

White Level Labs

- Engine Lathe Lab
- Manual Mill Lab
- Grinding Lab
- SMAW Lab
- GMAW Lab
- GTAW Lab

Engine Lathe Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a basic engine lathe, learning its various parts as well as the cutting tools and work holding devices and machining parts per detailed engineering drawings. The exercises will emphasize proper safety procedures and appropriate usage techniques.

Key Learning/ Performance Objectives

- Identify the various parts of an engine lathe
- Identify the common types of cutting tools, tool holders and work holding devices
- Perform common types of O.D. (turning) operations
- Perform common types of I.D. (boring) operations
- Perform tapering, threading and knurling operations
- Calculate spindle speeds for turning and facing operations
- Machine parts per details and tolerances on engineering drawings

Success Measures

The student will identify the parts and operation of an engine lathe with 80% accuracy and produce parts with actual dimensions within the tolerance requirements of the drawing dimension. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Engine lathe
- Tooling for the various operations required by the engineering drawings
- Measurement tools

Prerequisite Lab

- Measurements Lab

Description of Procedure

The student will identify and describe the operations of the various parts of a lathe and the different cutting tools and holding devices used on the lathe. The student will then set up the engine lathe and machine parts per the information provided on engineering drawings.

Engine Lathe Lab Procedure and Worksheet

Name

Start Time

Date

Finish Time

Instructor's Signature

When in the Machine Shop area, the student must observe all the rules associated with Shop Safety, Machine Safety and wear Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Review the work area and the assigned machine tools

	Pass	Fail	Initials
1. Inventory the workbench and review the operation of the engine lathe.			
2. Check the guarding on the lathe.			

Task II - Machining Part Number BLL - 103 Rev. B - ADAPTER

	Pass	Fail	Initials
1. List the different operations required to machine the Adapter.			

**Task II - Machining Part Number BLL - 103 Rev.
B - ADAPTER cont.**

	Pass	Fail	Initials
2. Show all the necessary calculations for speeds and feeds.			
3. Identify and obtain the necessary lathe tools, cutting tools & inspection tools needed for this part.			
4. Obtain the material from the lab instructor.			
5. Machine the part on the engine lathe.			
6. Measure and record all required dimensions.			
Print Dimensions 0.491 + / -0.005 dia. 0.742 + / -0.005 dia. 0.950 + / -0.005 dia. 1/8 + / - 1/32 dia. 1.00 + / - 0.03 1.87 + / - 0.03 2.81 + / - 0.03 0.56 + / - 0.03 Surface Finish Measured Dimensions			

**Task II - Machining Part Number BLL – 103 Rev.
B - ADAPTER cont.**

	Pass	Fail	Initials
7. Make corrections, if necessary.			
8. Return all tools to their proper storage area.			

**Task III - Machining Part Number BLL – 101 Rev.
A - HANDLE**

	Pass	Fail	Initials
1. List the different operations required to machine the handle.			
2. Show all the necessary calculations for speeds and feeds.			

Task III - Machining Part Number BLL - 101 Rev.
A - HANDLE cont.

	Pass	Fail	Initials
3. Make all necessary calculations for the angles.			
4. Identify and obtain the necessary lathe tools, cutting tools & inspection tools needed for this part.			
5. Obtain the material from the lab instructor and cut it to length.			
6. Record length dimension.			
Print Dimension _____ Measured Dimension _____			
7. Machine the part on the engine lathe.			

Task III - Machining Part Number BLL - 101 Rev.

A - HANDLE cont.

8. Measure and record all required dimensions.

Print Dimensions	Measured Dimensions
0.875 + / - 0.005 dia.	_____
0.810 + / - 0.005 dia.	_____
0.500 + / - 0.005 dia.	_____
0.813 +/- 0.005 dia.	_____
0.375 + / - 0.005	_____
5.500 + / - 0.005	_____
3.875 + / - 0.005	_____
0.313 + / - 0.005	_____
Dimension after Knurl	_____
½ - 13 Thread	_____
Surface Finish	_____

9. Make corrections, if necessary.

10. Return all tools to their proper storage area.

Task IV - Machining Part Number BLL - 102 Rev.

A - BUSHING

1. List the different operations required to machine the bushing.

Task IV - Machining Part Number BLL – 102 Rev.
A - BUSHING cont.

