ANL-HEP-TR-96-42

PLATE STAMPING OF MASTERPLATES FOR THE TILE-CAL HADRONIC CALORIMETER USED IN THE ATLAS DETECTOR AT CERN

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16 May 1996

Introduction

Various methods have been explored for the fabrication of the large trapezoidal plates used in the construction of the Tile-Cal hadronic calorimeter for ATLAS. The options include die stamping, laser cutting, waterjet cutting, plasma arc cutting, and a combination of machining and laser cutting. Very early in the program, the Argonne group began investigating the possibility of die stamping the master plates. At that time it was felt that two dies would be necessary to achieve the accuracy required. Quotations were received for dies for both the master and spacer plates. Concern was expressed by many members of the collaboration that due to the very precise tolerances required, die stamping, using standard dies, would not be adequate. Fine blanking techniques were felt to be adequate, but were cost prohibitive. Two methods were finally used for the initial cutting of prototype plates, laser cutting and die stamping. Only the die stamping, will be reviewed here.

The Calorimeter

The Tile-Cal hadronic calorimeter is constructed of low carbon steel sheets, since it carries a portion of the return flux from the solenoidal coil. The calorimeter master-plates that are fabricated from this steel are 5 mm thick, and the interrupted spacers that

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are arrayed between them are each 4 mm thick. The masterplates are stacked with the spacer plate positions alternated in every other layer. This forms spaces for later insertion of scintillator plates. Each of these stacks of plates, which are referred to as a half-period, are then stacked into submodules with 32 half periods. These submodule assemblies are welded together into a single generic unit. These common units make up the major assemblies of the detector (one barrel calorimeter and two extended barrel calorimeters); an illustration of one submodule is shown in Fig. 1. In the case of the barrel, 18 common submodules plus one special submodule make up one 5.6 meter long wedge. Sixty-four of these wedges, when assembled, form the barrel calorimeter cylinder. The extended barrels (one on each end of the barrel are identical in construction, except there are only eight common submodules plus one special that combine to make a 2.6 meter long modules. The total number of masterplates in the entire calorimeter is approximately 74,000.

Master Plate Design

The design of the master plates went through two iterations before the final design for the first preproduction prototypes was accepted for manufacture. The original plates that were used in the first test beam prototypes were less complex, but had serious limitations when considered for the total structure of the calorimeter. Concern about the alignment of the plates during the entire assembly process, dictated that careful attention be paid to the registration of the plates during the assembly of submodules, and subsequent alignment of submodules on the support girder. In order to deal with this problem, special keyways were designed into the plates with very tight tolerances. These keyways were used to align plates in the stacking fixture at both the inner and outer radius. This same keyway aligns submodules on the structural girder during the final 5.6 meter module assembly. Other important features were a number of holes, located down the radial centerline of each plate. These holes have a twofold purpose. First they provide the registration necessary for aligning the spacer plates on the masterplates, and they provide a passage for the insertion of small diameter tubes used in the source calibration system.

DISCLAIMER

The dimensional tolerance on both location and size of these holes is also critical to the assembly of the calorimeter.

The final design of the master plates, Drawing # AT10112, Rev. C, is illustrated in Fig. 2.

Die Design

In light of the requirements for accuracy, it became obvious early in the program that the fabrication of the masterplates was critical to the overall assembly. The tolerances specified for the masterplates were very conservative, and taxed the technology of building large stamping dies. It also became apparent that the large number of plates needed to construct the calorimeter (74,000), were a significant fraction of the cost of the mechanical construction of the calorimeter. This dictated that very careful attention be paid to this aspect of fabrication.

Preliminary discussions were initiated with die manufacturers, prior to completion of the drawings of the masterplate. The size of the plates originally dictated a press size of 1000 T capacity. This requirement limited the number of prospective manufacturers. A bid solicitation was initiated in June 1995, for the manufacture of the die set and a prototype run of 1200 plates. This quantity provided enough plates for the assembly of the 5.6 meter prototype barrel module #0, with extra plates for additional submodules if necessary. The successful bidder was Banner Tool and Engineering Corporation located in Milwaukee, Wisconsin, USA. The design of the die, the surface preparation of the plates, the stamping of the plates, and inspection and packaging for shipment were included in the contract to Banner. The specification for the stamping of the 1200 prototype plates is appended as Attachment 1.

The die design was completed and approved late in 1995. The design of the die incorporated some unique features. First, in order to reduce the press load, shear of the long sides of the plate was built into the die to reduce the press load. Secondly, the punching of the holes was done progressively, again to reduce the press load. The clear-

ance between the punch and die was chosen to be .5 mm. This caused some concern, since the maximum tolerance on the outside plate dimension was limited to .2 mm. This concern proved to be unwarranted, since all of the plates fell within the specified tolerance. A test run was made on the die on November, 1995. The die was accepted and minor changes were made to achieve the required tolerances, and the final test run was made on December 11, 1995.

Die Certification

The die certification was achieved in two steps, first a very quick look at the overall dimensions of the plates, as stamped before final grinding of the die, and then an independent inspection of the plates, punched after the necessary corrections were made to the die. Five plates of the first test were stamped and inspected with only three notable discrepancies. The width of the keys was not in tolerance, and the number of holes, and the hole sizes, were not to finished dimension. In addition, the plate length was not in tolerance. The number and size of the holes was left out of the die on the first run deliberately. The results of this inspection proved that all of the dimensional requirements could be met, and that all of the hole locations were correct. Approval was given for the final grinding of the die.

On the final acceptance test a check was made after the first plate was stamped, to verify that all previously noted discrepancies had been corrected. The next step in the certification was to stamp a small number of plates (40), and conduct a very detailed dimensional inspection of the 40th plate before giving approval to make the initial run of 1200 plates. Argonne representatives were present during this step, and gave on-site approval to proceed with the final run. A group of plates, approximately 1% (14), were randomly extracted from the 1200 plate run and sent to Quality Calibration Service Incorporated in West Allis, Wisconsin for inspection.

Master Plate Production

The stamping of the plates was done under a subcontract by ATACO Steel Products Corporation in Cedarburg, Wisconsin. Once approval was given for final production, the run was started and all 1200 of the required plates were run in two ten-hour shifts. The rate of production was approximately 90 plates/hour, with a crew of four men until all 1200 plates were completed. Initial fears concerning temperature changes in the die and material proved to be of little concern, as long as the material is allowed to reach the temperature of the environment before stamping begins.

Surface Finish

As part of the stamping contract to Banner Tool, the plates were to be surface finished as described in the plate specification. This specification required that all plates be processed through a deburring and finishing operation. The machines used are manufactured in the U.S. by a Minnesota Company named "Timesavers". One of these machines, owned and operated by a Milwaukee Wisconsin Company, Efco Finishing Corporation, was used to deburr and finish all 1200 stamped plates. The average amount of material removed by this process was .024 mm. The distribution plots of the before and after thickness are shown in Fig. 3.

Final Inspection

Fourteen plates, from the 1200 stamped plates, were sent to Quality Calibration Service in Milwaukee for independent inspection. A full inspection and certification was required as part of the contract with Banner Tool. The number of plates requiring inspection was reduced, in view of the success in keeping the sizes consistent during the run. Initially, it was thought that 10% of the plates should be inspected, but this was reduced to 1% based on experience.

A full certified inspection of fourteen plates was included as part of the contract with Banner Corporation. The raw inspection data for all fourteen plates are contained in Attachment 2 . The data can be considered as falling into two classes: those dimensions defining the plate envelope, and those defining the internal relative positions, such as the source hole locations. Figure 4 shows the actual minus nominal dimension for all dimensions defining the plate envelope (points 1-24), for all fourteen plates measured. All measurements are within specification (the one point lying below -0.1 mm, has a tolerance of 0.25 mm). We have analyzed these data in somewhat more detail to better understand plate-to-plate reproducibility. Figure 5 shows the length variation from nominal. The full width of this distribution is substantially smaller than the 0.2 mm allowed tolerance, and its average is well within the tolerance envelope. The key width variation from nominal is shown separately for inner and outer radius keys in Fig. 6. With the small number of pieces measured, it is difficult to draw any firm conclusion, but the distributions are suggestive that plate-to-plate reproducibility will be somewhat better than the specified tolerance. The variation from nominal, of the width of the plate at the outer and inner radius, is also shown in Fig. 6. Here again, we observe that the plate-to-plate reproducibility is somewhat better than the tolerance specification.

Shipping

The packaging of the plates was also subcontracted to an outside company. This company provided the crating, blocking, and bracing for final shipment. Each crate contained 100 plates, stored flat, with two stacks side-by-side. The weight of each crate was approximately two metric tons.

Cost

When one compares the cost of producting the required number of masterplates for the detector by the two methods, die stamping versus laser cutting, the cost savings are potentially in excess of $1,000,000 USD.

Acknowledgements

We wish to thank the Associate Laboratory Director for Physical Research for providing discretionary funding in support of this work.

Figure Captions

Figure 1 Submodule drawing showing master plate layout.

Figure 2 Master plate drawing.

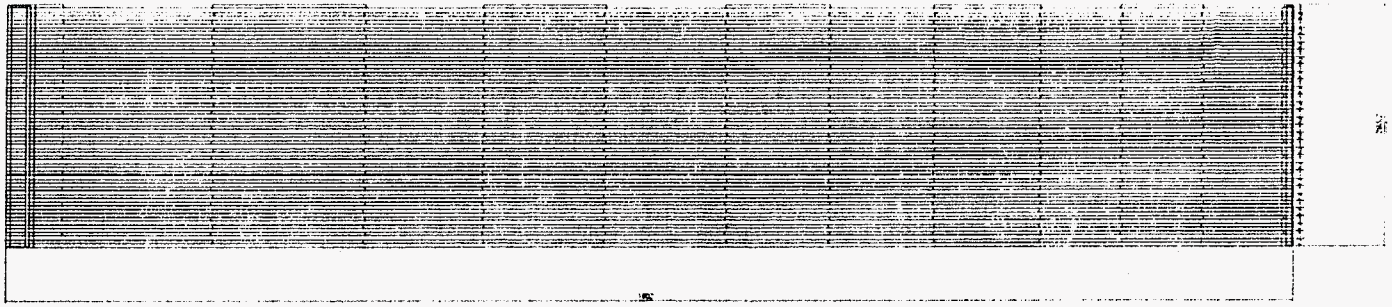
Figure 3 Thickness distribution in mm for raw sheet and finished masterplates (following deburring and finishing process).

Figure 4 Measured versus nominal dimension for ensembles of certification measurements on fourteen plates.

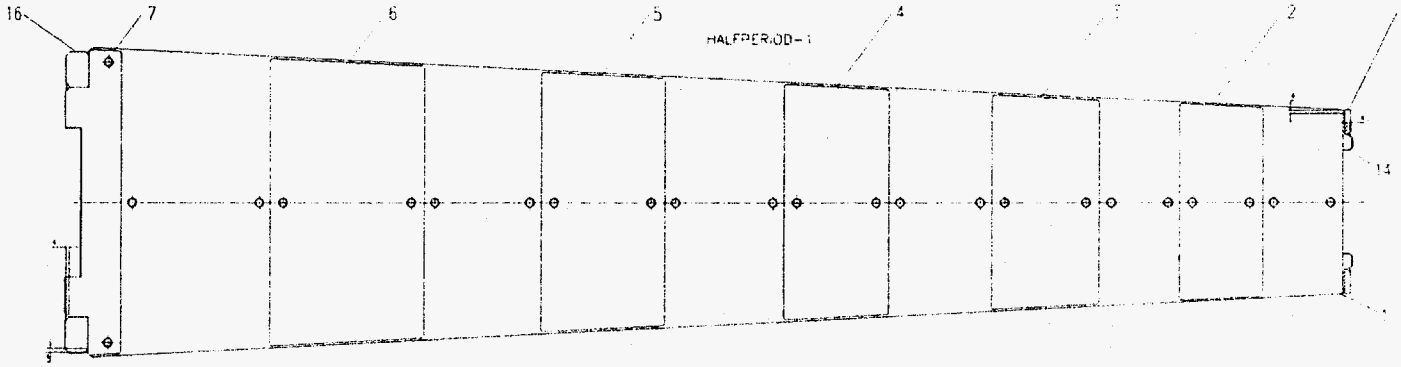
Figure 5 Measured versus nominal dimensions for plate length as measured at certification ponts 12, 13, and 14 for fourteen plates.

Figure 6 Measured versus nominal dimension for inner and outer radius keys and plate width at inner and outer radius.

