

Program Submittal

☒ New Program

☐ Revision to
Program No. _____

HP-67 Serial No. 1 6 0 9 A 0 0 7 0 4

HP-97 Serial No. _____

Program Title 6 7 - P r e s s u r e C o n v e r s i o n s
Underline 1 or 2
Keywords _____

Keyword(s) 1 P r e s s u r e
Underlined
in Title 2 C o n v e r s i o n s

No. of Steps 1 1 1

Category No. 9 9 0 7

Category Name O t h e r , , C o n v e r s i o n s

Abstract- 75 Word Maximum This program provides 72 constants to convert
pressure from or into the following units: Atmospheres, Millibars,
Gram/sq cm, Kilogram/sq Meter, Pounds/sq Inch, Inches of water,
Millimeters of mercury, Inches of Mercury and Centimeters of
water.

Name Barry J. Altman
First Initial Last

Address 1142 Hagues Mill Rd.

City Ambler State PA Zip Code 19002

Acceptance Choice: ☒ Four Programs or ☐ Two Programs and 10 blank cards.

0 0 1 7 2 2 I D 0 0 0 1 6 1 5 I D 0 0 1 1 4 1 3 I D 0 0 1 7 7 I D

Submittal Checklist: Please use the checklist below to insure submittal of all the proper program documentation.

- | | |
|---|--|
| ☐ Program Submittal | ☐ User Instructions |
| ☐ Program Description I | ☐ Program Form(s) |
| ☐ Program Description II | ☐ Magnetic Card (s) |

ACKNOWLEDGMENT AND AGREEMENT

To the best of my knowledge, I have the right to contribute this program material without breaching any obligation concerning nondisclosure of proprietary or confidential information of other persons or organizations. I am contributing this program material on a nonconfidential nonobligatory basis to Hewlett-Packard Company ("HP") for inclusion in its program library, and I agree that HP may use, duplicate, modify, publish, and sell the program material, and authorize others to do so without obligation or liability of any kind. HP may publish my name and address, as the contributor, to facilitate user inquiries pertaining to this program material.

Signature Barry J. Altman

Date MAR 30 78

Program Description I

Program Title Pressure Conversions

Contributor's Name Barry J. Altman

Address 1142 Haques Mill Road

City Ambler

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Program Description, Equations, Variables This program calculates 72 pressure constants by multiplying a derived constant by an inputted value. All constants programmed are based on a conversion to mm/Hg. The "from" conversion converts to mm/Hg. The "to" conversion divides to the appropriate constant. This may be expressed by the following relationship: $k_1 + k_2 = C$; where k_1 is a constant converting "from" units to mm/Hg. k_2 is a second conversion factor that converts mm/Hg into the "to" units. These two constants are calculated into one conversion "C" which is multiplied by the input value.

Operating Limits and Warnings No operating limits known. Accuracy to 9 places is assumed.

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

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[illegible]

Sample Problem(s) 36 cm/H₂O is equal to how many mm/Hg? Atmospheres?
320 cm/H₂O is equal to how many Atmospheres?

Solution(s)	Keystrokes	Display
	36 Label C (cm/H ₂ O)	36.00*
	Label B (mm/Hg)	26.48
	Label C (cm/H ₂ O)	1.00*
	Label A (Atm)	9.678111737-04
	36 Label E (Calc)	.03
	320 Label E (Calc)	.31

Reference(s) Constants derived from tables in the Handbook of Chemistry and Physics, 56th Edition. CRC Press Cleveland.

User Instructions

1

Atm Mb gm/cm² kg/m² lb/in²

in/Hg mm/Hg cm/H₂O in/H₂O Calc

2

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS		OUTPUT DATA/UNITS
1	Load side 1				
2	Input value (x)	x			x
3	Select "from" conversion	in/Hg	A		x*
		mm/Hg	B		x*
		cm/H ₂ O	C		x*
		in/H ₂ O	D		x*
		Atm	f	A	x*
		mb	f	B	x*
		gm/cm ²	f	C	x*
		in/m ²	f	D	x*
		lb/in ²	f	E	x*
4	Select "to" conversion	in/Hg	A		Answer
		mm/Hg	B		Answer
		cm/H ₂ O	C		Answer
		in/H ₂ O	D		Answer
		Atm	f	A	Answer
		mb	f	B	Answer
		gm/cm ²	f	C	Answer
		in/m ²	f	D	Answer
		lb/in ²	f	E	Answer
5	Input next value	x			
6	Calculate conversion		E		Answer
7	To continue conversion go to 5				
8	For different conversion select "from" conversion				1.00*
9	Select "to" conversion				Answer**
10	Input value	x			x
11	Calculate conversion		E		Answer
12	To continue go to 5. For new case go to 8				
	Answer** 1 is used as the first data value on new conversions				
	x* value will flash as a reminder to select "to" conversion				