	Pass	Fail	Initials
2. Show all the necessary calculations for speeds and feeds.			
3. Identify and obtain the necessary lathe tools, cutting tools & inspection tools needed for this part.			
4. Obtain the material from the lab instructor.			
5. Machine the part on the engine lathe.			
6. Record all required dimensions.			
Print Dimensions 2.000 + / -0.005 1.500 + / -0.005 dia. 2.25 + / -0.03 dia. Measured Dimensions _____ _____ _____			
7. Make corrections, if necessary.			
8. Return all tools to their proper storage area.			
9. Clean all machine tools and the work area.			

Manual Mill Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a manual mill, learning its various parts as well as cutting tools, and tool holding and work holding devices and machining parts per detailed engineering drawings. The exercises will emphasize proper safety procedures and appropriate usage techniques.

Key Learning/ Performance Objectives

- Identify the components of a manual vertical knee mill
- Describe the various controls found on a manual mill
- Identify the different types of cutting tools, tool holders and work holding devices used on a mill
- Perform common milling operations on the mill
- Calculate spindle speeds for milling operations
- Machine parts per details and tolerances on engineering drawings

Success Measures

The student will identify the parts and operation of manual mill with 80% accuracy and produce parts with actual dimensions within the tolerance requirements of the drawing dimension. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Manual vertical knee mill (Bridgeport type)
- Tooling for the various operations required by the engineering drawings
- Measurement tools

Prerequisite Lab

- Measurements Lab

Description of Procedure

The student will identify and describe the operation of the various parts of a manual mill and the different cutting tools and holding devices used on the mill. The student will then set up the mill and machine parts per the information provided on engineering drawings.



Manual Mill Lab Procedure and Worksheet

Name

Start Time

Date

Finish Time

Instructor's Signature

When in the Machine Shop area, the student must observe all the rules associated with Shop Safety and wear Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Review the work area and the assigned machine tools

	Pass	Fail	Initials
1. Inventory the workbench and review the operation of the manual mill.			
2. Check the guarding on the mill.			

Task II - Machining Part Number BML - 101 Rev. A - CONNECTOR

	Pass	Fail	Initials
1. List the different operations required to machine the connector.			

Task II - Machining Part Number BML - 101 Rev.
A - CONNECTOR cont.

	Pass	Fail	Initials
2. Show all the necessary calculations for speeds and feeds.			
3. Make all necessary calculations for the angles, if any.			
4. Identify and obtain the necessary mill tools, cutting tools and inspection tools needed for this part.			
5. Obtain the material from the lab instructor and cut it to length.			
6. Record the length dimension.			
Print Dimension 4.500 + / - 0.005			
Measured Dimension _____			
7. Machine the part on the mill.			

Task II - Machining Part Number BML - 101 Rev.
A - CONNECTOR cont.

8. Measure and record all required dimensions.

Print Dimensions	Measured Dimensions
1.875 + / - 0.005	_____
3.000 + / - 0.005	_____
2.500 + / - 0.005	_____
0.750 + / - 0.005	_____
0.625 + / - 0.005	_____
0.500 + / - 0.005 Dia.	_____
1.250 + / - 0.005	_____

9. Make corrections, if necessary.

10. Return all tools to their proper storage area.

Task III - Machining Part Number BML - 102 Rev.
B - HEAD

1. List the different operations required to machine the connector.

2. Show all the necessary calculations for speeds and feeds.

Task III - Machining Part Number BML - 102 Rev.
B - HEAD cont.

	Pass	Fail	Initials
3. Make all necessary calculations for the angles, if any.			
4. Identify and obtain the necessary mill tools, cutting tools and inspection tools needed for this part.			
5. Obtain the material from the lab instructor.			
6. Machine the part on the mill.			
7. Measure and record all required dimensions.			
Print Dimensions 3.000+ / - 0.005 1.500 + / - 0.005 0.750 + / - 0.005 ½ - 13 X 1.0 Thread Deburred Conforms to Print Measured Dimensions _____ _____ _____ _____ _____ _____			
Comments:			
8. Make corrections, if necessary.			
9. Return all tools to their proper storage area.			
10. Clean all machine tools and the work area.			

Grinding Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a surface grinder, learning its various parts as well as the grinding wheels and work holding devices, preparing a grinding wheel and grinding a part per an engineering drawing. The exercises will emphasize proper safety procedures and appropriate usage techniques. The student will be expected to perform all tasks in a careful and timely manner.

