



PART NAME : 107010.03 INPROCESS		July 01, 2014	05:05
REV NUMBER : 082808	SER NUMBER : MED DUTY	STATS COUNT : 1	

' CORE #' : 33
 ' MACH #' : K-14
 ' SHIFT #' : 3
 ' OPERATOR ' : RT
 CMM USED TO RUN PROGRAM (1,2 OR 4) : 3

PART ORIENTATION: HEAD DOWN WITH "J" TUBE TO THE REAR

DIM PIN C/L TO TOP OF CORE= 2D DISTANCE FROM POINT CAST C/L TO PLANE CORE PLN PAR TO ZAXIS,NO_RADIUS UNI

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	40.81	41.00	0.30	0.30	-0.19	0.00 -#-----

***** NOTE: THE (2) DIMENSIONS BELOW ARE REFERENCE ONLY*****

DIM DOME TO FRONT SKIRT TIP= 2D DISTANCE FROM PLANE PLN1 TO POINT FRNT SKRT TIP PNT PAR TO ZAXIS,NO_RADIUS

AX	MEAS
M	111.07

DIM DOME TO BACK SKIRT TIP= 2D DISTANCE FROM PLANE PLN1 TO POINT BCK SKRT TIP PNT PAR TO ZAXIS,NO_RADIUS

AX	MEAS
M	110.48

DIFFERENCE OF SKIRT TIPS NOT TO EXCEED***** ".5 MM " *****

DOES THE DIFFERENCE BETWEEN SKIRTS EXCEED 0.5MM ? : YES

DIM DOME TO LEFT MOLD RING= 2D DISTANCE FROM PLANE PLN1 TO POINT LFT MLD RING PNT PAR TO ZAXIS,NO_RADIUS

AX	MEAS
M	103.02

DIM DOME TO RIGHT MOLD RING= 2D DISTANCE FROM PLANE PLN1 TO POINT RGT MLD RNG PNT PAR TO ZAXIS,NO_RADIUS

AX	MEAS
M	102.86

DIFFERENCE OF DOME TO MOLD RING NOT TO EXCEED***** ".5 MM " *****

DOES THE DIFFERENCE BETWEEN MOLD RINGS EXCEED 0.5MM ? : NO

DIM CORE TO BOTTOM OF FRONT SKIRT TIP (OPPOSITE "J" TUBE)= 2D DISTANCE FROM PLANE CORE PLN TO POINT FRNT

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	76.63	76.30	0.40	0.40	0.33	0.00 -----#

DIM CORE TO BOTTOM OF BACK SKIRT TIP (J-TUBE SIDE)= 2D DISTANCE FROM PLANE CORE PLN TO POINT BCK SKRT TIP

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
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M 76.03 76.30 0.40 0.40 -0.27 0.00 -#-----

*** NOTIFY MANUFACTURING ENG IF DIM IS AT 37.6 (OR LESS) FOR DIST. BETWEEN PINBOSES. ***

***** Pinbosses can go to 37.50 *****

DIM DISTANCE BETWEEN PINBOSES AT PINHOLE C/L= 2D DISTANCE FROM POINT C/L LFT BOSS PNT TO POINT C/L RGT BOS.

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	37.58	38.00	0.50	0.40	-0.42	-0.02 <-----

DIM WINDOW DIAMETER CLOSED END= LOCATION OF CIRCLE CLOSED END WND CRL UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
D	104.61	104.90	0.10	0.70	-0.29	0.00

DIM CAST C/L TO LEFT WINDOW (NOTCH SIDE) (REFERENCE ONLY)= 2D DISTANCE FROM POINT CAST C/L TO POINT PNT41

AX	MEAS
M	52.47

DIM CAST C/L TO RIGHT WINDOW (OPPOSITE NOTCH) (REFERENCE ONLY)= 2D DISTANCE FROM POINT CAST C/L TO POINT

AX	MEAS
M	52.22

DIFFERENCE BETWEEN WINDOWS CAN NOT EXCEED***** " .6 MM " *****

DOES THE DIFFERENCE BETWEEN WINDOWS EXCEED 0.6MM ? : NO

CORE TO NI-RING SPEC 19.4 +/- .4

'1:30' : 19.4

'4:30' : 109.4

'7:30' : 19.4

'10:30' : 19.4

'DATE CODE:' : B 26

'HAND MEASUREMENT(S)' :

