

GENERAL COMPARE SUBROUTINE

The General Compare Subroutine compares two numerical fields and sets the proper high, low, equal, or unequal indicators according to the rules of algebra. Thus, its use is indicated when one or both of the fields to be compared are known to be negative or when the sign of either or both fields is unknown. It can also be used to compare a signed positive number with an unsigned number, but in this case it is more efficient to remove the sign and use the usual compare procedure. The Subroutine will also give proper algebraic compare indications for fields of unequal length.

FUNCTION AND LOGIC - In using the Subroutine, the programmer must visualize the problem as though he were able to write a normal compare instruction. Thus, if he wishes to compare a field labeled A with a field labeled B, he would write the following instruction if it were not for sign considerations:

<u>Op Code</u>	<u>A-Address</u>	<u>B-Address</u>
C	A	B

He would then test indicators as desired. In using the Subroutine for the same problem, the programmer must write the following instructions:

<u>Op Code</u>	<u>A-Address</u>	<u>B-Address</u>
A	A	AF
A	B	BF
B	COMPAR	

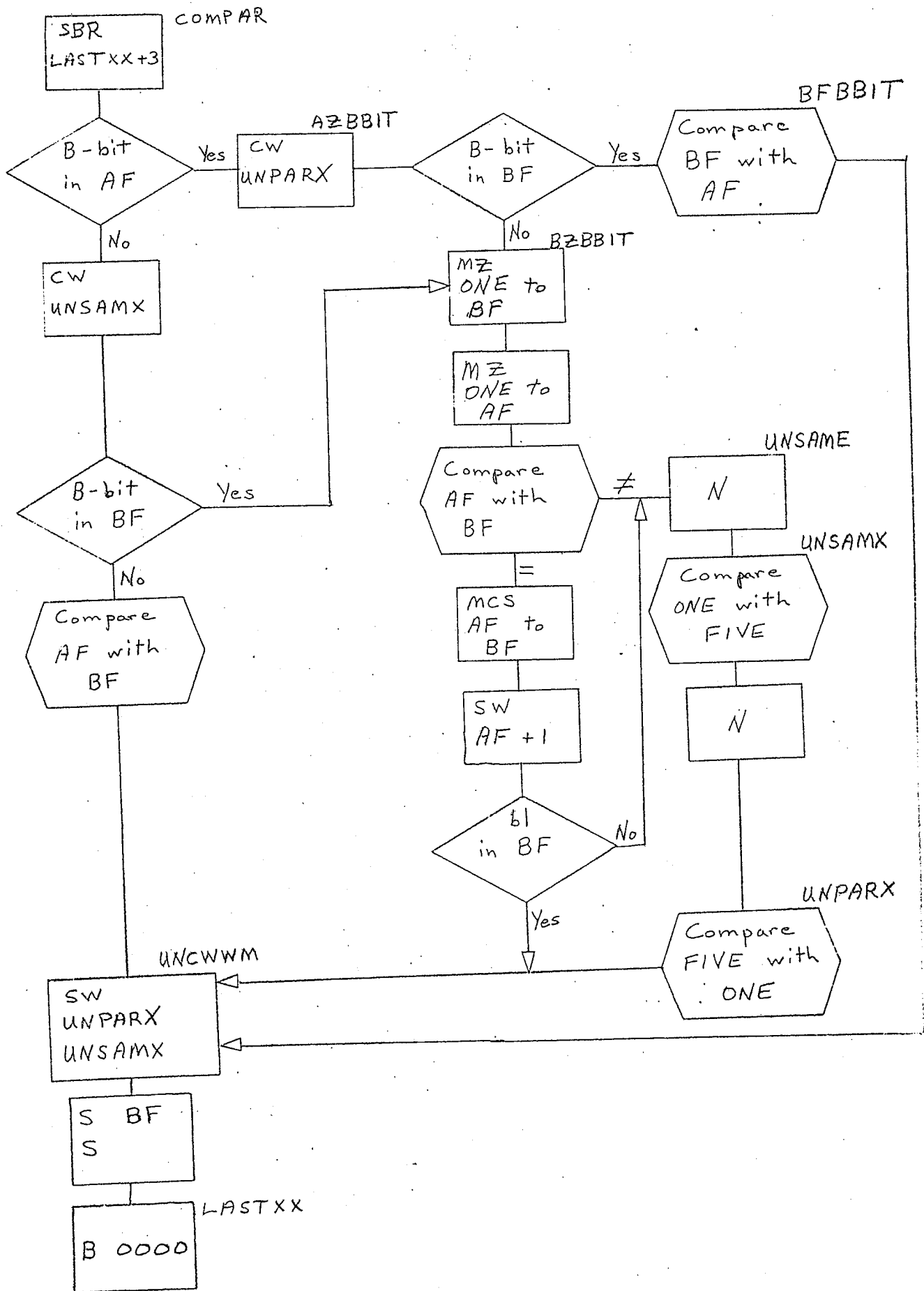
Then, since the Subroutine sets the proper indicators, he may test them just as if he had been able to write a normal compare instruction.