Key Learning/ Performance Objectives

- Describe grinding on a surface grinder
- Describe the components of a grinder
- Describe common work holding devices and their various accessories
- Define dressing and truing
- Describe grinding parallel surfaces
- Describe safety practices for using a surface grinder
- Dress a grinding wheel
- Grind a part per details and tolerances on an engineering drawing
- Operate a drill sharpener and belt sander

Success Measures

The student will identify the parts and operation of a surface grinder with 80% accuracy and grind parts with actual dimensions within the tolerance requirements of the drawing dimension. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Surface grinder
- Holding device (magnetic table)
- Diamond dresser unit
- Drill sharpener
- Belt sander
- Measurement tools

Prerequisite Lab

- Measurements Lab

Description of Procedure

The student will identify and describe the operations of the various parts of a surface grinder; the holding device used on the grinder, and the different types of dresser units. The student will then set up the grinder and grind a part per the information provided on an engineering drawing. The student will also sharpen a drill bit and remove flash from a casting.

Grinding

Lab Procedure and Worksheet

Name	Start Time
.....	
Date	Finish Time
.....	
Instructor's Signature	
.....	

When in the Machine Shop area, the student must observe all the rules associated with Shop Safety and wear Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Review the work area and the assigned machine tools

	Pass	Fail	Initials
1. Inventory the workbench and review the operation of the surface grinder.			
2. Check the guarding on the surface grinder.			

Task II - Surface grinding Part Number BGL - 101 Rev. B - CONNECTOR

	Pass	Fail	Initials
1. List the different operations required to surface grind the connector.			

Task II - Surface grinding Part Number BGL - 101
Rev. B - CONNECTOR cont.

	Pass	Fail	Initials
2. Show all the necessary calculations for speeds and feeds, if any.			
3. Make all necessary calculations for the angles, if any.			
4. Make a preliminary process sheet for surface grinding the connector.			
5. Identify and obtain the necessary grinding tools and inspection tools needed for this part.			
6. Dress the grinding wheel according to the directions given by the lab instructor.			
7. Obtain the material from the lab instructor.			

Task II - Surface grinding Part Number BGL - 101
Rev. B - CONNECTOR cont.

	Pass	Fail	Initials
8. Surface grind the first dimension, measure it and record it.			
Print Dimension 1.365 +/- 0.001			
Measured Dimension _____			
9. Surface grind the remaining dimension, measure it and record it.			
Print Dimension 1.855 +/- 0.001			
Measured Dimension _____			
10. Make corrections, if necessary.			
11. Return all tools to their proper storage area.			

Task III - Sharpening a Drill Bit

	Pass	Fail	Initials
1. Review the operation of the drill sharpener.			
2. Check the guarding on the drill sharpener.			
3. Sharpen a drill bit.			
4. Record all required results.			
5. Return all tools to their proper storage area.			

Task IV - Removing the flash from a casting
Pass
Fail
Initials

1. Review the operation of the belt sander.

2. Check the guarding on the belt sander.

3. Grind off the flash on the casting provided by the lab instructor.

4. Record all required results.

5. Return all tools to their proper storage area.

6. Clean all machine tools and the work area. Put scrap material in the scrap bin.

Shielded Metal Arc Welding Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a shielded metal arc welder, learning its various parts as well as the major types of electrodes used in SMAW processes. The student will weld butt, tee and lap joints on low carbon steel. The exercises will emphasize proper safety procedures and appropriate usage techniques. The student will be expected to perform all tasks in a careful and timely manner.

Key Learning/ Performance Objectives

- Define welding and basic arc welding
- Describe the path of electricity in welding and the arc welding process
- Identify the major types of electrodes
- Explain the importance of shielding using electrode coating
- Identify the major parts and operation of a shielded metal arc welder
- Identify the uses of SMAW processes
- Perform the basic metal preparation for SMAW processes
- Set the proper electrical settings for different weld joints
- Weld butt, tee and lap joints using a shielded metal arc welder

Success Measures

The student will identify the parts and operation of a shielded metal arc welder with 80% accuracy and make the various welds with an accuracy defined by the lab instructor. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Shielded metal arc welder
- Electric grinder
- Various electrodes
- Hand tools for welding
- Low carbon steel cut for the various weld joints

Prerequisite Lab

- None

Description of Procedure

The student will identify the various parts of an SMAW unit, determine the proper welding rod for a given application, determine and set the welder electrical setting for a butt, tee or lap joint welds. The student will then strike an arc between the part and electrode and make various joint welds on low carbon steel.