'INSPECTION RESULTS:' : REJH

CMM HISTORY

- 01: CONVERTED TO PDF FILE 12/15/2010
- 02: ADDED REFERENCE ONLY TO CONC. ID TO OD PER ENGINEERING 11/9/2011
- 03: REMOVED C/L TO PINBOSES & CONC. ID TO OD. ADDED SKIRT DIA. , CORE TO FRONT & BACK SKIRT TIPS & DIST. AC
- 04: Replaced bowled dome for flat dome 8/30/2013

NUMBER OF FEATURES OUT OF TOLERANCE

1

Run Time: 00:19:57

DIM PERP1= PERPENDICULARITY OF LINE P_L,RFS TO CYLINDER CYL1,RFS EXTENDLENGTH=68.500 UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	0.025	0.000	0.035	0.000	0.025	0.000 ----#--

DIM PINHOLE OFFSET= LOCATION OF LINE P_L UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Y	0.901	0.905	0.100	0.100	-0.004	0.000 ----#----

DIM PINBORE_POSITION= POSITION OF LINE P_L UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	BONUS	DEV	OUTTOL
Y	0.901	0.900				0.001	
Z	0.000	0.000				0.000	
TP	0.002	RFS	0.200		0.000	0.002	0.000 #-----

DIM LEFT REAR VR ANGLE= 2D ANGLE FROM PLANE PLN3 TO PLANE DOME_PLN

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
A	15°46'21"	15°54'00"	1°00'00"	1°00'00"	-0°07'39"	0°00'00" ---#-----

DIM RIGHT REAR VR ANGLE= 2D ANGLE FROM PLANE PLN4 TO PLANE DOME_PLN

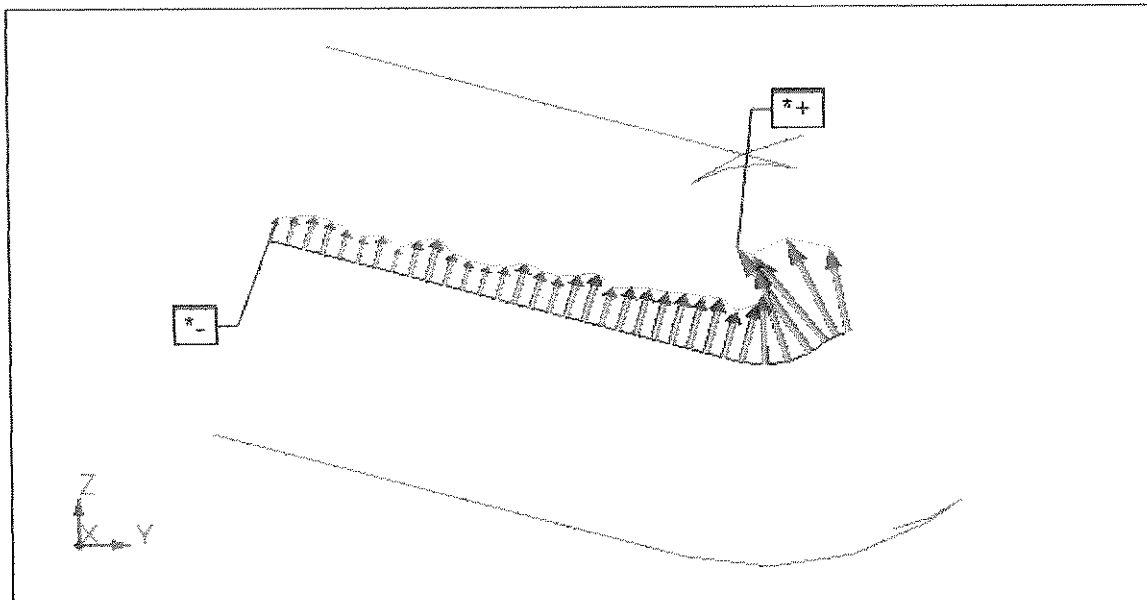
AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
A	15°36'39"	15°54'00"	1°00'00"	1°00'00"	-0°17'21"	0°00'00" ---#-----

