



40 Saw Mill River Road
Hawthorne, New York 10532
914/White Plains 9-1900

International Business Machines Corporation

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MEMORANDUM TO: Users of IBM 1620 Drafting System
1620-CX-04X

SUBJECT: Version 1, Modification Level 1

This modification has been prepared for users of the 1620 Drafting System and contains improvements and corrections for the following parts of this program:

1. Circles of small radii are drawn with irregular sized dots or dashes when such a line class is specified. For a given number of increments a line drawn at 45 degrees is longer than one drawn at zero or 90 degrees, therefore, the lengths of the dashes vary at different parts of a circle.
2. It has been reported that the DIMCR statement is ineffective for small radii. To obtain the proper drawing the user need only change the DIMP statement so that the arrow and text are located outside of the circumference of the circle. A proper statement would be DIMP/2.2, .1, 1, 0.
3. The statement "DRAW/MIRY (shape)" works improperly. Please see description of program changes attached which shows the correction to this error.
4. Incorrect error messages print out during dimensioning in Phase 3. The message is 306 and indicated that the dimensioning is out of limits on the drawing but actually it is not.
5. The statement: POINT/point, TANTO, circle fails to determine the point of tangency whenever the line so formed would be nearly vertical. DIM number 0826 has been completely rewritten to prevent this error condition.
6. The compiler does not recognize the occurrence of dollar signs in a Macro definition. This has been corrected.

This modification consists of the following:

1. Description of program changes - 3 pages
2. 80/80 listing of object deck replacement cards - 1 page
3. Replacement page 3 to the Application Directory - 1 page
4. System Manual replacement pages 577 thru 584 - 3 pages

5. Object Deck Replacement Cards

Object Deck Number 4 - 2 cards

Object Deck Number 21 - 1 card

Object Deck Number 31 - 1 card

Entire Object Deck Number 16 - 20 cards (18 cards preceded by 2 control cards)

Future recipients of the program subsequent to the date of this letter will receive the various decks with the changes noted above already incorporated.

Any discrepancy between the material received and the list above, as well as any errors in card reproduction, should be directed to: Manager of DP Program Information, IBM Corporation, 40 Saw Mill River Road, Hawthorne, New York 10532.

We appreciate your cooperation in making the enclosed changes and request the continued use of the Authorized Programming Analysis Report (APAR), submitted through your local IBM Systems Engineer, in reporting difficulties concerning this program. APAR's for this programming system should be sent to: APAR Processing, DP Application Programming Standards, 112 East Post Road, White Plains, New York 10601.

PROGRAM INFORMATION DEPARTMENT

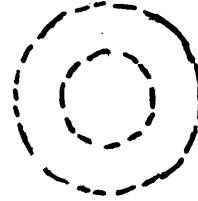
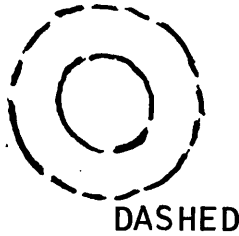
tm

cc: Branch Office SE Managers
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DESCRIPTION OF PROGRAM CHANGES

1- Circles of small radii are drawn with irregular sized dots or dashes when such a line class is specified.

The figure to the right shows results for such circles of .25 and .50 radii. While the results may not be optimum, the drafting system is working as designed. This condition is explained on page 190 of the System manual. For a given number of increments a line drawn at 45 degrees is longer than one drawn at zero or 90 degrees, therefore, the lengths of the dashes vary at different parts of a circle.



DOTTED

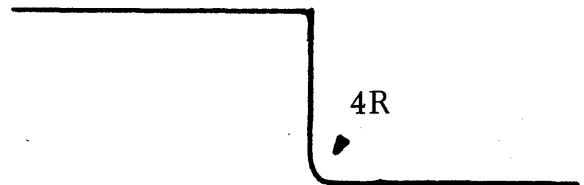
2- The DIMCR Statement is ineffective for small radii.

The DIMP is used to prevent the problem described above. On page 196 of the System manual, Figure 29 shows that arrows are drawn from the extension lines to the points (AFX, AFY) and (ATX, ATY). If the length of the text is greater than the space between the extension lines, then the points fall outside of the extension lines and the arrows are automatically reversed by the drafting system.

To obtain the proper drawing, the user need only change the DIMP statement so that the arrow and text are located outside the circumference of the circle, a proper statement would be :

DIMP/2.2, .1, 1, 0

Results of such a change are shown in the figure to the right of this information.