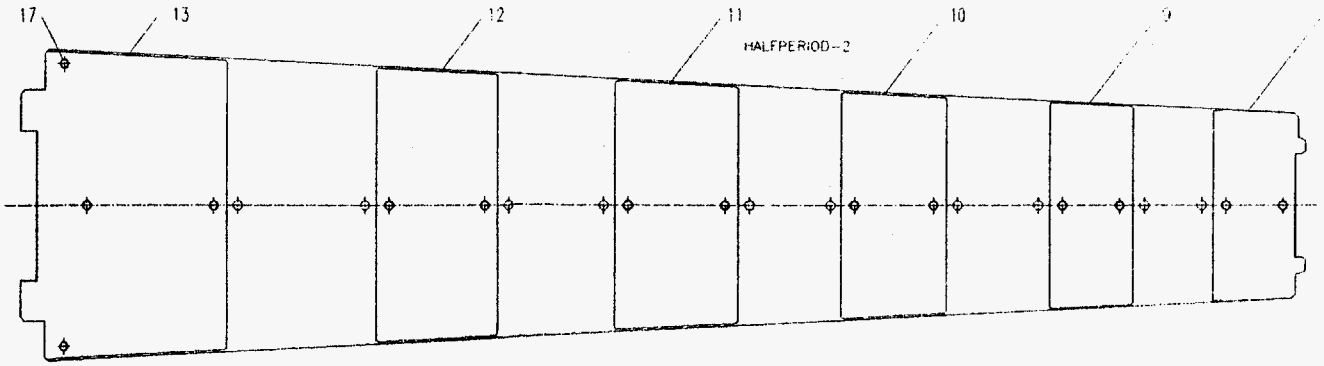
ELEVATION



TOP VIEW



HALF PERIOD - 2 (START)



NUMBER OF SUBMODULES TO BUILD
ONE BARREL MODULE 16 SUBMODULES
FOR THE WHOLE BARREL :
1152 SUBMODULES

NUMBER OF SUBMODULES TO BUILD
ONE EXT. BARREL MODULE 8 SUBMODULES
FOR THE WHOLE EXT. BARREL :
1024 SUBMODULES

TOTAL NUMBER OF SUBMODULES NEEDED :
2176 SUBMODULES

QUANTITY FOR ONE SUBMODULE

18	COUP. ELASTIQUE	17	SERIE LEGERE #11x8
17	BARRETTE REP. 2	16	PLAN TIL 326878 F
16	BARRETTE REP. 1	15	PLAN TIL 326878 F
15	SPACER REP. 13	14	PLAN TIL 305342 E
14	SPACER REP. 12	13	PLAN TIL 305342 E
13	SPACER REP. 11	12	PLAN TIL 305342 E
12	SPACER REP. 10	11	PLAN TIL 305342 E
11	SPACER REP. 9	10	PLAN TIL 305342 E
10	SPACER REP. 8	9	PLAN TIL 305342 E
9	SPACER REP. 7	8	PLAN TIL 305342 E
8	SPACER REP. 6	7	PLAN TIL 305342 E
7	SPACER REP. 5	6	PLAN TIL 305342 E
6	SPACER REP. 4	5	PLAN TIL 305342 E
5	SPACER REP. 3	4	PLAN TIL 305342 E
4	SPACER REP. 2	3	PLAN TIL 305342 E
3	SPACER REP. 1	2	PLAN TIL 305342 E
2	WASHER	1	PLAN TIL 305343 D

CALORIMETRE A TUILES (VERSION 2)
SUBMODULE STANDARD
16 PEAUCES

TIL 305398 B

Figure 1

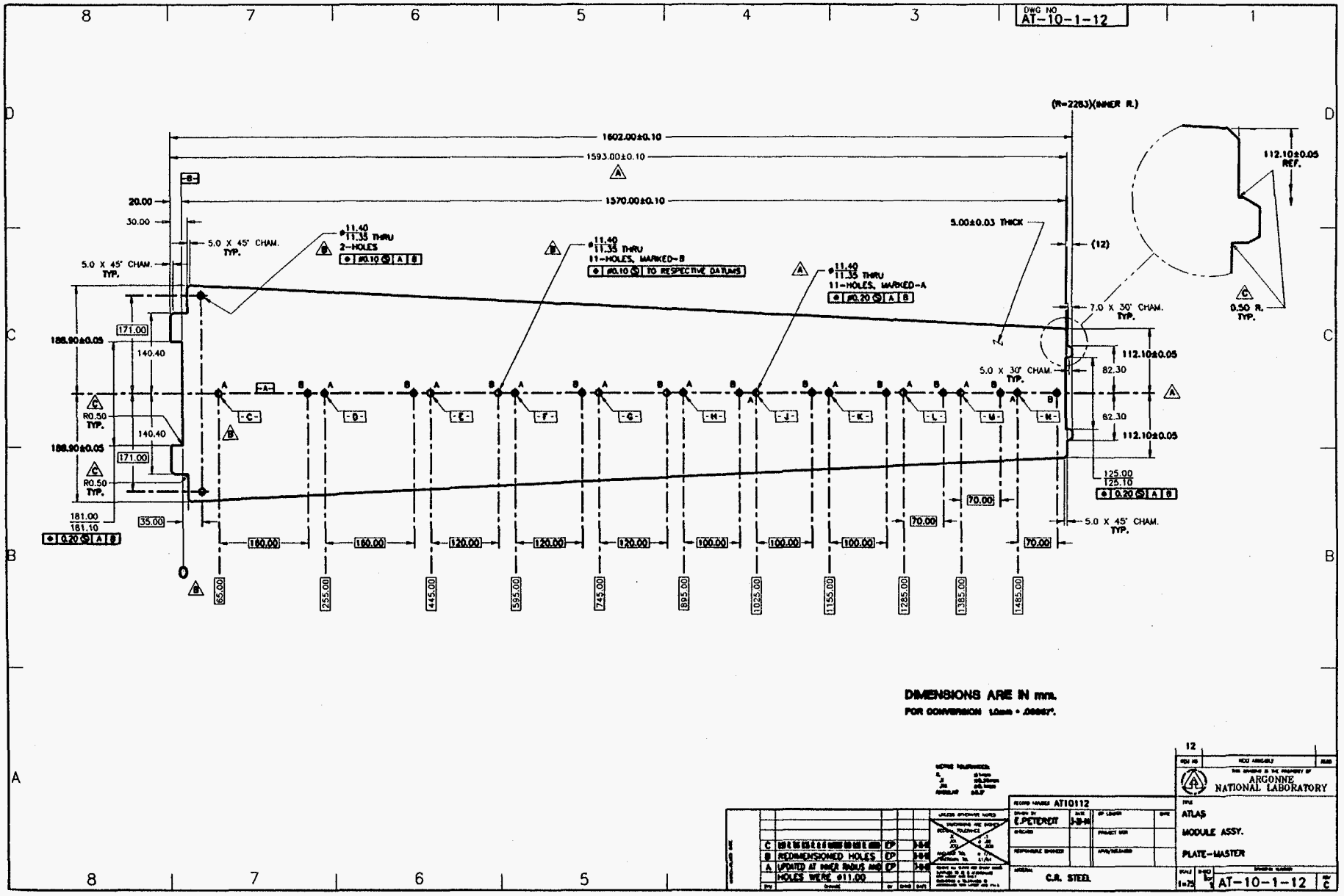

DWG NO AT-10-1-12
(R=2283)(INNER R.)
1602.00±0.10
1593.00±0.10
1570.00±0.10
20.00
30.00
5.0 X 45° CHAM. TYP.
5.00±0.03 THICK
(12)
112.10±0.05 REF.
0.50 R. TYP.
7.0 X 30° CHAM. TYP.
5.0 X 30° CHAM. TYP.
112.10±0.05
82.30
82.30
112.10±0.05
125.00
125.10
0.20 Ⓢ A B
171.00
140.40
188.90±0.05
R0.50 TYP.
140.40
188.90±0.05
171.00
R0.50 TYP.
181.00
181.10
0.20 Ⓢ A B
35.00
160.00
160.00
120.00
120.00
120.00
100.00
100.00
100.00
70.00
70.00
70.00
5.0 X 45° CHAM. TYP.
65.00
255.00
445.00
595.00
745.00
895.00
1025.00
1155.00
1285.00
1385.00
1485.00
-A- -B- -C- -D- -E- -F- -G- -H- -J- -K- -L- -M- -N-
DIMENSIONS ARE IN mm.
FOR CONVERSION 1.0mm = .03937".
C UPDATED AT INNER RADIUS AND HOLES WERE ø11.00
B RECOMMENSIONED HOLES
A UPDATED AT INNER RADIUS AND
C.R. STEEL
ARGONNE NATIONAL LABORATORY
ATLAS
MODULE ASSY.
PLATE-MASTER
AT-10-1-12
1=5
C

Figure 2

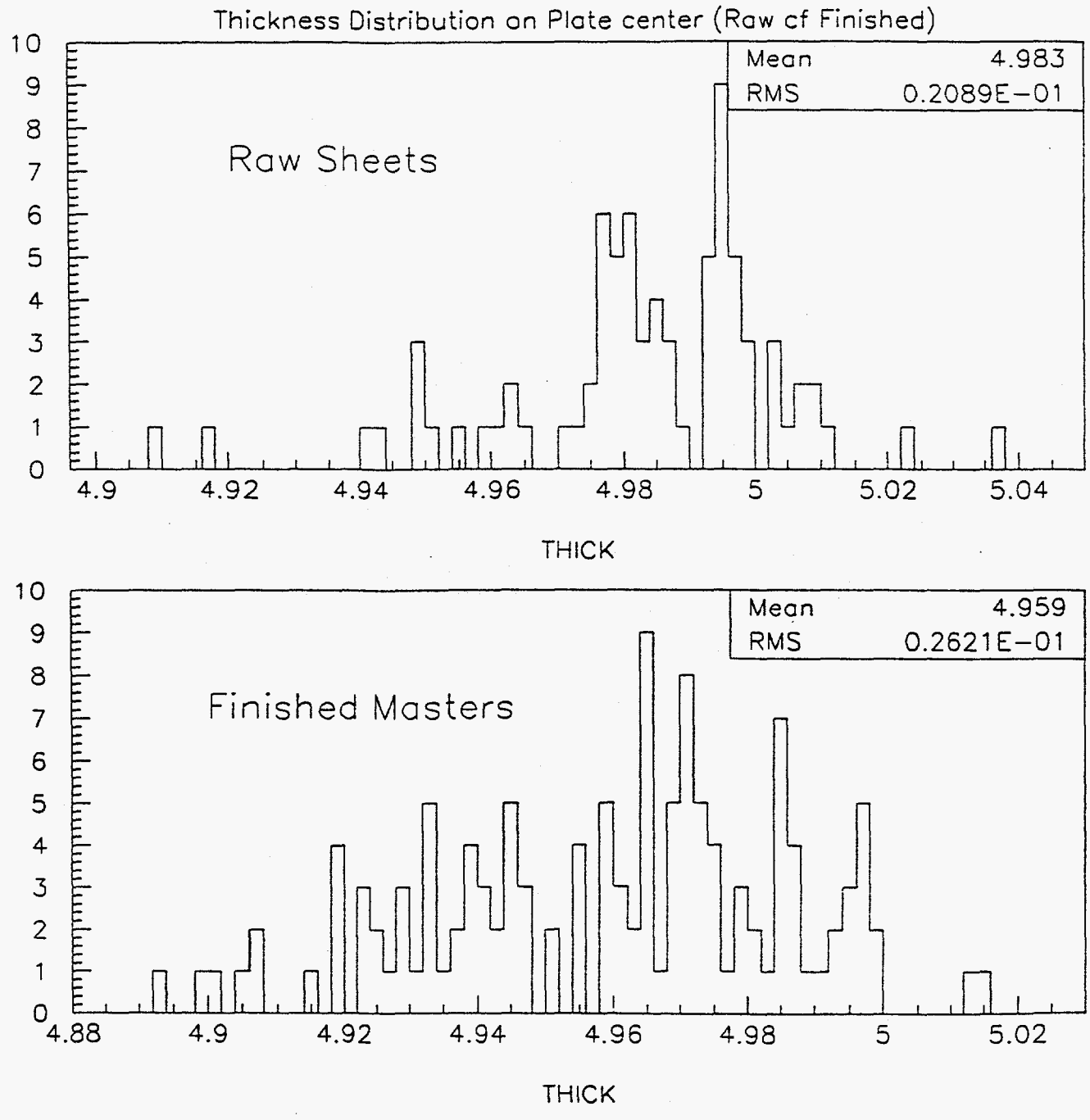

Thickness Distribution on Plate center (Raw cf Finished)
Raw Sheets
Mean 4.983
RMS 0.2089E-01
10
9
8
7
6
5
4
3
2
1
0
4.9
4.92
4.94
4.96
4.98
5
5.02
5.04
THICK
Finished Masters
Mean 4.959
RMS 0.2621E-01
10
9
8
7
6
5
4
3
2
1
0
4.88
4.9
4.92
4.94
4.96
4.98
5
5.02
THICK

Figure 3

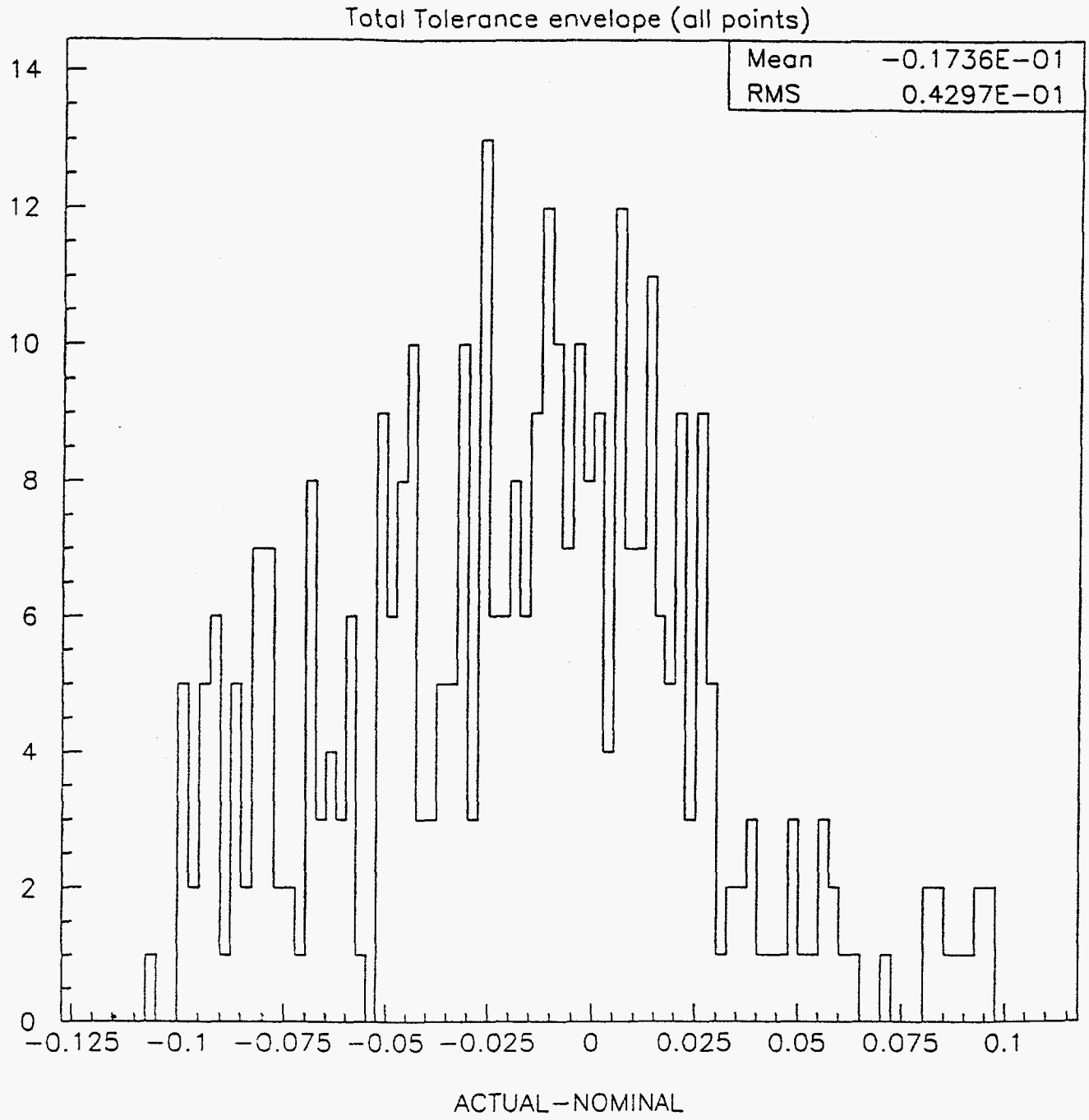

Total Tolerance envelope (all points)
Mean -0.1736E-01
RMS 0.4297E-01
14
12
10
8
6
4
2
0
-0.125 -0.1 -0.075 -0.05 -0.025 0 0.025 0.05 0.075 0.1
ACTUAL-NOMINAL

