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Automatic Welding Of Stainless Steel Tubing

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AUTOMATIC WELDING OF STAINLESS STEEL TUBING

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INTRODUCTION

In the past, stainless steel tubing used in ground support equipment to contain hypergolic, pneumatic, and hydraulic fluids was fabricated by manual welding or induction brazing processes. Traditionally, it has been required that joints fabricated by these processes be 100 percent radiographically inspected, a costly type of inspection. Today, advances in the state of the art have made automatic welding a desirable, cost effective method of replacing the other methods of fabricating this type of tubing. The automatic process provides a precise control of the welding process parameters, minimizing human error and thereby improving the quality of welds over those made by other processes. When the automatic process is used, with its inherent improvement in quality, a question naturally arises concerning the need for the 100 percent radiographic inspection requirement imposed on other methods.

To determine if the use of automatic welding would allow the reduction of the radiographic inspection requirement, and thereby reduce fabrication costs, a series of welding tests were performed. In these tests an Astro Arc automatic tube welder was used on AISI tubing, Type 304, in the 1/2, 3/4, and 1 1/2 inch diameter sizes. The tubing was representative of that used in the hypergolics, pneumatics, and hydraulics systems in the launch complex. The Astro Arc automatic tube welder had been checked out and calibrated previously during a production job where hypergolic valve box assemblies had been fabricated of similar tubing for Space Shuttle ground support equipment. Optimum welding parameters (machine settings) were obtained from the automatic welding procedures previously qualified during production welding. These parameters and qualified procedures were used by certified welding operators as a baseline for proper machine settings and procedures used during testing.

The optimum parameters were investigated to determine how much variation from optimum in machine settings could be tolerated and still result in a good quality weld. Threshold or borderline conditions were established. The effects of variations in the automatic process controls (machine settings) on the weld quality were investigated by making welds over a range of essential variables and by x-raying the resulting welds to study the effect of changing the process variables on the weld quality. The purpose of this study was to establish a range of essential variables (machine settings) for a given tube size to ensure that welds made within this variable range would be of good quality, thus allowing the requirement for 100 percent radiographic inspection to be reduced.

The process variables studied were the welding amperes, the revolutions per minute (RPM) as a function of the circumferential weld travel speed, and the shielding gas flow. Acceptable tolerance ranges for these variables were determined through correlation with good x-ray quality vs bad x-ray quality of the welds.

Strip chart recordings were made of the amperage and RPM to determine if strip charts were definitive enough to identify a good weld vs a bad weld. Tests showed that the strip chart recordings were not definitive enough to accomplish this objective, and the technique was abandoned.

The investigation showed, however, that the close control of process variables in conjunction with a thorough visual inspection of welds, (as described hereinafter) can be relied upon as an acceptable quality assurance procedure, thus permitting the radiographic inspection to be reduced by a large percentage when using the automatic process. Radiographic inspection can be eliminated during production welding, with a radiographic inspection requirement remaining only for weld certification testing. Currently, the welding specifications at the Kennedy Space Center are being modified to reduce the radiographic requirements and to substitute the automatic process control and weld visual inspection requirements in their place.

TEST METHODOLOGY

EQUIPMENT

The effects of process control variations on weld quality were investigated. The following equipment was used:

1. Astro Arc Power Source and Controls
   Serial No. 328, with a strip chart recorder

2. Astro Arc Welding Head
   A-1250-D, Serial No. 1389

3. Astro Arc Welding Head
   A-2500-D, Serial No. 1262

4. Four Channel Strip Chart Recorder
   Texas Instrument
   Serial No. FL04W60-171666

This equipment had been used during the welding of valve box tubing and had been checked out and calibrated.

MATERIALS

The following materials were used in testing:

1. Tubing, AISI, Type 304, Sizes: 1/4 inch x .035
   3/4 inch x .109, 1 1/2 inch x .049

2. Fittings, AISI, Type 316, 304, consisting of
   Parker-Hannifin Unions, 33 each size

TECHNIQUES

The following describes the techniques used in testing:

1. Automatic Welding Process. The automatic welding process utilizes a power source connected by flexible cables to a welding head, which is clamped on the tube in a manner similar to a pair of tongs. The electrode of the welding head turns 360° around the tubing to make a butt weld. The welding process is gas tungsten, pulsed arc welding. No filler wire is fed into the weld puddle. The addition of filler metal to the weld puddle is accomplished by the use of a weld fitting that has an additional shoulder of metal machined integral with the fitting. The shoulder melts during the welding and provides sufficient additional metal to the weld. The fitting is provided with a raised ring that fits into a groove in the welding head and serves to guide the tungsten welding electrode around the tube and to maintain proper alignment during welding. A photograph of the machine, set up to weld tubing, is shown in Figure 1. A photograph of tubing specimens welded by the automatic process is shown in Figure 2. Closeup views are shown in Figures 3, 4, and 5.

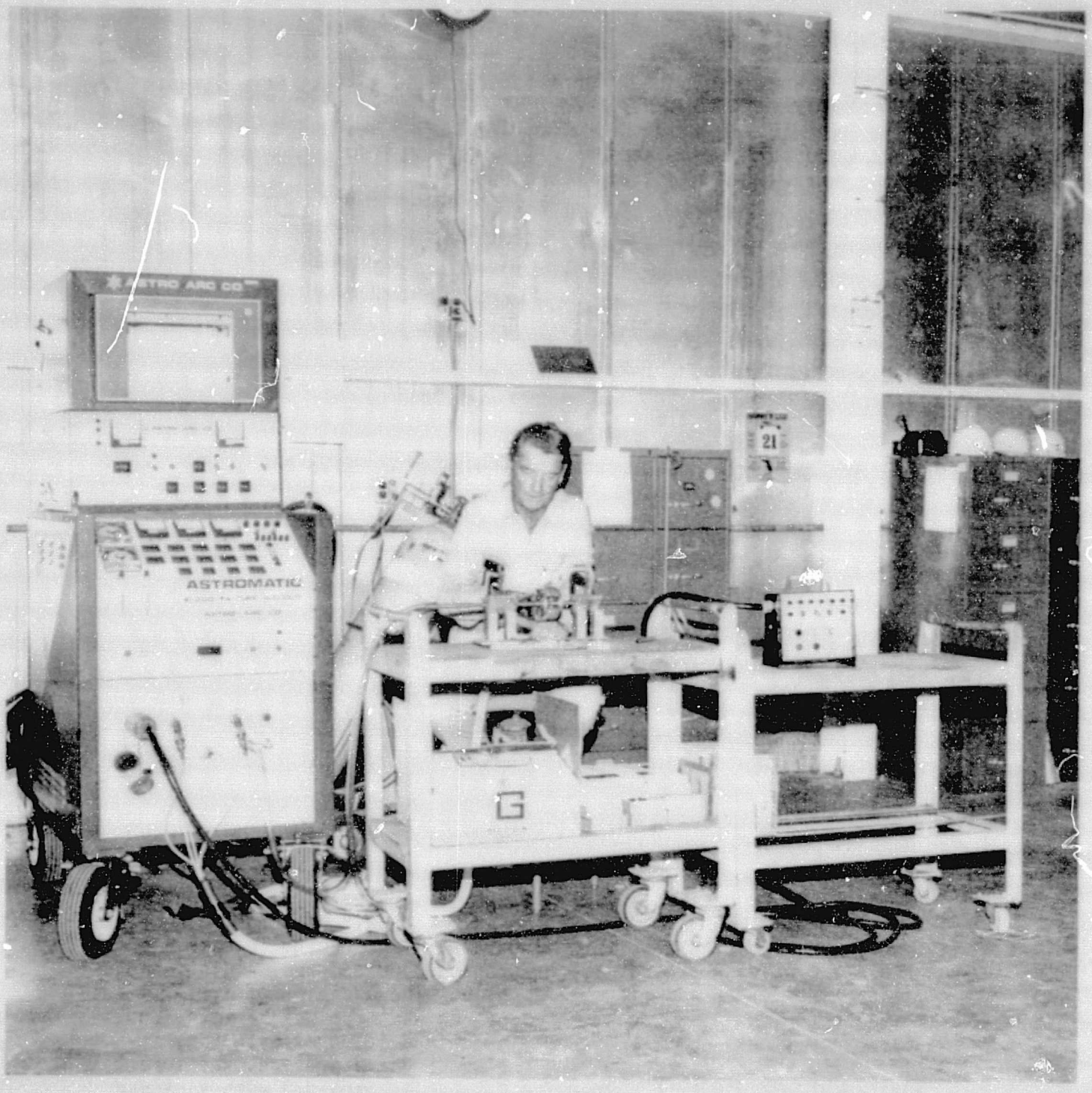


Figure 1. Machine Set Up to Weld Tubing

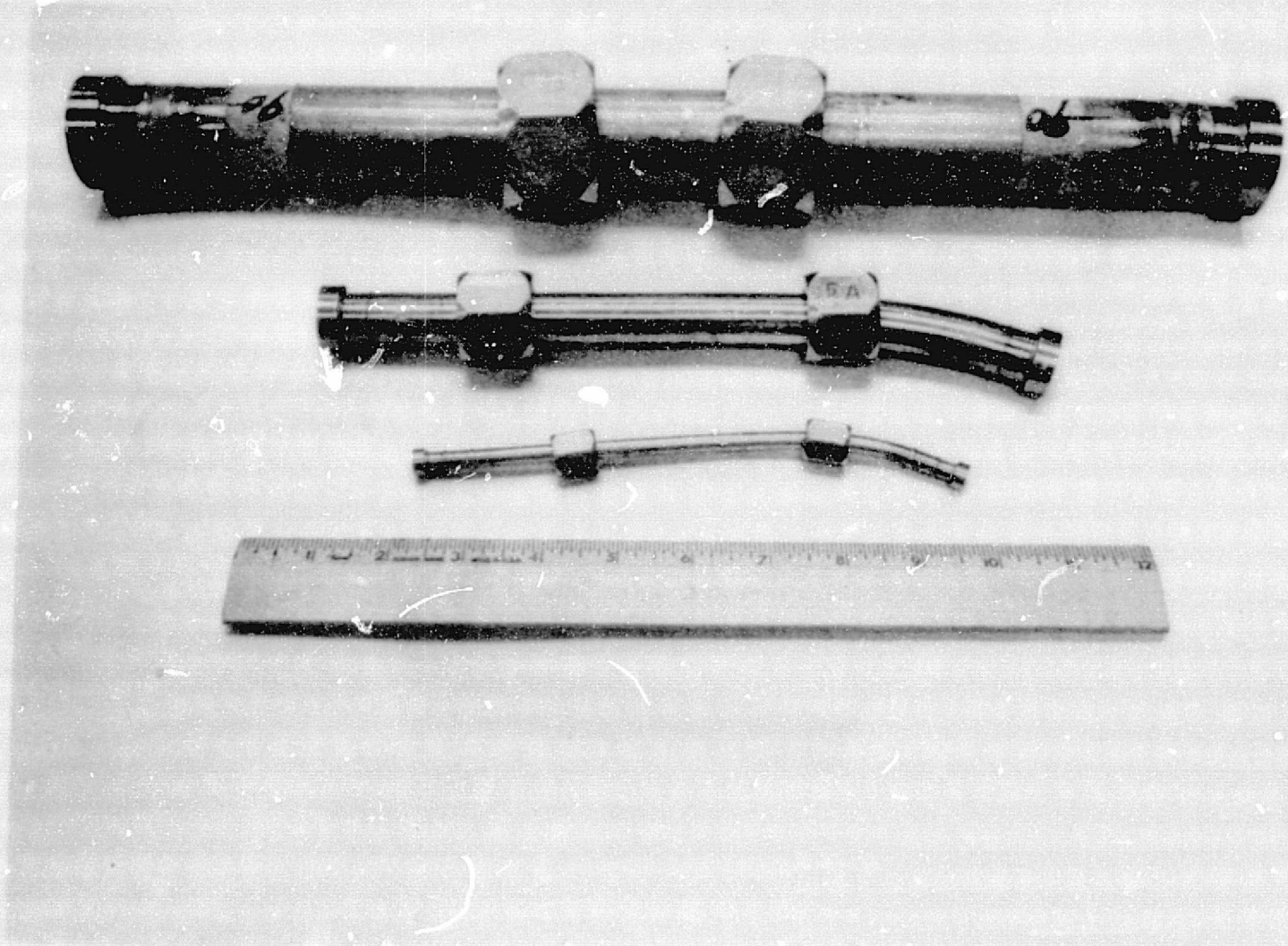


Figure 2. Tubing Specimens in 1/4, 3/4, and 1 1/2 Inch Sizes, Welded by the Automatic Process