If the Subroutine finds both fields positive, it sets indicators to show that the greater value is high. If it finds both fields negative, it sets indicators to show that the greater absolute value is low. If it finds that one field is negative and the other field is positive, it sets indicators to show that the positive field is high unless it also finds that both fields are zero, in which case, it sets indicators to show that the fields are equal. After the proper indicators are set, the main routine is re-entered and the programmer may test the indicators in his main routine. If A and B are both known to be signed, the set-up instructions may use an "M" Op Code, thus permitting use of a half-chain (move B first, then A). If B follows A in core storage, the second instruction can always be chained (add B first, then A).

REQUIRED FIELDS - The programmer must set up two DCW fields labeled AF and BF. Each of these must be at least as long as the number of digits in the longest field to be compared. AF must be equal in length to BF and BF must immediately follow AF in core storage. Both AF and BF must contain a Plus Zero in the low order digit and zeros in all other digits when the program is loaded. In the standard Subroutine source deck, AF and BF are 12 digits in length. The number of digits may be increased or reduced by the programmer by adding or deleting zeros. The Subroutine also requires two DCW constants, labeled ONE and FIVE and containing a 1 and 5, respectively, which may be used in common with the main routine.

CORE SPACE REQUIREMENTS - Subroutine instructions occupy 135 digits of core storage. In addition, four DCW fields are required as specified above. The programmer sets the length of AF and BF to accommodate his longest field. The maximum number of digits used by the Subroutine is thus $137 + L_{AF} + L_{BF}$. For computers with the indexing feature and with less than 16,000 digits of core storage, the Subroutine should be assembled between locations 1 and 999.

General Compare - Subroutine #2



PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	ERROR	NOTES	COMMENTS
					NO CONTROL CARD						
010	4		CCMPAR	SBR	LASTXX&003						GENERAL COMPARE
020	8			BWZ	AZBBIT	AF	K				SUBROUTINE #2
030	4			CW	UNSAMX						
040	8			BWZ	BZBBIT	BF	K				
050	7			C	AF	BF					
060	7		UNCWWM	SW	UNPARX	UNSAMX					
070	4			S	BF						
080	1			S							
090	4		LASTXX	B	0000						
100	4		AZBBIT	CW	UNPARX						
110	8			BWZ	BFBBIT	BF	K				
120	7		BZBBIT	MZ	CNE	BF					
130	7			MZ	CNE	AF					
140	7			C	AF	BF					
150	5			B	UNSAME		/				
160	7			MCS	AF	BF					
170	4			SW	AF 0001						
180	8			B	UNCWWM	BF					
190	1		UNSAME	NOP							
200	7		UNSAMX	C	CNE	FIVE					
210	1			NOP							
220	7		UNPARX	C	FIVE	ONE					
230	4			B	UNCWWM						
240	7		BFBBIT	C	BF	AF					
250	4			B	UNCWWM						
260	12		AF	DCW	*					000000000000&	
270	12		BF	DCW	*					000000000000&	
280	1		CNE	DCW	*					1	
290	1		FIVE	DCW	*					5 0493	

29 CARDS 13 LABELS HIGHEST STORAGE ADDRESS USED IS 0493

NO END CARD