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MANEUVERS FOR LINE OF DIVISIONS.

TO FORM LINE OF BEARING OF DIVISIONS.

CASE: Flank division as base unit on present course; dropping back the bearing more than 40° .

NOTE: Table II, checked by maneuvering board solution, will be used to determine the course angles for the divisions changing line of bearing. No course angle greater than 90° will be used.

SIGNAL: Form with division guides bearing as indicated (indicating new bearing and, when necessary, designating a flank division as base unit).

Steam at standard speed indicated (changing standard speed of formation if desired that base unit take speed other than present standard speed).

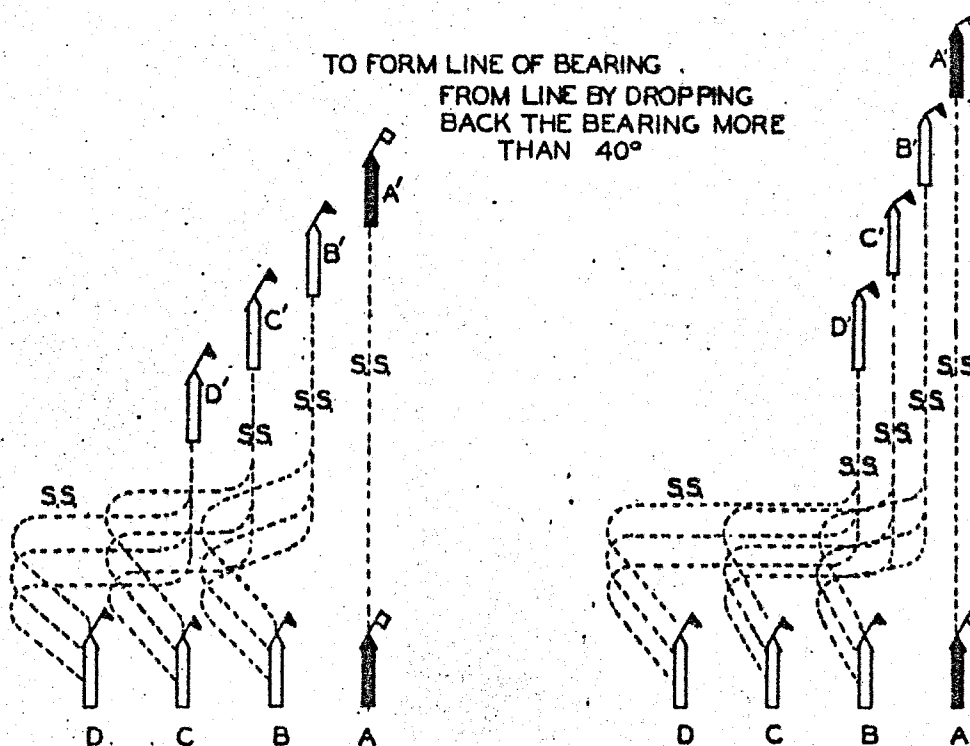
MOVEMENTS REQUIRED.

Base unit, division A or D, maintains present course at standard speed.

Other divisions make all changes of course by simultaneous turns. Maintain standard speed and move from present to new positions by two course evolutions, the courses being determined for the change in line of bearing indicated, from Table II (checked by maneuvering board solution).

Two course evolutions are prescribed, change course away from the base unit on the first course; at appropriate times change course toward the base unit on the second course, and resume former course at appropriate times to take positions on new line of bearing.

Divisions will steady on the course of the base unit for a short interval between the first and second courses of the two course evolution.



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MANEUVERS FOR LINE OF BEARING OF DIVISIONS.

TO FORM LINE OF DIVISIONS.

CASE: Flank division as base unit on present course by dropping back the bearing more than 40° .

MOVEMENTS REQUIRED.