Shielded Metal Arc Welding Lab Procedure and Worksheet

Name	Start Time
Date	Finish Time
Instructor's Signature	

When in the Welding Lab area, the student must observe all the rules associated with Shop Safety and Welding Safety and the wearing of Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Introduction to SMAW

1. The Instructor will check for compliance with all the safety rules regarding P.P.E. and clothing. The lab instructor will issue the necessary additional P.P.E. and denote the welding station to be used by the student. The student should verify the location of Fire Extinguishers in the room and that the exhaust system is operating properly.

Fire Extinguisher Location(s): _____

Exhaust System: _____

Personal Protective Equipment: _____

2. Review all of the equipment in the welding station and note any problems or items missing with the equipment. Identify the voltage control, rod clamp and cable.

Welder Name: _____

Serial Number: _____

Polarity Setting: _____

Misc. Information: _____

Pass

Fail

Initials

Task I - Introduction to SMAW cont.
Pass
Fail
Initials

3. Prepare the material so that a series of single line beads can be welded on one flat surface of the material.

4. Identify the material type and verify the correct welding rod. Using the manufacturer's information for the welding rod, determine the current and polarity settings and input the settings on the welder.

Material Type: _____

Welding Rod Type: _____

Settings: Current: _____

Voltage: _____

Polarity: _____

5. Make first welding pass. If acceptable to lab instructor, the student should make additional welding passes on the material.

6. Using the same welding rod and welder settings, make single V-joint welds per print BWL - 110, Revision A. Then tack and weld the pieces together along the six (6) inch length.

7. If weld is not acceptable, list corrective action taken.

Task II - Butt Joint Welds
Pass
Fail
Initials

1. Verify the correct welding rod. Using the manufacturer's information for the welding rod, determine the current and polarity settings and input the settings on the welder.

Welding Rod Type: _____

Settings: Current: _____

Voltage: _____

Polarity: _____

2. Using the same welding rod and adjusting the welder settings, make butt joint welds per Print BWL - 101, Revision B. Tack and weld the pieces together along a six (6) inch length.

3. If weld is not acceptable, list corrective action taken.

Task III - Lap Joint Welds
Pass
Fail
Initials

1. Verify the correct welding rod. Using the manufacturer's information for the welding rod, determine the current and polarity settings and input the settings on the welder.

Welding Rod Type: _____

Settings: Current: _____

Voltage: _____

Polarity: _____

2. Using the same welding rod and adjusting the welder settings, make lap joint welds per Print BWL - 103, Revision B. Tack and weld the pieces together along a six (6) inch length.

Task III - Lap Joint Welds cont.

	Pass	Fail	Initials
3. If weld is not acceptable, list corrective action taken.			

Task IV - T-Joint Welds

	Pass	Fail	Initials
1. Verify the correct welding rod. Using the manufacturer's information for the welding rod, determine the current and polarity settings and input the settings on the welder.			
Welding Rod Type: _____			
Settings: Current: _____			
Voltage: _____			
Polarity: _____			
2. Using the same welding rod and adjusting the welder settings, make T-joint welds per Print BWL - 102, Revision B. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken.			

Please return materials to the proper location, put scrap material in scrap bin and clean the welding area.

Gas Metal Arc Welding Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a gas metal arc welder, learning its various parts as well as the major types of electrodes used in GMAW processes. The student will weld butt, tee and lap joints on low carbon steel. The exercises will emphasize proper safety procedures and appropriate usage techniques. The student will be expected to perform all tasks in a careful and timely manner.

Key Learning/ Performance Objectives

- Define inert gas welding
- Explain the importance of shielding using inert gases
- Identify the major parts and operation of a gas metal arc welder
- Identify the uses of GMAW processes
- Determine proper welding wire for an application
- Perform the basic metal preparation for GMAW processes
- Set the proper electrical settings for different weld joints
- Weld butt, tee and lap joints using a gas metal arc welder

Success Measures

The student will identify the parts and operation of a gas metal arc welder with 80% accuracy and make the various welds with an accuracy defined by the lab instructor. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Gas metal arc welder with wire feeder
- Electric grinder
- Various welding wire
- Hand tools for welding
- Low carbon steel cut for the various weld joints

Prerequisite Lab

- Shielded Metal Arc Welding Lab

Description of Procedure

The student will identify the various parts of a GMAW unit and the wire feeder unit, determine the proper welding wire for an application, and determine and set the welder electrical setting for a butt, tee or lap joint welds. The student will then strike an arc between the part and electrode and make various joint welds on low carbon steel.