Figure 4

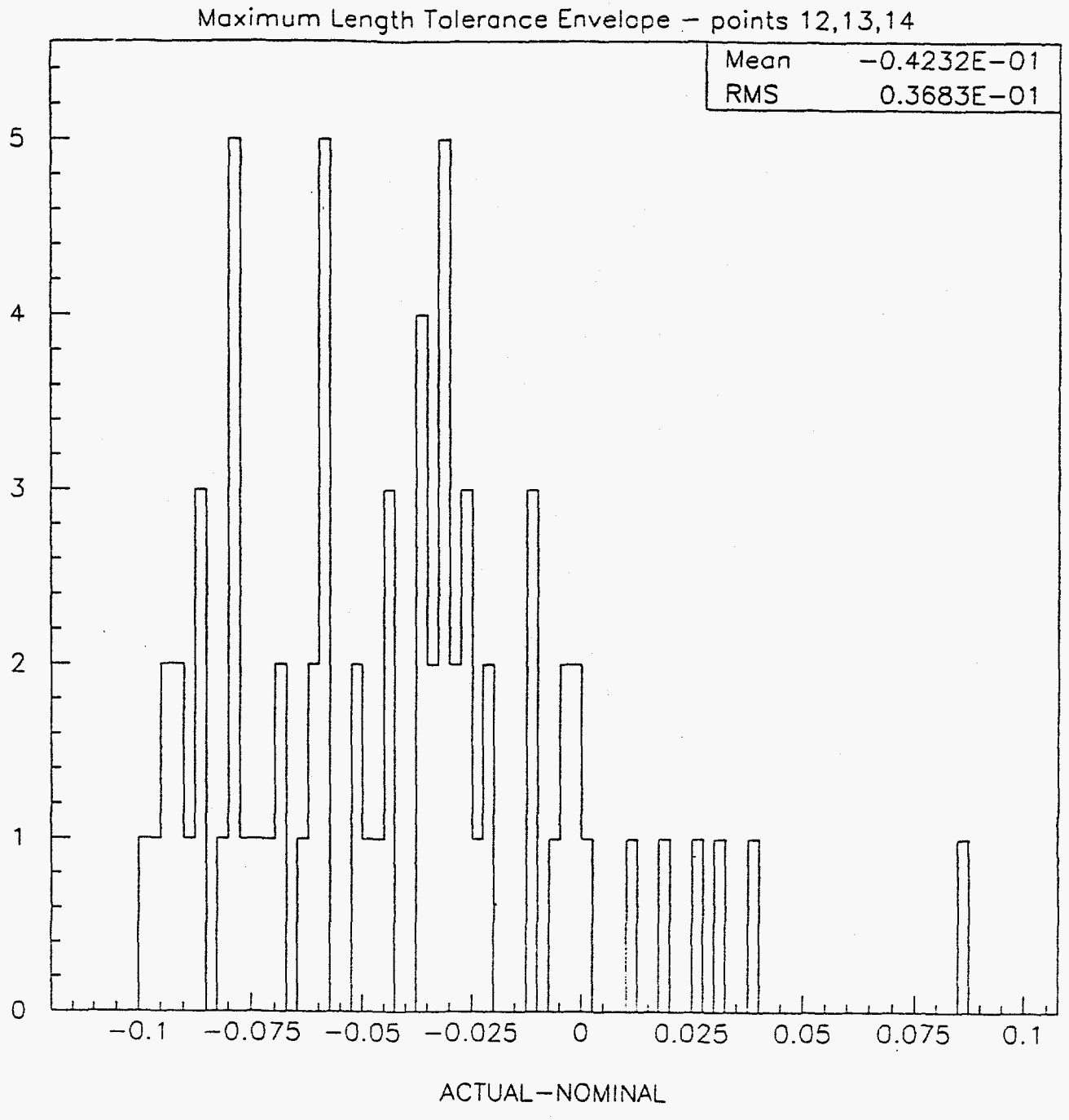

Maximum Length Tolerance Envelope – points 12,13,14
Mean −0.4232E−01
RMS 0.3683E−01
5
4
3
2
1
0
−0.1
−0.075
−0.05
−0.025
0
0.025
0.05
0.075
0.1
ACTUAL−NOMINAL

Figure 5

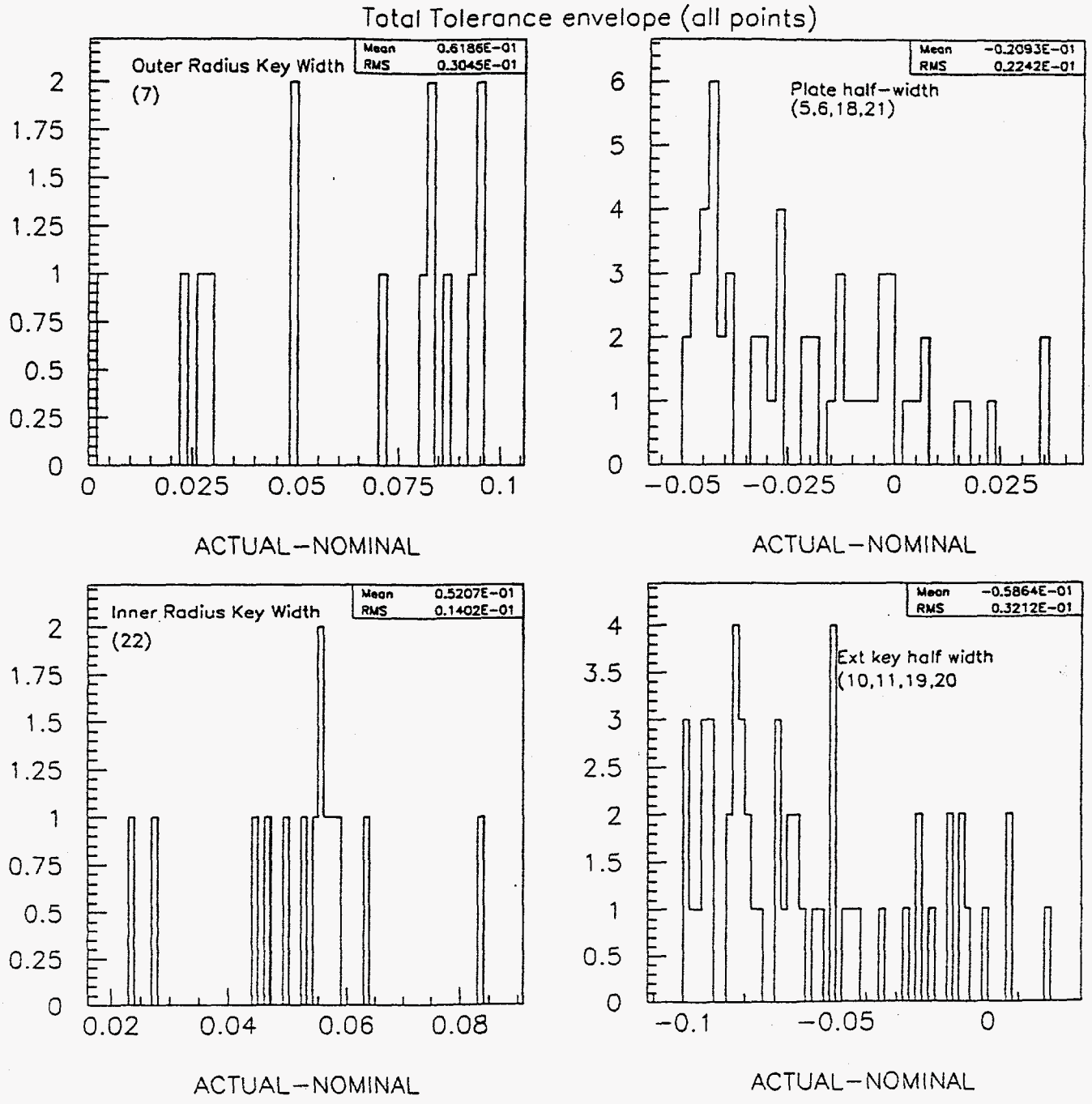

Total Tolerance envelope (all points)
Outer Radius Key Width
(7)
Mean 0.6186E-01
RMS 0.3045E-01
ACTUAL−NOMINAL
Plate half−width
(5,6,18,21)
Mean −0.2093E-01
RMS 0.2242E-01
ACTUAL−NOMINAL
Inner Radius Key Width
(22)
Mean 0.5207E-01
RMS 0.1402E-01
ACTUAL−NOMINAL
Ext key half width
(10,11,19,20
Mean −0.5864E-01
RMS 0.3212E-01
ACTUAL−NOMINAL

Figure 6

ANL-HEP-TR-95-39

ATTACHMENT A

Technical Specification for Plate Fabrication For the Atlas Tile Hadron Calorimeter

13 June 1995

Prepared by: Norman F. Hill

High Energy Physics Division
Argonne National Laboratory
9700 South Cass Avenue
Argonne Illinois, 60439 USA

* Work supported by the U.S. Department of Energy, Division of High Energy Physics, Contract W-31-109-ENG-38.

Project Description

The Atlas Collaboration, at the European Organization for Nuclear Research (CERN), proposes to build a general purpose proton-proton detector for the Large Hadron Collider (LHC), located in Geneva, Switzerland. The ATLAS collaboration consists of approximately 100 international institutions (universities and research laboratories) with a worldwide distribution. The ATLAS detector includes a large scintillating tile calorimeter using iron as the absorber material. This detector will be used to identify and measure the by-products of proton-proton collisions that occur at the symmetric center. The design of this detector is unique in that the absorber plates are oriented perpendicular to the colliding beam axis, rather than parallel, as is done in most other similar detectors to date. A simplified view of the detector is shown in the figure below.

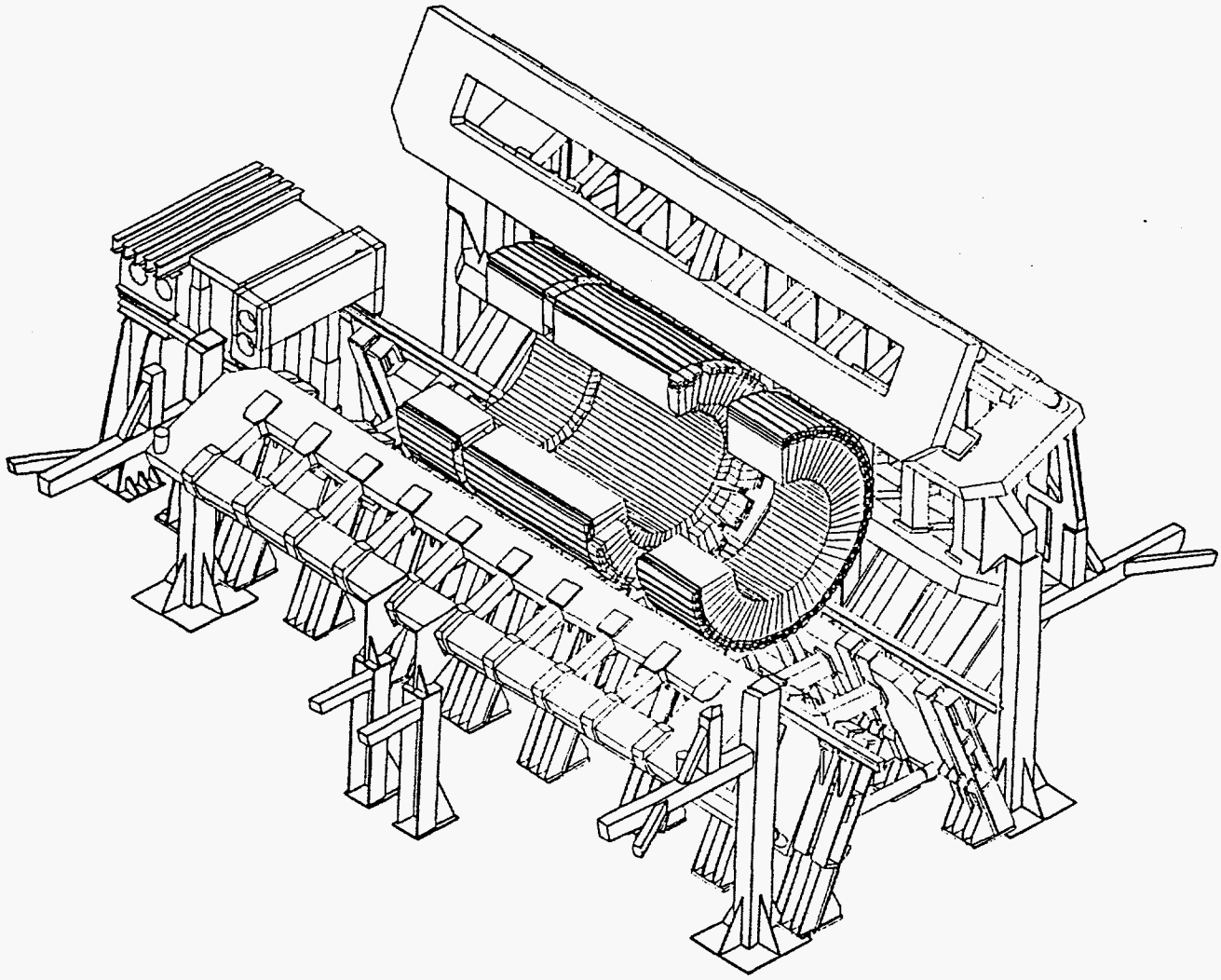


Figure 1

Tile Calorimeter Description

The Tile-Calorimeter consists of a cylinder constructed of steel plates that are trapezoidal in shape and formed into wedge shaped structures that are 2283 mm at their inner radius and 4230 mm at their outer radius. Each wedge module in the barrel is constructed of 19 submodules approximately 30 cm thick. The extended barrel portion of the detector consists of nine submodules, approximately 30 cm long, that form a similar cylinder that extends from each end of the barrel. The barrel cylinder is 5639.2 mm long, and each of the extended barrel cylinders is 2650 mm each. Each cell in the construction consists of two long trapezoidal plates 5 mm thick. A series of shorter plates 4.05 mm thick are staggered in between to form a checkerboard pattern when assembled. Each submodule is stacked with a specified number of cells or periods arrayed along the barrel axis. The total weight of the steel plates in the detector is approximately 3000 metric tons.

