

ATMS Structural Systems Activity Review

Texas A&M University

Lincoln Electric

Read the Equipment Manual

- The equipment manual gives specifications to the machine used during the contest.
- It explains how to switch from SMAW to FCAW.
- [Click on this link to download the MP 215i pdf](#)
- Here is a sample of what can be found in the manual:

VALUE-ADDED FEATURES

- **Multi-Process Capable** - Welds MIG, Flux-Cored, Stick, and DC TIG.
- **Dual Input Voltage** - 120V and 230V inputs so you can plug into any common power supply.
- **Ergonomic Case** - Sleek and robust case design with multiple lift points for ease of mobility around the shop.
- **Built in TIG Solenoid and Foot Pedal Adapter** The POWER MIG 215 MPI welder is designed to accept a TIG torch, no install required.
- **Robust and Reliable Wire Drive** - Ensures proper and consistent feeding for optimal welding experience.
- **Ready.Set.Weld® Technology** - Simplifies setup by recommending optimal welding parameters for each welding procedure.
- **ArcFX® Technology** - Provides instant visual feedback on how settings affect the weld outcome.
- **Memory Capability** - Easily recall saved settings to get welding faster.
- **Lightweight and Portable** - Only 48 lbs.

KEY CONTROLS

1. Ergonomic front Handle
2. User Interface
3. Twist Mate™ Receptacles
4. On/Off Switch
5. Angled Gun Connection For Improved Feedability
6. 4-Pin MIG gun adapter
7. 6-Pin Amphenol



INNOVATIVE USER INTERFACE

1. Settings Summary
2. Wire Feed Speed
3. Main Control Knob
4. Menu Button
5. Voltage
6. Back Button



ADVANCED OPTIONS



Run-In: Adjusts initial wire feed speed for smooth arc starting.



Thickness: Adjusts thickness, the display is to scale.



Pre Flow: Allows a time to be selected for shielding gas to flow after the trigger is pulled, prior to establishing an arc.



Spot Timer: Adjusts arc time for tack and spot welds.



Trigger: Choose between 2 and 4 step.



Post Flow: Allows a time to be selected for shielding gas to continue to flow after the trigger is released and output current is turned off.



Burn Back: Provides manual adjustment of the burnback time for any selected welding mode.



Save: Save settings to memory.



Menu: Takes you to Process Selection.



Hot Start: Increases amperage at arc start initialization.



Arc Force: Controls penetration profile from soft arc to crisp arc.



Gas Purge: Purge air line for specified time without activating output.



Load: Load settings from memory.



Inductance: Controls how fast the machine responds to shorts while welding.

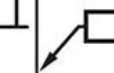
Read the WPS

The Welding Procedure Specification (WPS) gives you the necessary instructions to complete the project. Including:

- Welding Process
- Base Materials (types, grades, and thicknesses)
- Filler Materials (electrode or filler wire type, size, and classification)
- Welding Positions
- Welding Parameters (voltage, amperage, travel speed, heat input)
- Joint Design
- Post-Weld Cleaning

Know the Print Symbols

- Print Symbols should be known for the contest.
- They will be listed on the WPS.

WELD ALL AROUND	FIELD WELD	MELT- THROUGH	CONSUMABLE INSERT (SQUARE)	BACKING (RECTANGLE)	SPACER (RECTANGLE)	CONTOUR		
						FLUSH OR FLAT	CONVEX	CONCAVE
								

(Universal Technical Institute, 2020)

Specialized Safety Equipment

Proper PPE must be worn at all time.

- Including, but not limited to:
 - Welding helmet or shaded glasses with a minimum of shade 10 lenses
 - Welding jacket- **NO** hooded jackets
 - Leather shoes
 - Cotton pants with no holes and uncuffed
 - Welding gloves
 - For more information, [click here](#).



*(Lincoln Electric - VIKING 3350
Code Red Welding Helmet, n.d.)*



*(Lincoln Electric Premium
Leather Welding Gloves KH643
- the Home Depot, 2023)*



*(Lincoln Electric Fire Resistant XX-Large
Black Cloth Welding Jacket KH808XXL -
the Home Depot, 2023)*

Fire Safety



[This Photo](#)

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- Papers and clipboards should be placed away from welding area to decrease risk of fire.
- Backpacks should not be within the welding booth, especially ones made from nylon.

Wire Speed



- Wire speed is recommended to stay within the green as indicated by the arrow but will operate in the red too.
- The wire speed is specified by the WPS.

Equipment use

- Wires should not be tangled.
- The SMAW gun and electrode holder should be placed on welding tables.
- Watch your surroundings when handling these while adjusting the machine.



Welding tips



- Welding tips should be treated with care.
- If wire is not coming out, check the tip, and ask for assistance.
- Please do not continue to hold the trigger as it creates a mess in the machine.

References

MP 215I Product Guide.pdf. (n.d.). Google Docs.

https://drive.google.com/file/d/1ofqyrBRI_LJbWd71gp5QVZXMM9BZwzcA/view

University of Missouri - 2020 Structural Systems Activity. (n.d.). [https://schumacherl.mufaculty.umsystem.edu/home/national-ffa-](https://schumacherl.mufaculty.umsystem.edu/home/national-ffa-webpage/2020-structural-systems-activity)

[webpage/2020-structural-systems-activity](https://schumacherl.mufaculty.umsystem.edu/home/national-ffa-webpage/2020-structural-systems-activity)

Universal Technical Institute. (2020, January 27). Guide to Reading Welding Blueprint Symbols. *UTI Corporate*.

<https://www.uti.edu/blog/welding/welding-blueprint-symbols>