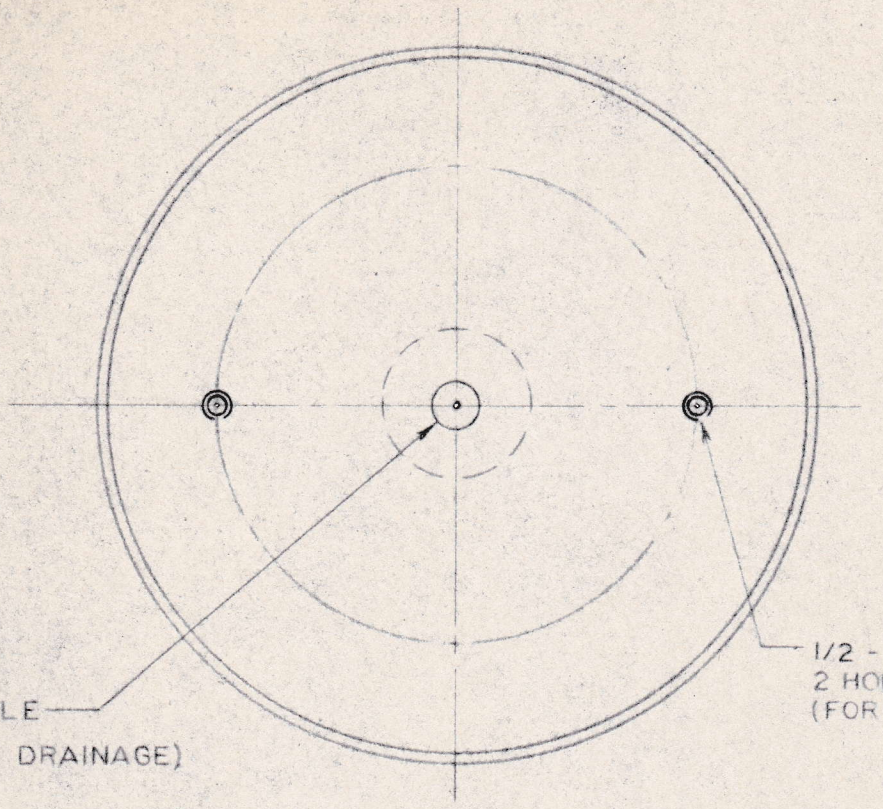
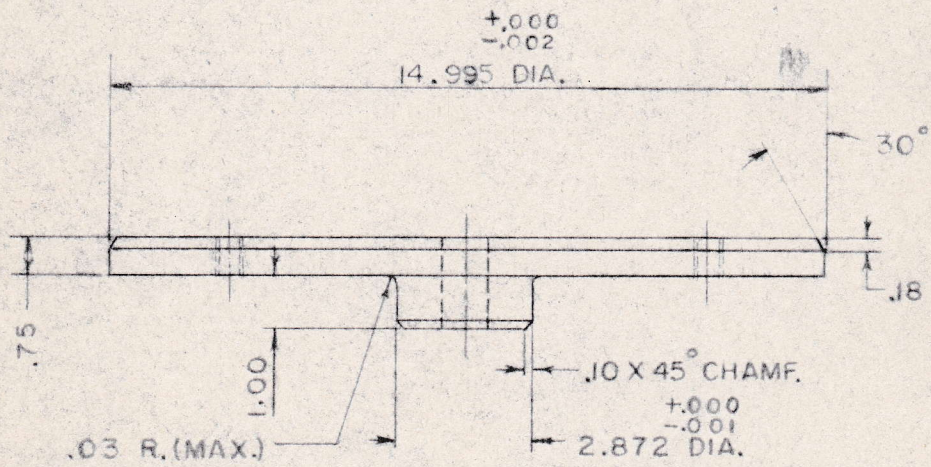
MACHINE DATA





THIS ADAPTER STOCKED IN TOOL CRIB
MATERIAL – MEEHANITE
HARDNESS – 325-350 BRINELL
FIXTURES REQUIRING THE USE OF THIS ADAPTER ARE TO BE STAMPED THUS "USE WITH PTD.570"