Organization

The U.S. participation in the Atlas Collaboration will require that fabrication of the plates into the appropriate shapes, plus the assembly into the prescribed modules be carried out by institutions in the U.S. At the present time the U.S. institutions responsible for this effort are: Argonne National Laboratory, the University of Chicago, the University of Illinois, Michigan State University, and the University of Texas, Arlington.

Technical Specification

The punched steel plates that will be used to construct the calorimeter described above, have applied tolerancing that is more stringent than is normally encountered for these manufacturing processes. It is therefore incumbent on the fabricator to understand the tolerancing and its effect on the overall assembly. The tolerancing for the location of the holes, keyways, and overall plate dimensions are identified on the applicable drawings.

Applicable Drawings

Drawing	Description
AT-10-1-12 (Attachment 1)	Atlas Module Assembly Plate Master

Material

The material to be used for fabricating these plates is identified in the "Technical Specifications for the Supply of Steel for the ATLAS Tile Hadron Calorimeter" (Attachment # 2). This material will be furnished by Argonne National Laboratory and will be supplied by a mill, or mills, in Europe. The general description of the plates is that of hot rolled, low carbon steel plate. Additional cold reduction will most likely be used to achieve the required thickness tolerance. The material will be furnished in either coil or sheet form, although sheet is preferred. If the successful vendor has flattening and shearing capability this price should be itemized separately.

Quantity Required

Master Plates

1200 pcs. Drawing # AT-10-1-12

This quantity represents only a prototype amount, and the total production quantity can be as many as 78,000 plates and as few as 38,000. In order to estimate the eventual cost of these plates, each vendor is also asked to quote a price for production runs of 78,000 and 38,000 pieces.

Plate Punching

The master plates (Drawing # AT-10-1-12) are to be die punched in two steps. The first step will produce the holes and keyways at both the small and large end of the plate, and the second step will trim the plate size to final dimension. This second step is necessary, since the key slots punched in the first step will be used to maintain the required tolerances on the width, included angle, and symmetry about the centerline of the finished plate. If the successful vendor can demonstrate that the dimensions and tolerances can be satisfied with a single die, he should so state.

Flattening, Deburring, and Finishing

All out of plane distortions, including burrs, must be removed from the plates after punching. The use of abrasive belt grinding is suggested for this process for example, equipment manufactured in the U.S. under the trade name of "Time

Saver". Upon completion of this step, no out of plane distortions should be detectable when a straight edge is passed over the plate in both the radial (Y) and the ϕ (X) directions. The Time Saver process may also be used to provide the necessary finish for final bonding of these plates into the 30 cm stacks. Since the deburring operation is required, the vendor may also be asked to provide this finish as final preparation of the plates before shipping.

Stacking and Sorting

Since the steel may be received in either coil or sheet, and in order to eliminate the necessity for sorting and restacking the punched plates after punching, it is preferred that systematic anomalies (taper for example) be eliminated at the time of flattening and shearing the plates from the coil. If this flattening and shearing is done by the vendor before punching them, systematics should be eliminated during that operation by flipping every other sheet. This orientation should then be maintained after punching. If the steel is received in precut sheets, the orientation as received should be maintained.

Vendor Responsibility

It will be the responsibility of the successful vendor to fulfill all of the requirements of this specification, if subcontractors are used for any part of required fabrication, they must be identified as part of the bid process.

Proving the Die

The die accuracy, and compliance to the drawing dimensions and tolerances, will be proven by a punching of at least ten plates prior to starting the production run. This proving of the die will be witnessed by an Argonne Representative upon notification by the vendor.

Acceptance

Acceptance of the finished plates will be based on a random final inspection of at least 10% of the plates. This inspection can be based on a witnessed inspection at the vendors facility before shipment by Argonne personnel, or by certification of that 10% inspection by the vendor. The top ten plates of every pallet should be

reserved for the inspected plates (see packaging for shipment). Acceptance of any plates that do not meet the specified dimensional tolerances will be at the discretion of Argonne National Laboratory.

Protection

After finishing, the plates must be protected from corrosion. It is therefore required that they be sprayed with oil and stacked with oiled paper between each plate before packaging for shipment. The oil to be used will be specified by Argonne as it is dependent on removal technique, however normal oils used in the stamping process will most likely be acceptable as long as they do not have substantial paraffin content.

Packaging for Shipment

The finished plates will be stacked on pallets that are of sufficient dimension to contain the plates with no overhang that could result in damage. Since some portion of these plates will be shipped to locations outside the U.S., each pallet should have a box cover that can be banded to the supporting pallet. The suggested load for each pallet is 100 plates, or no more than 4500 lbs. or 2050 kgs. The ten (10) inspected plates will be stacked on top of each pallet prior to packaging for shipment.

Delivery of all 1200 plates is contingent upon an expected delivery of the steel by the end of September, 1995. The required delivery for all 1200 stampings is no later than 31 October 1995. Partial deliveries will be accepted prior to that date.

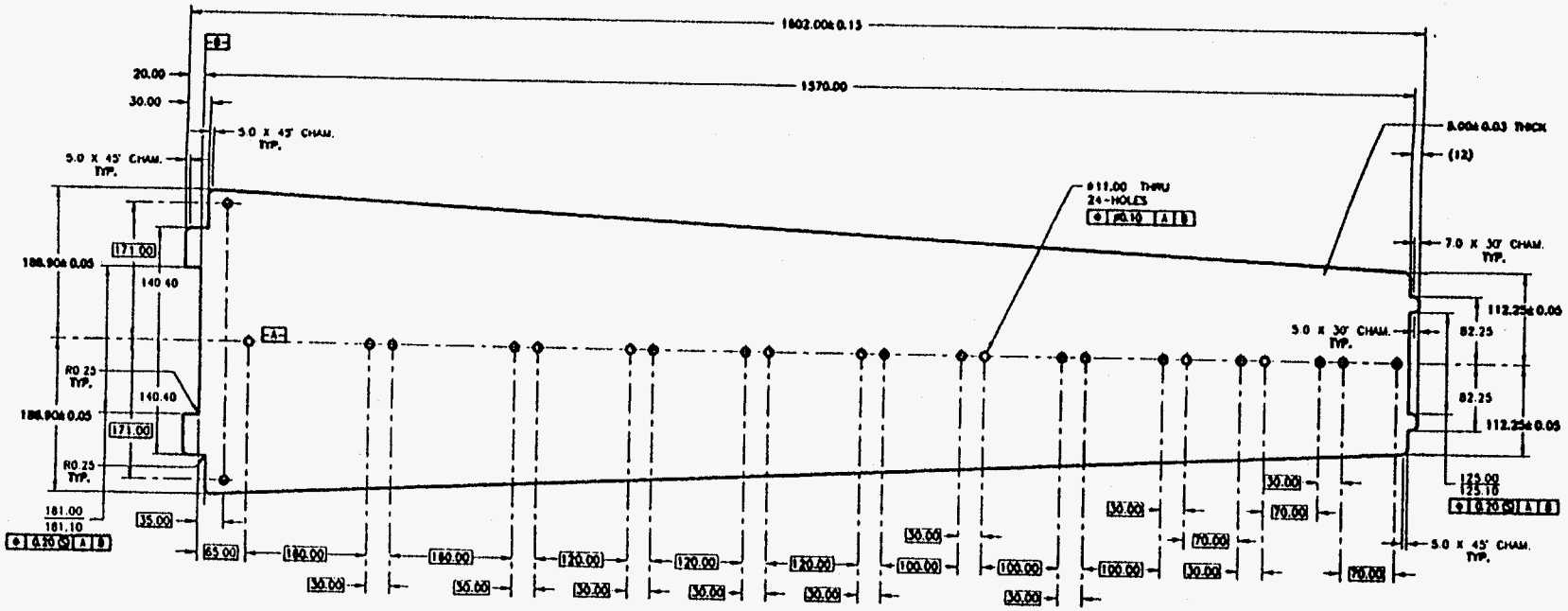
Shipping

All plates will be shipped to Argonne National Laboratory at the following address:

Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

Attention: Norman F. Hill 362/HEP

DWG NO. AT-10-1-12



DIMENSIONS ARE IN mm.

FOR CONVERSION 1.0mm = .03937".

DRAWN BY	E.PETERCIT	1-8-96	
MATERIAL	C.R. STEEL		

ARGONNE NATIONAL LABORATORY

ATLAS

MODULE ASSY.

PLATE-MASTER

SCALE 1=2 | SHEET 1 OF 1 | AT-10-1-12

ATTACHMENT B

DIMENSIONAL INSPECTION REPORT

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 1
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.990	
	20.000	0.100	0.100	20.006	
2	30.000	0.100	0.100	30.018	
	30.000	0.100	0.100	30.016	
3	5.000	0.250	0.250	5.024	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	4.990	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.854	
6	188.900	0.050	0.050	188.903	
7	⌖|0.20Ⓢ|A|B|	0.200		0.019	
	181.000	0.100		181.095	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.336	
11	140.400	0.100	0.100	140.386	
12	1602.000	0.100	0.100	1601.973	
	1602.000	0.100	0.100	1601.989	
13	1593.000	0.100	0.100	1592.921	
	1593.000	0.100	0.100	1592.939	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.969	
15	5.000	0.030	0.030	5.007	
16	12.000 REF.			12.014	
17	7.000	0.250	0.250	6.990	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.086	
19	82.300	0.100	0.100	82.230	
20	82.300	0.100	0.100	82.236	
21	112.100	0.050	0.050	112.054	
22	⌖|0.20Ⓢ|A|B|	0.200		0.000	
	125.000	0.100		125.045	
23	5.000	0.250	0.250	5.026	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.993	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.950	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.100	
	11.350 Ø	0.050		11.389	
D2	0.000 BSC.			0.049	
	745.000 BSC.			744.946	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.146	
	11.350 Ø	0.050		11.388	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.C64	
	70.000 BSC.			70.C24	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.137	
	11.350 Ø	0.050		11.372	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: PLATE MASTER
Prt#/Rev#: AT-10-1-12 REV B
Part S/N: 1
Machine: Q-55/56/65
Inspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.015	
	35.000 BSC			34.957	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.091	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			171.015	
	35.000 BSC			34.967	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.072	
	11.350Ø	0.050		11.350	
C-B	0.000 BSC			0.018	
	160.000 BSC			159.984	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.048	
	11.350 Ø	0.050		11.393	
D-A	0.000 BSC			0.023	
	255.000 BSC			254.967	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.080	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 1

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C27	
	160.000 BSC			160.C33	
	⌖ | Ø.10Ⓢ |A|D|	0.100		0.C85	
	11.350 Ø	0.050		11.356	
E-A	0.000 BSC			0.C06	
	445.000 BSC			444.909	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.182	
	11.350Ø	0.050		11.397	
E-B	0.000 BSC			0.C36	
	120.000 BSC			120.C28	
	⌖ | Ø.10Ⓢ |A|E|	0.100		0.C91	
	11.350 Ø	0.050		11.369	
F-A	0.000 BSC			0.C11	
	595.000 BSC			594.953	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.C97	
	11.350Ø	0.050		11.400	
F-B	0.000 BSC			0.C20	
	120.000 BSC			120.C11	
	⌖ | Ø.10Ⓢ |A|F|	0.100		0.C46	
	11.350 Ø	0.050		11.388	
G-B	0.000 BSC			0.C32	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.031	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.089	
	11.350 Ø	0.050		11.375	
H-A	0.000 BSC			0.029	
	895.000 BSC			894.974	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.078	
	11.350Ø	0.050		11.400	
H-B	0.000 BSC			0.046	
	100.000 BSC			99.983	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.098	
	11.350 Ø	0.050		11.389	
J-A	0.000 BSC			0.036	
	1025.000 BSC			1024.992	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.074	
	11.350Ø	0.050		11.400	
J-B	0.000 BSC			0.025	
	100.000 BSC			99.957	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.099	
	11.350 Ø	0.050		11.395	
K-A	0.000 BSC			0.041	
	1155.000 BSC			1154.956	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S'N: 1

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.120	
	11.350Ø	0.050		11.399	
K-B	0.000 BSC			0.C19	
	100.000 BSC			100.C18	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C52	
	11.350 Ø	0.050		11.397	
L-A	0.000 BSC			0.C26	
	1285.000 BSC			1284.945	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.122	
	11.350Ø	0.050		11.358	
L-B	0.000 BSC			0.C17	
	70.000 BSC			70.C42	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C91	
	11.350 Ø	0.050		11.400	
M-A	0.000 BSC			0.C44	
	1385.000 BSC			1384.985	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C93	
	11.350Ø	0.050		11.365	
M-B	0.000 BSC			0.C11	
	70.000 BSC			69.990	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C30	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 1