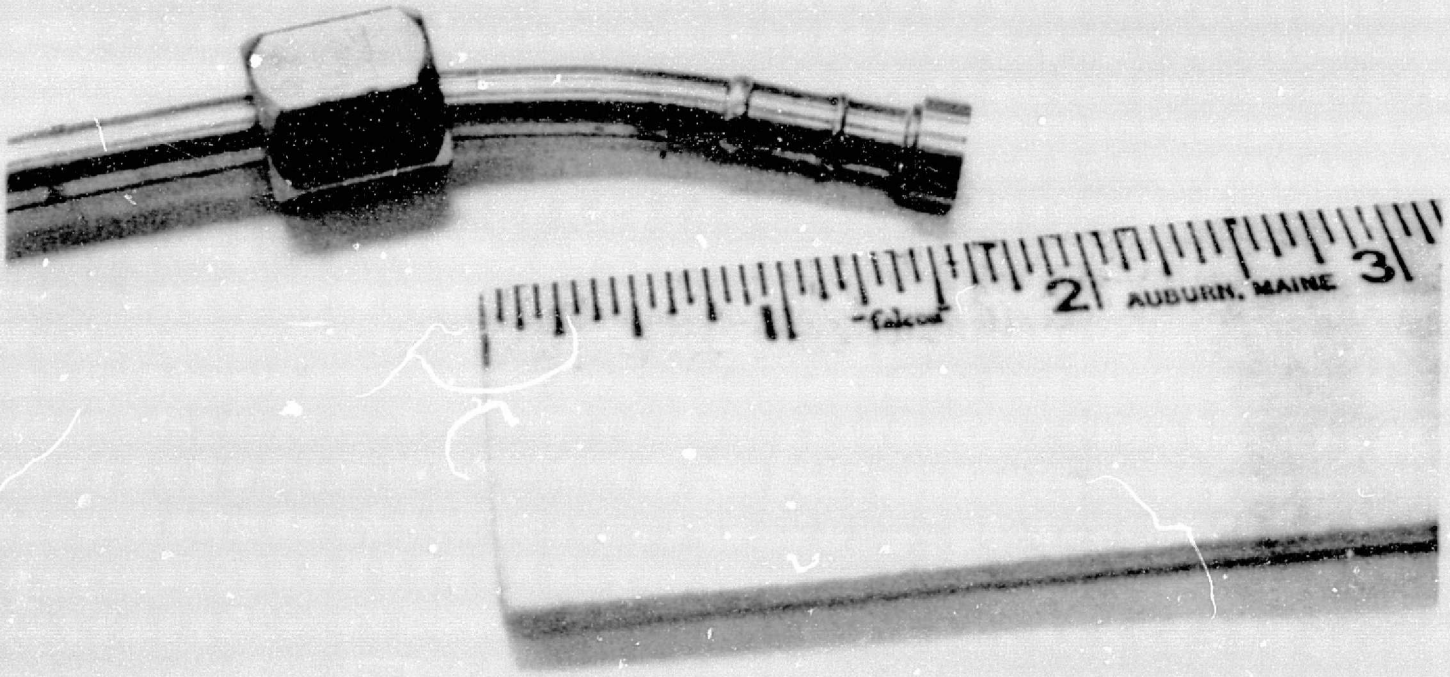


Figure 3. Close-up View of the Weld in 1/4 Inch Size Tubing

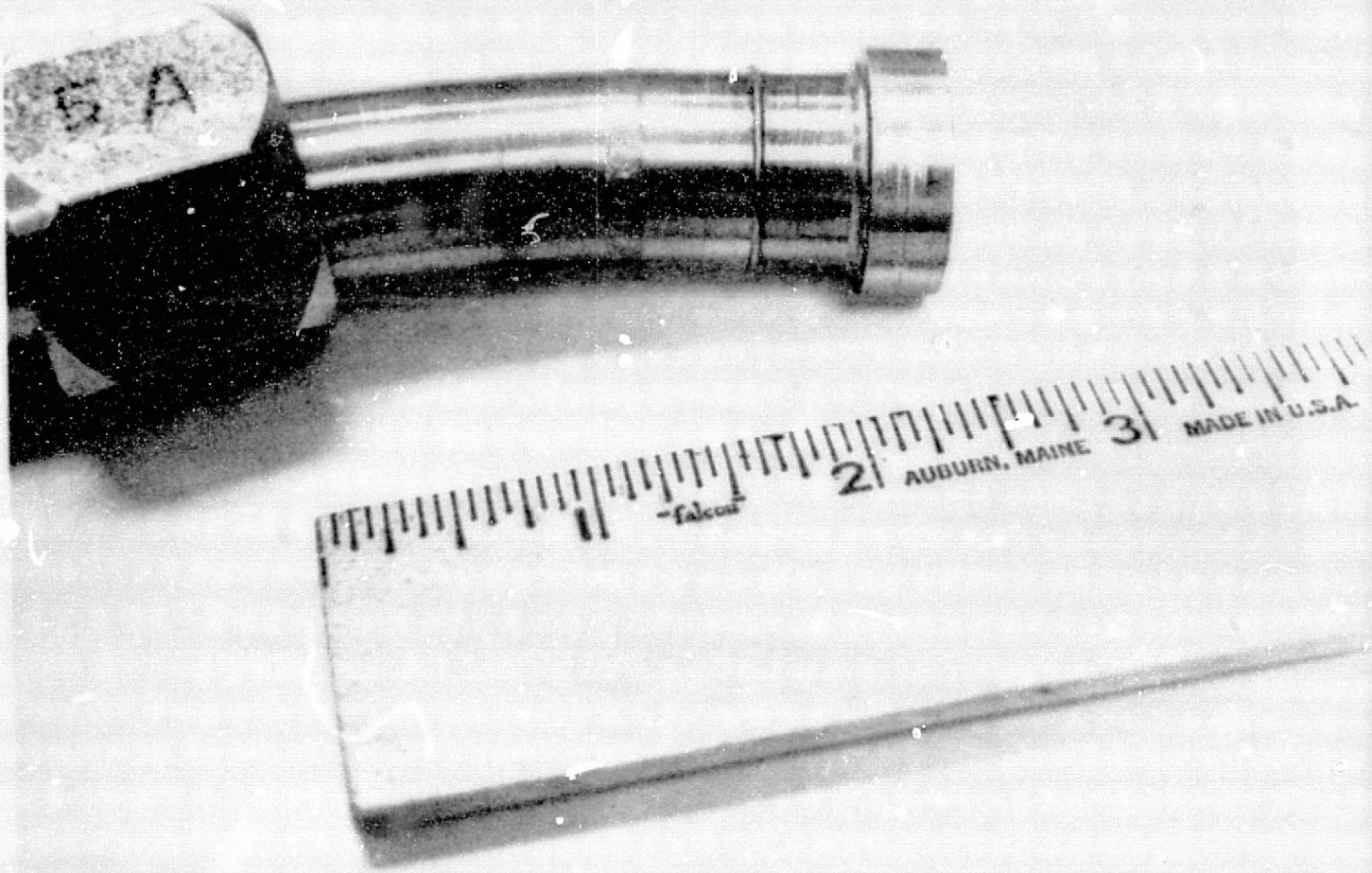


Figure 4. Close-up View of the Weld in 3/4 Inch Size Tubing

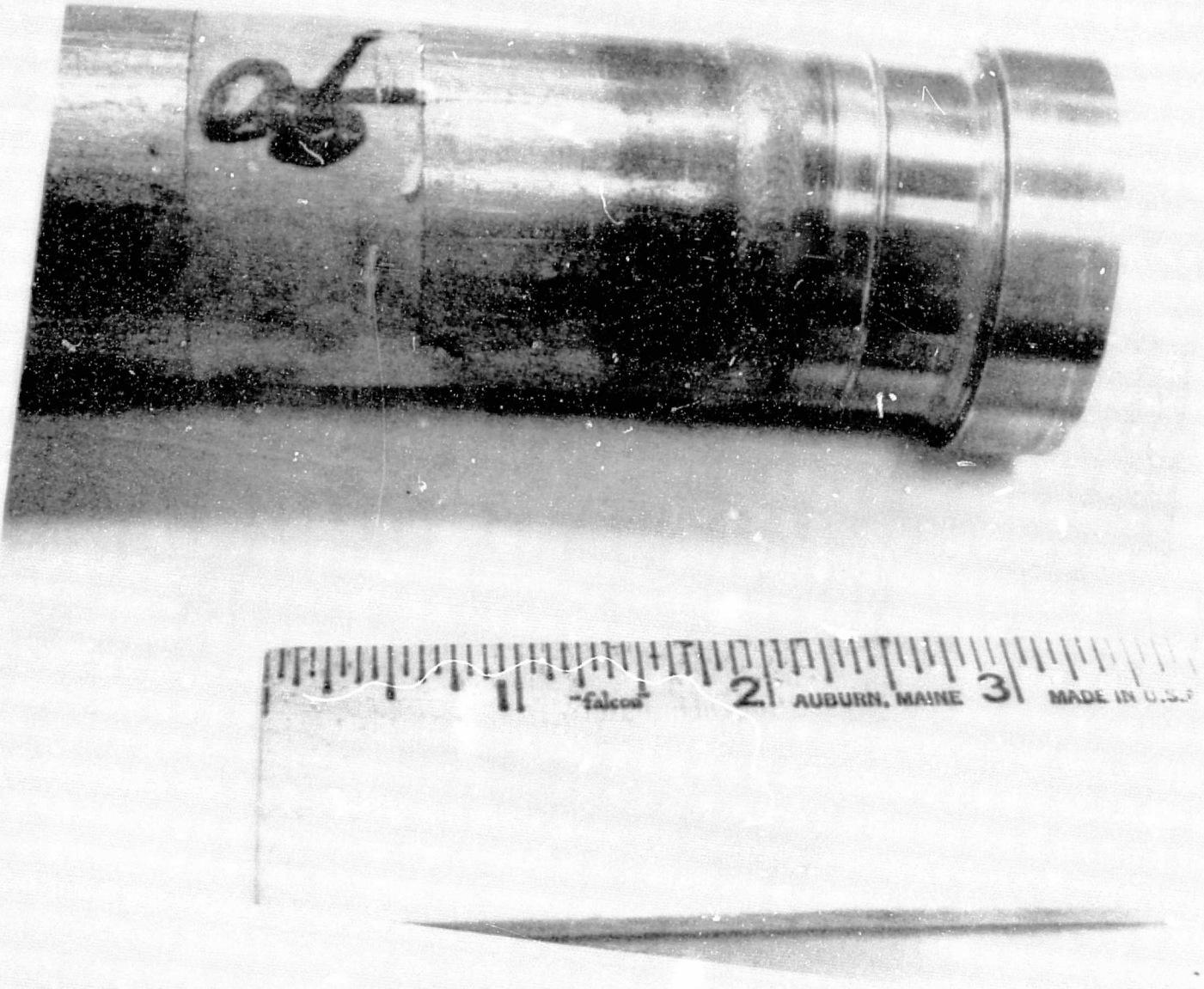


Figure 5. Close-Up View of the Weld in 1 1/2 Inch Size Tubing

2. Parameters Tested. As a first step, the optimum parameters (machine settings) were established by adopting the automatic welding procedures previously stated as being qualified for this equipment. These procedures were used by certified welding operators as a baseline during testing. The automatic procedures qualified as optimum and the welding operators certified for the three tube sizes (1/4, 3/4, 1 1/2 inch) are shown in the Appendix. During testing, the parameters varied were amperage, RPM, and shielding gas flow. One parameter at a time was varied, and the other parameters were maintained constant at their optimum values. Each parameter was varied in a manner that established threshold or borderline conditions. Threshold conditions were determined by weld quality based upon the point at which defects began to appear in x-rays during radiographic inspection of the welds.