ISSUE	CHANGE	BY	CK'D.	DATE

TITLE
ADAPTER FOR LOCATING TURNING FIXTURES WITH 15" I.D. TO BULLARD & KING VERT. TURRET LATHES

DRN.	CK'D.	APP'D.	DATE
A. PONTING	W. Bailey	C.B.	13 OCT. 53

TOOL DESIGN STANDARDS MANUAL

MASTER MECHANIC DEPT. GAS TURBINE DIVISION

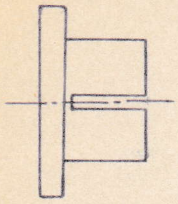
A.V. ROE CANADA LIMITED

STD. DI-2-1

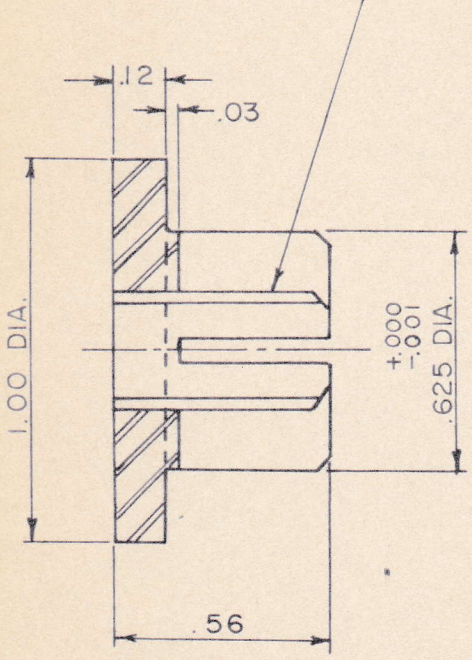
SHEET 1

REFERENCE

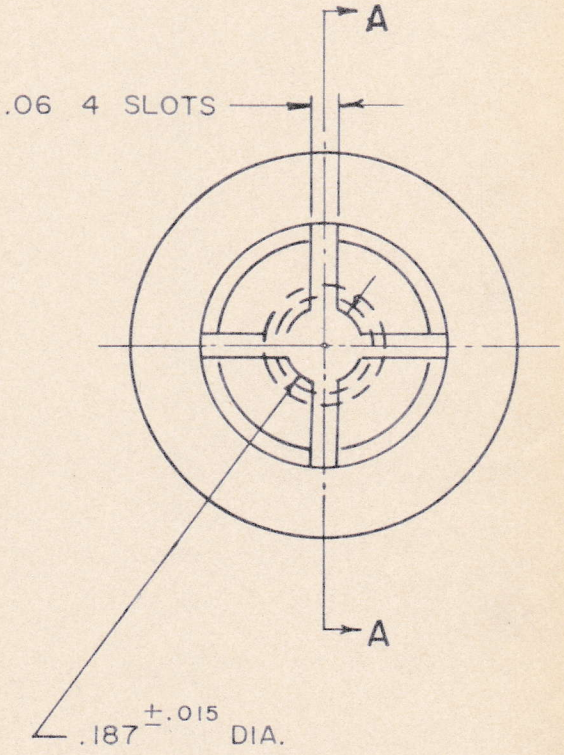
PTD. 574



ACTUAL SIZE



SECTION A-A



THIS PLUG STOCKED IN TOOL CRIB

MATERIAL – ATLAS SPS-245

HARDNESS – ROCKWELL C40-42

ISSUE	CHANGE	BY	CK'D.	DATE

TITLE

EXPANSION PLUG

TO PREVENT PASSAGE OF CHIPS

DRN.	CK'D.	APP'D.	DATE
A. PONTING	A.S. Briley	J.M. Tennis	1 DEC. 53

TOOL DESIGN STANDARDS MANUAL

MASTER MECHANIC DEPT. GAS TURBINE DIVISION

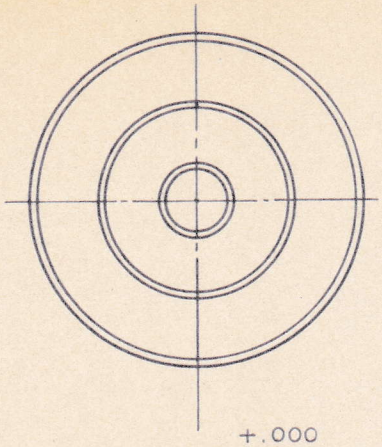
A.V. ROE CANADA LIMITED

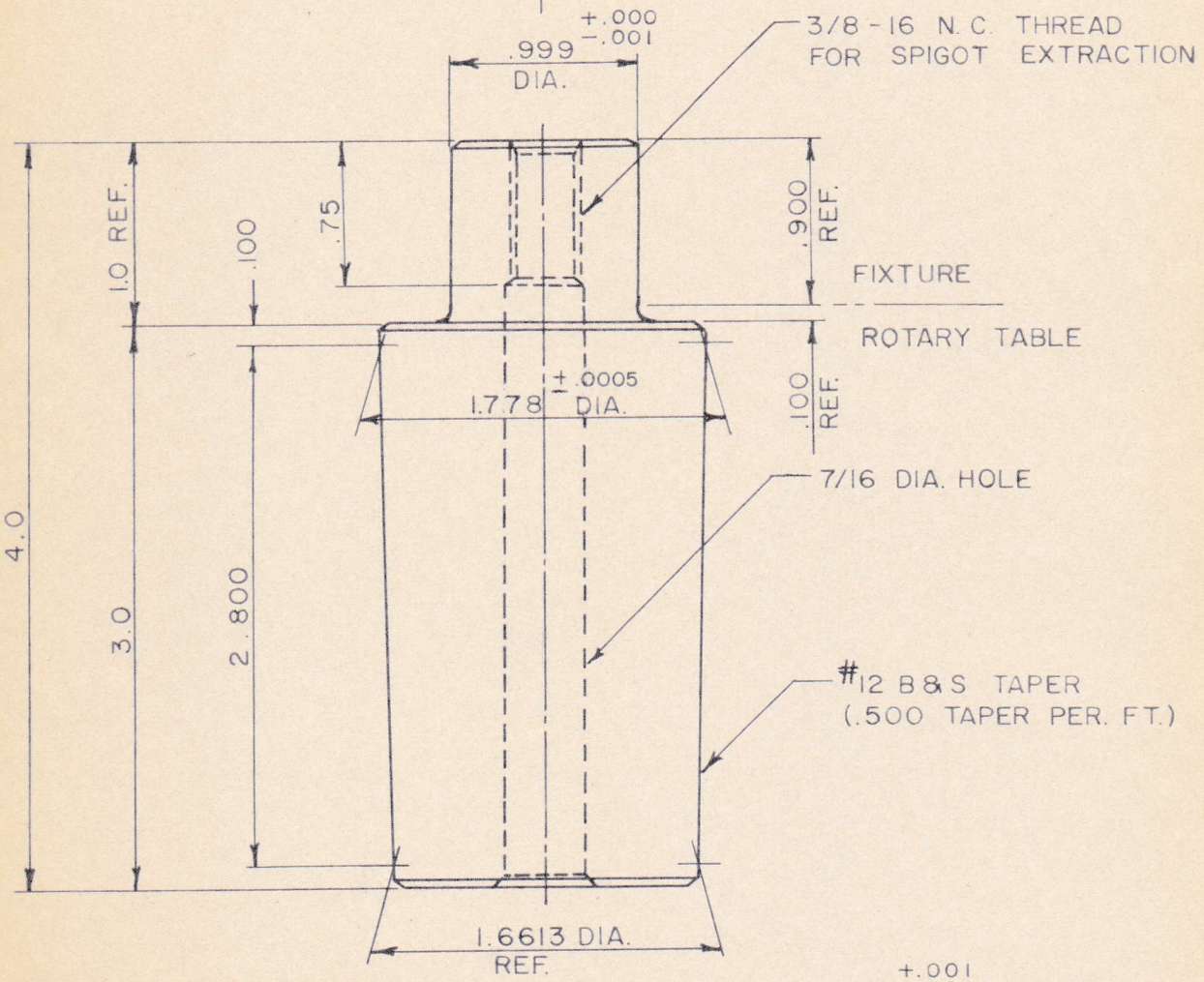
STD. D1-3-1

SHEET 1

REFERENCE

PTD. 600





+.001
-.000

FIXTURE DIMENSION — HOLE SIZE FOR SPIGOT 1.000 DIA.

THIS SPIGOT STOCKED IN TOOL CRIB
MATERIAL - ATLAS IMPACTO
HARDNESS - CARBURIZED, DEPTH OF CASE .020 MIN.

ISSUE	CHANGE	BY	CKD.	DATE

TITLE

STANDARD 1.0 DIA. SPIGOT
FOR LOCATING FIXTURES ON
20" & 24" CINCINNATI ROTARY TABLES

DRN.	CKD.	APPD.	DATE
A. PONTING	A. Bailey	G.P. Lewis	27 NOV 53

TOOL DESIGN STANDARDS MANUAL

MASTER MECHANIC DEPT. GAS TURBINE DIVISION

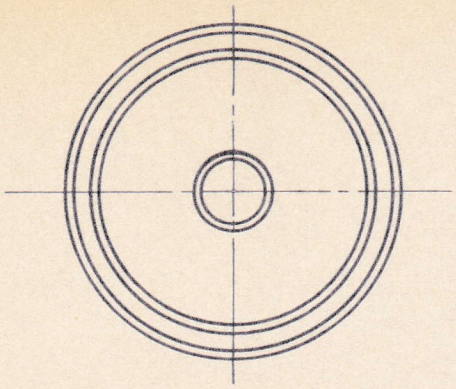
A.V. ROE CANADA LIMITED

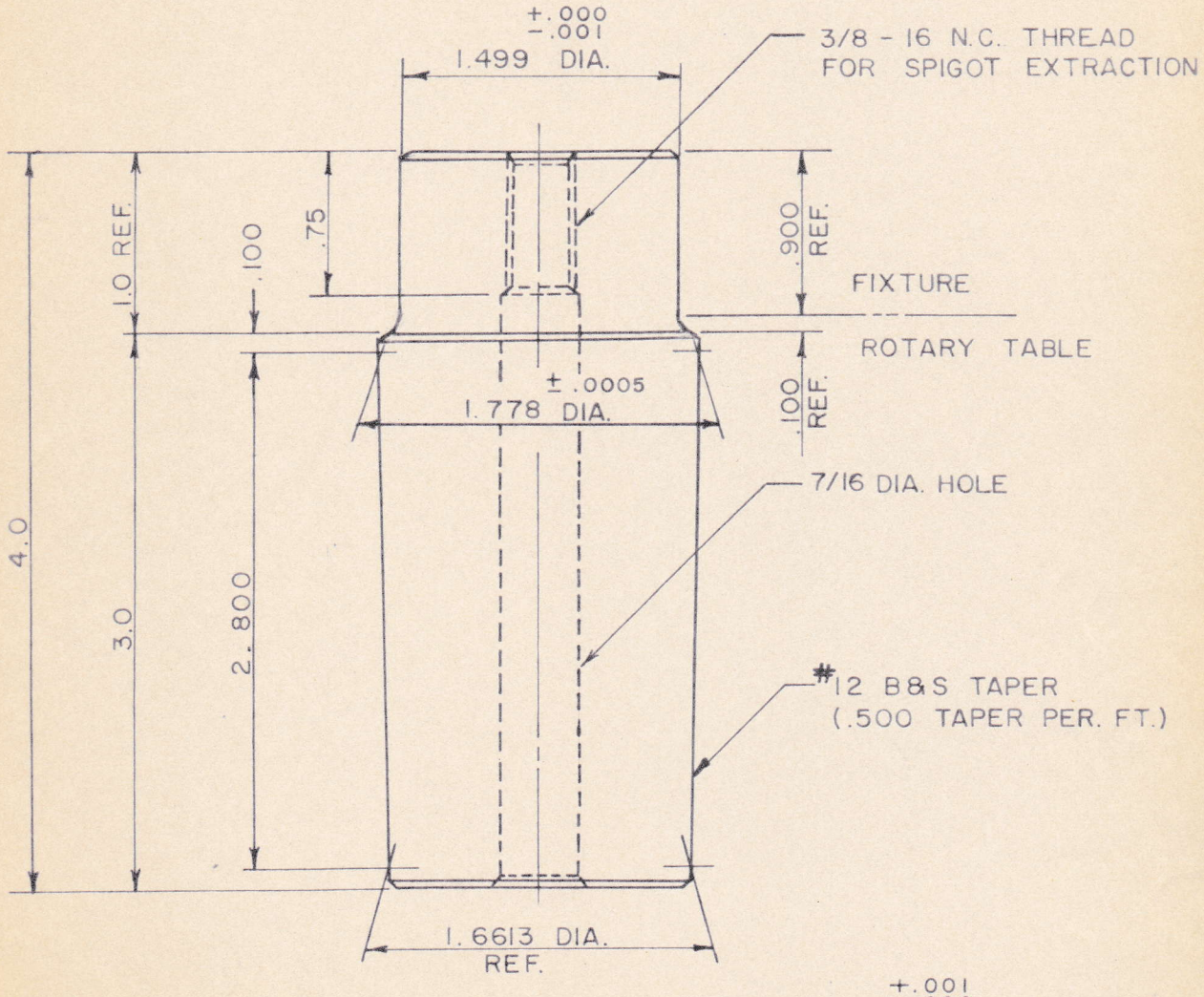
STD. DI-3-2

SHEET 1

REFERENCE

PTD. 596





+.001
-.000

FIXTURE DIMENSIONS – HOLE SIZE FOR SPIGOT 1.500 DIA.