Gas Metal Arc Welding Lab Procedure and Worksheet

Name _____

Start Time _____

Date _____

Finish Time _____

Instructor's Signature _____

When in the Welding Lab area, the student must observe all the rules associated with Shop Safety and Welding Safety and the wearing of Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Introduction to GMAW

Pass

Fail

Initials

1. The Instructor will check for compliance with all the safety rules regarding P.P.E. and clothing. The lab instructor will issue the necessary additional P.P.E. and denote the welding station to be used by the student. The student should verify the location of Fire Extinguishers in the room and that the exhaust system is operating properly.

Fire Extinguisher Location(s): _____

Exhaust System: _____

Personal Protective Equipment: _____

2. Review all of the equipment in the welding station and note any problems or items missing with the equipment. Identify the voltage control, the wire feeder, gun cable, flow meter/regulator assembly and the wire feed control [amperage].

Welder Name: _____

Serial Number: _____

Polarity Setting: _____

Misc. Information: _____

Task I - Introduction to GMAW cont.

	Pass	Fail	Initials
3. Prepare the material so that a series of single line beads can be welded on one flat surface of the material.			
4. Identify the material type and verify the correct welding wire. Using the manufacturer's information for the welding wire, determine the current and polarity settings and input the settings on the welder. Material Type: _____ Welding Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
5. Make first welding pass. If acceptable to lab instructor, the student should make additional welding passes on the material.			
6. Using the same welding wire and welder settings, make single V-joint welds per print BWL - 110, Revision A. Then tack and weld the pieces together along the six (6) inch length.			
7. If weld is not acceptable, list corrective action taken. _____ _____ _____			

Task II - Butt Joint Welds

	Pass	Fail	Initials
1. Verify the correct welding wire. Using the manufacturer's information for the welding wire, determine the current and polarity settings and input the settings on the welder. Welding Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
2. Using the same welding wire and adjusting the welder settings, make butt joint welds per Print BWL - 101, Revision B. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken. _____ _____ _____			

Task III - Lap Joint Welds

	Pass	Fail	Initials
1. Verify the correct welding wire. Using the manufacturer's information for the welding wire, determine the current and polarity settings and input the settings on the welder. Welding Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
2. Using the same welding wire and adjusting the welder settings, make lap joint welds per Print BWL - 103, Revision B. Tack and weld the pieces together along a six (6) inch length.			

Task III - Lap Joint Welds cont.

	Pass	Fail	Initials
3. If weld is not acceptable, list corrective action taken.			

Task IV - T-Joint Welds

	Pass	Fail	Initials
1. Verify the correct welding wire. Using the manufacturer's information for the welding wire, determine the current and polarity settings and input the settings on the welder.			
Welding Wire Type: _____			
Settings: Current: _____			
Voltage: _____			
Polarity: _____			
Gas Flow Rate: _____			
2. Using the same welding wire and adjusting the welder settings, make T-joint welds per Print BWL - 102, Revision B. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken.			

Please return materials to the proper location, put scrap material in scrap bin and clean the welding area.

Gas Tungsten Arc Welding Lab

Introduction

In these lab exercises, the student will experience the operation and uses of a gas tungsten arc welder, learning its various parts as well as the major types of electrodes used in GTAW processes. The student will weld butt, tee and lap joints on low carbon steel and aluminum. The exercises will emphasize proper safety procedures and appropriate usage techniques. The student will be expected to perform all tasks in a careful and timely manner.

Key Learning/ Performance Objectives

- Identify the major parts and operation of a gas tungsten arc welder
- Identify the uses of GTAW processes
- Identify the equipment needed for gas tungsten arc welding
- Identify various filler materials used in gas tungsten arc welding
- Perform the basic metal preparation for GTAW processes
- Set the proper electrical settings for different weld joints
- Weld butt, tee and lap joints using a gas tungsten arc welder

Success Measures

The student will identify the parts and operation of a gas tungsten arc welder with 80% accuracy and make the various welds with an accuracy defined by the lab instructor. The student will comply completely with all safety measures.