DIM RIGHT_REAR_OUTTER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN1 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	0.189	0.000	0.300	0.300	0.189	0.000 ---- --#-

DIM PROF2= PROFILE OF SURFACE OF SET SCN1 FORMANDLOCATION UNITS=MM

AX	MAX	MIN
M	0.189	0.034 ---- --#-

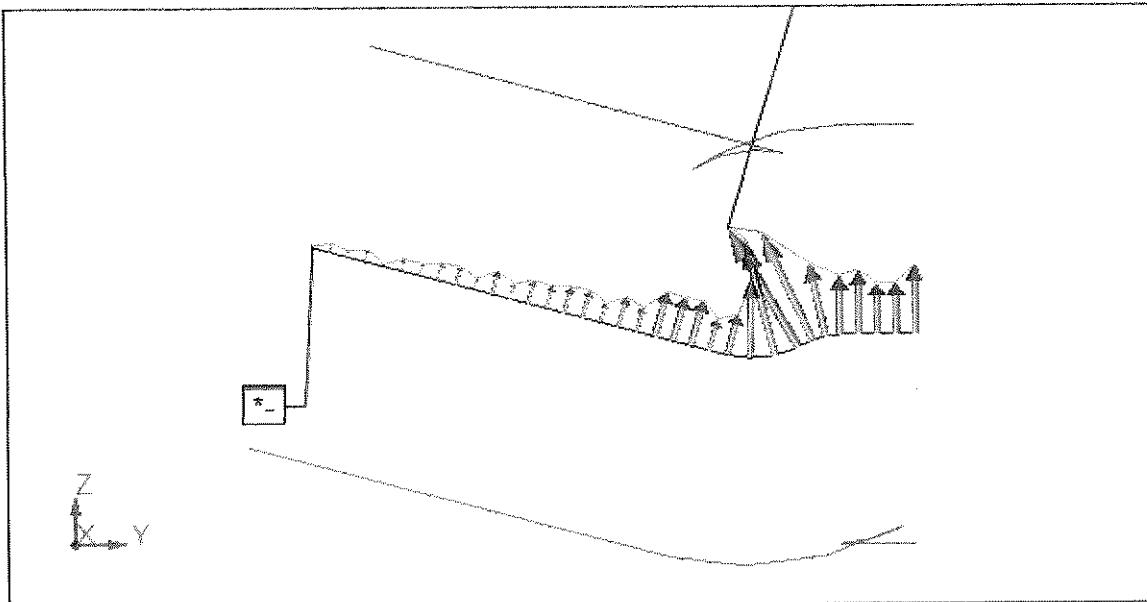


DIM RIGHT_REAR_INNER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN2 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	0.203	0.000	0.300	0.300	0.203	0.000 ---- --#-