THIS SPIGOT STOCKED IN TOOL CRIB
MATERIAL – ATLAS IMPACTO
HARDNESS – CARBURIZED, DEPTH OF CASE .020 MIN.

ISSUE	CHANGE	BY	CKD.	DATE

TITLE

STANDARD 1.5 DIA. SPIGOT
FOR LOCATING FIXTURES ON
20" & 24" CINCINNATI ROTARY TABLES

DRN.	CKD.	APD.	DATE
A. PONTING	A.G. Bailey	G. M. Timms	2 DEC. 53

TOOL DESIGN STANDARDS MANUAL

MASTER MECHANIC DEPT. GAS TURBINE DIVISION

A.V. ROE CANADA LIMITED

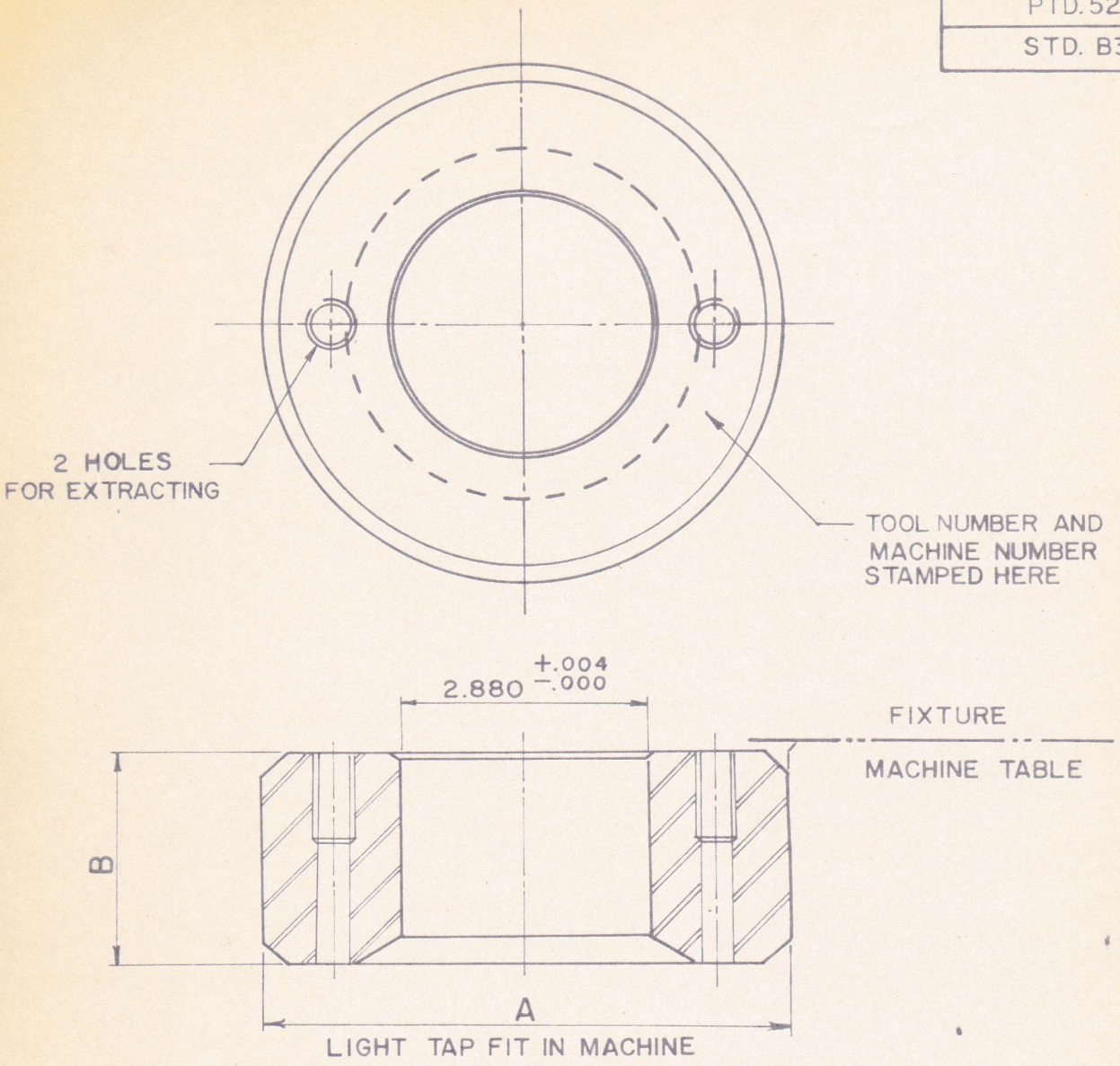
STD. D I - 4 - 1

SHEET 1

REFERENCE

PTD. 523

STD. B3-8-1



TOOL NO.	A	B	TYPE OF MACHINE RING USED ON
PTD.523-1	6.00	2.44	30" 36" 42" 54" BULLARD MAN-AU-TROL 36" 42" BULLARD CUT MASTER 36" KING (TRACER EQUIPPED)
PTD.523-3	6.25	3.00	52" KING (TRACER EQUIPPED)

THESE RINGS STOCKED IN TOOL CRIB

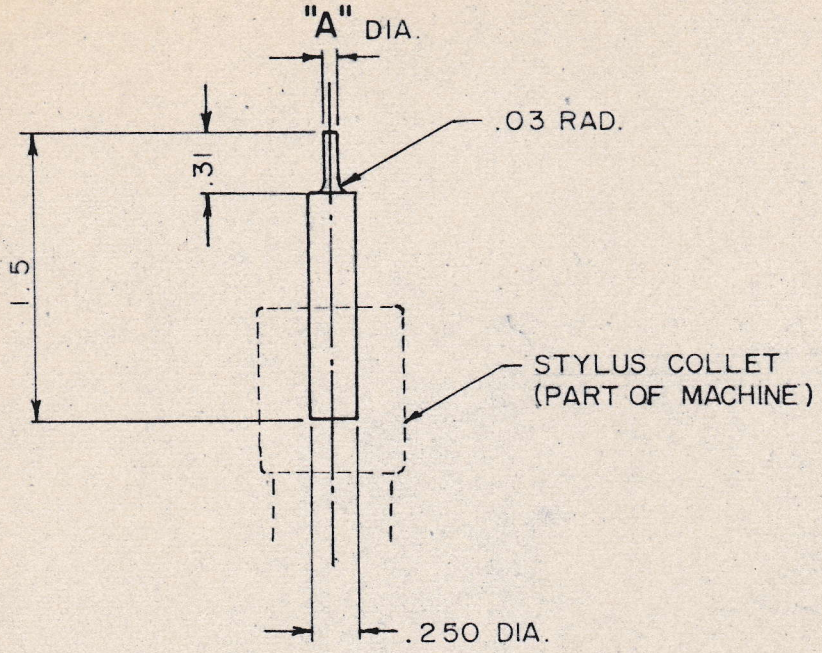
MATERIAL - MILD STEEL

HARDNESS - CARBURIZED, DEPTH OF CASE .020 MIN.

ISSUE	CHANGE	BY	CKD.	DATE

TITLE: STANDARD FIXTURE LOCATING RINGS USED ON VERTICAL TURRET LATHES FOR LOCATING FIXTURE SPIGOT B3-8-1

DRN. A. PONTING | CKD. A.H. Bailey | APPD. D.M. Lewis | DATE 23 FEB. 54



THESE STYLII STOCKED IN TOOL CRIB
MATERIAL - 1/4" DIA. DRILL ROD
NOT HEAT TREATED

"A" DIA. TOL. +.000 −.001	TOOL NUMBER (LATTER PART IS STYLUS RADIUS)
.050	PTD. 577 - 025
.060	PTD. 577 - 030
.070	PTD. 577 - 035
.080	PTD. 577 - 040
.090	PTD. 577 - 045
.100	PTD. 577 - 050