3. Radiographic Inspection. All welds during the investigation were inspected 100 percent by radiography to obtain the data used to establish process control ranges and threshold conditions. In addition, a visual inspection was made of each weld. The visual inspection included the use of a borescope for the inside diameter (ID) inspection of 1/4 inch size tubing. Defects observed at threshold conditions are recorded under Inspection Results in Tables 3.1 through 3.18. The defects recorded include lack of penetration (LOP), concavity, and drop-through.

4. Strip Chart Recordings. Strip chart recordings were made of welds to determine if this method could be used to identify good quality welds vs bad quality welds. A typical strip chart recording is shown in Figure 6.

5. Test Runs. The test was divided into three phases, with each phase corresponding to a specific tube size. The effects of increasing and decreasing the three parameters, amperage, RPM, and shielding gas flow, were investigated. The ranges of acceptable parameters were determined by varying the individual parameters in increments of 5 percent, until the threshold values were found by correlation with the results of the radiographic and visual inspections. One parameter at a time was varied, with the remaining two being maintained constant at optimum settings. When a reject first occured, due to defects appearing in the x-ray, a repeat run was performed at the parameter deviation just preceding the setting where the reject occured. This was done to verify each threshold value. One type of defect prominently noted was concavity. The data sheets for individual test runs are included as an Appendix. Visual inspection results are separate from x-ray results.

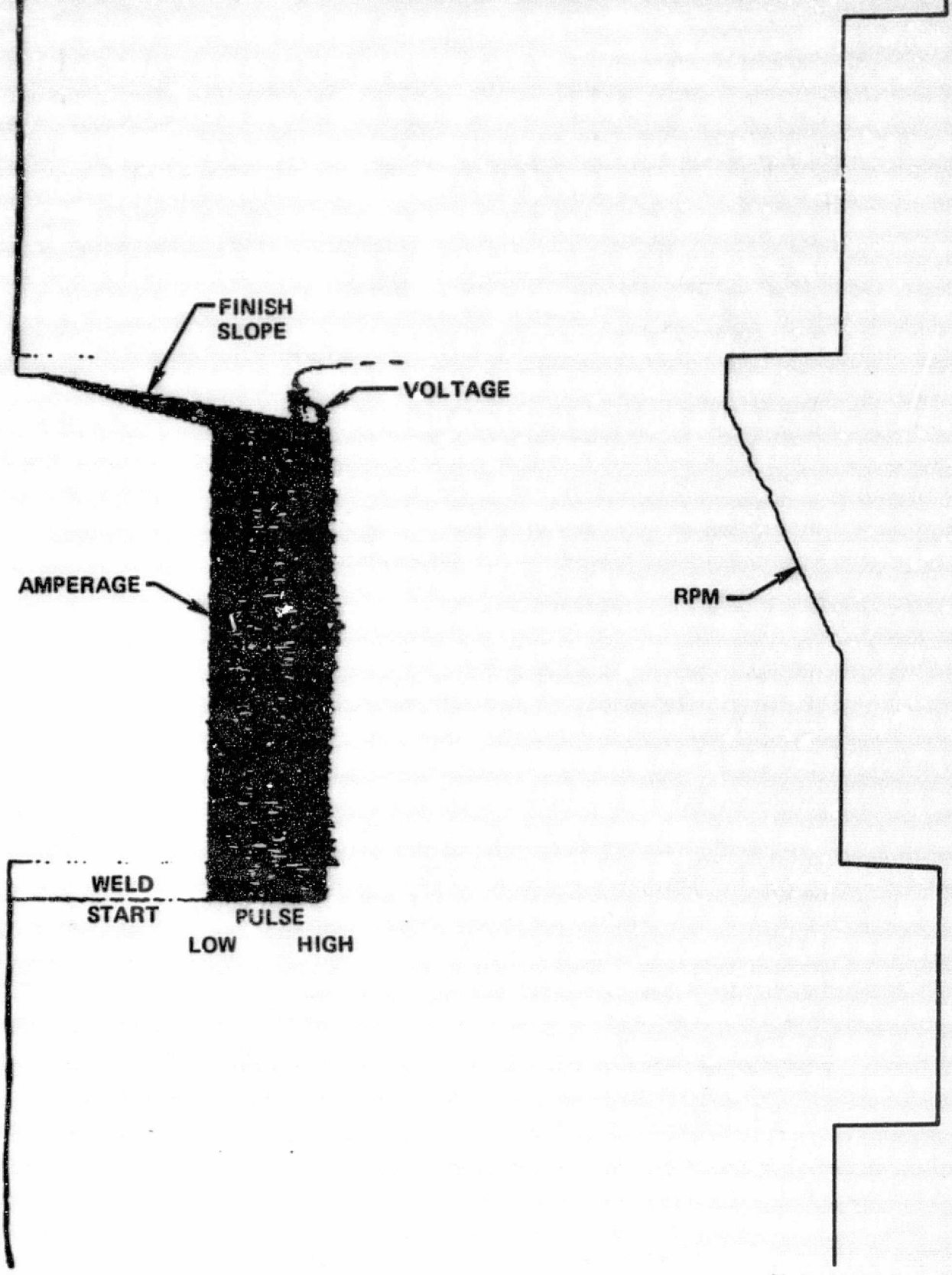


Figure 6. Typical Strip Chart Recording

TEST RESULTS

Individual test results are reported in the following tables:

Phase I

Table 3.1 - Increasing Amperage Tests

Tube size 1/4" x .035

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2*	Plus 10 percent	Satisfactory
3	Plus 15 percent	Reject, LOP
4	Plus 10 percent	Satisfactory

*Threshold Value, 10 percent.

TABLE 3.2 - Decreasing Amperage Tests

Tube size 1/4" x .035

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2	Minus 10 percent	Satisfactory
3*	Minus 15 percent	Satisfactory
4	Minus 20 percent	Reject, LOP
5	Minus 15 percent	Satisfactory

*Threshold Value, 15 percent.

Table 3.3 - Increasing RPM Tests

Tube size 1/4" x .035

Using the optimum RPM as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 15 percent	Satisfactory
4	Plus 20 percent	Satisfactory
5*	Plus 25 percent	Satisfactory
6	Plus 30 percent	Reject, LOP
7	Plus 25 percent	Satisfactory

*Threshold Value, 10 percent.

Table 3.4 - Decreasing RPM Tests

Tube size 1/4" x .035

Using the optimum RPM as a baseline:

RUN NO.	RPM DEIVATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2*	Minus 10 percent	Satisfactory
3	Minus 15 percent	Reject, LOP
4	Minus 10 percent	Satisfactory

*Threshole Value, 10 percent.

Table 3.5 - Increasing Shielding Gas Tests

Tube size 1/4" x .035

Using the optimum shielding gas flow as a baseline:

RUN NO.	GAS DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 15 percent	Satisfactory
4	Plus 20 percent	Satisfactory
5	Plus 25 percent	Satisfactory
6*	Plus 30 percent	Satisfactory
7	Plus 35 percent	Reject, LOP
8	Plus 30 percent	Satisfactory

*Threshold Value, 30 percent.

Table 3.6 - Decreasing Shielding Gas Tests

Tube size 1/4" x .035

Using the optimum shielding gas flow as a baseline:

RUN NO.	GAS DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2	Minus 10 percent	Satisfactory
3	Minus 25 percent	Satisfactory
4*	Minus 30 percent	Satisfactory
5	Minus 40 percent	Reject, LOP

*Threshold Value, 30 percent.

Table 3.7 - Increasing Amperage Tests

Tube size 3/4" x .109

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2*	Plus 10 percent	Satisfactory
3	Plus 5 percent	Satisfactory

*Threshold Value, 10 percent.

All three test runs produced satisfactory x-rays. However, visual inspection revealed a borderline condition in each run, consisting of some concavity associated with greater than normal drop-through at the inside diameter (ID) of the tube. This heavier walled tube was found to be very sensitive to changes in amperage.

Table 3.8 - Decreasing Amperage Tests

Tube size 3/4" x .109

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2*	Minus 10 percent	Satisfactory
3	Minus 15 percent	Reject, LOP
4	Minus 10 percent	Satisfactory

*Threshold Value, 10 percent.

Table 3.9 - Increasing RPM Tests

Tube size 3/4 " x .109

Using the optimum RPM as a baseline:

RUN NO.	RPM DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 15 percent	Satisfactory
4	Plus 20 percent	Satisfactory
5	Plus 25 percent	Satisfactory
6	Plus 30 percent	Satisfactory
7*	Plus 35 percent	Satisfactory
8	Plus 40 percent	Reject, LOP
9	Plus 35 percent	Satisfactory

*Threshold Value, 35 percent.

Table 3.10 - Decreasing RPM Tests

Tube size 3/4" x .109

Using the optimum RPM as a baseline:

RUN NO.	RPM DEVIATION	INSPECTION RESULTS
1*	Minus 5 percent	Satisfactory
2	Minus 10 percent	Reject, LOP
3	Minus 3 percent	Satisfactory

*Threshold Value, 5 percent.

In comparing this narrow range with the wide range in the Increasing RPM Tests results, it becomes apparent that the optimum RPM value should be somewhat higher than the value selected. Since the total range of +35 percent and -5 percent is 40 percent, a more meaningful evaluation is a range of +20 percent and -20 percent.

Table 3.11 - Increasing Shielding Gas Tests

Tube size 3/4" x .109

Using the optimum shielding gas flow as a baseline:

RUN NO.	GAS DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3*	Plus 15 percent	Satisfactory
4	Plus 20 percent	Reject, Concavity

*Threshold Value, 15 percent.

Table 3.12 - Decreasing Shielding Gas Tests

Tube size 3/4" x .109

Using the optimum shielding gas flow as a baseline:

RUN NO	GAS DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2*	Minus 10 percent	Satisfactory

*Threshold Value, 10 percent.

The narrow range indicates that these parameters should be adjusted to a slight modification of the optimum value.

Phase III

Table 3.13 - Increasing Amperage Tests

Tube size 1 1/2" x .049

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 15 percent	Satisfactory
4	Plus 20 percent	Satisfactory
5*	Plus 25 percent	Satisfactory
6	Plus 30 percent	Reject, Concavity
7	Plus 25 percent	Satisfactory

*Threshold Value, 25 percent.

Table 3.14 - Decreasing Amperage Tests

Tube size 1 1/2" x .049

Using the optimum amperage as a baseline:

RUN NO.	AMPERAGE DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2	Minus 10 percent	Satisfactory
3*	Minus 15 percent	Satisfactory
4	Minus 20 percent	Reject, LOP
5	Minus 15 percent	Satisfactory

*Threshold Value, 15 percent.

Table 3.15 - Increasing RPM Tests

Tube size 1 1/2" x .049

Using the optimum RPM as a baseline:

RUN NO.	RPM DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 15 percent	Satisfactory
4*	Plus 20 percent	Satisfactory
5	Plus 25 percent	Reject, LOP
6	Plus 20 percent	Satisfactory

*Threshold Value, 20 percent.

Table 3.16 - Decreasing RPM Tests

Tube size 1 1/2" x .049

Using the optimum RPM as a baseline:

RUN NO.	RPM DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2*	Minus 10 percent	Satisfactory
3	Minus 15 percent	Reject, LOP
4	Minus 10 percent	Satisfactory

*Threshold Value, 10 percent.

Table 3.17 - Increasing Shielding Gas Tests

Tube size 1 1/2" x .049

Using the optimum shielding gas flow as a baseline:

RUN NO.	GAS DEVIATION	INSPECTION RESULTS
1	Plus 5 percent	Satisfactory
2	Plus 10 percent	Satisfactory
3	Plus 20 percent	Satisfactory
4	Plus 30 percent	Satisfactory
5	Plus 40 percent	Satisfactory

The results indicate an insensitivity to this parameter.