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350 Ø	0.050		11.389	
N-A	0.000 BSC			0.064	
	1485.000 BSC			1484.970	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.141	
	11.350Ø	0.050		11.358	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 2
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.983	
	20.000	0.100	0.100	19.992	
2	30.000	0.100	0.100	30.000	
	30.000	0.100	0.100	29.991	
3	5.000	0.250	0.250	5.013	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	4.981	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.868	
6	188.900	0.050	0.050	188.899	
7	⌖|0.20Ⓢ|A|B|	0.200		0.047	
	181.000	0.100		181.082	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.374	
11	140.400	0.100	0.100	140.308	
12	1602.000	0.100	0.100	1601.938	
	1602.000	0.100	0.100	1601.948	
13	1593.000	0.100	0.100	1592.942	
	1593.000	0.100	0.100	1592.922	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.941	
15	5.000	0.030	0.030	4.996	
16	12.000 REF.			12.065	
17	7.000	0.250	0.250	7.014	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.074	
19	82.300	0.100	0.100	82.207	
20	82.300	0.100	0.100	82.277	
21	112.100	0.050	0.050	112.074	
22	⌖|0.20Ⓢ|A|B|	0.200		0.068	
	125.000	0.100		125.047	
23	5.000	0.250	0.250	5.016	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.011	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.952	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.096	
	11.350 Ø	0.050		11.376	
D2	0.000 BSC.			0.038	
	745.000 BSC.			744.989	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.079	
	11.350 Ø	0.050		11.373	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.016	
	70.000 BSC.			70.040	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.086	
	11.350 Ø	0.050		11.393	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 2
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.001	
	35.000 BSC			34.958	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.084	
	11.350Ø	0.050		11.350	
D5	171.000 BSC			170.989	
	35.000 BSC			34.956	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.091	
	11.350Ø	0.050		11.385	
C-B	0.000 BSC			0.007	
	160.000 BSC			160.002	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.015	
	11.350Ø	0.050		11.397	
D-A	0.000 BSC			0.038	
	255.000 BSC			254.920	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.177	
	11.350Ø	0.050		11.350	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and libirated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 2

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C31	
	160.000 BSC			160.C26	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C81	
	11.350Ø	0.050		11.391	
E-A	0.000 BSC			0.C05	
	445.000 BSC			444.955	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C91	
	11.350Ø	0.050		11.356	
E-B	0.000 BSC			0.C44	
	120.000 BSC			120.C23	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C99	
	11.350Ø	0.050		11.395	
F-A	0.000 BSC			0.C10	
	595.000 BSC			594.992	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C26	
	11.350Ø	0.050		11.367	
F-B	0.000 BSC			0.C29	
	120.000 BSC			119.997	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C58	
	11.350Ø	0.050		11.385	
G-B	0.000 BSC			0.C43	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 2

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.016	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.092	
	11.350Ø	0.050		11.391	
H-A	0.000 BSC			0.008	
	895.000 BSC			894.999	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.016	
	11.350Ø	0.050		11.360	
H-B	0.000 BSC			0.030	
	100.000 BSC			100.003	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.060	
	11.350Ø	0.050		11.373	
J-A	0.000 BSC			0.010	
	1025.000 BSC			1025.031	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.065	
	11.350Ø	0.050		11.351	
J-B	0.000 BSC			0.006	
	100.000 BSC			99.952	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.097	
	11.350Ø	0.050		11.390	
K-A	0.000 BSC			0.022	
	1155.000 BSC			1154.996	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and libirated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S'N: 2

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.045	
	11.350Ø	0.050		11.350	
K-B	0.000 BSC			0.039	
	100.000 BSC			99.997	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.078	
	11.350Ø	0.050		11.362	
L-A	0.000 BSC			0.025	
	1285.000 BSC			1284.977	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.068	
	11.350Ø	0.050		11.390	
L-B	0.000 BSC			0.027	
	70.000 BSC			70.041	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.098	
	11.350Ø	0.050		11.385	
M-A	0.000 BSC			0.012	
	1385.000 BSC			1385.011	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.033	
	11.350Ø	0.050		11.391	
M-B	0.000 BSC			0.006	
	70.000 BSC			70.000	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.012	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 2

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.372	
N-A	0.000 BSC			0.016	
	1485.000 BSC			1484.990	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.038	
	11.350Ø	0.050		11.398	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST--821/253616-94 and .ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 3
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	20.000	
	20.000	0.100	0.100	19.989	
2	30.000	0.100	0.100	30.001	
	30.000	0.100	0.100	30.005	
3	5.000	0.250	0.250	4.996	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	4.991	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.891	
6	188.900	0.050	0.050	188.856	
7	⌖|0.20Ⓢ|A|B|	0.200		0.050	
	181.000	0.100		181.084	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.387	
11	140.400	0.100	0.100	140.317	
12	1602.000	0.100	0.100	1601.988	
	1602.000	0.100	0.100	1601.966	
13	1593.000	0.100	0.100	1593.012	
	1593.000	0.100	0.100	1592.900	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.979	
15	5.000	0.030	0.030	5.006	
16	12.000 REF.			12.010	
17	7.000	0.250	0.250	7.008	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.060	
19	82.300	0.100	0.100	82.220	
20	82.300	0.100	0.100	82.265	
21	112.100	0.050	0.050	112.081	
22	⌖|0.20Ⓢ|A|B|	0.200		0.061	
	125.000	0.100		125.023	
23	5.000	0.250	0.250	5.006	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.015	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.972	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.056	
	11.350 Ø	0.050		11.399	
D2	0.000 BSC.			0.039	
	745.000 BSC.			744.984	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.084	
	11.350 Ø	0.050		11.383	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.031	
	70.000 BSC.			70.005	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.063	
	11.350 Ø	0.050		11.363	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: PLATE MASTER
Part#/Rev#: AT-10-1-12 REV B
Part S/N: 3
Machine: Q-55/56/65
Inspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			0171.006	
	35.000 BSC			34.963	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.075	
	11.350Ø	0.050		11.350	
D5	171.000 BSC			170.996	
	35.000 BSC			34.953	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.094	
	11.350Ø	0.050		11.350	
C-B	0.000 BSC			0.004	
	160.000 BSC			159.998	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.009	
	11.350Ø	0.050		11.390	
D-A	0.000 BSC			0.057	
	255.000 BSC			254.954	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.146	
	11.350Ø	0.050		11.350	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with NCSL/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 3

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C38	
	160.000 BSC			160.C32	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C99	
	11.350Ø	0.050		11.377	
E-A	0.000 BSC			0.C12	
	445.000 BSC			444.949	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.105	
	11.350Ø	0.050		11.355	
E-B	0.000 BSC			0.C30	
	120.000 BSC			120.C32	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C88	
	11.350Ø	0.050		11.400	
F-A	0.000 BSC			0.C18	
	595.000 BSC			594.993	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C39	
	11.350Ø	0.050		11.350	
F-B	0.000 BSC			0.C13	
	120.000 BSC			120.C03	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C27	
	11.350Ø	0.050		11.390	
G-B	0.000 BSC			0.C37	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 3

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.022	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.086	
	11.350Ø	0.050		11.399	
H-A	0.000 BSC			0.044	
	895.000 BSC			894.966	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.111	
	11.350Ø	0.050		11.350	
H-B	0.000 BSC			0.033	
	100.000 BSC			100.028	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.087	
	11.350Ø	0.050		11.390	
J-A	0.000 BSC			0.008	
	1025.000 BSC			1025.041	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.084	
	11.350Ø	0.050		11.350	
J-B	0.000 BSC			0.008	
	100.000 BSC			99.960	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.082	
	11.350Ø	0.050		11.393	
K-A	0.000 BSC			0.057	
	1155.000 BSC			1154.966	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 3

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.133	
	11.350Ø	0.050		11.350	
K-B	0.000 BSC			0.C10	
	100.000 BSC			100.C41	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C84	
	11.350Ø	0.050		11.396	
L-A	0.000 BSC			0.C17	
	1285.000 BSC			1284.988	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C42	
	11.350Ø	0.050		11.371	
L-B	0.000 BSC			0.C10	
	70.000 BSC			70.C44	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C90	
	11.350Ø	0.050		11.365	
M-A	0.000 BSC			0.C19	
	1385.000 BSC			1385.C45	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C98	
	11.350Ø	0.050		11.356	
M-B	0.000 BSC			0.C13	
	70.000 BSC			69.990	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C33	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 3

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.390	
N-A	0.000 BSC			0.031	
	1485.000 BSC			1485.031	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.088	
	11.350Ø	0.050		11.355	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 4
Machine: Q-55/56/65
Inspector:
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+Tol	-Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.996	
	20.000	0.100	0.100	19.982	
2	30.000	0.100	0.100	30.000	
	30.000	0.100	0.100	30.003	
3	5.000	0.250	0.250	4.987	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	4.984	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.884	
6	188.900	0.050	0.050	188.874	
7	⌖|0.20Ⓢ|A|B|	0.200		0.034	
	181.000	0.100		181.002	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.319	
11	140.400	0.100	0.100	140.308	
12	1602.000	0.100	0.100	1601.978	
	1602.000	0.100	0.100	1601.930	
13	1593.000	0.100	0.100	1593.026	
	1593.000	0.100	0.100	1592.905	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.965	
15	5.000	0.030	0.030	5.009	
16	12.000 REF.			12.009	
17	7.000	0.250	0.250	7.015	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.090	
19	82.300	0.100	0.100	82.201	
20	82.300	0.100	0.100	82.208	
21	112.100	0.050	0.050	112.056	
22	⌖|0.20Ⓢ|A|B|	0.200		0.074	
	125.000	0.100		125.027	
23	5.000	0.250	0.250	5.015	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.015	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.966	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.068	
	11.350 Ø	0.050		11.398	
D2	0.000 BSC.			0.030	
	745.000 BSC.			744.993	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.062	
	11.350 Ø	0.050		11.386	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.009	
	70.000 BSC.			70.011	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.028	
	11.350 Ø	0.050		11.374	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 4
Machine: Q-55/56/65
nspector:
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.009	
	35.000 BSC			34.959	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.084	
	11.350Ø	0.050		11.374	
D5	171.000 BSC			170.999	
	35.000 BSC			34.956	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.088	
	11.350Ø	0.050		11.353	
C-B	0.000 BSC			0.008	
	160.000 BSC			159.994	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.020	
	11.350Ø	0.050		11.393	
D-A	0.000 BSC			0.056	
	255.000 BSC			254.956	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.142	
	11.350Ø	0.050		11.350	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST--821/253616-94 and .ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 4

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C29	
	160.000 BSC			160.C38	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C96	
	11.350Ø	0.050		11.399	
E-A	0.000 BSC			0.C19	
	445.000 BSC			444.954	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.100	
	11.350Ø	0.050		11.374	
E-B	0.000 BSC			0.C34	
	120.000 BSC			120.C34	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C96	
	11.350Ø	0.050		11.393	
F-A	0.000 BSC			0.C17	
	595.000 BSC			594.996	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C35	
	11.350Ø	0.050		11.358	
F-B	0.000 BSC			0.C33	
	120.000 BSC			120.C13	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C71	
	11.350Ø	0.050		11.400	
G-B	0.000 BSC			0.C39	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 4

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.031	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.100	
	11.350Ø	0.050		11.393	
H-A	0.000 BSC			0.040	
	895.000 BSC			894.968	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.102	
	11.350Ø	0.050		11.354	
H-B	0.000 BSC			0.021	
	100.000 BSC			100.016	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.053	
	11.350Ø	0.050		11.395	
J-A	0.000 BSC			0.015	
	1025.000 BSC			1025.065	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.133	
	11.350Ø	0.050		11.350	
J-B	0.000 BSC			0.030	
	100.000 BSC			99.961	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.098	
	11.350Ø	0.050		11.393	
K-A	0.000 BSC			0.025	
	1155.000 BSC			1155.009	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 4

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C53	
	11.350Ø	0.050		11.357	
K-B	0.000 BSC			0.C26	
	100.000 BSC			100.C19	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C64	
	11.350Ø	0.050		11.398	
L-A	0.000 BSC			0.C01	
	1285.000 BSC			1285.C03	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C06	
	11.350Ø	0.050		11.354	
L-B	0.000 BSC			0.C26	
	70.000 BSC			70.C38	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C92	
	11.350Ø	0.050		11.395	
M-A	0.000 BSC			0.C03	
	1385.000 BSC			1385.C56	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.112	
	11.350Ø	0.050		11.351	
M-B	0.000 BSC			0.C03	
	70.000 BSC			70.C01	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C06	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 4

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.386	
N-A	0.000 BSC			0.009	
	1485.000 BSC			1485.042	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.086	
	11.350Ø	0.050		11.354	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

QUALITY CALIBRATION SERVICE INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 5
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	20.012	
	20.000	0.100	0.100	19.949	
2	30.000	0.100	0.100	30.013	
	30.000	0.100	0.100	29.967	
3	5.000	0.250	0.250	4.970	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.023	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.874	
6	188.900	0.050	0.050	188.851	
7	⌖|0.20Ⓢ|A|B|	0.200		0.001	
	181.000	0.100		181.027	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.349	
11	140.400	0.100	0.100	140.356	
12	1602.000	0.100	0.100	1602.018	
	1602.000	0.100	0.100	1601.955	
13	1593.000	0.100	0.100	1593.030	
	1593.000	0.100	0.100	1592.966	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.965	
15	5.000	0.030	0.030	4.991	
16	12.000 REF.			12.041	
17	7.000	0.250	0.250	6.984	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.097	
19	82.300	0.100	0.100	82.230	
20	82.300	0.100	0.100	82.223	
21	112.100	0.050	0.050	112.079	
22	⌖|0.20Ⓢ|A|B|	0.200		0.014	
	125.000	0.100		125.055	
23	5.000	0.250	0.250	4.998	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.006	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.934	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.132	
	11.350 Ø	0.050		11.400	
D2	0.000 BSC.			0.081	
	745.000 BSC.			744.967	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.175	
	11.350 Ø	0.050		11.398	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and
librated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with
SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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DIMENSIONAL INSPECTION REPORT

S/N Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.072	
	70.000 BSC.			69.992	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.145	
	11.350 Ø	0.050		11.397	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 5
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.023	
	35.000 BSC			34.983	
	⌖ | Ø.10Ⓢ |A|B|	0.100		0.057	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.974	
	35.000 BSC			34.961	
	⌖ | Ø.10Ⓢ |A|B|	0.100		0.094	
	11.350Ø	0.050		11.400	
C-B	0.000 BSC			0.034	
	160.000 BSC			160.004	
	⌖ | Ø.10Ⓢ |A|C|	0.100		0.068	
	11.350Ø	0.050		11.391	
D-A	0.000 BSC			0.021	
	255.000 BSC			254.924	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.158	
	11.350Ø	0.050		11.400	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 5

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C28	
	160.000 BSC			160.C36	
	⌖ | Ø.10Ⓢ | A | D |	0.100		0.C91	
	11.350Ø	0.050		11.400	
E-A	0.000 BSC			0.C85	
	445.000 BSC			444.948	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.199	
	11.350Ø	0.050		11.400	
E-B	0.000 BSC			0.C41	
	120.000 BSC			120.C27	
	⌖ | Ø.10Ⓢ | A | E |	0.100		0.C98	
	11.350Ø	0.050		11.395	
F-A	0.000 BSC			0.C66	
	595.000 BSC			594.974	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.142	
	11.350Ø	0.050		11.400	
F-B	0.000 BSC			0.C25	
	120.000 BSC			120.C38	
	⌖ | Ø.10Ⓢ | A | F |	0.100		0.C91	
	11.350Ø	0.050		11.398	
G-B	0.000 BSC			0.C41	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 5