Equipment and Special Requirements

- Gas tungsten arc welder
- Electric grinder
- Various filler materials
- Hand tools for welding
- Low carbon steel and aluminum cut for the various weld joints

Prerequisite Lab

- Gas Metal Arc Welding Lab

Description of Procedure

The student will identify the various parts of a GTAW unit, determine the proper filler wire for an application, determine and set the welder electrical setting for a butt, tee or lap joint welds. The student will then strike an arc between the part and tungsten electrode and make various joint welds on low carbon steel and aluminum.



Gas Tungsten Arc Welding Lab Procedure and Worksheet

Name _____

Start Time _____

Date _____

Finish Time _____

Instructor's Signature _____

When in the Welding Lab area, the student must observe all the rules associated with Shop Safety and Welding Safety and the wearing of Personal Protective Equipment. The student must be wearing long trousers without cuffs and a long sleeved shirt with cuffs. Clothing must be either made of cotton or of a flame-retardant material. Shoes must be leather with a steel toe.

Task I - Introduction to GTAW

Pass

Fail

Initials

1. The Instructor will check for compliance with all the safety rules regarding P.P.E. and clothing. The lab instructor will issue the necessary additional P.P.E. and denote the welding station to be used by the student. The student should verify the location of Fire Extinguishers in the room and that the exhaust system is operating properly.

Fire Extinguisher Location(s): _____

Exhaust System: _____

Personal Protective Equipment: _____

2. Review all of the equipment in the welding station and note any problems or items missing with the equipment. Identify the voltage control, gun cable and flow meter/regulator assembly.

Welder Name: _____

Serial Number: _____

Polarity Setting: _____

Misc. Information: _____

Task I - Introduction to GTAW cont.

	Pass	Fail	Initials
3. Prepare the material so that a series of single line beads can be welded on one flat surface of the material.			
4. Identify the material type and verify the correct filler wire. Using the manufacturer's information for the filler wire, determine the current and polarity settings and input the settings on the welder. Material Type: _____ Filler Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
5. Make first welding pass. If acceptable to lab instructor, the student should make additional welding passes on the material.			
6. Using the same filler wire and welder settings, make single V-joint welds per print BWL - 110, Revision A. Then tack and weld the pieces together along the six (6) inch length.			
7. If weld is not acceptable, list corrective action taken. _____ _____ _____			

Task II - Butt Joint Welds

	Pass	Fail	Initials
1. Verify the correct filler wire. Using the manufacturer's information for the filler wire, determine the current and polarity settings and input the settings on the welder. Filler Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
2. Using the same filler wire and adjusting the welder settings, make butt joint welds per Print BWL - 101, Revision B. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken. _____ _____ _____			

Task III - Lap Joint Welds

	Pass	Fail	Initials
1. Verify the correct filler wire. Using the manufacturer's information for the filler wire, determine the current and polarity settings and input the settings on the welder. Filler Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
2. Using the same filler wire and adjusting the welder settings, make lap joint welds per Print BWL - 103, Revision B. Tack and weld the pieces together along a six (6) inch length.			

Task III - Lap Joint Welds cont.

	Pass	Fail	Initials
3. If weld is not acceptable, list corrective action taken.			

Task IV - T-Joint Welds

	Pass	Fail	Initials
1. Verify the correct filler wire. Using the manufacturer's information for the filler wire, determine the current and polarity settings and input the settings on the welder.			
Filler Wire Type: _____			
Settings: Current: _____			
Voltage: _____			
Polarity: _____			
Gas Flow Rate: _____			
2. Using the same filler wire and adjusting the welder settings, make T-joint welds per Print BWL - 102, Revision B. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken.			

Task V - OPTIONAL - Aluminum Welding

	Pass	Fail	Initials
1. Verify the correct filler wire. Using the manufacturer's information for the filler wire, determine the current and polarity settings and input the settings on the welder. Filler Wire Type: _____ Settings: Current: _____ Voltage: _____ Polarity: _____ Gas Flow Rate: _____			
2. Using the same filler wire and adjusting the welder settings, make single V-joint welds per Print BWL - 111, Revision A. Tack and weld the pieces together along a six (6) inch length.			
3. If weld is not acceptable, list corrective action taken. _____ _____ _____			

Please return materials to the proper location, put scrap material in scrap bin and clean the welding area.



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