Table 3.18 - Decreasing Shielding Gas Tests

Tube size 1 1/2" x .049

Using the optimum shielding gas flow as a baseline:

RUN NO.	GAS DEVIATION	INSPECTION RESULTS
1	Minus 5 percent	Satisfactory
2	Minus 10 percent	Satisfactory
3	Minus 15 percent	Satisfactory
4	Minus 30 percent	Satisfactory
5	Minus 50 percent	Reject, oxidized.

At 50 percent of the optimum gas flow rate, the specimen oxidized.

SUMMARY OF RESULTS

It was found that the following ranges of process variables from optimum produced good quality welds as determined by the radiographic inspection. Any greater deviation resulted in defective welds.

Tube size 1/4" x .035

Amperage Deviation

Increasing . . . . . 10 percent

Decreasing . . . . . 15 percent

RPM Deviation

Increasing . . . . . 25 percent

Decreasing . . . . . 10 percent

Shielding Gas Flow Deviation

Increasing . . . . . 30 percent

Decreasing . . . . . 30 percent

Tube size 3/4" x .109

Amperage Deviation

Increasing . . . . . 10 percent

Decreasing . . . . . 10 percent

RPM Deviation

Increasing . . . . . 20 percent

Decreasing . . . . . 20 percent

Shielding Gas Flow Deviation

Increasing . . . . . 15 percent

Decreasing . . . . . 10 percent

Tube size 1 1/2" x .049

Amperage Deviation

Increasing . . . . . 25 percent

Decreasing . . . . . 15 percent

RPM Deviation

Increasing . . . . . 20 percent

Decreasing . . . . . 10 percent

Shielding Gas Flow Deviation

Increasing . . . . . 40 + percent

Decreasing . . . . . 30 + percent

The results obtained using the strip chart recordings revealed that this method of recording is not reliable for identifying good quality welds vs bad quality welds. All welding data sheets are included in the Appendix.

CONCLUSION

The results of the testing show that when the optimum welding parameters are established by qualifying the welding procedures for specific sizes of tubing, and when welding machine operators are certified, then the automatic tube welding process repeatedly produces good quality welds with a high degree of reliability. Quality of the welds was determined by both radiographic and visual inspections. It was found that the welding parameters could be varied over a considerable range without jeopardizing the weld quality, although this is not a recommended practice. The correlation between the results of the radiographic and visual inspections was good. When the weld passed the visual inspection, there was a high probability that it would pass the radiographic inspection.

The reliability of the automatic tube welding process has been verified by its performance in the recent production welding of tube assemblies for the hypergolics ground support equipment for the Space Shuttle. Approximately 5000 welds were made using the automatic tube welding process at the Kennedy Space Center, and several thousand were made at Michoud in stainless steel tubing, in sizes ranging from 1/4 inch to 2 inch diameters. In both projects, the weld quality was found to be high, requiring very little repair welding. It is estimated that 3 percent of these production welds required minor repairs during their fabrication. This high degree of reliability and low rejection rate is attributed to the close control provided by the automatic process, minimizing human error.

In view of the consistently high quality of the welds reproduced by the automatic tube welding process, both in testing and in production welding, it is concluded that the 100 percent radiographic inspection requirement can be removed when tubing is welded by the automatic process. Good quality welds result when the automatic process parameters are controlled at optimum values. When this control is supplemented by weld visual inspection, good quality welds are assured.

IMPLEMENTATION

Based on the findings of this investigation, the following procedures will be implemented in Kennedy Space Center specifications for welding tubing when the automatic process is used:

1. The Astro Arc Pulsed Gas Tungsten Arc Welding Process or equal will be used with butt weld tube fittings.

2. During the qualification of the welding procedures and the certification of welding operators, the 100 percent radiographic inspection requirement will remain in effect. The contractor will verify that satisfactory radiographic inspections are attained. During this period, the optimum welding parameters will be determined. The contractor will verify the optimum welding parameters in a qualified welding procedure and certify welding operators, based upon both radiographic and visual inspections.

3. During the production welding phase, after qualification and certification, the radiographic inspection will be eliminated. It will be replaced by a rigid control of process parameters, augmented by 100 percent visual inspection. The control of process parameters and the results of the visual inspection will become part of the inspection record, signed by the contractor. The data to be recorded is as follows:

   a. Weld Number: To be recorded on the data sheet and etched on the tube adjacent to the weld.

   b. Welder's Name and Certification Verification

   c. Date of Welding

   d. Government Specification Number

   e. Contractor's Procedure Number

   f. Contract or Project Number

   g. Tube Material and Size

   h. Welding Position

   i. Machine Settings

      (1) Arc Amperes (Weld Levels I, II, III, and IV)

      (2) Time (Levels I, II, III, and IV)

      (3) Pulse Low (Amperes)

      (4) Pulse High (Time)

(5) Pulse Low (Time)

(6) Finish Slope

(7) Rotation Delay

(8) Head Speed, RPM

(9) Shielding and Backup Gas Flow, CFH

(10) Arc Voltage

(11) Tungsten Electrode (Length, Bevel, Land, Arc Gap)

(12) Machine Used (Equipment, Manufacturer, Serial Number)

(13) Fitting Type and Manufacturer

Note: During the welding process, every effort must be made to maintain the machine settings (item i) at their optimum values. If more than one parameter varies measurably, from optimum, the weld shall be rejected. In the case where only one parameter varies not more than 5 percent the weld shall be acceptable.

j. Inspection Report Number

K. Inspection's Signed Verification: Optimum settings maintained as specified in item i.

l. Weld Visual Inspection Results

m. Approvals or Rejections: Quality/Contractor Signatures, Government Inspector Approval or Rejection Stamp.

4. The following steps shall be performed during the automatic welding process:

a. Turn gas on slowly at tank for torch and backup gas. Check for adequate tank pressure. Check for correct gas and gas flow per weld schedule by depressing gas flow button. Gas must be turned off at tank at the end of work shift. Seal backup gas tube to flow over inside diameter (ID) of weld joint.

b. Attach ground cable to tube when using A3500 head. A ground cable is not required with A2500 head.

c. Check for proper tungsten electrode grinding and gap on fitting. Regrind electrode if contaminated or if shape of point has changed. Point of electrode must be positioned in exact center of fitting lip.

d. Make sure that tube end is cut square and is free from burrs on outside and inside edges and that there is no gap when tube and fittings are clamped in weld head. Clean joint surfaces of finger prints with freon and lense cleaner tissue.

e. Always start weld with gear teeth in housing to prevent arcing from gear ring. This applies to the A2500 weld head. Arc may be struck in any position with the A3500 head.

f. Check each item on weld schedule for proper control panel settings.

g. Check the following:

(1) Gear rotation switch is in forward position

(2) RPM setting is correct

(3) Panel and arc starter switches are on

(4) Pulse-step pulse switch is in correct position

(5) Arc voltage switch is on (A3500 head only)

h. Depress sequence start button and observe root drop-through when possible. Slight amp adjustment (within ±5 percent) may be made during welding to assure uniformity. Time may be added to Level IV to provide overlap if weld start did not give full penetration. These adjustments are not to be considered as variations from optimum.

5. The visual inspection shall be a 100 percent coverage for each weld, including the weld root when it is accessible for viewing. When weld roots are inaccesible for viewing, then the record of process controls will govern acceptance or rejection of the weld root. Any of the following defects shall be unacceptable:

a. Cracks

b. Porosity open to the surface

c. Concavity

6. KSC-SPEC-Z-0016, "Automatic Welding, Stainless Steel Pipe and Tubing, Invar 36 Pipe, Carbon Steel Pipe, Aluminum Pipe, Specification for" (revised to include items 1 through 5 above for tubing) will govern the application of the automatic tube welding process with implementation assuring good quality tube welds at reduced cost.

APPENDIX

Qualification and Certification and Data Sheets

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WELDS Q-Q & R-R IDP #23 WPS No. 404

WPP NUMBER	REVISION LETTER	PAGE
WPP-LO-0501		14 of 14

SPECIFICATION NO. REVISION. DATE 7/7/77 OUT OF STA-028

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304 L
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N 79X80246-1

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

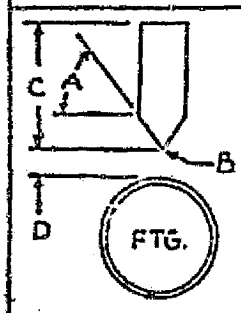
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	2.9	3.60

QUALIFICATION POSITIONS

[X] HORIZONTAL [X] VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME Tooley STAMP

RADIOGRAPH ACCEPTANCE JUL 19 1977

TENSILE TEST ACCEPTANCE

REPORT NUMBER MTB-129-77

APPROVALS:

MFG. D/821 DATE 7/13/77

Q.E. D/814 DATE 7-12-77

ENGR. D/836 DATE 7/18/77

QUALITY CONTROL STAMP DATE JUL 19 1977

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No. 1208

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE ______

PURGE GAS

BACK-UP		HEAD		TUBE DATA	
INTERNAL GAS	ARG	HEAD GAS	ARG	O.D.	.750
FLOW CFH	5±2	FLOW CFH	15±5	WALL	.109
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME	15 SEC(MIN)	ALLOY	304
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME	1 MIN(MIN)	FTG. P/N	12-18-YHY

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

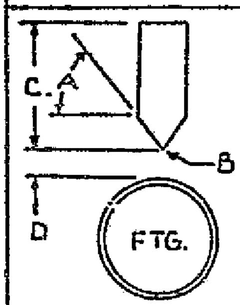
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL NNNN ☐ VERTICAL MMMM

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME Tooley JT STAMP ______

RADIOGRAPH ACCEPTANCE ______

TENSILE TEST ACCEPTANCE ______

REPORT NUMBER MTR-218-77

APPROVALS:

MFG. D/827 C.H. Adams DATE 10-14-77

Q.E. D/814 [signature] DATE 10/14/77

ENGR. D/838 [signature] DATE 10/17/77

QUALITY CONTROL ______ STAMP DATE OCT 17 1977

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WELD #CC & DD | IPD #16 | WPS No. 2402

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.50
FLOW CFH 5±2	FLOW CFH 15±5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304 L
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N 740021-2.049

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

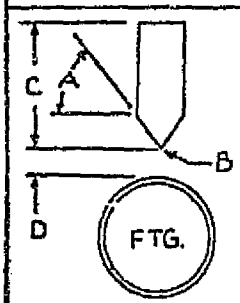
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

[X] HORIZONTAL [X] VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.259

D .030

WELDERS NAME Tom Hughes STAMP

RADIOGRAPH ACCEPTANCE 5/4/77

TENSILE TEST ACCEPTANCE 5/6/77

REPORT NUMBER MTR-063-77

APPROVALS:

MFG. D/821 [signature] DATE 5-4-77

Q.E. D/814 [signature] DATE 5-4-77

ENGR. D/830 [signature] DATE 5-6-77

QUALITY CONTROL STAMP DATE 5/6/77

DATA SHEET
1/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #38 +5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

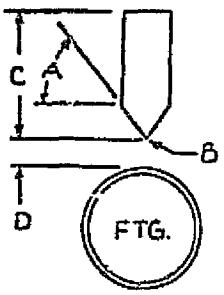
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
026	024	022	019	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	095	009	4.0
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	0.9	3.60	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 080°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A-328-001 Sample #39 + 10%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
028	025	023	020	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

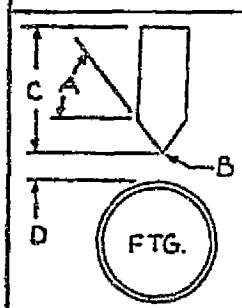
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916 S-1 REV. 5-73

DATA SHEET
1/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #40 +15%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
029	027	025	021	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

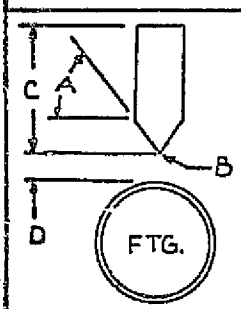
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJ. CONCAVITY & EXCESS DROP THRU

DATA SHEET
1/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #41 +15%-2 amps

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of Tine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
027	025	023	019	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

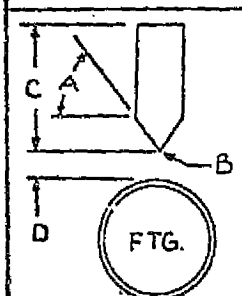
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