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			119.993	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.083	
	11.350Ø	0.050		11.377	
H-A	0.000 BSC			0.066	
	895.000 BSC			894.993	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.133	
	11.350Ø	0.050		11.400	
H-B	0.000 BSC			0.028	
	100.000 BSC			99.970	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.082	
	11.350Ø	0.050		11.398	
J-A	0.000 BSC			0.066	
	1025.000 BSC			1024.984	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.136	
	11.350Ø	0.050		11.388	
J-B	0.000 BSC			0.012	
	100.000 BSC			99.989	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.033	
	11.350Ø	0.050		11.384	
K-A	0.000 BSC			0.074	
	1155.000 BSC			1154.933	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 5

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.200	
	11.350Ø	0.050		11.386	
K-B	0.000 BSC			0.C07	
	100.000 BSC			100.C36	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.073	
	11.350Ø	0.050		11.398	
L-A	0.000 BSC			0.C69	
	1285.000 BSC			1284.960	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.160	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.C41	
	70.000 BSC			70.C25	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C96	
	11.350Ø	0.050		11.362	
M-A	0.000 BSC			0.C66	
	1385.000 BSC			1385.C05	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.132	
	11.350Ø	0.050		11.398	
M-B	0.000 BSC			0.C09	
	70.000 BSC			69.968	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C66	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 5

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.380	
N-A	0.000 BSC			0.072	
	1485.000 BSC			1484.985	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.147	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 6
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.987	
	20.000	0.100	0.100	19.975	
2	30.000	0.100	0.100	29.978	
	30.000	0.100	0.100	29.998	
3	5.000	0.250	0.250	4.982	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.016	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.895	
6	188.900	0.050	0.050	188.856	
7	⌖|0.20Ⓢ|A|B|	0.200		0.033	
	181.000	0.100		181.080	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.301	
11	140.400	0.100	0.100	140.398	
12	1602.000	0.100	0.100	1601.914	
	1602.000	0.100	0.100	1601.905	
13	1593.000	0.100	0.100	1592.941	
	1593.000	0.100	0.100	1592.929	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.919	
15	5.000	0.030	0.030	5.009	
16	12.000 REF.			12.010	
17	7.000	0.250	0.250	7.019	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.067	
19	82.300	0.100	0.100	82.240	
20	82.300	0.100	0.100	82.282	
21	112.100	0.050	0.050	112.051	
22	⌖|0.20Ⓢ|A|B|	0.200		0.035	
	125.000	0.100		125.052	
23	5.000	0.250	0.250	4.981	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.015	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.958	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.084	
	11.350 Ø	0.050		11.398	
D2	0.000 BSC.			0.061	
	745.000 BSC.			744.973	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.133	
	11.350 Ø	0.050		11.397	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and
ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with
SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.076	
	70.000 BSC.			70.054	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.186	
	11.350 Ø	0.050		11.399	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

'art Name: PLATE MASTER
:rt#/Rev#: AT-10-1-12 REV B
Part S/N: 6
Machine: Q-55/56/65
:nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TECUMSEH AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.990	
	35.000 BSC			34.958	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.086	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.992	
	35.000 BSC			34.951	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.099	
	11.350Ø	0.050		11.390	
C-B	0.000 BSC			0.019	
	160.000 BSC			160.025	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.063	
	11.350Ø	0.050		11.394	
D-A	0.000 BSC			0.073	
	255.000 BSC			254.960	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.166	
	11.350Ø	0.050		11.375	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and libirated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 6

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.041	
	160.000 BSC			160.024	
	⌖ | Ø.10Ⓢ | A | D |	0.100		0.095	
	11.350Ø	0.050		11.397	
E-A	0.000 BSC			0.038	
	445.000 BSC			444.952	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.122	
	11.350Ø	0.050		11.371	
E-B	0.000 BSC			0.038	
	120.000 BSC			120.021	
	⌖ | Ø.10Ⓢ | A | E |	0.100		0.087	
	11.350Ø	0.050		11.399	
F-A	0.000 BSC			0.020	
	595.000 BSC			594.989	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.046	
	11.350Ø	0.050		11.393	
F-B	0.000 BSC			0.002	
	120.000 BSC			120.014	
	⌖ | Ø.10Ⓢ | A | F |	0.100		0.028	
	11.350Ø	0.050		11.378	
G-B	0.000 BSC			0.039	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 6

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.027	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.095	
	11.350Ø	0.050		11.367	
H-A	0.000 BSC			0.078	
	895.000 BSC			895.012	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.158	
	11.350Ø	0.050		11.381	
H-B	0.000 BSC			0.031	
	100.000 BSC			99.975	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.080	
	11.350Ø	0.050		11.394	
J-A	0.000 BSC			0.070	
	1025.000 BSC			1025.039	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.160	
	11.350Ø	0.050		11.400	
J-B	0.000 BSC			0.033	
	100.000 BSC			99.979	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.078	
	11.350Ø	0.050		11.396	
K-A	0.000 BSC			0.077	
	1155.000 BSC			1154.959	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and libirated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ASI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 6

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.174	
	11.350Ø	0.050		11.396	
K-B	0.000 BSC			0.010	
	100.000 BSC			100.042	
	⌖ | Ø.10Ⓢ | A | K |	0.100		0.086	
	11.350Ø	0.050		11.390	
L-A	0.000 BSC			0.077	
	1285.000 BSC			1284.983	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.158	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.025	
	70.000 BSC			70.043	
	⌖ | Ø.10Ⓢ | A | L |	0.100		0.099	
	11.350Ø	0.050		11.396	
M-A	0.000 BSC			0.086	
	1385.000 BSC			1385.017	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.175	
	11.350Ø	0.050		11.371	
M-B	0.000 BSC			0.002	
	70.000 BSC			70.017	
	⌖ | Ø.10Ⓢ | A | M |	0.100		0.034	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 6

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.393	
N-A	0.000 BSC			0.066	
	1485.000 BSC			1484.931	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.191	
	11.350Ø	0.050		11.356	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 7
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.952	
	20.000	0.100	0.100	20.027	
2	30.000	0.100	0.100	29.973	
	30.000	0.100	0.100	30.028	
3	5.000	0.250	0.250	4.975	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.021	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.857	
6	188.900	0.050	0.050	188.861	
7	⌖|0.20Ⓢ|A|B|	0.200		0.055	
	181.000	0.100		181.049	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.391	
11	140.400	0.100	0.100	140.406	
12	1602.000	0.100	0.100	1601.973	
	1602.000	0.100	0.100	1601.908	
13	1593.000	0.100	0.100	1592.920	
	1593.000	0.100	0.100	1592.996	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.957	
15	5.000	0.030	0.030	5.001	
16	12.000 REF.			11.989	
17	7.000	0.250	0.250	7.003	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.088	
19	82.300	0.100	0.100	82.278	
20	82.300	0.100	0.100	82.230	
21	112.100	0.050	0.050	112.054	
22	⌖|0.20Ⓢ|A|B|	0.200		0.073	
	125.000	0.100		125.056	
23	5.000	0.250	0.250	4.989	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.984	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.911	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.178	
	11.350 Ø	0.050		11.400	
D2	0.000 BSC.			0.077	
	745.000 BSC.			744.960	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.174	
	11.350 Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.C23	
	70.000 BSC.			70.C15	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.C55	
	11.350 Ø	0.050		11.397	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 7
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.957	
	35.000 BSC			34.978	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.097	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.989	
	35.000 BSC			34.957	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.089	
	11.350Ø	0.050		11.400	
C-B	0.000 BSC			0.041	
	160.000 BSC			160.028	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.099	
	11.350Ø	0.050		11.397	
D-A	0.000 BSC			0.076	
	255.000 BSC			254.957	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.175	
	11.350Ø	0.050		11.357	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST--821/253616-94 and .ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 7

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.018	
	160.000 BSC			160.036	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.080	
	11.350Ø	0.050		11.388	
E-A	0.000 BSC			0.087	
	445.000 BSC			444.959	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.192	
	11.350Ø	0.050		11.387	
E-B	0.000 BSC			0.020	
	120.000 BSC			120.037	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.084	
	11.350Ø	0.050		11.394	
F-A	0.000 BSC			0.053	
	595.000 BSC			594.973	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.119	
	11.350Ø	0.050		11.398	
F-B	0.000 BSC			0.003	
	120.000 BSC			120.003	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.008	
	11.350Ø	0.050		11.375	
G-B	0.000 BSC			0.040	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.007	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.081	
	11.350Ø	0.050		11.380	
H-A	0.000 BSC			0.071	
	895.000 BSC			894.974	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.151	
	11.350Ø	0.050		11.375	
H-B	0.000 BSC			0.002	
	100.000 BSC			99.961	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.078	
	11.350Ø	0.050		11.390	
J-A	0.000 BSC			0.076	
	1025.000 BSC			1024.991	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.153	
	11.350Ø	0.050		11.386	
J-B	0.000 BSC			0.012	
	100.000 BSC			99.960	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.084	
	11.350Ø	0.050		11.381	
K-A	0.000 BSC			0.058	
	1155.000 BSC			1154.936	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and
ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with
SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S'N: 7

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.173	
	11.350Ø	0.050		11.400	
K-B	0.000 BSC			0.C35	
	100.000 BSC			100.C19	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C80	
	11.350Ø	0.050		11.394	
L-A	0.000 BSC			0.C33	
	1285.000 BSC			1284.948	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.123	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.C10	
	70.000 BSC			70.C38	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C79	
	11.350Ø	0.050		11.398	
M-A	0.000 BSC			0.C01	
	1385.000 BSC			1384.998	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C04	
	11.350Ø	0.050		11.395	
M-B	0.000 BSC			0.C01	
	70.000 BSC			69.973	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C54	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.

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Part S/N: 7

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.400	
N-A	0.000 BSC			0.023	
	1485.000 BSC			1484.964	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.085	
	11.350Ø	0.050		11.387	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with NCSL/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 8
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-26-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.935	
	20.000	0.100	0.100	20.040	
2	30.000	0.100	0.100	29.983	
	30.000	0.100	0.100	30.008	
3	5.000	0.250	0.250	4.895	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.021	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.852	
6	188.900	0.050	0.050	188.887	
7	⌖|0.20Ⓢ|A|B|	0.200		0.089	
	181.000	0.100		181.096	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.354	
11	140.400	0.100	0.100	140.342	
12	1602.000	0.100	0.100	1601.956	
	1602.000	0.100	0.100	1601.989	
13	1593.000	0.100	0.100	1592.937	
	1593.000	0.100	0.100	1592.963	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.930	
15	5.000	0.030	0.030	5.022	
16	12.000 REF.			11.991	
17	7.000	0.250	0.250	6.969	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.134	
19	82.300	0.100	0.100	82.218	
20	82.300	0.100	0.100	82.202	
21	112.100	0.050	0.050	112.059	
22	⌖|0.20Ⓢ|A|B|	0.200		0.056	
	125.000	0.100		125.063	
23	5.000	0.250	0.250	5.022	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.987	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.916	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.168	
	11.350 Ø	0.050		11.396	
D2	0.000 BSC.			0.000	
	745.000 BSC.			744.937	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.126	
	11.350 Ø	0.050		11.397	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.072	
	70.000 BSC.			69.979	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.150	
	11.350 Ø	0.050		11.397	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 8
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.958	
	35.000 BSC			34.979	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.094	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.968	
	35.000 BSC			34.965	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.095	
	11.350Ø	0.050		11.400	
C-B	0.000 BSC			0.037	
	160.000 BSC			160.004	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.074	
	11.350Ø	0.050		11.395	
D-A	0.000 BSC			0.055	
	255.000 BSC			254.923	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.189	
	11.350Ø	0.050		11.398	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C03	
	160.000 BSC			160.C35	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C70	
	11.350Ø	0.050		11.395	
E-A	0.000 BSC			0.C87	
	445.000 BSC			444.979	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.179	
	11.350Ø	0.050		11.400	
E-B	0.000 BSC			0.C26	
	120.000 BSC			120.C15	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C60	
	11.350Ø	0.050		11.374	
F-A	0.000 BSC			0.C67	
	595.000 BSC			594.950	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.167	
	11.350Ø	0.050		11.400	
F-B	0.000 BSC			0.C00	
	120.000 BSC			120.C10	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C20	
	11.350Ø	0.050		11.383	
G-B	0.000 BSC			0.C39	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 8

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.018	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.086	
	11.350Ø	0.050		11.388	
H-A	0.000 BSC			0.085	
	895.000 BSC			894.955	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.192	
	11.350Ø	0.050		11.400	
H-B	0.000 BSC			0.033	
	100.000 BSC			99.976	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.082	
	11.350Ø	0.050		11.399	
J-A	0.000 BSC			0.063	
	1025.000 BSC			1024.973	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.137	
	11.350Ø	0.050		11.400	
J-B	0.000 BSC			0.018	
	100.000 BSC			99.960	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.088	
	11.350Ø	0.050		11.358	
K-A	0.000 BSC			0.072	
	1155.000 BSC			1154.941	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.186	
	11.350Ø	0.050		11.400	
K-B	0.000 BSC			0.C27	
	100.000 BSC			100.C37	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C92	
	11.350Ø	0.050		11.390	
L-A	0.000 BSC			0.C06	
	1285.000 BSC			1284.923	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.154	
	11.350Ø	0.050		11.395	
L-B	0.000 BSC			0.C05	
	70.000 BSC			69.998	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C11	
	11.350Ø	0.050		11.392	
M-A	0.000 BSC			0.C35	
	1385.000 BSC			1384.947	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.127	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C30	
	70.000 BSC			70.C03	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C60	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S'N: 8