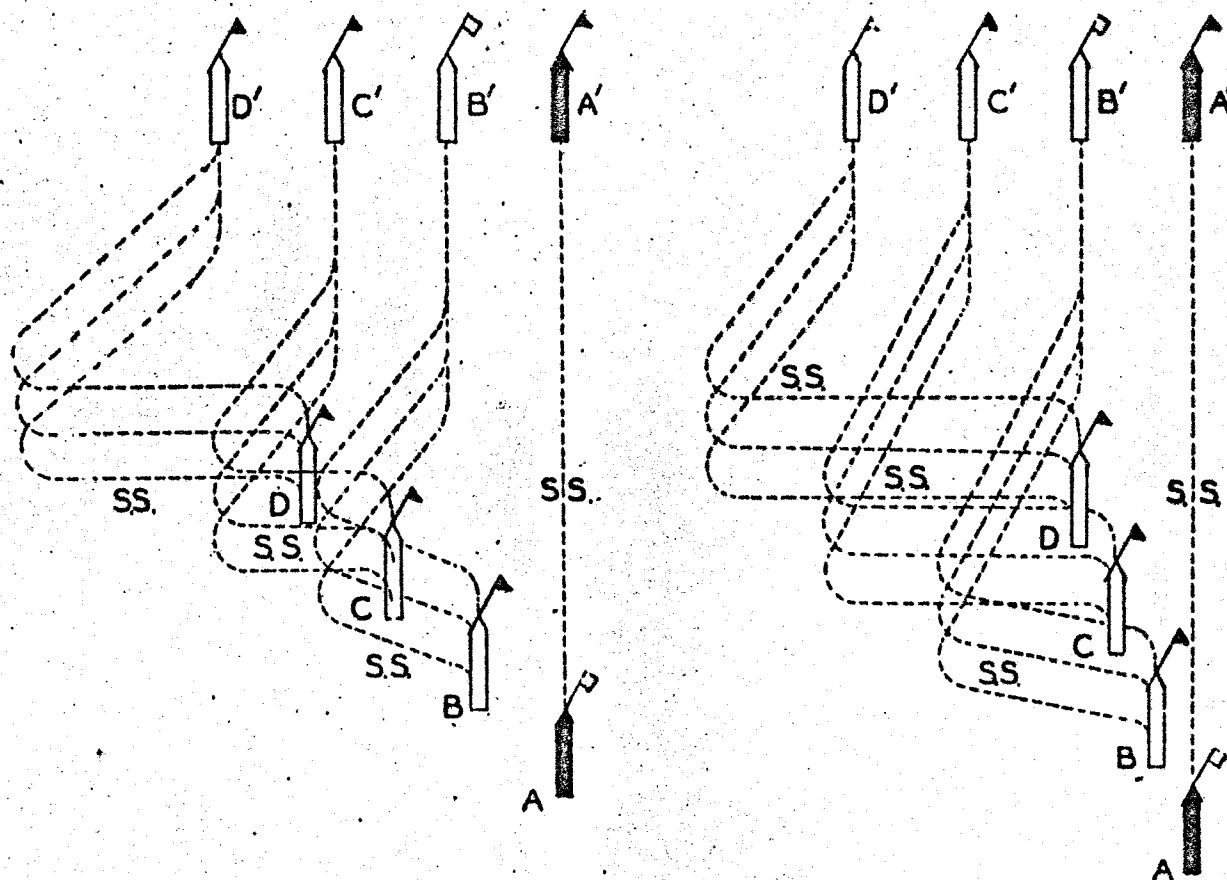
Base unit maintain present course and speed.

Other divisions make all changes of course by simultaneous turns. Maintain standard speed and move from present to new positions by two course evolutions, the courses being determined for the change in line of bearing indicated, from Table II (checked by maneuvering board solution).

Two course evolutions are prescribed, change course away from the base unit on the first course; at appropriate times change course toward the base unit on the second course, and resume former course at appropriate times to take new positions on line of bearing.

Divisions will steady on the course of the base unit for a short interval between the first and second courses of the two course evolution.

TO FORM LINE FROM LINE OF BEARING BY
DROPPING BACK THE BEARING MORE
THAN 40°



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MANEUVERS FOR LINE OF BEARING OF DIVISIONS.

TO FORM ANOTHER LINE OF BEARING.

CASE: Flank division as base unit on present course, by dropping back the bearing more than 40°.

MOVEMENTS REQUIRED.

Base unit maintain present course and speed.

Other divisions make all changes of course by simultaneous turns. Maintain standard speed and move from present to new positions by one course or two course evolutions, the course or courses being determined for the change in bearing indicated, from Table II (checked by maneuvering board solution).

If a one course evolution is prescribed, change course toward or away from base unit, resuming former course at appropriate times to take positions on new line of bearing.

If a two course evolution is prescribed, change course away from the base unit on the first course; at appropriate times change course toward the base unit on the second course, and resume former course at appropriate times to take position on new line of bearing.

Divisions will steady on the course of the base unit for a short interval between the first and second courses of the two course evolution.