DATA SHEET
1/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TSP A/A 328-001 Sample #72 -5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS. ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
026	024	022	019	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

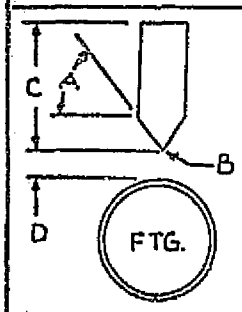
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3816-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #17 -5%

X-Ray Results: OK

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. or fine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
024	022	020	017	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

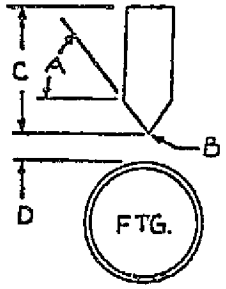
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016S-1 REV. 5-72

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #18 -10%

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH	5±2	FLOW CFH 15±5	WALL 0.035
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. or fine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
022	021	019	016	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

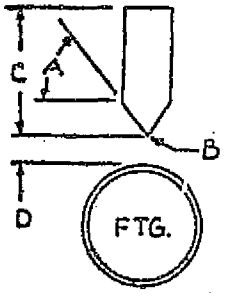
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 080°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3116.5-1 REV 5-73

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS NO.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #19 -15%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5÷2	FLOW CFH 15÷5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
021	020	018	015	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

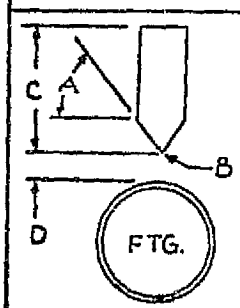
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3816S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #20 -20%

X-Ray Results: Rej. Lop

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
020	013	017	014	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

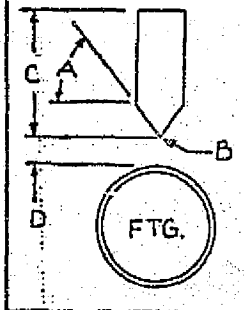
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER 1328

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJ. LOP

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #21 - 25%

X-Ray Results: Rej. LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
019	017	015	013	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0

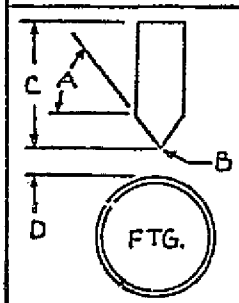
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	2.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 080°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP

DATA SHEET
1/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

MPP-LO-0001 WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #22

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
021	019	017	015	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0

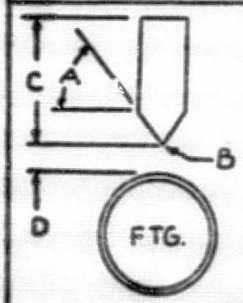
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B 015

C 1.329

D 030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2016S-1 REV. 5-73

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #78 +5%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

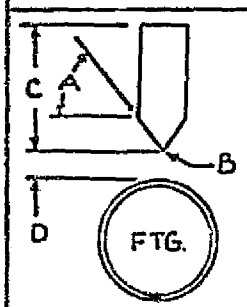
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	2.78

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 30162-1 REV 6-77

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #79 +10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

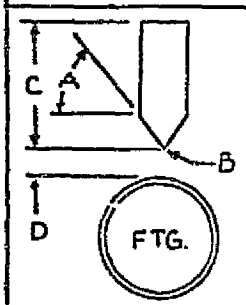
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.96

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MFP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #80 +15%

X-Ray Results: Accept

PURGE GAS BACK-UP	PURGE GAS HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

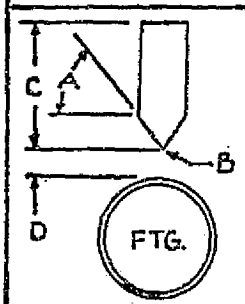
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	4.14

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016S-1 REV. 5-73

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #81 +20%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0

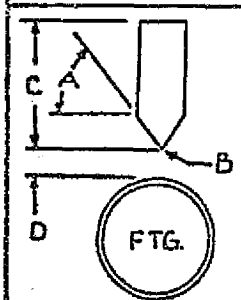
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	4.32

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3516 S-1 REV. 5-73

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #82 +20% Repeat

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of Tine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

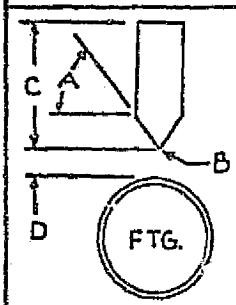
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	0.9	4.32	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #83 +25%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

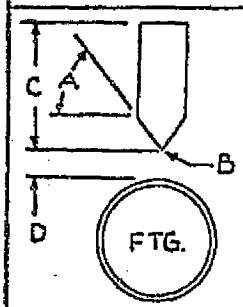
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	4.50

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916 S-1 REV. 5-73

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #84 +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

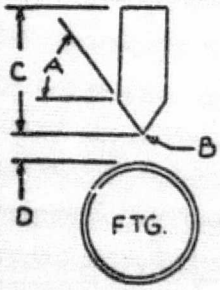
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	4.68

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

DATA SHEET
1/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #85 +25%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5±2	FLOW CFH 15±5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

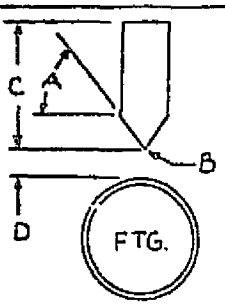
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	0.9	4.50	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #73 -5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5÷2	FLOW CFH 15÷5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

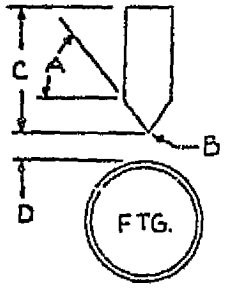
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.42

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 080°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #74 - 10%

X-Ray Results: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

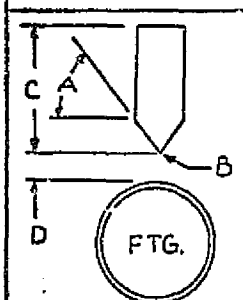
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.24

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #75-45%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

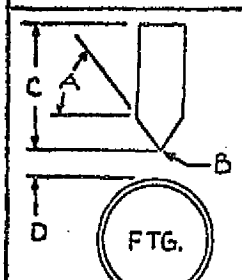
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.06

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT L.O.P.

FORM 3618.6.1 REV 6-73

DATA SHEET
1/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #76 -20%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 15+5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

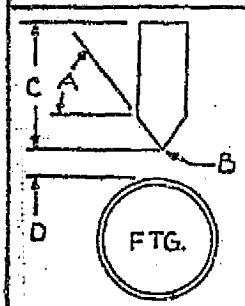
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	2.88

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

FORM 3916-S-1 REV. 5-73

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #93 +5%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5÷2	FLOW CFH 16	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

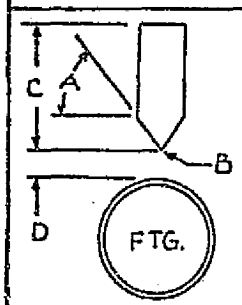
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

HELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3015-S-1 REV. 5-73

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #94 +10% .

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. .250
FLOW CFH	5+2	FLOW CFH 17	WALL .035
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

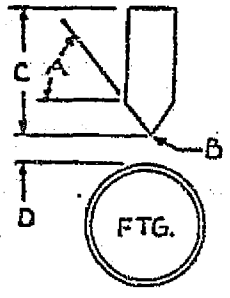
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916S-1 REV. 5-73

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #95 +20%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 18	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

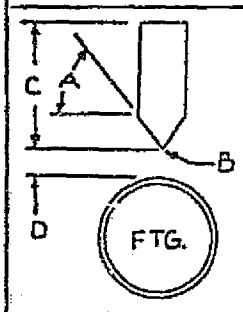
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328/1328

HEAD S/N



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME STAMP

RADIOGRAPH ACCEPTANCE

TENSILE TEST ACCEPTANCE

REPORT NUMBER

APPROVALS:

MFG. D/821 DATE

Q.E. D/814 DATE

ENGR.D/830 DATE

QUALITY CONTROL STAMP DATE

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #96 +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5+2	FLOW CFH 20	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

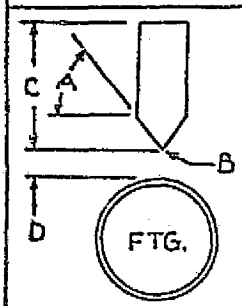
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	360

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2016 S-1 REV. 5-73

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTT WELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MFP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #97 +40%

X-Ray Results: Reject L.O.F.

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 21	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (m.n) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

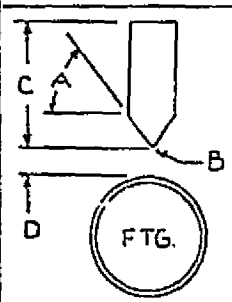
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #98 +50%

X-Ray Results: Reject L.O.F

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5±2	FLOW CFH 22	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

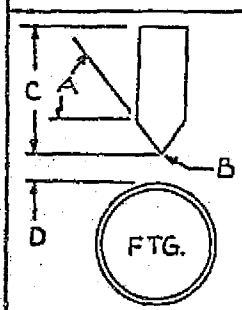
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916 S-1 REV. 5-73

DATA SHEET
1/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #99 +60%

X-Ray Results: Reject L.O.F

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 24	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

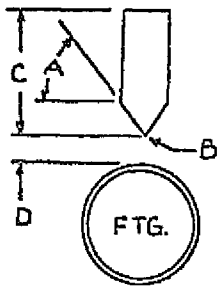
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016-S-1 REV 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #86 -5%

X-Ray Results: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5÷2	FLOW CFH 14*	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
007	005	005	009	4.0

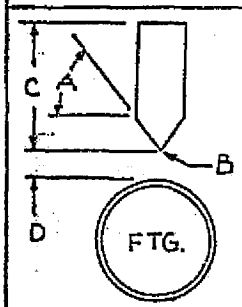
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

*DECREASING SHIELD GAS

FORM 3916-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #87 -10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 12	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

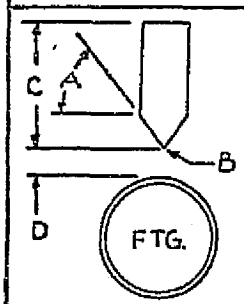
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SP RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #88 -25%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. ..250
FLOW CFH 5±2	FLOW CFH 15±5 11	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

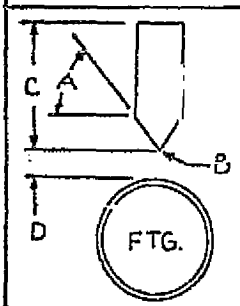
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

a .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOW CONCAVITY

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #89 -30%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 9	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

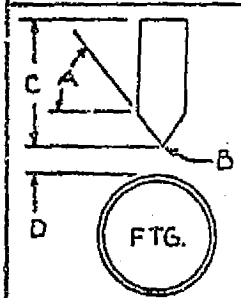
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #90 -40%

X-Ray Pesults: REJECT L.O.P

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. .250
FLOW CFH 5+2	FLOW CFH 8	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

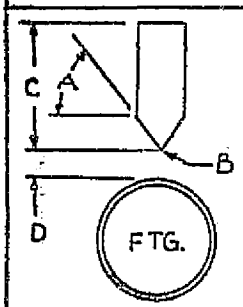
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	0.9	3.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #91 -60%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.250
FLOW CFH 5÷2	FLOW CFH 6.5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. or fine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

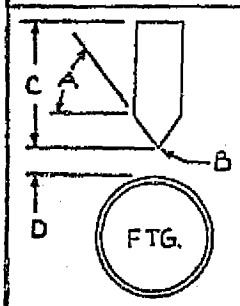
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	0.9	3.60	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.329

D .030

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOW CONCAVITY

FORM 3016-S-1 REV. 5-73

DATA SHEET
1/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

M/P NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #92 -70%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARC	O.D. .250
FLOW CFH 5÷2	FLOW CFH 5	WALL .035
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