DIM PROF3= PROFILE OF SURFACE OF SET SCN2 FORMANDLOCATION UNITS=MM

AX	MAX	MIN
M	0.203	0.003 ---- --#-

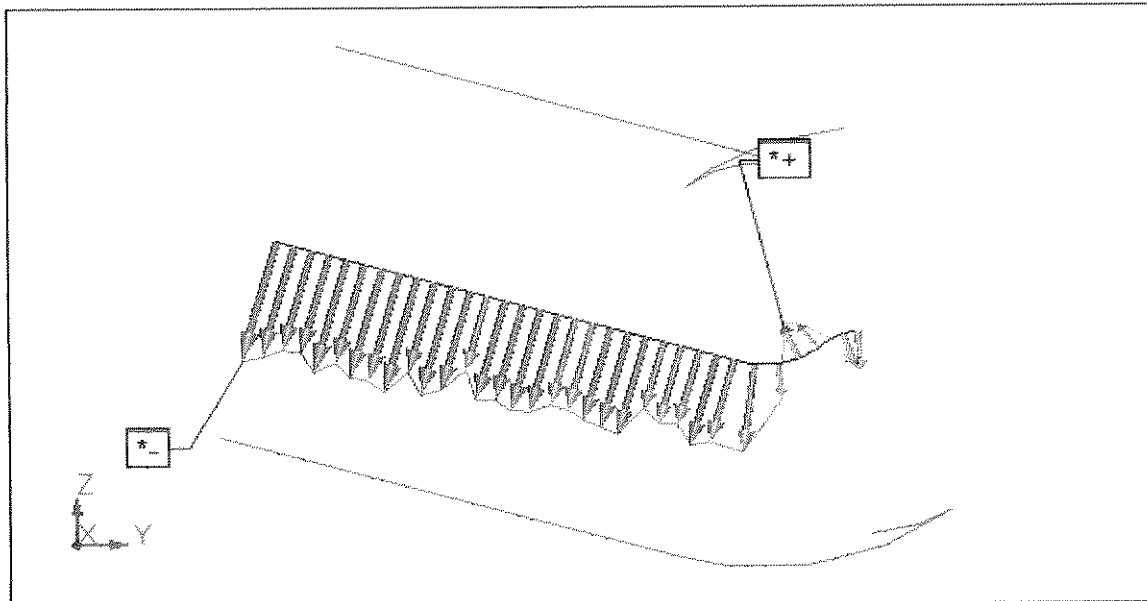


DIM LEFT_REAR_OUTTER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN3 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL	
M	0.239	0.000	0.300	0.300	0.239	0.000	-#-- #---