- 3- The statement: DRAW/MIRY (shape) works improperly.
In DIM number 0831 change the following statement on page 616 of the listings:

From: 20970 TFM MODES-3,10 17018 16 06857 -0010
To: 20970 TFM MODES-3,10,10 17018 16 06857 000J0

- 4- The drafting system produces an error message that dimensioning is out of limits if the programmer rotates a drawing using the ORIGIN statement and attempts to produce a dimension line which is not in the first quadrant of the nonrotated drawing.

The error condition cannot be entirely corrected within the present version of the drafting system. Temporarily, the following restriction will be in effect: An ORIGIN/NO MORE statement must be written preceding any origin statement which follows an ORIGIN statement that has rotation.

For example, the following sequence of statements can cause the error condition:

ORIGIN/5,6,ATANGL, -90
Other drafting statements
ORIGIN/any form

To cause proper drawing, change the statements to read:

ORIGIN/5,6,ATANGL, -90
Other drafting statements
ORIGIN/NO MORE
ORIGIN/ any form

In DIM number 0860 change the following statement on page 727 of the listings:

From: 05840 DIMER BTM ERLST, *+13 13704 17 06626 J3717
To: 05840 DIMER B D1280-12 13704 49 13736 J3717

- 5- The statement: POINT/point, TANTO, circle fails to determine the point of tangency whenever the line so formed would be nearly vertical.

DIM number 0826 has been completely rewritten to prevent the error condition. Please replace pages 578 through 584 of the listings with the three (3) pages that follow these program change descriptions.

Page three (3) of the Application Directory, should also be changed after the entry for deck 16. Please change the amount of cards from 30 to 18 cards in the third column on the page. (Please Note: the change deck has 20 cards - 18 object cards + two (2) control cards. This is explained on page two (2) of the Directory in the next-to-the-last paragraph).

6- The compiler does not recognize the occurrence of dollar signs in a MACRO definition.

In DIM number 0813 change the following two (2) statements on pages 499 and 500 of the listings:

From: 10285 CM E, 34, 10 14242 14 06249 000L4
To: 10285 CM E, 13, 10 14242 14 06249 000J3

From: 10600 CM E+2, 34, 10 14858 14 06251 000L4
To: 10600 CM E+2, 13, 10 14858 14 06251 000J3

80/80 LISTING of OBJECT DECK REPLACEMENT CARDS

OBJECT DECK NUMBER 31 See (A) Below

J3672KK4441369211655491370400000ZJ3692KL44413736116664913736J3717M57273707500074

OBJECT DECK NUMBER 21 See (B) Below

J6990KK20685700001271707816987ZJ7018KK41606857000J0271707817017ZJ7048K0316000020

OBJECT DECK NUMBER 4 See (C) Below

J4197K076249000K34614182012001406249000KK4614654012001406249000J3461485801200004

J4868K07J34614654012001706560J41941215121000052602731151212602457027311102400015

OBJECT DECK NUMBER 16

ZZDUP

*DLOAD 0826 1569400796CM
J5694KJ0J6280J5710ZJ5710KM831063460630527128741570R31062540629511157090000100001
J5758K0725066801570R111570900001310636706264310638706346310628506367170973400002
J5825K070000031065530631517024580626346158900110016073290P0762707252157093100003
J5892K07062850636717099220000017026080656231166460631517099840000017026080600004
J5959K07562311663506315171004606263170260806562310653106315170255806324170200005
J6026KN6446062401702712063243106542063151002375J6077490234N00000ZJ6077K020600006
J6079K0926306263ZKN5310631506553170255806324170245806263170271206324310655300007
J6143K07063151702558065403116657063153106315065531702558065513116667063154400008
J6210K0716232066803216664000001716340J6244310628516689310630506346491570R0000009
J6277K0700031062540629527124901627R310634606305261570916279491574600000311600010
J6344KL2678166671002375J6371490234N00000ZJ6371KJ1J6687J6644ZKJ231166891665700011
J6394KK41002375J6413490234N00000ZJ6413KJ1J6698J6655ZKK01002375J64434902350000012
J6444K040000ZJ6443KJ1J669806355ZKK41002375J6473490235000000ZJ6473K07J6698J600013
J6480K04687ZKM82616687166662616685166641002375J6527490234N00000ZJ6527K03J6600014
J6530K0887J6644ZKK41002375J6557490234N00000ZJ6557KJ1J6708J6655ZK091002375J600015
J6577KJ5587490235000000ZJ6587KJ1J670806365ZKK41002375J6617490235N00000R000000016
J6617KJ1J6708J6687ZKJ2491633R00000ZJ6688K01ZZJ6710000Z0000000000 - 17
R9999Z00000000000 - 18

Discard the present object deck number 16, replacing it with the deck listed above and enclosed. Perform a Disk Utility Program to delete DIM number 0826. Load the new deck number 16 onto the disk.