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.390	
N-A	0.000 BSC			0.008	
	1485.000 BSC			484.942	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.117	
	11.350Ø	0.050		11.397	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with NCSL/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 9
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.931	
	20.000	0.100	0.100	19.918	
2	30.000	0.100	0.100	30.027	
	30.000	0.100	0.100	29.948	
3	5.000	0.250	0.250	5.011	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.021	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.857	
6	188.900	0.050	0.050	188.861	
7	⌖|0.20Ⓢ|A|B|	0.200		0.055	
	181.000	0.100		181.049	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.391	
11	140.400	0.100	0.100	140.406	
12	1602.000	0.100	0.100	1601.925	
	1602.000	0.100	0.100	1601.969	
13	1593.000	0.100	0.100	1592.964	
	1593.000	0.100	0.100	1592.920	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1570.000	
15	5.000	0.030	0.030	5.011	
16	12.000 REF.			12.038	
17	7.000	0.250	0.250	7.029	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.093	
19	82.300	0.100	0.100	82.237	
20	82.300	0.100	0.100	82.219	
21	112.100	0.050	0.050	112.098	
22	⌖|0.20Ⓢ|A|B|	0.200		0.073	
	125.000	0.100		125.084	
23	5.000	0.250	0.250	4.974	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.993	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.921	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.158	
	11.350 Ø	0.050		11.395	
D2	0.000 BSC.			0.077	
	745.000 BSC.			744.946	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.188	
	11.350 Ø	0.050		11.398	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.025	
	70.000 BSC.			70.033	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.083	
	11.350 Ø	0.050		11.398	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 9
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.040	
	35.000 BSC			34.982	
	⌖ | Ø.10Ⓢ | A | B |	0.100		0.088	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			171.012	
	35.000 BSC			34.969	
	⌖ | Ø.10Ⓢ | A | B |	0.100		0.066	
	11.350Ø	0.050		11.392	
C-B	0.000 BSC			0.037	
	160.000 BSC			160.033	
	⌖ | Ø.10Ⓢ | A | C |	0.100		0.099	
	11.350Ø	0.050		11.399	
D-A	0.000 BSC			0.078	
	255.000 BSC			254.996	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.156	
	11.350Ø	0.050		11.396	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 9

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C25	
	160.000 BSC			160.C34	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C84	
	11.350Ø	0.050		11.391	
E-A	0.000 BSC			0.C59	
	445.000 BSC			444.983	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.123	
	11.350Ø	0.050		11.399	
E-B	0.000 BSC			0.C30	
	120.000 BSC			120.C25	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C78	
	11.350Ø	0.050		11.382	
F-A	0.000 BSC			0.C72	
	595.000 BSC			594.948	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.178	
	11.350Ø	0.050		11.393	
F-B	0.000 BSC			0.C07	
	120.000 BSC			120.C25	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C52	
	11.350Ø	0.050		11.391	
G-B	0.000 BSC			0.C49	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 9

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			119.991	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.100	
	11.350Ø	0.050		11.395	
H-A	0.000 BSC			0.C35	
	895.000 BSC			894.930	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.157	
	11.350Ø	0.050		11.398	
H-B	0.000 BSC			0.C38	
	100.000 BSC			100.C09	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.C78	
	11.350Ø	0.050		11.398	
J-A	0.000 BSC			0.C62	
	1025.000 BSC			1024.922	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.199	
	11.350Ø	0.050		11.400	
J-B	0.000 BSC			0.C15	
	100.000 BSC			100.C21	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.C52	
	11.350Ø	0.050		11.393	
K-A	0.000 BSC			0.C64	
	1155.000 BSC			1154.988	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 9

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.130	
	11.350Ø	0.050		11.384	
K-B	0.000 BSC			0.C24	
	100.000 BSC			100.C40	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C93	
	11.350Ø	0.050		11.395	
L-A	0.000 BSC			0.C35	
	1285.000 BSC			1284.926	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.164	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.C34	
	70.000 BSC			70.C29	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C89	
	11.350Ø	0.050		11.381	
M-A	0.000 BSC			0.C03	
	1385.000 BSC			1384.931	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.138	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C23	
	70.000 BSC			69.973	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C71	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.398	
N-A	0.000 BSC			0.054	
	1485.000 BSC			1484.927	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.182	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 10
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.932	
	20.000	0.100	0.100	20.009	
2	30.000	0.100	0.100	29.987	
	30.000	0.100	0.100	30.012	
3	5.000	0.250	0.250	5.026	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	4.994	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.906	
6	188.900	0.050	0.050	188.861	
7	⌖|0.20Ⓢ|A|B|	0.200		0.054	
	181.000	0.100		181.022	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.305	
11	140.400	0.100	0.100	140.418	
12	1602.000	0.100	0.100	1601.971	
	1602.000	0.100	0.100	1601.994	
13	1593.000	0.100	0.100	1592.913	
	1593.000	0.100	0.100	1592.971	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.915	
15	5.000	0.030	0.030	5.021	
16	12.000 REF.			11.947	
17	7.000	0.250	0.250	7.017	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.054	
19	82.300	0.100	0.100	82.250	
20	82.300	0.100	0.100	82.218	
21	112.100	0.050	0.050	112.081	
22	⌖|0.20Ⓢ|A|B|	0.200		0.040	
	125.000	0.100		125.054	
23	5.000	0.250	0.250	4.994	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.017	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.924	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.152	
	11.350 Ø	0.050		11.400	
D2	0.000 BSC.			0.094	
	745.000 BSC.			744.975	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.195	
	11.350 Ø	0.050		11.396	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.C32	
	70.000 BSC.			69.988	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.C68	
	11.350 Ø	0.050		11.400	
				2	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: PLATE MASTER
Prt#/Rev#: AT-10-1-12 REV B
Part S/N: 10
Machine: Q-55/56/65
Inspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.996	
	35.000 BSC			34.982	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.037	
	11.350Ø	0.050		11.395	
D5	171.000 BSC			170.967	
	35.000 BSC			34.973	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.085	
	11.350Ø	0.050		11.398	
C-B	0.000 BSC			0.027	
	160.000 BSC			160.033	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.085	
	11.350Ø	0.050		11.398	
D-A	0.000 BSC			0.063	
	255.000 BSC			254.975	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.136	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 10

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C32	
	160.000 BSC			160.C21	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C77	
	11.350Ø	0.050		11.399	
E-A	0.000 BSC			0.C57	
	445.000 BSC			444.947	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.156	
	11.350Ø	0.050		11.397	
E-B	0.000 BSC			0.C20	
	120.000 BSC			120.C45	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C98	
	11.350Ø	0.050		11.400	
F-A	0.000 BSC			0.C57	
	595.000 BSC			594.983	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.119	
	11.350Ø	0.050		11.400	
F-B	0.000 BSC			0.C06	
	120.000 BSC			120.C15	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C32	
	11.350Ø	0.050		11.397	
G-B	0.000 BSC			C.C40	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.002	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.080	
	11.350Ø	0.050		11.395	
H-A	0.000 BSC			0.083	
	895.000 BSC			894.995	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.166	
	11.350Ø	0.050		11.400	
H-B	0.000 BSC			0.040	
	100.000 BSC			99.974	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.095	
	11.350Ø	0.050		11.400	
J-A	0.000 BSC			0.064	
	1025.000 BSC			1025.024	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.137	
	11.350Ø	0.050		11.397	
J-B	0.000 BSC			0.000	
	100.000 BSC			99.954	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.092	
	11.350Ø	0.050		11.398	
K-A	0.000 BSC			0.039	
	1155.000 BSC			1154.966	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 10

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.103	
	11.350Ø	0.050		11.400	
K-B	0.000 BSC			0.C38	
	100.000 BSC			100.C29	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C96	
	11.350Ø	0.050		11.377	
L-A	0.000 BSC			0.C02	
	1285.000 BSC			1284.989	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C22	
	11.350Ø	0.050		11.391	
L-B	0.000 BSC			0.C19	
	70.000 BSC			70.C37	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C83	
	11.350Ø	0.050		11.376	
M-A	0.000 BSC			0.C38	
	1385.000 BSC			1384.974	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C92	
	11.350Ø	0.050		11.364	
M-B	0.000 BSC			0.C42	
	70.000 BSC			70.C24	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C97	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.395	
N-A	0.000 BSC			0.032	
	1485.000 BSC			1484.981	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.074	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 11
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.959	
	20.000	0.100	0.100	20.010	
2	30.000	0.100	0.100	30.009	
	30.000	0.100	0.100	29.977	
3	5.000	0.250	0.250	4.995	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.025	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.906	
6	188.900	0.050	0.050	188.856	
7	⌖|0.20Ⓢ|A|B|	0.200		0.015	
	181.000	0.100		181.030	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.332	
11	140.400	0.100	0.100	140.307	
12	1602.000	0.100	0.100	1601.948	
	1602.000	0.100	0.100	1601.999	
13	1593.000	0.100	0.100	1592.920	
	1593.000	0.100	0.100	1592.969	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.957	
15	5.000	0.030	0.030	5.008	
16	12.000 REF.			12.032	
17	7.000	0.250	0.250	7.034	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.068	
19	82.300	0.100	0.100	82.221	
20	82.300	0.100	0.100	82.250	
21	112.100	0.050	0.050	112.070	
22	⌖|0.20Ⓢ|A|B|	0.200		0.016	
	125.000	0.100		125.049	
23	5.000	0.250	0.250	5.006	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.976	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.928	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.144	
	11.350 Ø	0.050		11.399	
D2	0.000 BSC.			0.088	
	745.000 BSC.			744.960	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.193	
	11.350 Ø	0.050		11.380	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY
CALIBRATION
SERVICE INC.

ACCREDITED
No. 482.01

Part S/N: SAMPLE NO. 11

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.081	
	70.000 BSC.			69.999	
	⌖ | Ø0.20 Ⓢ | A | B |	0.200		0.162	
	11.350 Ø	0.050		11.397	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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10205 W. Greenfield Avenue • West Allis, WI 53214 • 1-800-362-4243 • FAX (414) 256-8911 • (414) 256-8900

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: PLATE MASTER
Part#/Rev#: AT-10-1-12 REV B
Part S/N: 11
Machine: Q-55/56/65
Inspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.018	
	35.000 BSC			34.976	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.060	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.961	
	35.000 BSC			34.971	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.097	
	11.350Ø	0.050		11.398	
C-B	0.000 BSC			0.021	
	160.000 BSC			160.019	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.057	
	11.350Ø	0.050		11.382	
D-A	0.000 BSC			0.033	
	255.000 BSC			254.936	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.144	
	11.350Ø	0.050		11.398	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.040	
	160.000 BSC			160.021	
	⌖ | Ø.10Ⓢ |A|D|	0.100		0.090	
	11.350Ø	0.050		11.380	
E-A	0.000 BSC			0.060	
	445.000 BSC			444.932	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.181	
	11.350Ø	0.050		11.400	
E-B	0.000 BSC			0.031	
	120.000 BSC			120.034	
	⌖ | Ø.10Ⓢ |A|E|	0.100		0.092	
	11.350Ø	0.050		11.373	
F-A	0.000 BSC			0.096	
	595.000 BSC			594.972	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.200	
	11.350Ø	0.050		11.400	
F-B	0.000 BSC			0.031	
	120.000 BSC			120.019	
	⌖ | Ø.10Ⓢ |A|F|	0.100		0.073	
	11.350Ø	0.050		11.395	
G-B	0.000 BSC			0.043	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 11

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.016	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.092	
	11.350Ø	0.050		11.396	
H-A	0.000 BSC			0.060	
	895.000 BSC			895.039	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.143	
	11.350Ø	0.050		11.367	
H-B	0.000 BSC			0.004	
	100.000 BSC			99.952	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.096	
	11.350Ø	0.050		11.400	
J-A	0.000 BSC			0.061	
	1025.000 BSC			1024.998	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.122	
	11.350Ø	0.050		11.393	
J-B	0.000 BSC			0.021	
	100.000 BSC			99.962	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.087	
	11.350Ø	0.050		11.389	
K-A	0.000 BSC			0.081	
	1155.000 BSC			1154.958	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.182	
	11.350Ø	0.050		11.396	
K-B	0.000 BSC			0.C32	
	100.000 BSC			100.C31	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C89	
	11.350Ø	0.050		11.395	
L-A	0.000 BSC			0.C50	
	1285.000 BSC			1284.964	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.123	
	11.350Ø	0.050		11.395	
L-B	0.000 BSC			0.C34	
	70.000 BSC			70.C34	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C96	
	11.350Ø	0.050		11.399	
M-A	0.000 BSC			0.C33	
	1385.000 BSC			1384.996	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C66	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C35	
	70.000 BSC			69.971	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C91	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 11

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.399	
N-A	0.000 BSC			0.081	
	1485.000 BSC			1484.964	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.177	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISO/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 462.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 12
Machine: Q-55/56/65
Inspector:
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.973	
	20.000	0.100	0.100	19.997	
2	30.000	0.100	0.100	29.973	
	30.000	0.100	0.100	30.001	
3	5.000	0.250	0.250	4.976	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.039	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.917	
6	188.900	0.050	0.050	188.896	
7	⌖|0.20Ⓢ|A|B|	0.200		0.050	
	181.000	0.100		181.094	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.308	
11	140.400	0.100	0.100	140.314	
12	1602.000	0.100	0.100	1602.038	
	1602.000	0.100	0.100	1602.087	
13	1593.000	0.100	0.100	1592.951	
	1593.000	0.100	0.100	1592.976	

. spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST-- and alibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.998	
15	5.000	0.030	0.030	5.022	
16	12.000 REF.			12.097	
17	7.000	0.250	0.250	6.981	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.052	
19	82.300	0.100	0.100	82.254	
20	82.300	0.100	0.100	82.216	
21	112.100	0.050	0.050	112.115	
22	⌖|0.20Ⓢ|A|B|	0.200		0.050	
	125.000	0.100		125.058	
23	5.000	0.250	0.250	5.026	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	5.019	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.934	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.132	
	11.350 Ø	0.050		11.391	
D2	0.000 BSC.			0.043	
	745.000 BSC.			744.988	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.089	
	11.350 Ø	0.050		11.395	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.C32	
	70.000 BSC.			69.978	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.C78	
	11.350 Ø	0.050		11.399	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 12
Machine: Q-55/56/65
nspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.996	
	35.000 BSC			34.954	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.092	
	11.350Ø	0.050		11.390	
D5	171.000 BSC			170.964	
	35.000 BSC			34.969	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.095	
	11.350Ø	0.050		11.398	
C-B	0.000 BSC			0.027	
	160.000 BSC			160.020	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.067	
	11.350Ø	0.050		11.396	
D-A	0.000 BSC			0.048	
	255.000 BSC			254.936	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.160	
	11.350Ø	0.050		11.400	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISO/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 12