ISSUE	CHANGE	BY	CKD.	DATE

TITLE
STANDARD STYLII
FOR AMERICAN TRACER LATHES

DRN. A. PONTING | CKD. A.S. Bailey | APPD. G. M. Timms | DATE 14 DEC. 53

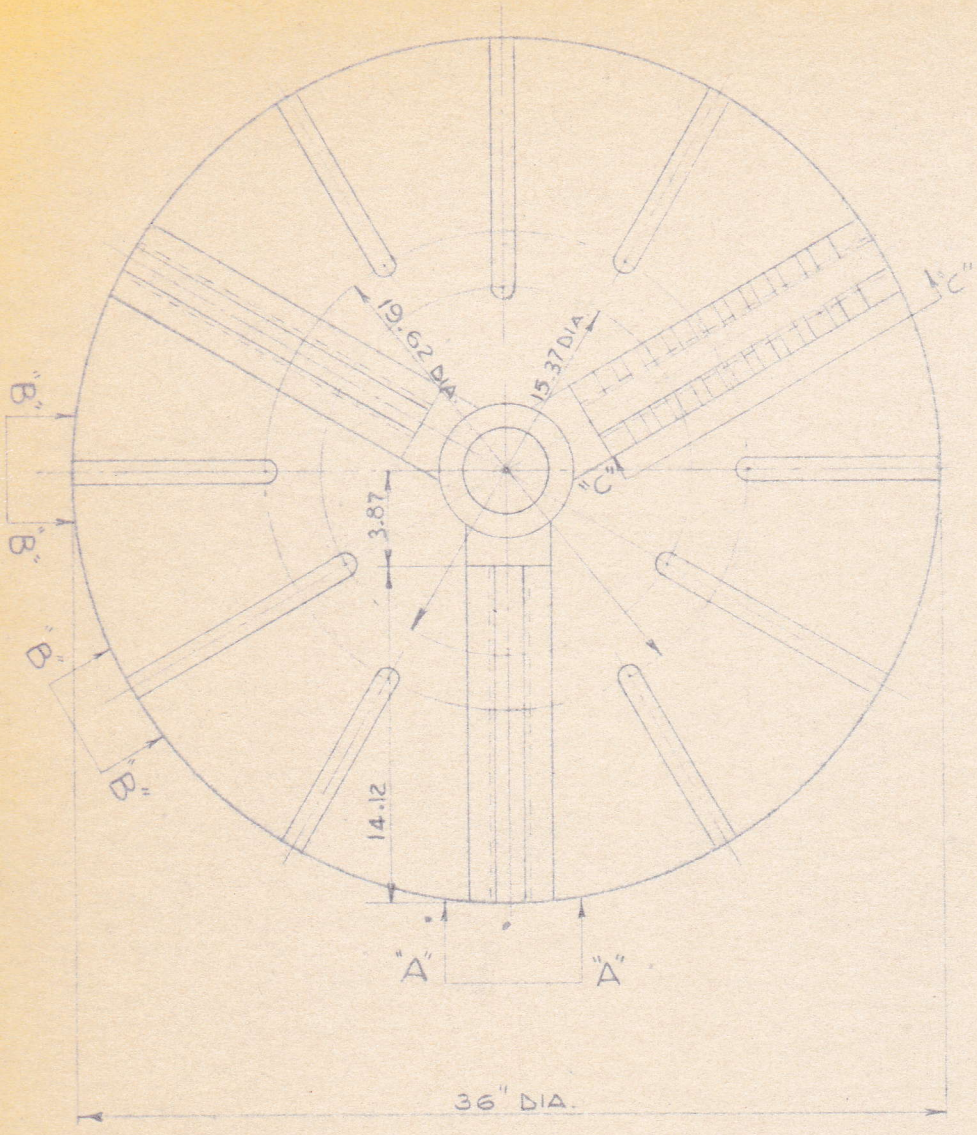
TOOL DESIGN STANDARDS MANUAL

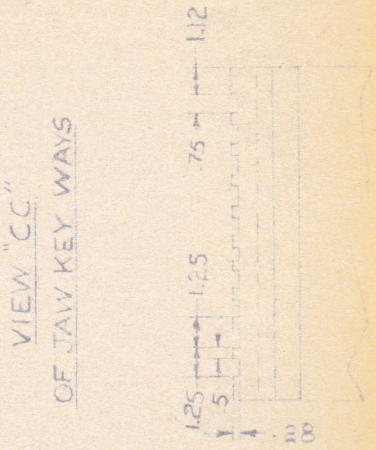
MASTER MECHANIC DEPT. GAS TURBINE DIVISION

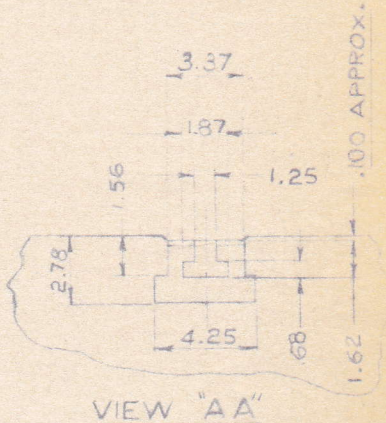
A.V. ROE CANADA LIMITED

STD. 5-22-51

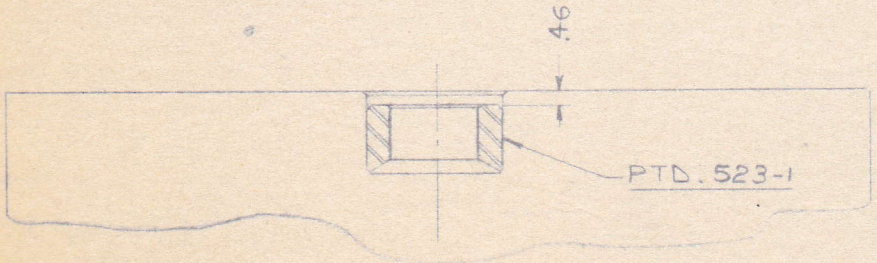
SHEET 1

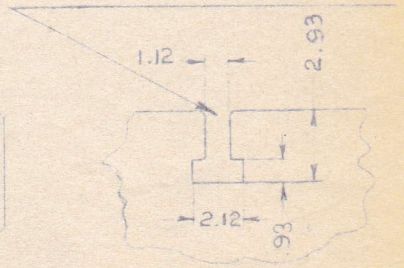






VIEW "AA"





VIEW "BB"

ISSUE	CHANGE	BY	CKD.	DATE

TITLE

3 JAW CHUCK FOR

36" KING VERTICAL TURRET LATHE

DRN.	CKD.	APPD.	DATE
A. PONTING		E. Millar	6 Jul 54

CODE NUMBERS FOR TOOLING

TOOLING OR REVISION TO TOOLING DUE TO -	NEW	REVISION	CANCELLATION
Original Tooling Contract & "M" Mods.	N-1	R-1	C-1
"E Modification" Changes	N-2	R-2	C-2
Accelerated Program	N-3	R-3	C-3
Revised Time Studies	N-4	R-4	C-4
Revised Process Planning	N-5	R-5	C-5
Original Tooling Unsatisfactory	N-6	R-6	C-6
Improvements During or as a Result of Tool Proving	N-7	R-7	C-7
Change of Machine Allocation	N-8	R-8	C-8
B.O.F. Parts	N-9	R-9	Not used
Overhaul & Repair Program	N-10	N-10	Not used
Replacement of Broken & Worn Tooling	N-11	Not used	C-11
P.T.D's & Specially Manufactured Stock Items	N-12	Not used	Not used
Change Notices (CN XXXX)	N-13	R-13	C-13

ORENDA ENGINES LIMITED

Inter-Departmental Memornadum

DATE: 3 May 1956
TO: Tool Design Personnel, Master Mechanic Department
FROM: A. G. Bailey
SUBJECT: DESIGN TIME FOR PROJECTS D-6, D-6A and D-6X

Tool design time for the subject codes, is to be entered on the PS-13 Daily Time Report Card. Each tool number is to be individually listed as usual, with the project number (D-6, D-6A and D-6X) shown in the project column.

Project Number Explanations:

D-6 Tool design for normal D-6 work.
D-6A Tool design for Anti-Icing and Nose Fairing parts.
D-6X Tool design being done for Experimental Tool Design Department. (K. McGuire)

Commencing immediately, tool design time for these three projects, will not be turned in against the tool type letters A to F inclusive. All time for D-6, D-6A and D-6X projects listed on a report card, are to be accumulated and entered as one sum, in the space directly above the grand total.

The account number, 4356-0000, which covers these three projects, is to be entered on the same line as their total hours.

A G Bailey

A. G. Bailey
Tool Standards Analyst

AGB:mh

George M. Purvis

Approved: George M. Purvis
Chief Tool Designer

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE: 8 March 1956
TO: Tool Design Personnel - Master Mechanic Department
FROM: A. Bailey
SUBJECT: N-13 CODE FOR DESIGN TIME

A new code, N-13, has been incorporated into our code system for tool design hours expended.

Design hours against this code, are to be entered on the Daily Time Report, on the side of the card where indirect hours are entered. Use the blank space at the bottom of the card for the code number, tool number and hours expended.

NOTE: Do not confuse this new code for design hours, with the new engine number PS-13.

A. G. Bailey
Tool Standards Analyst
Master Mechanic Department

AGB:mh

Approved By: G. M. Purvis
Chief Tool Designer
Master Mechanic Department

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE: 2 February 1956
TO: Tool Design Personnel, Master Mechanic Department
FROM: A. G. Bailey
SUBJECT: NEW DESIGNS FOR DRAWING SHEETS

1. Our regular printed drawing sheets, which include sizes A, B, C, D and E, have been redesigned in order that the Experimental Tool Design in Plant #1, will also use them as their standard printed drawing sheets.