DIM PROF5= PROFILE OF SURFACE OF SET SCN3 FORMANDLOCATION UNITS=MM

AX	MAX	MIN	
M	0.091	0.016	---- #---

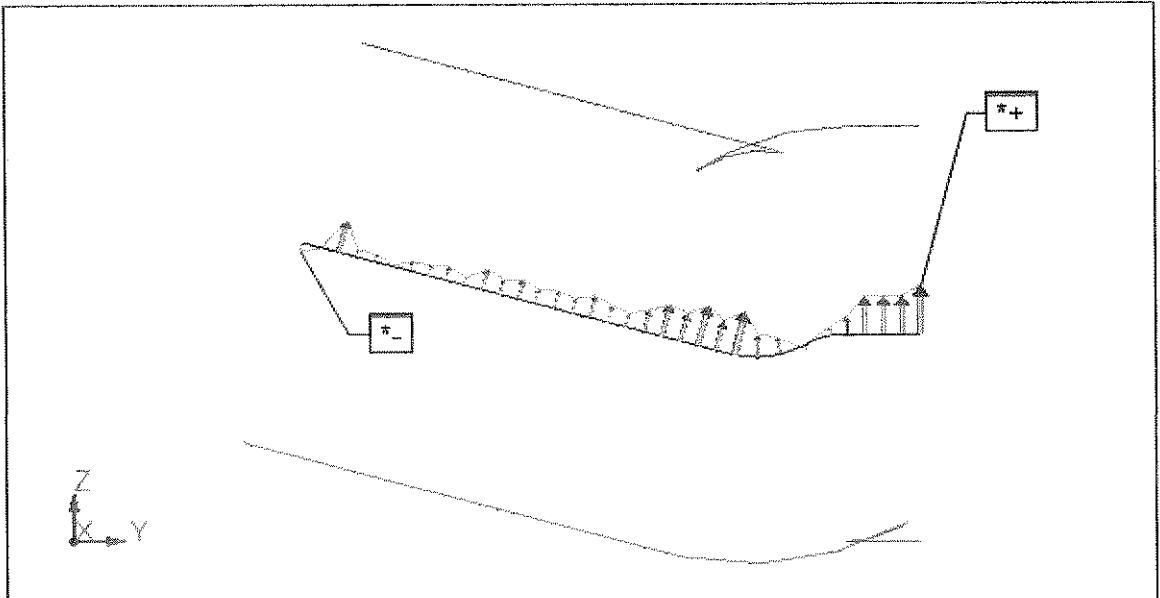


DIM LEFT_REAR_INNER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN4 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL	
M	0.084	0.000	0.300	0.300	0.084	0.000	---- #---

DIM PROF7= PROFILE OF SURFACE OF SET SCN4 FORMANDLOCATION UNITS=MM

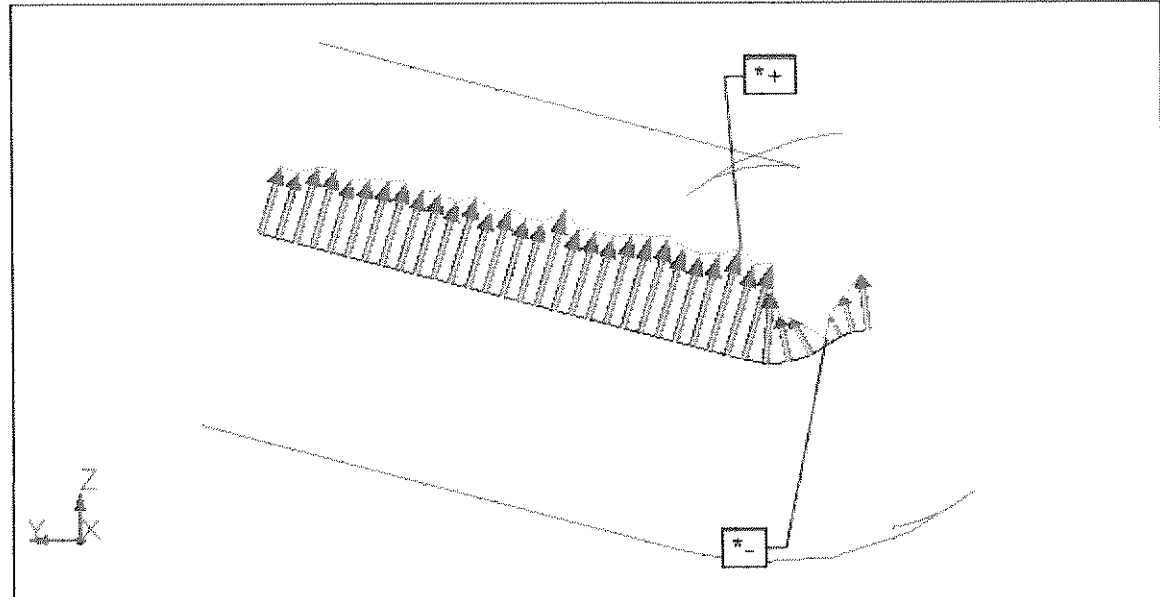
AX	MAX	MIN	
M	0.072	-0.013	---- #---



DIM RIGHT_FRONT_VR_ANGLE= 2D ANGLE FROM PLANE PLN5 TO PLANE DOME_PLN
 AX MEAS NOMINAL +TOL -TOL DEV OUTTOL
 A 15°49'43" 15°54'00" 1°00'00" 1°00'00" -0°04'17" 0°00'00" ----#----