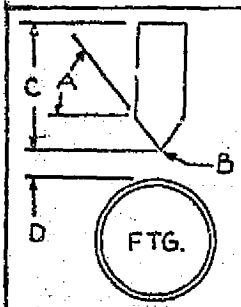
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
025	023	021	018	010
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
007	005	005	009	4.0
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	0.9	3.60	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

R .015

C 1.329

D .030

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT

FORM 2016-S-1 REV. 5-73

DATA SHEET
3/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #34 +5%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

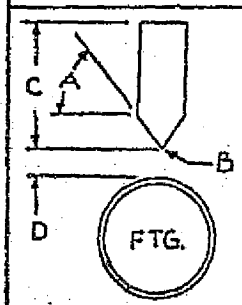
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
078	077	077	076	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.2	0.1	3.6	1.00	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJ. CONCAVITY & EXCEPTS DROP THRU

FORM 3916S-1 REV. 5-73

DATA SHEET
3/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #35 +10%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
081	080	080	079	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

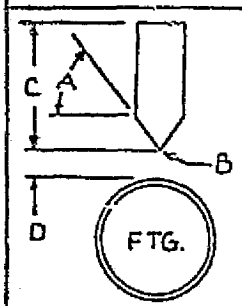
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-209"4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJ. CONCAVITY & EXCESS DROP THRU

DATA SHEET
3/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #36 -4 Amps Below +10% Level

X-Ray Resluts: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.105
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

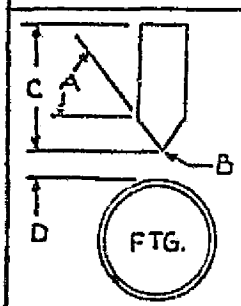
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
077	076	076	075	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJ. SLIGHT CONCAVITY

FORM 2016 S-1 REV. 5-73

DATA SHEET
3/4" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #37 -6 Amps Below +10% Level

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

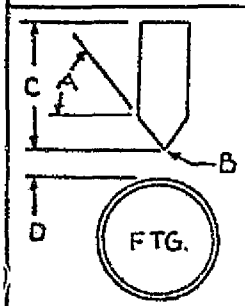
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
075	074	074	073	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 7818 S.1 REV 6-73

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #10 -5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
070	069	069	068	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

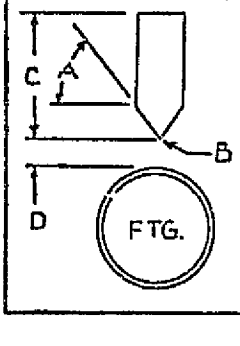
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #11 -10%

X-Ray Results: Accept

PURGE GAS BACK-UP		HEAD		TUBE DATA	
INTERNAL GAS	ARG	HEAD GAS	ARG	O.D.	0.750
FLOW CFH	5±2	FLOW CFH	15±5	WALL	.109
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME	15 SEC(MIN)	ALLOY	
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME	1 MIN(MIN)	FTG. P/N	

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
067	066	066	065	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

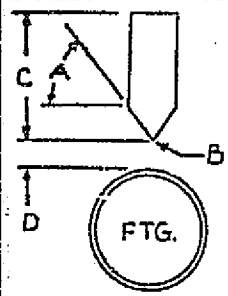
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #12 -15%

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

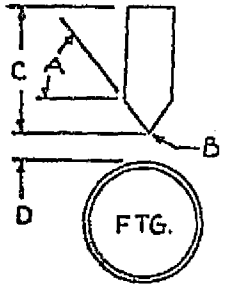
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
063	062	062	061	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.2	0.1	3.6	1.00	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

FORM 7018.5.1 REV 5-73

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #13 -20%

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
059	058	058	058	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

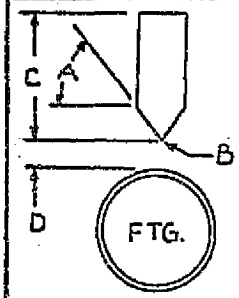
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

FORM [illegible] REV. 5-73

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #14

X-Ray Results: Reject LOP

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS: ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

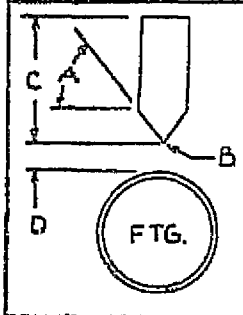
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
061	060	060	060	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	01[illegible]	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.[illegible]	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328/1328

HEAD S/N



ELECTRODE (Sketch)

A	80°
B	.010
C	1.073
D	.020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

FORM 3116.5-1 REV 5-77

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #15

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

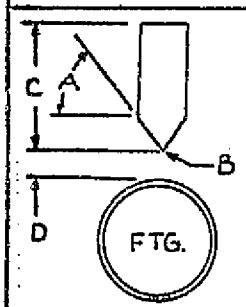
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
063	068	062	062	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.2	0.1	3.6	1.00	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

FORM 3016.5-1 REV 5-73

DATA SHEET
3/4" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #16

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN).	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

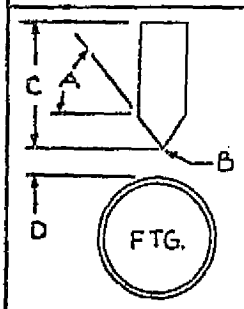
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
065	064	064	064	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
[illegible]	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2015 S-1 REV 5-77

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #46 +5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

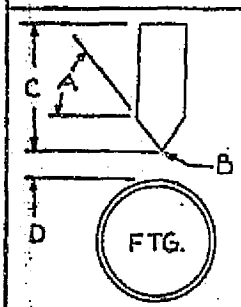
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.05

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328/1328

HEAD S/N



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME STAMP

RADIOGRAPH ACCEPTANCE

TENSILE TEST ACCEPTANCE

REPORT NUMBER

APPROVALS:

MFG. D/821 DATE

Q.E. D/814 DATE

ENGR.D/830 DATE

QUALITY CONTROL STAMP DATE

VISUAL ACCEPT

FORM 7016.5-1 REV 6-73

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #47 +10%

X-Ray Results: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

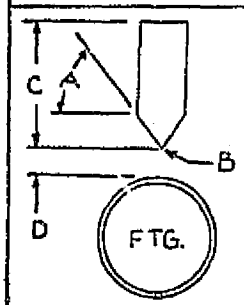
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.10

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3116.5-1 REV 5-77

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #48 +15%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

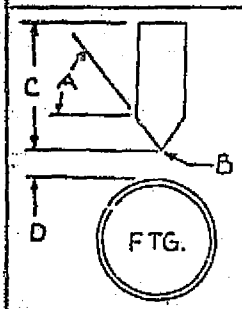
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.15

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #49 +20%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

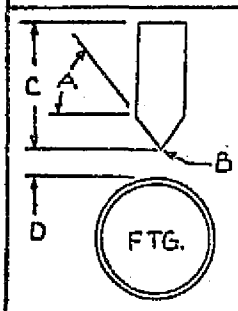
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.20

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016.5-1 REV. 5-73

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

WPS NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #50 +25%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

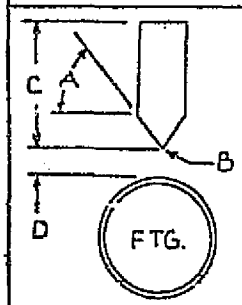
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.25

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #51 +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

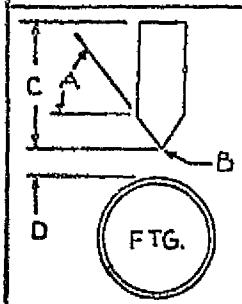
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.30

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM MWPS-1 REV 5-77

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #52 +35%

X-Ray Results: Accept

BACK-UP PURGE GAS	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

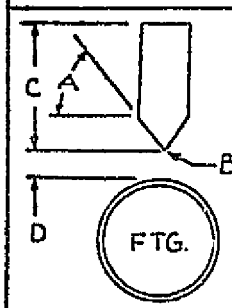
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.35

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME ______ STAMP ______

RADIOGRAPH ACCEPTANCE ______

TENSILE TEST ACCEPTANCE ______

REPORT NUMBER ______

APPROVALS:

MFG. D/821 ______ DATE ______

Q.E. D/814 ______ DATE ______

ENGR. D/830 ______ DATE ______

QUALITY CONTROL ______ DATE ______
STAMP

FORM 2016.5.1 REV 5-73

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #53 +40%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

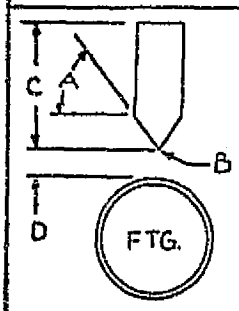
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.40

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP

FORM 2018-S-1 REV. 5-73

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #54 +33%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS: ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9

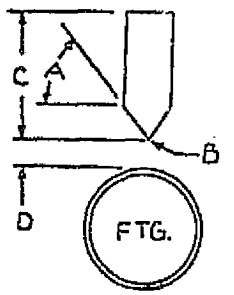
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.33

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP

FORM 7018 S-1 REV 5-73

DATA SHEET
3/4" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #55 +29%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

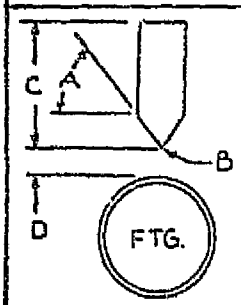
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.29

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 7016-S-1 REV 5-73

DATA SHEET
3/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #56 -5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

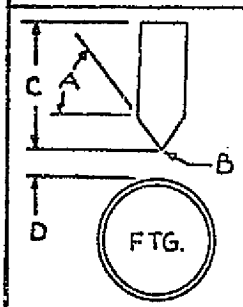
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.2	0.1	3.6	0.95	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJ. LOW CONCAVITY

FORM 2016 S-1 REV 8-72

DATA SHEET
3/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #57 -10%

X-Ray Results: Reject L.O.P.

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

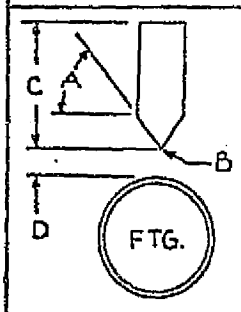
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	0.90

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

FORM 3016-1 REV 8-73

DATA SHEET
3/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #58

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

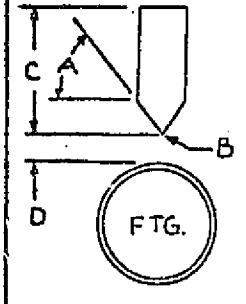
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	0.97

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

FORM 7316.5-1 REV 5-73

DATA SHEET
3/4" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #59 -1%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

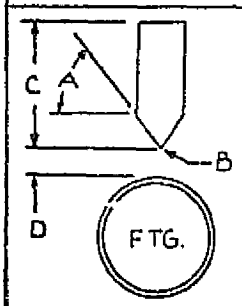
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.60	0.99

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #111 +5%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 16	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

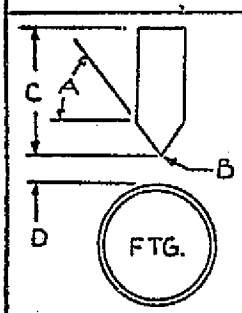
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 3816.S-1 REV. 5-73

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #112 +10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. .750
FLOW CFH 5+2	FLOW CFH 17	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

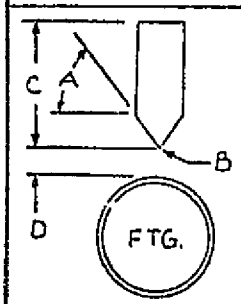
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #113 +15%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 18	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

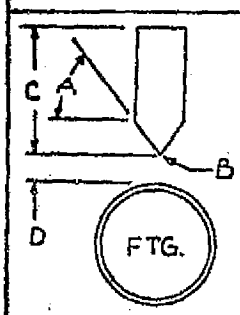
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 3016.5-1 REV. 5-73

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #114 +30%

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH	5÷2	FLOW CFH 20	WALL .109
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

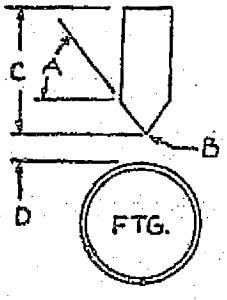
LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328
HEAD S/N 1328



ELECTRODE (Sketch)
A 80°
B .010
C 1.073
D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

FORM 7816.5-1 REV 5-73

A-2

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #115 +20%

X-Ray Results: Reject L.O.P.