2. The words "Experimental" and "Manufacturing", appear in the new title block. One of these words, the one that does not apply, is to have a heavy line drawn through it. In our use of the drawing sheets, we will draw a line through the word "Experimental".

3. It will be noted, that the "Drawing Issue No." block, has been deleted. Also that the "Stock Sizes" and the "Amendments", have changed places. The drawing issue number of each drawing, will now be found in the first column of the amendments.

4. When a drawing is issued for the first time, a figure one (1) will be shown in the issue column and the notation, "1st Issue", will be shown in the amendment column. This will be printed on the lowest line, as the issues and amendments will now start at the bottom line, with the latest issue being on the top line of the amendment column.

5. The stock sizes will now start on the top line and read downwards.

6. These new sheets will come into use as the supply of our present sheets become depleted.

A. G. Bailey
Tool Standards Analyst
Master Mechanic Department

AGB:mh

Approved By: G. M. Purvis
Chief Tool Designer
Master Mechanic Department

B U L L E T I N

CATALOG # 8 - Correction

Siewek Tool Company
Detroit, Michigan
March 1, 1954

ON PAGE 512 - SWING "C" WASHERS

Part #10472 should read #10463

"D" lettering on the drawing should read "E"

"E" lettering on the drawing should read "D"

The shoulder screws, page 516, go with the corresponding Swing "C" Washers:

	Swing "C" Washer
10471	10460
10472	10461
10473	10462
10474	10463

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE: 11 January 1956
TO: Fixture Design Section, Master Mechanic Department
FROM: L. Brooks
SUBJECT: PS-13 PART DRAWINGS

Draftsmen working with PS-13 part drawings are asked to return these prints to the writer at the end of each day.

This is a security regulation and must be observed.

L. Brooks

LB:mh

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE: 5 January 1956
TO: Tool Design Personnel, Master Mechanic Department
FROM: A. G. Bailey
SUBJECT: PS-13 DESIGN HOURS ON OPERATION SHEETS

Effective immediately, all design hours expended on Operation Sheets for the PS-13 engine, are to be entered on the Daily Time Report Cards as direct hours.

Show the figure "13" in the blank block of the series column, directly under the 14 series block, and enter the part number and hours expended against the particular shop where the part is to be made.

NOTE: Design hours for operation sheets on all engines previous to the PS-13, will be reported as indirect hours, as usual.

A. G. Bailey
Tool Standards Analyst
Master Mechanic Department

AGB:mh

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE: 14 December 1955
TO: Tool Design Personnel, Master Mechanic Department
FROM: A. G. Bailey
SUBJECT: RS 13 DESIGN HOURS

All tool design hours expended on the RS 13 engine are to be entered on the Daily Time Report as direct hours.

Show the figure "13" in the blank space of the series column and enter the tool numbers against the particular shop for which they are designed.

Reference regarding the tool number series.

Series of tool numbers have been allotted for tooling in certain shops, as follows:

SERIES	SHOP	ISSUED BY PLANNER
400,000	Assembly & Test	P. Metcalfe
410,000	Sheet Metal	H.V. Chambers
420,000	Manufacturing	S. Barber
430,000	Manufacturing	G. Larner
440,000	Manufacturing	M. Lonsdale
450,000	Manufacturing	M. Lafete
460,000	Blades	L. Baker

A. G. Bailey
Tool Standards Analyst
Master Mechanic Department

AGB:mh

6 December 1955

PLANT BADGES

Please see that your badge is clearly visible at all times during plant hours.

Disciplinary action will be taken against persistent offenders.

LGB:mh

ORENDA ENGINES LIMITED

Inter-Departmental Memorandum

DATE: 25 November 1955
TO: Tool Design Personnel - Master Mechanic Department
FROM: G. M. Purvis
SUBJECT: PERSONAL TELEPHONE CALLS

As of this date, the practice of making personal telephone calls on telephones located in sections other than the Tool Design Section, must be discontinued. Also, have incoming calls directed to the Tool Design local instead of other department locals.

George M. Purvis

G. M. Purvis
Chief Tool Designer
Master Mechanic Department

GMP:mh

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE 28 March 1955
TO Fixture Design Department, Master Mechanic Department
FROM L. G. Brooks
SUBJECT STANDARD CLAMPS AND FIXTURE DETAILS

Please take particular care on future designs and reworks, that wherever possible standard details are used in fixture construction per the Stock List. The checkers have instructions to query any original details which could be replaced by standard parts.

.....

LGB:mh

L. G. Brooks

ORENDA ENGINES LIMITED

Inter-departmental Memorandum

DATE 30 March 1955
TO Tool Design Personnel - Master Mechanic Department
FROM A. G. Bailey
SUBJECT METHOD OF HOLDING MILL SUPPLY ITEMS FOR SPECIFIC TOOLS

When a draftsman intends using particular Mill Supply items in the design of a tool and only a small quantity are in stock, these items can be requisitioned immediately and held in the Tool Room Progress Section for this specific tool. This can be covered by the following method:

Partially fill out a "Requisition for Mill Supply" (Avro PGT 2156) as follows:-

1. Date
2. Tool number (after "used for")
3. Draftsman's name (directly above tool number)
4. Quantity
5. Description

Do not sign or complete more than the above five items.
Mill Supply requisitions must be made out in triplicate.
The original is white and the others are pink and yellow.
The red number on the three copies must correspond.
These three copies are to be delivered to Tool Planning, c/o K. O'Neill, either by mail or in person.

A brief record of the items being requisitioned, is to be written on the T.D.R. for your reference. For it will be necessary to mention on your tool order, that these certain items have been "drawn from stores".

TOOL CANCELLATION

If tool is cancelled prior to tool being ordered, K. O'Neill must be notified so that items being held can be returned to Mill Supply Stores.

TOOL SUB-CONTRACTED

If manufacture of tool is Sub-Contracted, Mill Supply items that can be used, are to be supplied to the Sub-Contractor. Reference to these items being supplied is to appear on the Tool Order.

A. G. Bailey

A. G. Bailey
Tool Standards Analyst
Master Mechanic Department

AGB:mh

c.c. G. M. Purvis
K. O'Neill

24th. Nov. 1953.

TEMPORARY
STD. E.

TO: Tool Design Personnel - Section #4733
Master Mechanic's Dept. G/T.

SUBJECT: "STANPAT" PRINTED TITLE BLOCKS.

"Stanpat" printed title blocks for "L" size drawings can now be obtained from the Standards section of the Tool Design Office.

These Stanpats will be attached to the back of the drawing sheet and will dispense with the use of our present title block stamp.

For further information, please contact the writer.

A.G. Bailey.
Group Leader - Standards.
Master Mechanic's Dept. G/T.

AGB/AP.

cc. Mr. G.M. Purvis.

TEMPORARY
STD. E

January 8th. 1953.

TO: TOOL DESIGN PERSONNEL - SECTION #4733
MASTER MECHANIC DEPARTMENT, G. T.

SUBJECT: STAMPS FOR DRAWING ISSUE & FIXTURE TAGS

Two (2) new rubber stamps have been placed in the Tool Design stamp box and are for general use as of this date. They are to be used as follows:

STAMP ON LATEST
DRAWING ISSUE No.

This stamp re drawing issue, is to be stamped on the first sheet only of all tool drawings, immediately above the part of the title block which reads: "MARK ON PART NO. & TOOL NO."

FIXTURE TAG
M-905 TO BE
SUPPLIED & WIRED
TO THIS TOOL

THE TOOL NUMBER,
ALL LOOSE DETAILS
& THEIR QUANTITIES,
TO BE STAMPED ON
FIXTURE TAG.

THE WORD "TAG",
TO BE STAMPED ON
FIXTURE, JUST BELOW
THE TOOL NUMBER.

This stamp re fixture tag is to be stamped on the first sheet only of tool drawings which have one or more loose details.
Locate stamp at bottom of drawing immediately to the left of the title block.

A. G. Bailey
Group Leader - Standards Sec.,
Master Mechanic Dept., G. T.

AGB:vs

January 15th, 1953

TEMPORARY
STD. E

TOOL DESIGN SECTION #4733
STANDARD PRACTICE BULLETIN

SUBJECT: COMPARATOR SCREENS

In order to provide a more accurate and useful service to the Master Mechanic Superintendent's Section, particularly the Grinding Room and Tool Inspection; please be governed by the following notes concerning the subject matter.

A stock of Vinylite Sheets is being maintained in the Tracing paper cabinet, for comparator screen material. The use of tracing paper for this purpose is to be discontinued immediately, as shrinkage introduces sufficient inaccuracy to make them useless after a few days.