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C24	
	160.000 BSC			160.C43	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C98	
	11.350Ø	0.050		11.398	
E-A	0.000 BSC			0.C71	
	445.000 BSC			444.966	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.157	
	11.350Ø	0.050		11.395	
E-B	0.000 BSC			0.C25	
	120.000 BSC			120.C37	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.C89	
	11.350Ø	0.050		11.398	
F-A	0.000 BSC			0.C58	
	595.000 BSC			595.C07	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.117	
	11.350Ø	0.050		11.383	
F-B	0.000 BSC			0.C17	
	120.000 BSC			120.C06	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C36	
	11.350Ø	0.050		11.377	
G-B	0.000 BSC			0.C47	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with NCSL/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
terations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 12

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			119.991	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.096	
	11.350Ø	0.050		11.382	
H-A	0.000 BSC			0.067	
	895.000 BSC			895.023	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.142	
	11.350Ø	0.050		11.396	
H-B	0.000 BSC			0.014	
	100.000 BSC			99.955	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.094	
	11.350Ø	0.050		11.398	
J-A	0.000 BSC			0.035	
	1025.000 BSC			1025.016	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.077	
	11.350Ø	0.050		11.393	
J-B	0.000 BSC			0.008	
	100.000 BSC			99.955	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.091	
	11.350Ø	0.050		11.397	
K-A	0.000 BSC			0.038	
	1155.000 BSC			1154.950	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ISI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.126	
	11.350Ø	0.050		11.389	
K-B	0.000 BSC			0.C44	
	100.000 BSC			100.C23	
	⌖ | Ø.10Ⓢ | A | K |	0.100		0.C99	
	11.350Ø	0.050		11.400	
L-A	0.000 BSC			0.C02	
	1285.000 BSC			1284.989	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.C22	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.C16	
	70.000 BSC			70.C37	
	⌖ | Ø.10Ⓢ | A | L |	0.100		0.C81	
	11.350Ø	0.050		11.395	
M-A	0.000 BSC			0.C42	
	1385.000 BSC			1385.C16	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.C90	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C32	
	70.000 BSC			69.978	
	⌖ | Ø.10Ⓢ | A | M |	0.100		0.C78	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: 12

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.386	
N-A	0.000 BSC			0.016	
	1485.000 BSC			1484.979	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.053	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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QUALITY CALIBRATION SERVICE, INC.

ACCREDITED No. 442.01

D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 13
Machine: Q-55/56/65
Inspector:
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	20.001	
	20.000	0.100	0.100	19.991	
2	30.000	0.100	0.100	29.992	
	30.000	0.100	0.100	29.985	
3	5.000	0.250	0.250	4.934	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.028	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.905	
6	188.900	0.050	0.050	188.922	
7	⌖|0.20Ⓢ|A|B|	0.200		0.032	
	181.000	0.100		181.088	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.314	
11	140.400	0.100	0.100	140.300	
12	1602.000	0.100	0.100	1601.924	
	1602.000	0.100	0.100	1601.914	
13	1593.000	0.100	0.100	1592.903	
	1593.000	0.100	0.100	1592.913	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.911	
15	5.000	0.030	0.030	5.007	
16	12.000 REF.			12.012	
17	7.000	0.250	0.250	7.014	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.135	
19	82.300	0.100	0.100	82.221	
20	82.300	0.100	0.100	82.244	
21	112.100	0.050	0.050	112.053	
22	⌖|0.20Ⓢ|A|B|	0.200		0.001	
	125.000	0.100		125.057	
23	5.000	0.250	0.250	5.061	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.990	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.929	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.142	
	11.350 Ø	0.050		11.400	
D2	0.000 BSC.			0.033	
	745.000 BSC.			744.969	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.091	
	11.350 Ø	0.050		11.399	

spection performed on CMM calibrated prior to use with Master Reference Standards traceab.e to the NIST-- and
librated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with
SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.026	
	70.000 BSC.			69.982	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.063	
	11.350 Ø	0.050		11.395	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

art Name: PLATE MASTER
rt#/Rev#: AT-10-1-12 REV B
Part S/N: 13
Machine: Q-55/56/65
Inspector:
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			171.002	
	35.000 BSC			34.952	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.096	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.957	
	35.000 BSC			34.977	
	⌖|Ø.10Ⓢ|A|B|	0.100		0.098	
	11.350Ø	0.050		11.357	
C-B	0.000 BSC			0.032	
	160.000 BSC			160.026	
	⌖|Ø.10Ⓢ|A|C|	0.100		0.082	
	11.350Ø	0.050		11.398	
D-A	0.000 BSC			0.049	
	255.000 BSC			254.925	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.179	
	11.350Ø	0.050		11.392	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with SI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 13

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.C31	
	160.000 BSC			160.C38	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.C98	
	11.350Ø	0.050		11.398	
E-A	0.000 BSC			0.C18	
	445.000 BSC			444.936	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.133	
	11.350Ø	0.050		11.374	
E-B	0.000 BSC			0.C50	
	120.000 BSC			119.999	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.100	
	11.350Ø	0.050		11.393	
F-A	0.000 BSC			0.C43	
	595.000 BSC			594.957	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.122	
	11.350Ø	0.050		11.355	
F-B	0.000 BSC			0.C22	
	120.000 BSC			120.C42	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.C95	
	11.350Ø	0.050		11.371	
G-B	0.000 BSC			0.C11	

spection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with 31/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.011	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.031	
	11.350Ø	0.050		11.384	
H-A	0.000 BSC			0.076	
	895.000 BSC			895.023	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.159	
	11.350Ø	0.050		11.360	
H-B	0.000 BSC			0.037	
	100.000 BSC			99.977	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.087	
	11.350Ø	0.050		11.386	
J-A	0.000 BSC			0.033	
	1025.000 BSC			1025.025	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.083	
	11.350Ø	0.050		11.400	
J-B	0.000 BSC			0.016	
	100.000 BSC			99.971	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.066	
	11.350Ø	0.050		11.397	
K-A	0.000 BSC			0.054	
	1155.000 BSC			1154.938	

pection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and brated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with I/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 13

DIMENSIONAL INSPECTION REPORT

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.164	
	11.350Ø	0.050		11.397	
K-B	0.000 BSC			0.C06	
	100.000 BSC			100.C48	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C97	
	11.350Ø	0.050		11.393	
L-A	0.000 BSC			0.C60	
	1285.000 BSC			1284.990	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.122	
	11.350Ø	0.050		11.400	
L-B	0.000 BSC			0.C26	
	70.000 BSC			70.C38	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C92	
	11.350Ø	0.050		11.398	
M-A	0.000 BSC			0.C59	
	1385.000 BSC			1385.C28	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.131	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C34	
	70.000 BSC			70.C35	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C98	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.399	
N-A	0.000 BSC			0.026	
	1485.000 BSC			1484.984	
	⌖ | Ø.20Ⓢ |A|B|	0.200		0.061	
	11.350Ø	0.050		11.400	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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DIMENSIONAL INSPECTION REPORT

Part Name: ATLAS MODULE ASSY.
Part#/Rev#: AT-10-1-12 REV. B
Part S/N: SAMPLE NO. 14
Machine: Q-55/56/65
Inspector: [signature]
Date: 12-27-1995

For: BANNER TOOL & ENGINEERING CORP
7254 N. TEUTONIA AVENUE
MILWAUKEE, WI 53209-2004
P.O.: 8302

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
1	20.000	0.100	0.100	19.948	
	20.000	0.100	0.100	20.093	
2	30.000	0.100	0.100	30.092	
	30.000	0.100	0.100	30.013	
3	5.000	0.250	0.250	4.905	
	45.000°	0.500	0.500	45.000	
4	5.000	0.250	0.250	5.036	
	45.000°	0.500	0.500	45.000	
5	188.900	0.050	0.050	188.866	
6	188.900	0.050	0.050	188.896	
7	⌖|0.20Ⓢ|A|B|	0.200		0.084	
	181.000	0.100		181.071	
8	0.250 R TYP.	0.100	0.100	0.250	
9	0.250 R TYP.	0.100	0.100	0.250	
10	140.400	0.100	0.100	140.392	
11	140.400	0.100	0.100	140.334	
12	1602.000	0.100	0.100	1601.942	
	1602.000	0.100	0.100	1601.973	
13	1593.000	0.100	0.100	1592.941	
	1593.000	0.100	0.100	1592.909	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
14	1570.000	0.100	0.100	1569.997	
15	5.000	0.030	0.030	5.028	
16	12.000 REF.			12.028	
17	7.000	0.250	0.250	6.988	
	30.000°	0.500	0.500	30.000	
18	112.100	0.050	0.050	112.079	
19	82.300	0.100	0.100	82.249	
20	82.300	0.100	0.100	82.226	
21	112.100	0.050	0.050	112.098	
22	⌖|0.20Ⓢ|A|B|	0.200		0.045	
	125.000	0.100		125.059	
23	5.000	0.250	0.250	5.040	
	45.000°	0.500	0.500	45.000	
24	5.000	0.250	0.250	4.968	
	30.000°	0.500	0.500	30.000	
D1	0.000 BSC.			0.000	
	65.000 BSC.			64.947	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.106	
	11.350 Ø	0.050		11.392	
D2	0.000 BSC.			0.000	
	745.000 BSC.			744.991	
	⌖|Ø0.20Ⓢ|A|B|	0.200		0.018	
	11.350 Ø	0.050		11.394	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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Part S/N: SAMPLE NO. 14

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D3	0.000 BSC.			0.038	
	70.000 BSC.			69.960	
	⌖ | Ø0.20Ⓢ | A | B |	0.200		0.110	
	11.350 Ø	0.050		11.399	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST-- and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
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D I M E N S I O N A L I N S P E C T I O N R E P O R T

Part Name: PLATE MASTER
Part#/Rev#: AT-10-1-12 REV B
Part S/N: 14
Machine: Q-55/56/65
Inspector: [signature]
Date: 01-03-1996

For: BANNER TOOL & ENGINEERING CORP
7254 N. TECUMSEH AVENUE
MILWAUKEE, WI 53209-2004
P.O.:

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D4	171.000 BSC			170.984	
	35.000 BSC			34.974	
	⌖ | Ø.10Ⓢ | A | B |	0.100		0.061	
	11.350Ø	0.050		11.400	
D5	171.000 BSC			170.991	
	35.000 BSC			34.966	
	⌖ | Ø.10Ⓢ | A | B |	0.100		0.070	
	11.350Ø	0.050		11.380	
C-B	0.000 BSC			0.014	
	160.000 BSC			160.026	
	⌖ | Ø.10Ⓢ | A | C |	0.100		0.059	
	11.350Ø	0.050		11.396	
D-A	0.000 BSC			0.076	
	255.000 BSC			254.936	
	⌖ | Ø.20Ⓢ | A | B |	0.200		0.199	
	11.350Ø	0.050		11.392	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
D-B	0.000 BSC			0.033	
	160.000 BSC			160.037	
	⌖|Ø.10Ⓢ|A|D|	0.100		0.099	
	11.350Ø	0.050		11.396	
E-A	0.000 BSC			0.075	
	445.000 BSC			444.978	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.156	
	11.350Ø	0.050		11.399	
E-B	0.000 BSC			0.019	
	120.000 BSC			120.015	
	⌖|Ø.10Ⓢ|A|E|	0.100		0.048	
	11.350Ø	0.050		11.395	
F-A	0.000 BSC			0.074	
	595.000 BSC			594.989	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.150	
	11.350Ø	0.050		11.390	
F-B	0.000 BSC			0.001	
	120.000 BSC			120.018	
	⌖|Ø.10Ⓢ|A|F|	0.100		0.036	
	11.350Ø	0.050		11.381	
G-B	0.000 BSC			0.003	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	120.000 BSC			120.020	
	⌖|Ø.10Ⓢ|A|G|	0.100		0.040	
	11.350Ø	0.050		11.384	
H-A	0.000 BSC			0.059	
	895.000 BSC			895.030	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.132	
	11.350Ø	0.050		11.400	
H-B	0.000 BSC			0.011	
	100.000 BSC			99.959	
	⌖|Ø.10Ⓢ|A|H|	0.100		0.085	
	11.350Ø	0.050		11.400	
J-A	0.000 BSC			0.049	
	1025.000 BSC			1025.042	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.129	
	11.350Ø	0.050		11.399	
J-B	0.000 BSC			0.008	
	100.000 BSC			99.951	
	⌖|Ø.10Ⓢ|A|J|	0.100		0.099	
	11.350Ø	0.050		11.393	
K-A	0.000 BSC			0.036	
	1155.000 BSC			1154.974	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
Alterations of this certificate are not allowed without the expressed consent of the originating metrology lab.

Part S/N: 14

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C89	
	11.350Ø	0.050		11.397	
K-B	0.000 BSC			0.C27	
	100.000 BSC			100.C11	
	⌖|Ø.10Ⓢ|A|K|	0.100		0.C58	
	11.350Ø	0.050		11.384	
L-A	0.000 BSC			0.C08	
	1285.000 BSC			1284.983	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C38	
	11.350Ø	0.050		11.376	
L-B	0.000 BSC			0.C10	
	70.000 BSC			70.C48	
	⌖|Ø.10Ⓢ|A|L|	0.100		0.C98	
	11.350Ø	0.050		11.393	
M-A	0.000 BSC			0.C24	
	1385.000 BSC			1385.C27	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.C72	
	11.350Ø	0.050		11.400	
M-B	0.000 BSC			0.C38	
	70.000 BSC			69.973	
	⌖|Ø.10Ⓢ|A|M|	0.100		0.C93	

Inspection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and calibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with ANSI/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.

D I M E N S I O N A L I N S P E C T I O N R E P O R T

S/N Dwg Log	Nominal Size	+ Tol	- Tol	Actual Size	Out of Tol
	11.350Ø	0.050		11.400	
N-A	0.000 BSC			0.035	
	1485.000 BSC			1484.994	
	⌖|Ø.20Ⓢ|A|B|	0.200		0.071	
	11.350Ø	0.050		11.395	

pection performed on CMM calibrated prior to use with Master Reference Standards traceable to the NIST--821/253616-94 and ibrated for volumetric accuracy by an outside agency in accordance with ANSI/ASME B89.1.12. Inspection in accordance with I/NCSL Z540-1 & ISO 10012-1. Dimensional format per ANSI Y14.5M Latest Edition.
erations of this certificate are not allowed without the expressed consent of the originating metrology lab.