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 18	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

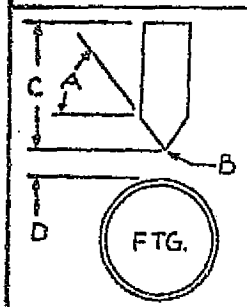
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

FORM 3116.5-1 REV. 5-73

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #116 +10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 17	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

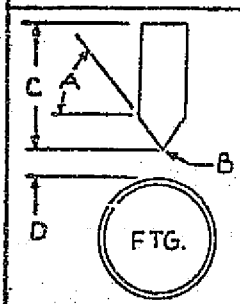
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

DATA SHEET
3/4" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-L0-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #117 +5%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 16	WALL .109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

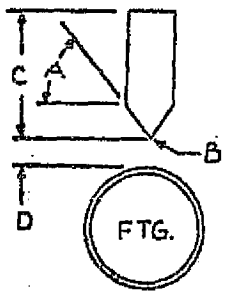
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 7016-5-1 REV 5-73

DATA SHEET
3/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #108 -5%

X-Ray Result: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 14	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

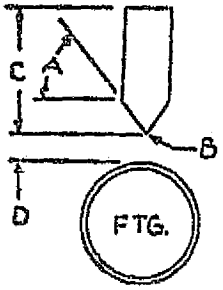
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOW CONCAVITY

FORM MHS-1 REV 6-73

DATA SHEET
3/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #109 -10%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 13	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
018	017	016	017	9.9

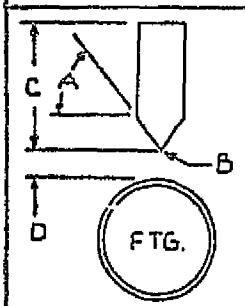
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .010

C 1.073

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

DATA SHEET
3/4" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #110

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 0.750
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.109
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

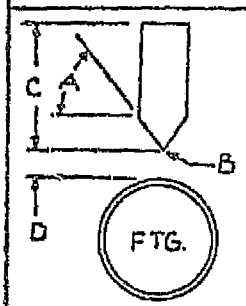
PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	073	072	042
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
018	017	016	017	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.2	0.1	3.6	1.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328
HEAD S/N 1328



ELECTRODE (Sketch)

A	80°
B	.010
C	1.073
D	.020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT MINIMAL CONCAVITY

FORM 7016-5-1 REV 5-83

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #24 +10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	HEAD GAS	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of Tine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
102	101	98	96	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

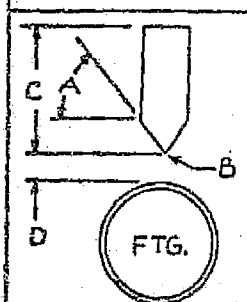
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME STAMP

RADIOGRAPH ACCEPTANCE

TENSILE TEST ACCEPTANCE

REPORT NUMBER

APPROVALS:

MFG. D/821 DATE

Q.E. D/814 DATE

ENGR. D/830 DATE

QUALITY CONTROL STAMP DATE

FORM 3016-5-1 REV 5-73

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No. .

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #25 +5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
098	097	094	091	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

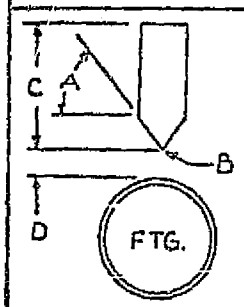
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A .080

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #26 *

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
100	099	96	94	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

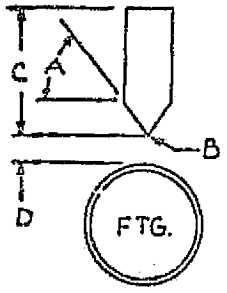
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 080°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

* -2 AMPS BELOW SAMPLE #24

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #27 +15%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
107	106	102	100	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

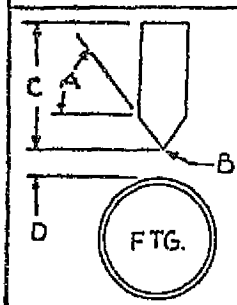
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016 S-1 REV 6-7[illegible]

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #28 +20%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
112	110	107	104	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

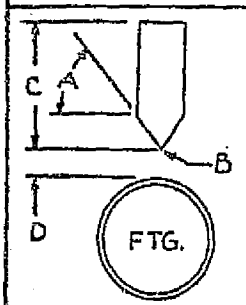
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 7018.5.1 REV 5-77

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #29 +25%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
116	112	111	109	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

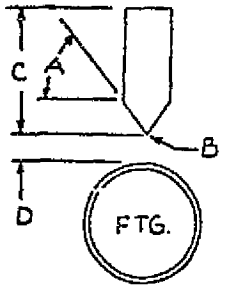
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N I262



ELECTRODE (Sketch)

A .080

B .015

C 1.270

D .020

HELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #30 +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
120	120	116	115	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
009	012	009	010	9.9

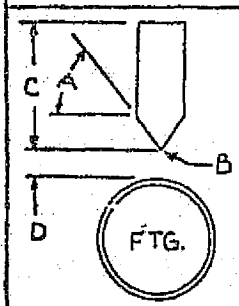
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.50

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT CONCAVITY

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #31 -2 Amps Below +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

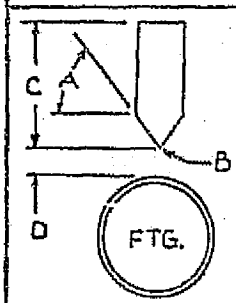
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
118	118	114	113	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
009	012	009	010	9.9
PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**	
0.1	0.1	1.0	1.60	

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOW CONCAVITY

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #32 -4 Amps of +30%

X-Ray Results: Accept

PURGE GAS BACK-UP	PURGE GAS HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5÷2	FLOW CFH 15÷5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
116	116	112	111	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

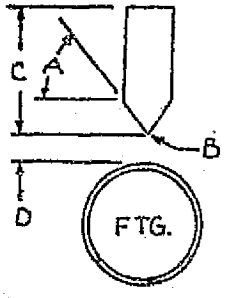
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2016-S-1 REV. 5-73

DATA SHEET
1 1/2" Increasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #33 -6 Amps of + 30%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
114	114	110	109	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

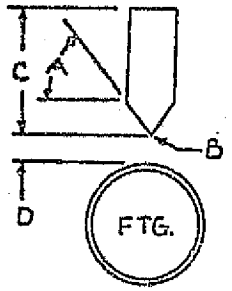
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

FORM 7016.5-1 REV 5-73

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #1 -5%

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH	5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304 L
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
088	087	085	083	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

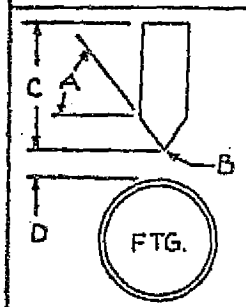
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT 1 1/2"

FORM 3016.5-1 REV. 5-73

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #2 -10%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304L
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
084	083	080	079	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

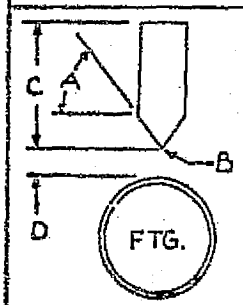
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT 1 1/2"

FORM 3516-S-1 REV. 8-73

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #3 -15%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304L
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
079	078	076	074	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

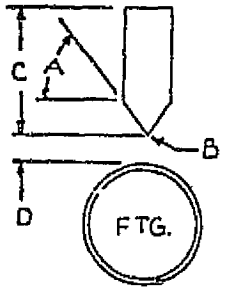
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #4 -20%

X-Ray Results: Reject L.O.P.

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY 304L
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	074	071	070	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-239 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

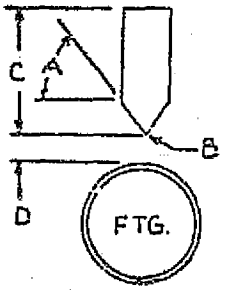
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.50

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 90°

B .015

C .270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #5 -25%

X-Ray Results: Reject L.O.P.

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS. ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
070	069	067	065	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

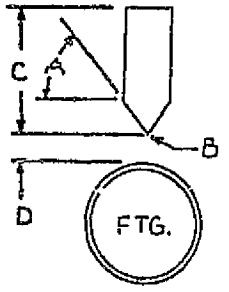
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-L0-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #6 -25% Repeat

X-Ray Results: Reject LOP

PURGE GAS BACK-UP	PURGE GAS HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of Tine between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

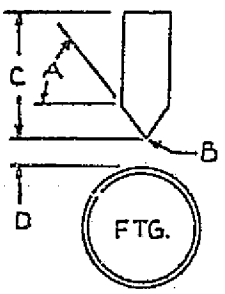
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
070	069	067	065	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
009	012	009	010	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TSP A/A 328-001 Sample #7

X-Ray Results: Reject LOP

PURGE GAS BACK-UP	PURGE GAS HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
072	071	069	067	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

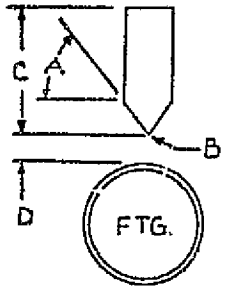
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT LOP

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #8

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
074	073	071	069	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

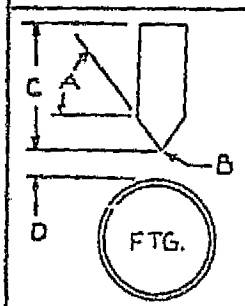
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

NOTE VISUAL INDICATES MINUTE AREA NO DROP THRU. WELD IS FUSED.

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #9

X-Ray Results: Reject LOP

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
076	075	073	071	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

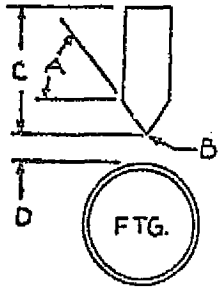
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2016 S-1 REV. 5-73

DATA SHEET
1 1/2" Decreasing Amps

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #42 -25% + 8 Amps

X-Ray Results: Accept *

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

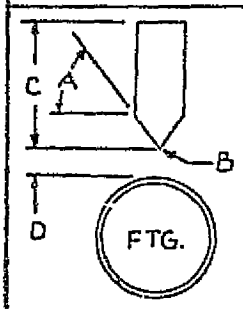
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
078	077	075	073	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
009	012	009	010	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT *BORDERLINE ON POROSITY

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. . DATE TPS A/A 328-001 Sample #43 +5% RPM

X-Ray Results: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

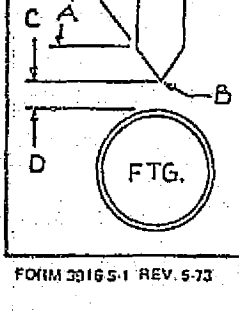
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.68

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916 S-1 REV. 5-73

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #44 +10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

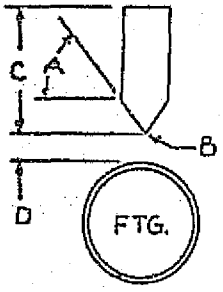
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.76

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016 S-1 REV. 5-73

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #45 +15%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

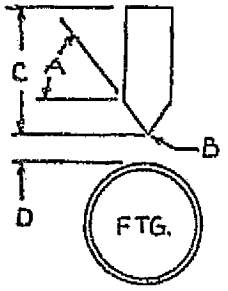
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.84

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3016-S-1 REV. 6-73

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #60 +20%

X-Ray Results: Accept

PURGE GAS BACK-UP		HEAD		TUBE DATA	
INTERNAL GAS	ARG	HEAD GAS	ARG	O.D.	1.500
FLOW CFH	5±2	FLOW CFH	15±5	WALL	0.049
PRE-PURGE TIME	.2 MIN(MIN)(1)	PRE-PURGE TIME	15 SEC(MIN)	ALLOY	
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME	1 MIN(MIN)	FTG. P/N	

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

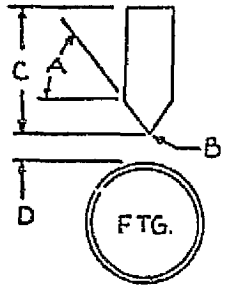
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.98

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #61 +25%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

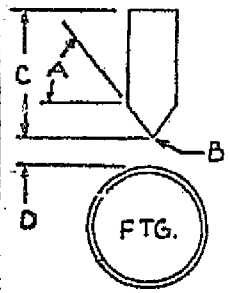
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	2.00

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Samples #62 +30%

X-Ray Results: Reject L.O.P.

