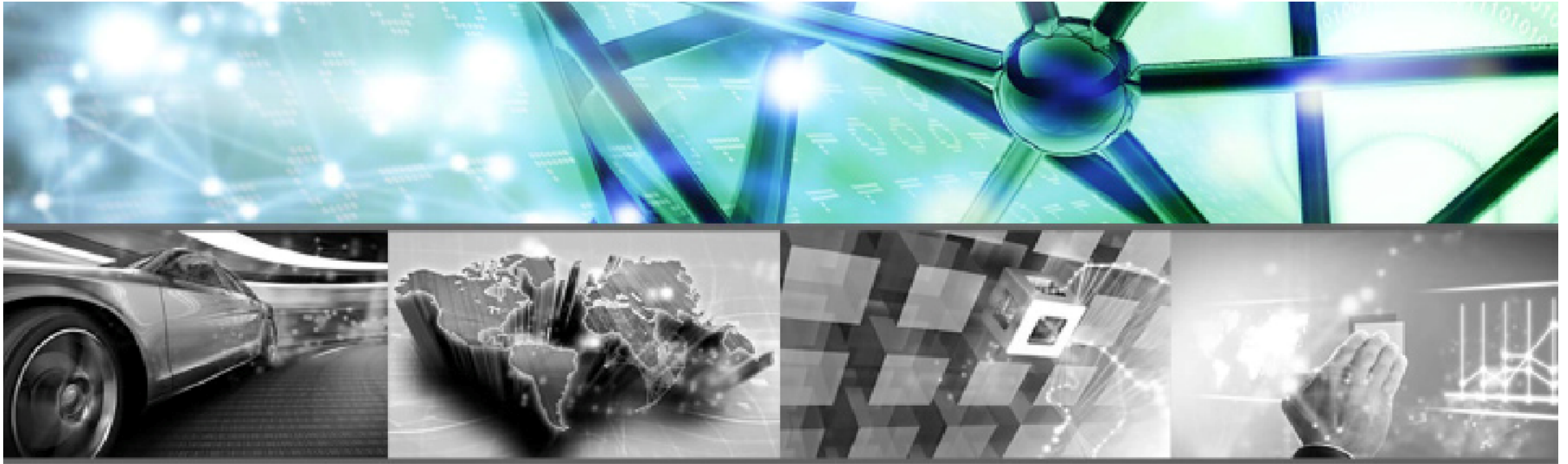
1. Take a panoramic image of the rear of the rack (panorear\_\*\*\*.jpg).



# Revision Log



Revision	Initials	Date	Description
1	CHTM	05-26-17	Initial checklist document issued.



## Working together, achieving great things

When your company and ours combine energies, great things can happen. You bring ideas, challenges and opportunities. We'll bring powerful additive and market expertise, unmatched testing capabilities, integrated global supply and an independent approach to help you differentiate and succeed.