Equipment and screen sizes are as follows:

(1) Cleveland Optical Grinder - 10½" x 18½" only.

(2) 14" J. & L. Comparator - minimum 7" x 10", up to any size contained within a 14" dia. circle.

(3) 30" J. & L. Comparator - minimum 15" x 20", up to any size contained within a 30" dia. circle.

Due to the cost and availability of this Vinylite material, it is to be understood that screen sizes for the J. & L. Comparators must be kept to a minimum.

Three magnifications are available on all the above mentioned equipment, viz:

10 times - 20 times - 50 times.

Images are to be drawn in pencil on the matte surface of the Vinylite and are to be approximately central.

A horizontal or vertical "set-up" line is to appear on all screens for alignment purposes and the image is to be true to this line.

Drafting machines should not be relied on for important angles. Trigonometry should be used and lines extended as far as convenient to reduce error.

Using a 100th scale, a pencil of 4H minimum hardness and a magnifying glass, .005 tolerances can be maintained on any image and these instruments should be used, especially on close limit work.

Screens for specific tools should carry the relative tool number, detail number and issue number at lower edge of screen. Also draftsman's name and date drawn should be shown.

A free hand replica of each screen, including tool number etc. to be traced on tracing paper and handed to A.G. Bailey for filing.

Screens of a standard type for general use, should be referred to A.G. Bailey before being drawn or numbered.

All screens must carry an authorized signature before being released from the Tool Design Section.

A.G. Bailey
Group Leader - Standards
Master Mechanic Dept., G/T.

Approved by: E.C. Busby
E.C. Busby
Chief Tool Designer
Master Mechanic Dept., G/T.

AGB:vs

29th August, 1952.

TO:- TOOL DESIGN PERSONNEL (SECTION 4733)
MASTER MECHANIC DEPT., G.T.

FROM:- A.G. BAILEY
STANDARDS.

TEMPORARY
STD. E

DETAIL No.	IF IN DOUBT – ASK		UNLESS NOTED TOLERANCES ARE
	REMOVE SHARP CORNERS		.0 ± .030
ISSUE No.	TOOL No.	SHT No.	.00 ± .010
			.000 ± .003

The new detail stamp, as shown above, is now in the stamp box, and is for general use as of this date. It is to appear beneath each detail.

The use of this stamp will make it unnecessary to show each Detail Number, in a balloon, except in General Assemblies and Sub-Assemblies.

Kindly complete the stamp by inserting the Detail Number, Issue Number, Tool Number, and Sheet Number.

A.G. Bailey.
Group Leader-Standards
Master Mechanic Dept., G.T.

2 May 52

TEMPORARARY
STD. E

[illegible] BULLETIN

G/T PRODUCTION TOOL DESIGN (SECT. #4733)

SUBJECT: TOOL DRAWING ISSUE & REISSUE PROCEDURE

Hitherto it has been a function of the Work Order and Record Section (under D. Armstrong) to apply the Tool Drawing Issue and Detail Issue stamps to tracings and also enter the correct Issue Number of new and reissued Tool Drawings.

As of the 1st. of May, 1952, this becomes the responsibility of the Tool Design Section and for this reason the following procedure should be followed:

1.0 Every sheet of a design must bear a DRAWING ISSUE NUMBER stamp immediately to the left of the title block. (This will be unnecessary on printed paper which will soon be available as space has been provided in the title block for this.)

1.1 All sheets on which Details appear must bear, in addition to the above, a DETAIL NO.---, ISSUE NO.--- stamp in the lower right hand corner of each detail block. Tool Number and Sheet Number should also appear immediately below this stamp. (A new stamp with this incorporated will be available in the near future.)

1.2 On new Drawings being released for the first time, the Tool Designer will enter the figure 1 in ALL above mentioned stamps on all sheets.

1.3 When the first change is made on a Tool Drawing, it becomes Issue #2 and will be known as such, not as Change #1 or Amendment #1 as has been the practice. The procedure to be followed can best be shown by an example, viz; a design consisting of 5 sheets, all at present to Issue #1.

1.31 On Sheet #5, Detail #10 and 11 are changed dimensionally and Detail #16 added. The dimensions changed are designated with a small figure 2 contained in a triangle adjacent to the actual dimension on the field of the Drawing. The change block in the upper right hand corner of the sheet also carries a figure 2 with no triangle and the changes are listed in detail such as:- "Det. 10 - 3.75 was 4.0, .500 holes added, "Det. 11 - 6.250 was 6.0 ± .001 was ± .0005 etc, Det. 16 added.

1.32 The Detail Stamps under Dets. 10 and 11 and the new Detail #16 should now read Issue #2; likewise the Drawing Issue Stamp beside the title block is changed to read Issue #2.

1.33 The Drawing Issue Stamp on Sheet #1, assuming this to be the Assembly Drawing of the Tool, is changed to Issue #2, the change block on Sheet #1 carries a

TEMPORARY
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SHEET 2

Figure 2 would read, Sheet 5 changed, Detail #16 added.

1.3 This entire design is now known as Issue #2 and the instructions to the Tool Room are to work to Issue #2, even though Sheets 2, 3 and 4 still read Issue #1. By reissuing each time a change is necessary on any other sheet, Sheet #1 becomes an index of what is affected by any particular Issue, and only those sheets are reissued to the Tool Room.

1.4 If a change requires new sheets be added to a design, these are considered as changes and will carry the same raised Detail Issue Numbers and Drawing Issue Number that Sheet #1 will have by virtue of the reissue. The change blocks on the new sheets would then read (with the new Issue Number), "This sheet added." (In this case it is important that the new total number of sheets be recorded on all sheets at this time, but need not be a reason to reissue sheets otherwise unaffected.)

1.5 To correlate this procedure, the "pink" orders for reworks should read "Rework as per Issue ----", before listing Sheet Numbers and Details affected. The use of the terms "Change Number" and "Amendment Number" are to be discontinued when referring to Tool Drawings.

The above represents a very small increase in the duties of the Tool Designer, but will eliminate one extra handling of the Drawings in the Work Order Section and should expedite the work of the Department as a whole.

E. C. Busby
Chief Tool Designer - G.T.
Master Mechanic Dept.

ECB:vs

c.c. Messrs. A. Bassett
T. Palonka
E. Taylor (3)
W. N. Towart (2)
K. O'Neill

58R, Oct. 1953.

TEMPORARY
STD. E

TO: Tool Design Personnel - Section #4733.
Master Mechanics' Dept. G/T.

SUBJECT. Use of asterisk (*) in book of 8 place trig. tables.

It is apparent that all Tool Design Personnel are not familiar with the important use of the asterisk in our book of 8 place trig. tables. Therefore the following information and examples should help to avoid future errors in trig. calculations.

The first 3 of the 8 place figures in the tables, are given at both the top and bottom of each column, but when these differ at the top and bottom of a column, one of them, together with its' corresponding following groups, (that is the last 5 figures,) is distinguished by an asterisk (*), leading values (first 3 figures) marked with an asterisk, must always be combined with following values (last 5 figures) similarly marked, and vice versa.

Example taken from page 69 of this book.

PROBLEM: The cotangent of $3^{\circ} - 23' - 30''$ is required.

In the eleventh column, the first 3 figures shown at top and bottom, differ. The top 3 figures being *16.9 while the bottom 3 figures are 16.8. Therefore the Last 5 figures (73368^{8}) shown at the 30" line, not being distinguished with an asterisk, must be combined with the 16.8 at the bottom of the column, which also has no asterisk.

The correct answer - 16.873368.

(16.973368 would be incorrect.)

A.G. Bailey,
Group Leader - Standards.
Master Mechanics' Dept. G/T.

AGB/AP.

cc. Mr. E.C. Busby.

October 1952

STANDARD PRACTICE BULLETIN
TOOL DESIGN SECTION - #4733

TEMPORARY
STD. E

TOOL DESIGN STANDARDS

SUBJECT: REAMED HOLE TOLERANCES

In calling up reamed holes on Tool Drawings, the practise to be followed is illustrated below:

.375 REAM)
.50 ")
.7188 ")
Use maximum of 4 place decimals, corrected if 5th. place is 5 or more.

The tolerance implied by the word REAM is that which would normally be expected of a reamer made to manufacturers' Standards, regardless of how many decimal places are used on the Drawing giving the diameter. Standard Reamer tolerances are as follows:

Up to .250 + .0004
+ .0001

Over .250 & up to 1.000 + .0005
+ .0001

Over 1.000 + .0006
+ .0002

If for any reason these tolerances are not suitable for a particular application, required tolerance must be specified on the Drawing.