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	088

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

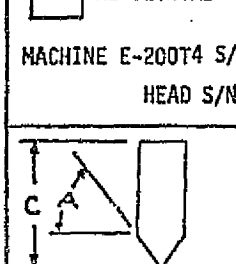
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	2.08

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP & WELD TOO HIGH

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #63 +25%

X-Ray Results: Reject for L.O.P

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

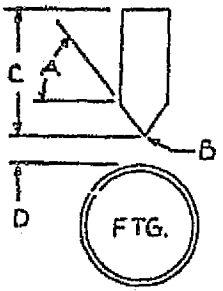
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.95

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT LOP & COLD WELD ON INSP.

DATA SHEET
1 1/2" Increasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #64 +20%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

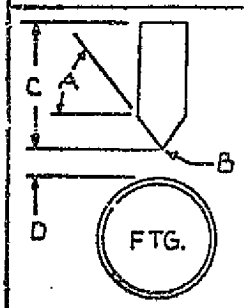
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.92

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM 3016-S-1 REV. 5-73

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #65 -5%

X-Ray Results: Accept

PURGE GAS BACK-UP	PURGE GAS HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

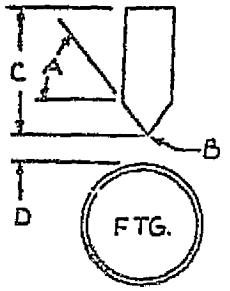
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.52

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3816-S-1 REV. 6-73

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #66 -10% RPM

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

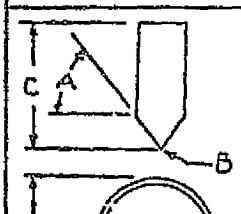
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.44

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #67 -15% RPM

X-Ray Results: Reject L.O.P.

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

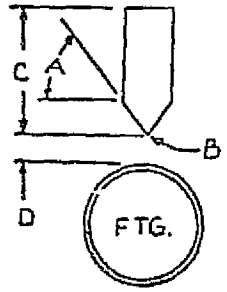
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.36

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #68 -20%

X-Ray Results: Reject L.O.P.

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

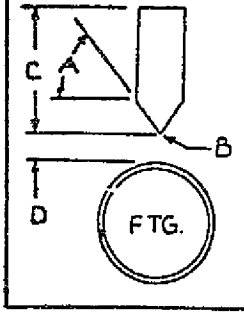
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.28

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT L.O.P. & TRAIL OFF NO GOOD

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #69 -17%

X-Ray Results: Reject L.O.P.

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 15±5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

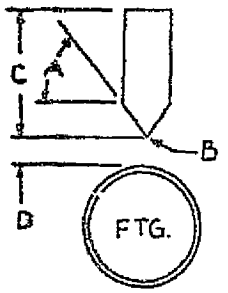
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.30

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL REJECT L.O.P.

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #70 -18%

X-Ray Results: Reject L.O.P.

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

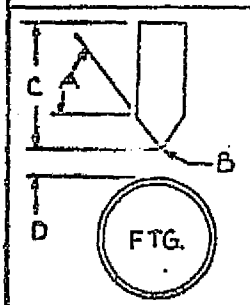
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.27

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

FORM 1916-S-1 REV. 5-73

DATA SHEET
1 1/2" Decreasing RPM

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #71 -13%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 15+5	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

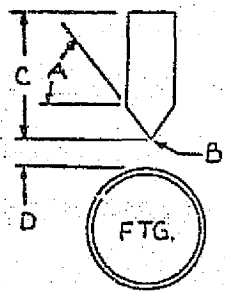
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.40

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

DATA SHEET
1 1/2" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-L0-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #106 +5%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 16	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	0 0

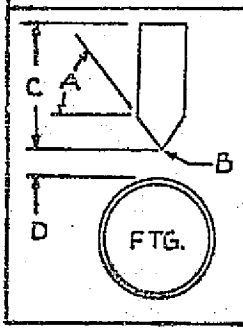
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1328



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3916-5-1 REV. 5-73

DATA SHEET
1 1/2" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #107 +10%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS. ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 17	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

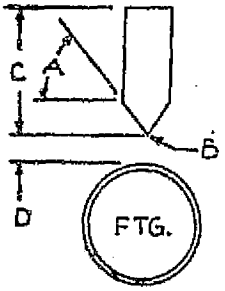
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
019	012	009	010	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1628



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 2016.6-1 REV 5-73

DATA SHEET
1 1/2" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sapmle #118 +20%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 18	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

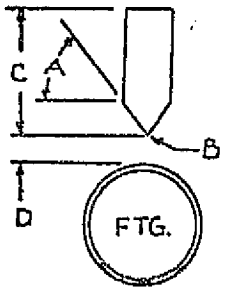
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

FORM MPP-5-1 REV 5-73

DATA SHEET
1 1/2" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #119 +30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 20	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

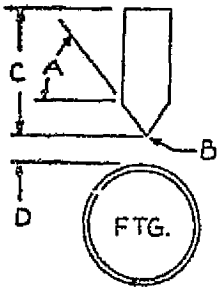
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

DATA SHEET
1 1/2" Increasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #120 +40%

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH	5+2	FLOW CFH 22	WALL 0.049
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

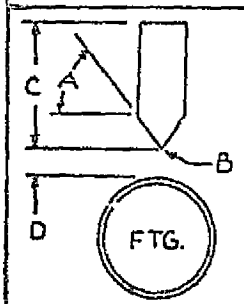
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG, D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

ACCEPT

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #100 -5%

X-Ray Result: Accept

PURGE GAS		
BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.50
FLOW CFH 5+2	FLOW CFH 14	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	0.9

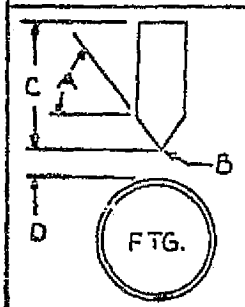
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.0	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPs A/A 328-001 Sample #101 -10%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.50
FLOW CFH 5+2	FLOW CFH 13+2	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

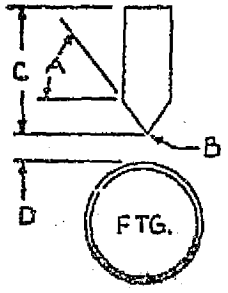
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.62

QUALIFICATION POSITIONS

☐ HORIZONTAL ☐ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #102 -15%

X-Ray Results: Accept

PURGE GAS BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5±2	FLOW CFH 12±2	WALL 0.049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

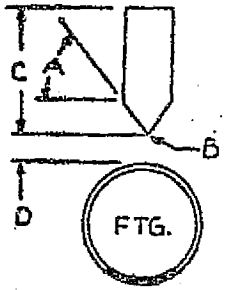
WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038
LEVEL I Time 1-299 Sec	**LEVEL II Time 1-299 Sec**	**LEVEL III Time 1-299 Sec**	**LEVEL IV Time 1-299 Sec**	**FINISH SLOPE .1 to 9.9 Sec**
009	012	009	010	9.9
	PULSE HIGH .1 to 9.9 Sec	**PULSE LOW .1 to 9.9 Sec**	**ROTATION DELAY .1 to 9.9 Sec**	**HEAD SPEED RPM**
	0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT

FORM 3918-S-1 REV. 5-73

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #103 -30%

X-Ray Results: Accept

PURGE GAS

BACK-UP	HEAD	TUBE DATA
INTERNAL GAS ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH 5+2	FLOW CFH 10	WALL .049
PRE-PURGE TIME 2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME 1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

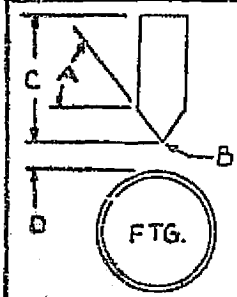
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/827 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR. D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

WPS NUMBER	REVISION LETTER	PAGE
MPP-LO-0001		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #104 -50%

X-Ray Results: Accept

PURGE GAS BACK-UP		HEAD		TUBE DATA	
INTERNAL GAS	ARG	HEAD GAS	ARG	O.D.	1.500
FLOW CFH	5+2	FLOW CFH	7.5	WALL	0.049
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME	15 SEC(MIN)	ALLOY	
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME	1 MIN(MIN)	FTG. P/N	

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

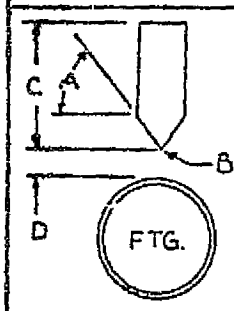
PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328

HEAD S/N 1262



ELECTRODE (Sketch)

A 80°

B .015

C 1.270

D .020

WELDERS NAME _____ STAMP ____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

REJECT EXCESSIVE HOT SPOT

DATA SHEET
1 1/2" Decreasing Shielding Gas

AUTOMATIC BUTTWELD
WELDING PROCEDURE SPECIFICATION (WPS)

WPS No.

MPP NUMBER	REVISION LETTER	PAGE
MPP-LO-0001 •		14 of 14

SPECIFICATION NO. REVISION. DATE TPS A/A 328-001 Sample #105 -6%

X-Ray Results: Accept

PURGE GAS	BACK-UP	HEAD	TUBE DATA
INTERNAL GAS	ARG	HEAD GAS ARG	O.D. 1.500
FLOW CFH	5+2	FLOW CFH 5	WALL .049
PRE-PURGE TIME	2 MIN(MIN)(1)	PRE-PURGE TIME 15 SEC(MIN)	ALLOY
POST-PURGE TIME	1 MIN(MIN)	POST-PURGE TIME 1 MIN(MIN)	FTG. P/N

(1) Add 1 min (min) for each additional ft. of line between the gas inlet and the joint to be welded.

PROGRAMMER SETTINGS

WELD LEVEL I 5 to 199 Amps	WELD LEVEL II 5 to 199 Amps	WELD LEVEL III 5 to 199 Amps	WELD LEVEL IV 5 to 199 Amps	PULSE LOW 5 to 199 Amps
093	092	089	087	038

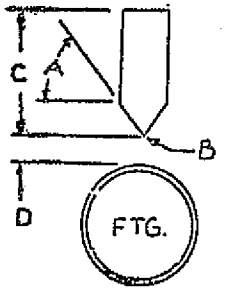
LEVEL I Time 1-299 Sec	LEVEL II Time 1-299 Sec	LEVEL III Time 1-299 Sec	LEVEL IV Time 1-299 Sec	FINISH SLOPE .1 to 9.9 Sec
009	012	009	010	9.9

PULSE HIGH .1 to 9.9 Sec	PULSE LOW .1 to 9.9 Sec	ROTATION DELAY .1 to 9.9 Sec	HEAD SPEED RPM
0.1	0.1	1.00	1.60

QUALIFICATION POSITIONS

☐ HORIZONTAL ☑ VERTICAL

MACHINE E-200T4 S/N 328
HEAD S/N 1328



ELECTRODE (Sketch)
A 80°
B .015
C 1.270
D .020

WELDERS NAME _____ STAMP _____

RADIOGRAPH ACCEPTANCE _____

TENSILE TEST ACCEPTANCE _____

REPORT NUMBER _____

APPROVALS:

MFG. D/821 _____ DATE _____

Q.E. D/814 _____ DATE _____

ENGR.D/830 _____ DATE _____

QUALITY CONTROL _____ DATE _____
STAMP

VISUAL ACCEPT