Program Listing I

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STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	f Lbl 0	31 25 00	Subroutine 0		h SF 1	35 51 01	
	h F? 1	35 71 01			h Rtn	35 22	- - - - -
	h Rtn	35 22	Loads constant		f Lbl A	31 25 11	Label A
	h Sto I	35 33	in memory	060	f Gsb 0	31 22 00	
	2	02			Rcl A	34 11	in/Hg
	5	05			Gto 1	22 01	- - - - -
	.	83			f Lbl B	31 25 12	Label B
	4	04			f Gsb 0	31 22 00	
	Sto A	33 11	25.4 Sto A		1	01	mm/Hg
010	1	01			Gto 1	22 01	- - - - -
	0	00			f Lbl C	31 25 13	Label C
	÷	81	2.54		f Gsb 0	31 22 00	
	.	83			Rcl C	34 13	cm/H ₂ O
	7	07		070	Gto 1	22 01	- - - - -
	3	03			f Lbl D	31 25 14	Label D
	5	05			f Gsb 0	31 22 00	
	5	05			Rcl D	34 14	in/H ₂ O
	3	03			Gto 1	22 01	- - - - -
	9	09			g Lbl A	32 25 11	Label fA
020	Sto C	33 13	.735539 Sto C		f Gsb 0	31 22 00	
	x	71	x 2.54		Rcl E	34 15	Atm
	Sto D	33 14	Sto D		Gto 1	22 01	- - - - -
	7	07			g Lbl B	32 25 12	Label fB
	6	06		080	f Gsb 0	31 22 00	
	0	00			Rcl B	34 12	mb
	Sto E	33 15	760 Sto E		Gto 1	22 01	- - - - -
	.	83			g Lbl C	32 25 13	Label fC
	7	07			f Gsb 0	31 22 00	
	5	05			Rcl 7	34 07	gm/cm ²
030	0	00			Gto 1	22 01	- - - - -
	0	00			g Lbl D	32 25 14	Label fD
	6	06			f Gsb 0	31 22 00	
	2	02			Rcl 8	34 08	kg/m ²
	Sto B	33 12	.750062 Sto B	090	Gto 1	22 01	- - - - -
	.	83			g Lbl E	32 25 15	Label fE
	7	07			f Gsb 0	31 22 00	
	3	03			Rcl 9	34 09	lb/in ²
	5	05			Gto 1	22 01	- - - - -
	5	05			f Lbl 1	31 25 01	Subroutine 1
040	5	05			h F? 2	35 71 02	Stores 1st
	8	08			Gto 3	22 03	constant in
	6	06			Sto 0	33 00	Register 0
	Sto 7	33 07	.7355586 Sto 7		h Sf 2	35 51 02	- - - - -
	1	01		100	f Lbl 2	31 25 02	Subroutine 2
	0	00			h Rcl I	35 34	Indicates "to"
	÷	81	÷ 10		h Pause	35 72	must be select
	Sto 8	33 08	.07355586 Sto 8		Gto 2	22 02	- - - - -
	5	05			f Lbl 3	31 25 03	Subroutine 3
	1	01			Sto ÷ 0	33 81 00	Derives constant
050	.	83			1	01	- - - - -
	7	07			h x-I	35 24	
	1	01			f Lbl E	31 25 15	Label E
	4	04			Rcl 0	34 00	Multiplies
	9	09		110	x	71	constant by
	6	06			R/S	84	value
	Sto 9	33 09	51.71496 Sto 9				

REGISTERS

0 Used	1	2	3	4	5	6	7 .735558	8 .07355	9 51.714
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
A 25.4	B .750062	C .735539	D 1.86826906	E 760	I Used				

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