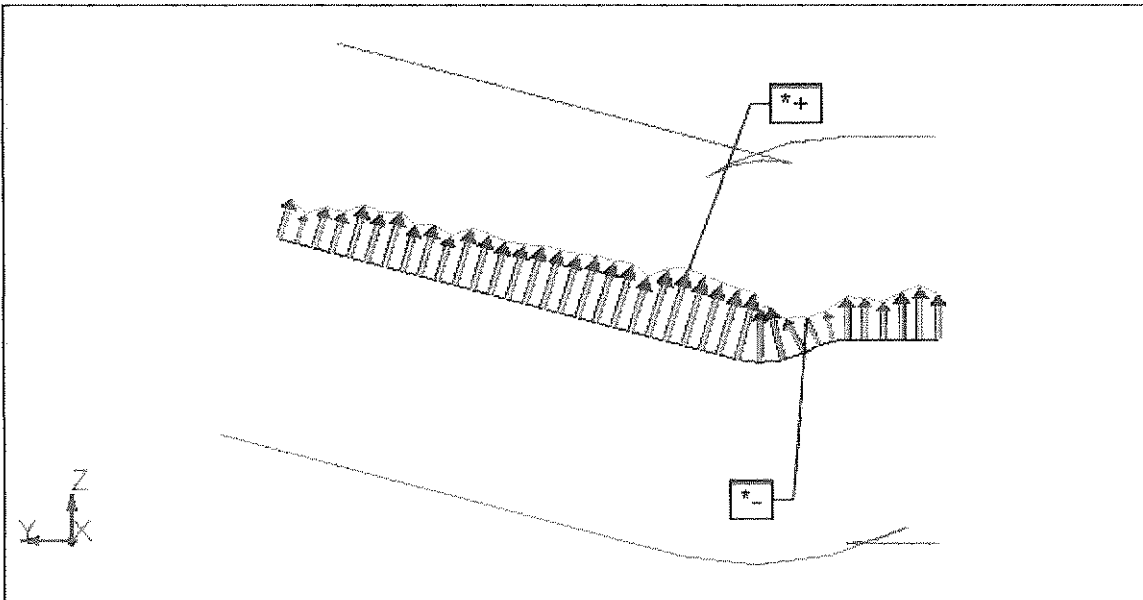
DIM RIGHT_FRONT_OUTTER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN5 FORMANDLOCATION UNITS=MM
 AX MEAS NOMINAL +TOL -TOL DEV OUTTOL
 M 0.161 0.000 0.300 0.300 0.161 0.000 ----|#--

DIM PROF9= PROFILE OF SURFACE OF SET SCN5 FORMANDLOCATION UNITS=MM
 AX MAX MIN
 M 0.161 0.010 ----|#--



DIM RIGHT_FRONT_INNER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN6 FORMANDLOCATION UNITS=MM
 AX MEAS NOMINAL +TOL -TOL DEV OUTTOL
 M 0.110 0.000 0.300 0.300 0.110 0.000 ----|#--