- (A) Replace card number 74 of object deck number 31 with the change card shown above and enclosed. Perform a Disk Utility Program to delete DIM number 0860. Load the corrected version onto the disk.
- (B) Replace card number 20 of object deck number 21 with the above change card. Perform a Disk Utility Program to delete DIM number 0831. Load the corrected version 0831 onto the disk.
- (C) Replace cards numbered 04 and 15 of object deck number 4. Perform a Disk Utility Program to delete DIM number 0813. Load the corrected version of 0813 onto the disk.

<u>Deck Number</u>	<u>Program Dim Number</u>	<u>Number of Cards</u>
7	0819	10
8	0838	13
9	0839	9
10	0820	16
11	0821	10
12	0822	149
13	0823	20
14	0824	37
15	0825	34
16	0826	18 □
17	0827	11
18	0828	36
19	0829	30
20	0830	16
21	0831	32
22	0832	35
23	0833	38
24	0834	13
25	0835	40
26	0848	37
27	0849	24
28	0840	74
29	0841	8
30	0850	180
31	0860	188
32	0861	42
33	0870	65
34	0871	23
35	0872	53
36	0873	64

CONTROL CARD DECKS FOR CONVERSION TO CORE IMAGE

The three control card decks listed below contain the necessary data to convert the three subprograms which use floating-point subroutines into core image format. None of the cards have sequence numbers.

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<u>Deck Number</u>	<u>Associated Dim Number</u>	<u>Number of Cards</u>
37	0841	8
38	0821	9
39	0820	9

SAMPLE PROBLEM DECK

Deck number 40 is the sample problem deck. It contains two unnumbered control cards followed by 73 source statement cards numbered from 01 to 73 in card columns 79 and 80.

OPTIONAL PROGRAM MATERIAL -- SOURCE DECKS

The source decks have sequence numbers in card columns 1-5. Card columns 77-80 contain the four-digit dim number for the program.

<u>Deck Number</u>	<u>Dim Number</u>	<u>Card Count*</u>
1	0810	1455
2	0811	559
3	0812	576
4	0813	147
5	0814	166
6	0818	7
7	0819	57
8	0838	97
9	0839	57
10	0820	80
11	0821	30
12	0822	1078
13	0823	154
14	0824	209
15	0825	235
16	0826	193
17	0827	95
18	0828	298
19	0829	218
20	0830	121
21	0831	297
22	0832	225
23	0833	278

* Approximate

21175 ARKLIN DSS 4*LL+1
21180 DEND 00796

17730 00041
00796

17772 CORE POSITIONS REQUIRED
00235 STATEMENTS PROCESSED

*PAGE 577 *

(ID) **THE 1620 DRAFTING SYSTEM PHASE 2 DIM NO 0826
*ID NUMBER0826
*ERROR STOP
*NO SUBROUTINES

THE 1620 DRAFTING SYSTEM PHASE 2 DIM NO 0826 PAGE 1

20010***ID NUMBER 0826
20015***LOAD ON CALL FROM PHASE TWO
20020***CONTAINS POINT TANTO CIRCLE
20025*MAINLINE EQUIVALENCES
*PART PROCESSOR EQUIVALENCES