ECB:vs

E. C. Busby
Chief Tool Designer,
Master Mechanic Dept., G.T.

c.c. To all Tool Room Supervision

DATE December 14, 1956
TO TOOL DESIGN STAFF
FROM G. M. Purvis
SUBJECT MEASURING WIRES AND ROLLS

In order to eliminate the large variety of sizes of measuring wires and rolls called up on tool and gauge drawings, the following sizes are to be adhered to.

PREFERRED DIAS.	ALTERNATIVE DIAS.
	.020
.050	
	.075
.100	
	.150
.200	
	.250
.300	
	.400
.500	
	.750
1.000	

Whenever practicable the 'Preferred Diameters' are to be used.

This ruling applies to measurements of Tapers, Vees, Angular faces and the like. Screw threads, Gear & Spline Teeth are to be dimensioned using standard wire sizes recommended by the standards of the American Society of Mechanical Engineers.

There are to be no exceptions to this rule.

Group Leaders, please see that sub-contract design offices have a copy of this instruction.

George M. Purvis

George M. Purvis
Chief Tool Designer
Master Mechanic's Department

GMP/st

c.c. Messrs. P. Bowell
L. Monkhouse
L. Chapman (4)
K. O'Neil

C
O
P
Y

November 29, 1955

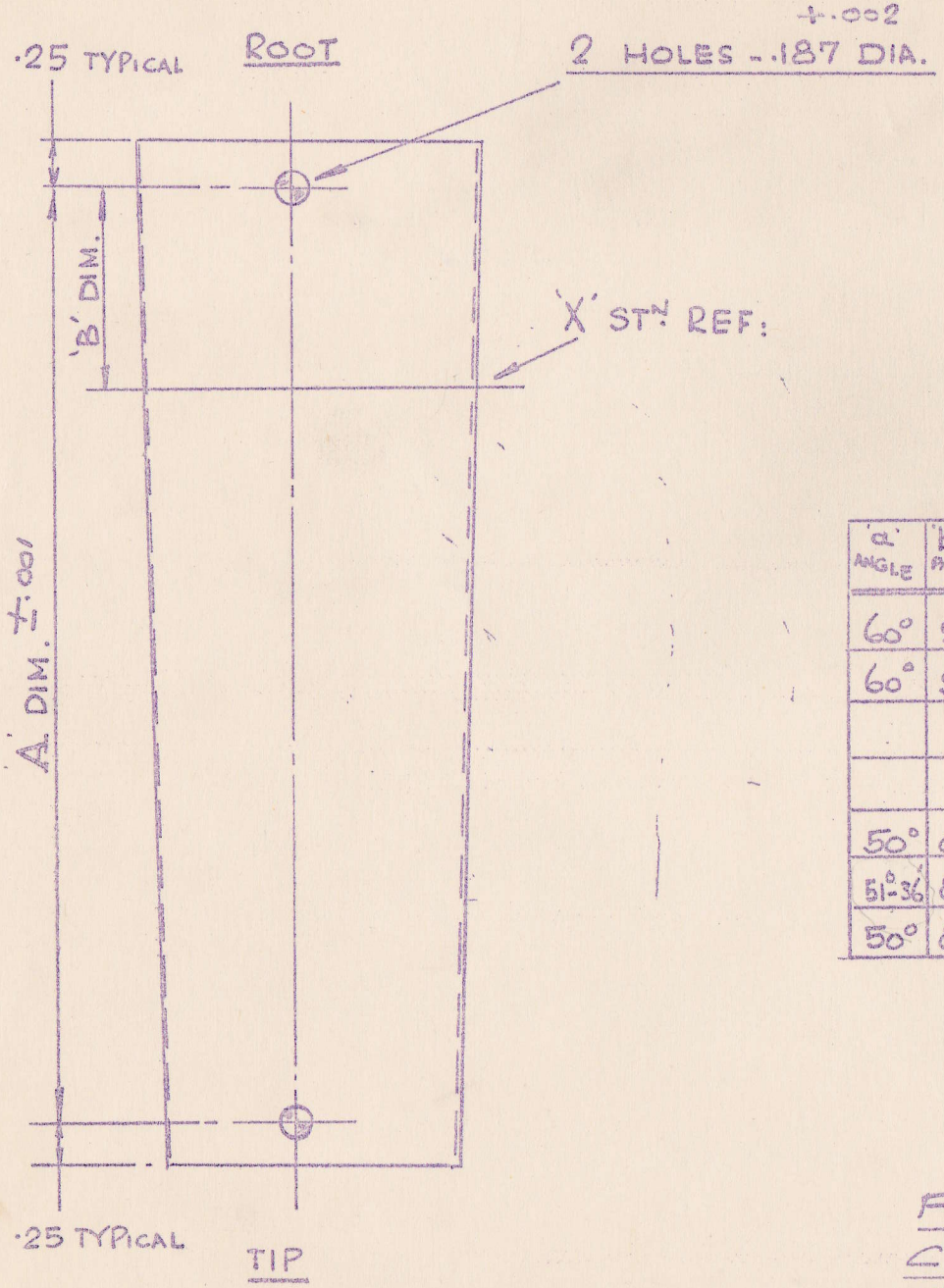
SHEET METAL PLANNING DEPT.

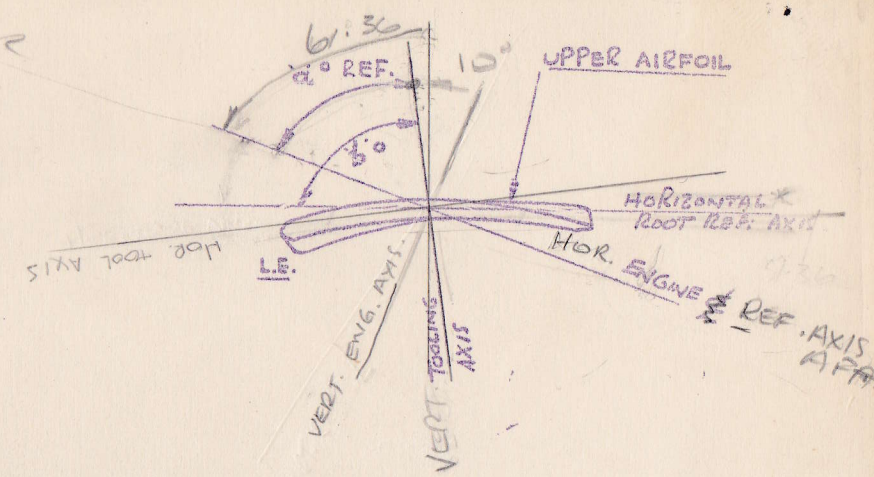
STANDARDIZATION OF SHEET METAL TOOLING

List of standard type sheet metal tooling to date herewith:

TPD-0360	Adjust. Cropping Die 1 1/2 min.	
1-D-260677	Adjust. Cropping Die 1/4 min.	
75PD-15327	Flattening Die	
TST-0745	Die Cushion 3.6 dia.	
TST-0201	Die Cushion 6.0 dia.	
TST-0400	Die Cushion 7.0 dia.	
1-D-260302	Basic 'V' Form Die	
D-410010	'V' Punch 90° x .030 R.)	
1-D-260495	'V' Punch 90° x .060 R.)	For use with 1-D-260302
1-D-260303	'V' Punch 90° x .100 R.)	
1-D-260191	'V' Punch 90° x .190 R.)	
TPD-1064	'V' Form Die 90° x .060R.	
TPD-0625	'V' Form Die 90° x .160 R.	
1-D-260190	Adjust. Pierce & Crop Die)	
1-D-260192	Adjust. Pierce & Crop Die)	For 90° Brackets
1-D-260301	Adjust. Pierce & Crop Die)	
1-D-260870	.500 x .312 x .003 Washer Die	
75PD-15218	.625 x .390 x .065 Washer Die	
TPD-0790	.781 x .265 x .020 Washer Die	
1-D-260524	1.00 x .625 x .031 Washer Die	
TPD-0701	1.25 x .765 x .062 Washer Die	
1-D-260582	5.90 Dia. Blanking Die	
1-D-260739	9.00 Dia. Blanking Die	
M-1990	Std. Pierce Die for Adaptor for Brake	
1-D-260875	Rotary Shears Adaptor (3/8 Spring Pin)	
M-1950	U/V Welding Fix. for Cylinders	

FOR





'a' ANGLE	'b' ANGLE	BLADE No.	'A' DIM.	'B' DIM	'X' AIRFOIL STATION IDENTITY
60°	90°	82524-1&2	7.750	1.200	B-FM
60°	90°	82525-1&2	6.625	1.660	J-O
		82526-1&2	6.125	1.180	K-N
		82527-1&2	5.500	1.300	L-I
50°	80°	82528-1&2	5.000	1.000	M-E
51°-36'	80°	82529-1&2	5.000	1.000	M-E
50°	80°	83330-1&2	5.000	1.346	M-N

FABRICATED STATOR TOOLING HOLE CENTRES FOR REF: PRIOR TO FINALIZING OF OP. SH'TS.