DIM PROF11= PROFILE OF SURFACE OF SET SCN6 FORMANDLOCATION UNITS=MM
 AX MAX MIN
 M 0.110 0.045 ----|#--



DIM LEFT_FRONT_VR_ANGLE= 2D ANGLE FROM PLANE PLN6 TO PLANE DOME_PLN

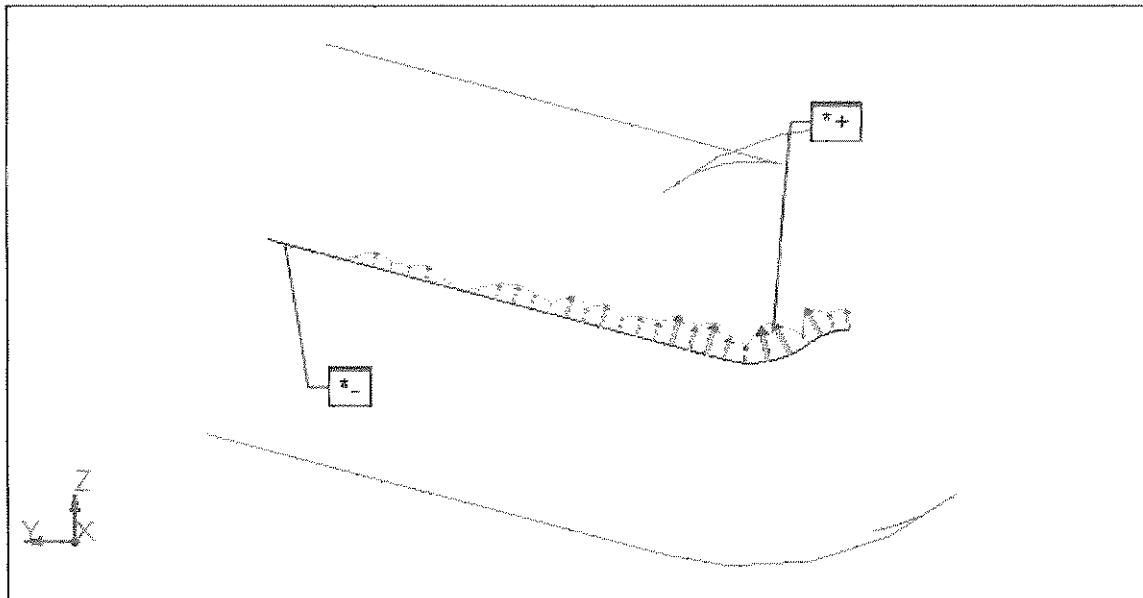
AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL	
A	15°48'11"	15°54'00"	1°00'00"	1°00'00"	-0°05'49"	0°00'00"	---- #----

DIM LEFT_FRONT_OUTTER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN7 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL	
M	0.060	0.000	0.300	0.300	0.060	0.000	---- #----

DIM PROF13= PROFILE OF SURFACE OF SET SCN7 FORMANDLOCATION UNITS=MM

AX	MAX	MIN	
M	0.055	-0.004	---- #----

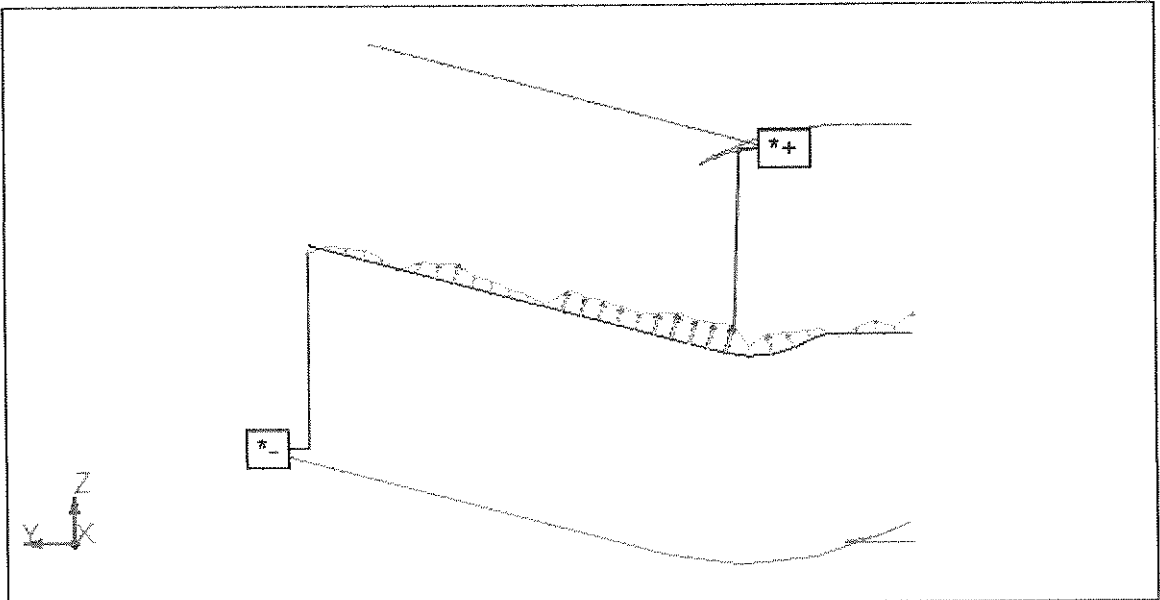


DIM LEFT_FRONT_INNER_VALVE_PROFILE= PROFILE OF SURFACE OF SET SCN8 FORMANDLOCATION UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL	
M	0.054	0.000	0.300	0.300	0.054	0.000	---- #----