20035	SCSUB	DS	,02458			02458	00000		
20040	SCMUL	DS	,02558			02558	00000		
20045	SCDIV	DS	,02608			02608	00000		
20050	SCRUT	DS	,02712			02712	00000		
	L	DS	,00009			00009	00000		
	WKA	DS	,06540			06540	00000		
	WKB	DS	,06551			06551	00000		
	WKC	DS	,06562			06562	00000		
	SCACC	DS	,06324			06324	00000		
	LN1	DS	,06285			06285	00000		
	LNA	DS	,06367			06367	00000		
	PT	DS	,06346			06346	00000		
	PT1	DS	,06305			06305	00000		
	PT2	DS	,06285			06285	00000		
	PT3	DS	,06264			06264	00000		
	PTA	DS	,06387			06387	00000		
	R2	DS	,06263			06263	00000		
	MESPE	DS	,07321			07321	00000		
	KF1P	DS	,06240			06240	00000		
	SWLR	DS	,06680			06680	00000		
	DIST	DS	,09734			09734	00000		
	PPERR	DS	,07252			07252	00000		
	SCTAC	DS	,10046			10046	00000		
	DXOF	DS	,09922			09922	00000		
	DYOF	DS	,09984			09984	00000		
	GETCR	DS	,12874			12874	00000		
	CR1	DS	,06295			06295	00000		
	CR2	DS	,06254			06254	00000		
	CORE	DS	,15694			15694	00000		
	LL	DS	,10			00010	00000		
	GETPT	DS	,12490			12490	00000		
	YY1	DS	,06355			06355	00000		
	XX1	DS	,06365			06365	00000		
20295			DORG CORE			15694			
20300			*INDIRECT ENTRIES						
20305			DSA PTACR,PTAC			15698	00005	J6280	
						15703	00005	J5710	
20310*									
20315*			POINT TANTO CIRCLE						
20320			DS 5			15708	00005		
20325			PTAC TR PT,PT1			15710	31	06346	06305
20330			BT GETCR,PTAC-1,11			15722	27	12874	1570R
20335			TR CR2,CR1			15734	31	06254	06295
20340			PTACA AM PTAC-1,1			15746	11	15709	-0001
20345			TD SWLR,PTAC-1,11			15758	25	06680	1570R
20350			AM PTAC-1,1			15770	11	15709	-0001
20355*			CHECK FOR VALID POINT						
			TR LNA,PT3,,,CIRCLE CENTER			15782	31	06367	06264
			TR PTA,PT,,,OUTSIDE POINT			15794	31	06387	06346

20715	FM	ROTT,SINT	16352 10 02375 J6371
			16364 49 0234N 00000
			16371 00005 J6687
			16376 00005 J6644
			16381 00001 @
20720	TR	ROTAY-L,ROTY-L	16382 31 16689 16657
20725	FM	ROTAY,CUST	16394 10 02375 J6413
			16406 49 0234N 00000
			16413 00005 J6698
			16418 00005 J6655
			16423 00001 @
20730	FA	ROTAY,YY1	16424 10 02375 J6443
			16436 49 0235- 00000
			16443 00005 J6698
			16448 00005 -6355
			16453 00001 @
20735	FA	ROTAY,ROTT	16454 10 02375 J6473
			16466 49 0235- 00000
			16473 00005 J6698
			16478 00005 J6687
			16483 00001 @
20740*NEW		X=XT+X* \cos -Y*SIN	
20745	TF	ROTT,ROTY	16484 26 16687 16666
20750	TF	ROTT-2,ROTY-2	16496 26 16685 16664
20755	FM	ROTT,SINT	16508 10 02375 J6527
			16520 49 0234N 00000
			16527 00005 J6687
			16532 00005 J6644
			16537 00001 @
20760	FM	ROTAX,COST	16538 10 02375 J6557
			16550 49 0234N 00000
			16557 00005 J6708
			16562 00005 J6655
			16567 00001 @
20765	FA	ROTAX,XX1	16568 10 02375 J6587
			16580 49 0235- 00000
			16587 00005 J6708
			16592 00005 -6365
			16597 00001 @
20770	FS	ROTAX,ROTT	16598 10 02375 J6617
			16610 49 0235N 00000
			16617 00005 J6708
			16622 00005 J6687
			16627 00001 @
20775	B7	ROTAT-1,,6	16628 49 1633R 00000
20780 SINT	DS	LL	16644 00010
20785	DS	1	16645 00001
20790 COST	DS	LL	16655 00010
20795	DS	1	16656 00001
20800 ROTY	DS	LL	16666 00010
20805 ROTX	DS	LL	16676 00010
20810	DS	1	16677 00001
20815 ROTT	DS	LL	16687 00010
20820	DC	1,	16688 00001

20825 ROTAY	DS	LL	16698 00010
20830 ROTAX	DS	LL	16708 00010
20835	DS	1	16709 00001
20970	DEND	00796	00796

16710 CORE POSITIONS REQUIRED
00129 STATEMENTS PROCESSED

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