T.F.L. 25-57

EXAMPLE: A CERTAIN SHEET METAL PROBLEM REQUIRES THE CALCULATION OF A FRUSTUM CONE PATTERN DEVELOPMENT. THE DIMENSIONS OF THE FRUSTUM CONE IN THIS EXAMPLE ARE: BASE DIAMETER 13 INCHES
TOP DIAMETER 4 INCHES
HEIGHT 10 1/2 INCHES

THE DIMENSIONS OF THE DEVELOPED PATTERN ARE FOUND BY THE FOLLOWING METHOD —

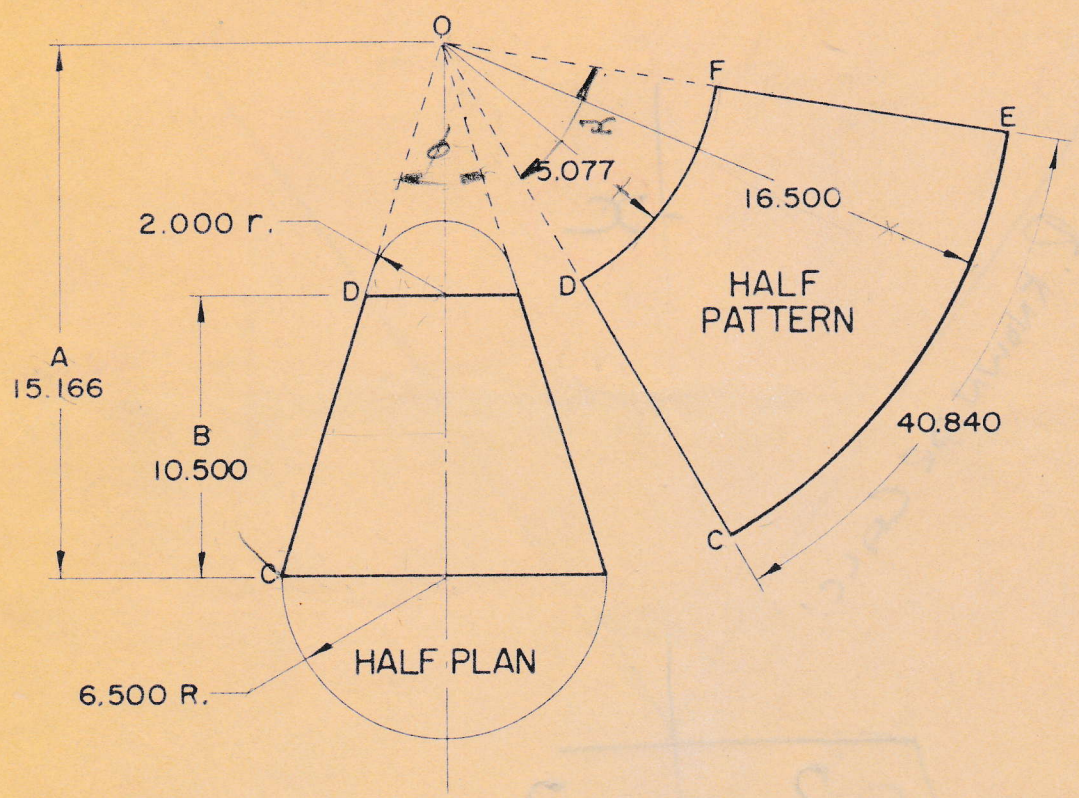


ILLUSTRATION OF METHOD OF CALCULATING PATTERN FOR FRUSTUM CONE WITH DIMENSIONS AS SHOWN IN THE DIAGRAM.

SOLUTION — FROM PROPORTIONAL TRIANGLES WE OBTAIN THE HEIGHT "A", AS FOLLOWS:

$$\frac{A}{A-B} = \frac{R}{r} \quad \text{OR} \quad A = \frac{B \times R}{R-r} = \frac{10.500 \times 6.500}{6.500 - 2.000} = 15.166 \text{ INS.}$$

RADIUS $OC = \sqrt{A^2 + R^2} = \sqrt{15.166^2 + 6.500^2} = 16.500$ INS.

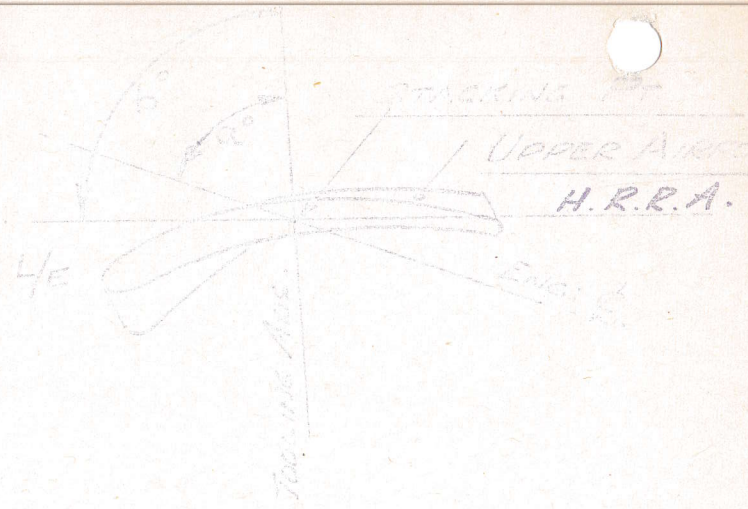
RADIUS $OD = \frac{r \times OC}{R} = \frac{2.000 \times 16.500}{6.500} = 5.077$ INS.

LENGTH OF CURVE $CE = 2\pi R = 2 \times 3.1416 \times 6.5 = 40.840$ INS.

LENGTH OF CURVE $DF = 2\pi r = 2 \times 3.1416 \times 2 = 12.566$ INS.

$x = \text{Sin } \theta \times 360^\circ$

	LEADING EDGE			TRAILING EDGE		
PART Nº	STN	L°	HEIGHT	STN.	L°	HEIGHT
82571.	C-BG.	15°	.228	C-BG.	25°-15'	.284
	C-BJ	15°	.160	C-BJ	0°-45'	.062
82522	C-MK	16°	.123	C-MK	27°-30'	.205
	C-MW	16°	.212	C-MW	13°-00'	.205
83783.	C-JB	18°-45'	.128	C-JB.	21°-30'	.235
	C-HR.	18°-45'	.135	C-HR.	14°-30'	.138
82524.	B-FP	13°	.253.	B-FP	6°-00'	.224
	B-FD.	13°	.054.	B-FD	21°-30'	.224
83654.	C-JN	8°	.040	C-JH	19°-00	.202
W.S.	C-JE.	8°	.036	C-JE	1°-00	.093
82525	JT.	10°	.061	JT.	23°-10'	.182
	JN	10°	.165	JN.	8°-5'	.182
82526	KM	10°	.024	KM	12°-10'	.172
	KR	10°	.152	KR	21°-30'	.172
82527	L-H	11°	.038	L-H	19°-30'	170
	LO	11°	.132	LO	11°-45'	170
82528.	MH	10°	.157	MD	17°-20'	.200
	ME	10°	.076	MI	29°-00	.200
82529.	MH	10°	.157	MD	17°-20	.200
	ME.	10°	.076	MI	29°-00	.200
83330	MR	13°	.128	MR	15°-30'	.120
	ML.	13°	.078	MN	16°-00'	.120
84026	B-PL	10°	.053	B-PL	19°-43'	.250
	B-PA.	10°	.146	B-PA	21°-11'	.170
84027.	B-PL	10°	.053	B-PL	19-43'	250
	B-PA.	10°	.146	B-PA	21°-11.	.170
84028.	MH	10°	.157	MD	17°-20'	.200
	ME.	10°	.076	MI	29°-00	.200
5639	MH	10°	.157	MD	17°-20'	.200
	ME.	10°	.076	MI	29°-00'	.200



Angle	b. Angle	d. Dia.	Blade No.	A Dim.	Bolt	X Station
71-15	90°	187	82571-1 & 2.	11-625	L375	C-B1.
67-30	90°	"	82572- "	10-309.	L250	C-ML.
63°	90°	"	82573- "	9-000	1-000	C-JA.
60°	90°	"	82524 "	7-750	1-250	B-FM.
60°	90°	"	82525 "	6-875	1-000	J-N
55°	90°	"	82526 "	6-125	1-180	K-N
55°	90°	"	82527 "	5-500	1-250	L-A.
50°	90°	"	82528 "	5-000	1-000	M-E
51-30	90°	"	82529 "	5-000	1-000	H-E
50°	90°	"	83330 "	5-000	1-250	H-N
135°	115°	"	83535 "	9-000	2-000	C-JN

SEE P.M.

VERT.

Parallel

TO Horz. Tooling Axis.

18°