DIM PROF15= PROFILE OF SURFACE OF SET SCN8 FORMANDLOCATION UNITS=MM

AX	MAX	MIN	
M	0.042	-0.012	---- #----



DIM LEFT REAR VR TO PINLINE= LOCATION OF PLANE PLN3 UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.227	37.220	0.300	0.300	0.007	0.000 ----#----

DIM LEFT_REAR_LINE_POINT= LOCATION OF POINT LT_REAR_LINE_PT UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.232	37.220	0.300	0.300	0.012	0.000 ----#----

DIM RIGHT REAR VR TO PINLINE= LOCATION OF PLANE PLN4 UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.184	37.220	0.300	0.300	-0.036	0.000 ---#-----

DIM RIGHT_REAR_LINE_POINT= LOCATION OF POINT RT_REAR_LINE_PT UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.185	37.220	0.300	0.300	-0.035	0.000 ---#-----

DIM RIGHT FRONT VR TO PINLINE= LOCATION OF PLANE PLN5 UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.806	37.710	0.300	0.300	0.096	0.000 -----#---

DIM RIGHT_FRONT_LINE_POINT= LOCATION OF POINT RT_FRNT_LINE_PT UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.842	37.710	0.300	0.300	0.132	0.000 -----#--

DIM LEFT FRONT VR TO PINLINE= LOCATION OF PLANE PLN6 UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.694	37.710	0.300	0.300	-0.016	0.000 ----#----

DIM LEFT_FRONT_LINE_POINT= LOCATION OF POINT LT_FRNT_LINE_PT UNITS=MM

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
Z	37.694	37.710	0.300	0.300	-0.016	0.000 ----#----

DIM FRONT_ISLAND_TO_PINBORE= 2D DISTANCE FROM POINT FRNT_ISLAND_PNT TO LINE P_L PAR TO ZAXIS,NO_RADIUS UNIT:

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	30.520	30.500	0.300	0.300	0.020	0.000 ----#----

DIM REAR_ILAND_TO_PINBORE= 2D DISTANCE FROM LINE P_L TO POINT REAR_ISLAND_PNT PAR TO ZAXIS,NO_RADIUS UNIT:

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
M	30.590	30.500	0.300	0.300	0.090	0.000 -----#---

Less than 90 degrees perp is at top.
 More than 90 degrees perp is at bottom.

DIM PERPENDICULARITY_ANGLE= 2D ANGLE FROM LINE LIN12 TO LINE P_L

AX	MEAS	NOMINAL	+TOL	-TOL	DEV	OUTTOL
----	------	---------	------	------	-----	--------

A 89°58'46" 90°00'00" 2°00'00" 2°00'00" -0°01'14" 0°00'00" ----#----

IS PROBE TO THE LEFT OF THE OILHOLE. : YES
IS PROBE TO THE RIGHT OF THE OILHOLE. : YES
IS PROBE TO THE RIGHT OF THE OILHOLE. : YES
IS PROBE TO THE LEFT OF THE OILHOLE. : YES
IS PROBE TO THE LEFT OF THE OILHOLE. : YES
IS PROBE TO THE RIGHT OF THE OILHOLE. : YES
IS PROBE TO THE RIGHT OF THE OILHOLE. : YES
IS PROBE TO THE LEFT OF THE OILHOLE. : YES
IF ALL ARE YES, OILHOLE LOCATION IS WITHIN $\pm 5^\circ$