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TO CHANGE LINE OF BEARING BY DROPPING BACK
THE BEARING MORE THAN 40°

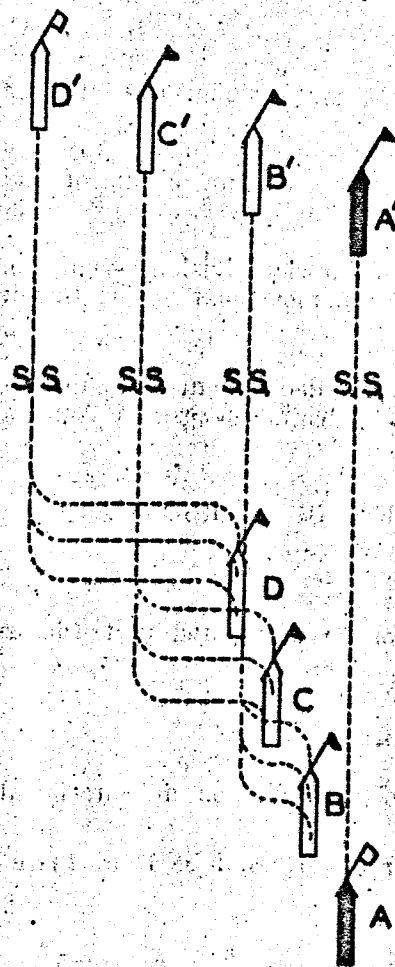


FIG. I

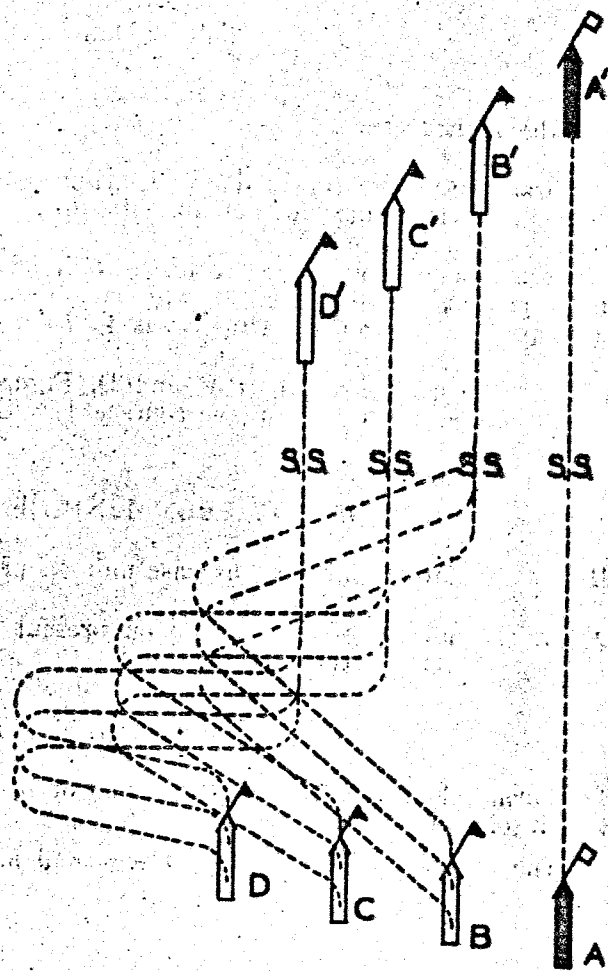


FIG. II

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DEPLOYMENT OF THE BATTLE LINE.

~~(See Article 705(a), FPP-142)~~

~~(FPP 185, Art. 1205.)~~

TO DEPLOY FROM COLUMN OF DIVISIONS OR FROM LINE OF DIVISIONS.

CASES: An interior division of column as base unit on course to right (or left) of present course, or;

An interior division of line as base unit on course less than 90° to right (or left) of present course.

SIGNAL: Deploy on right (or left) flank division (or designated base unit) on course to right (or left) of present course (indicating the deployment course and designating an interior division as base unit).

MOVEMENTS REQUIRED.

Two movements are executed in succession without further signal from the officer conducting the maneuver.

First movement. Form line of bearing of divisions from column or line of divisions, by simultaneous division head of column movements to deployment course.

Second movement. Form column of divisions on an interior division as base unit, on deployment course. This movement will be a division column movement unless the deployment signal requires simultaneous ship turns to be used.

NOTE: The evolutions of B, C and D, Figure II, typify deployment from line of divisions on a flank division on courses less than 90° to right of present course.

TO DEPLOY FROM LINE OF BEARING OF DIVISIONS.

CASE: An interior division as base unit on present course.

SIGNAL: Deploy on present course on present guide or on designated unit (designating an interior division as base unit).

MOVEMENTS REQUIRED.

Form column of divisions from line of bearing of divisions, on an interior division as base unit on present course.

The maneuver is typified by the second maneuver of Figure I or II of Plate 9.

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FIG. I
FOR COLUMN

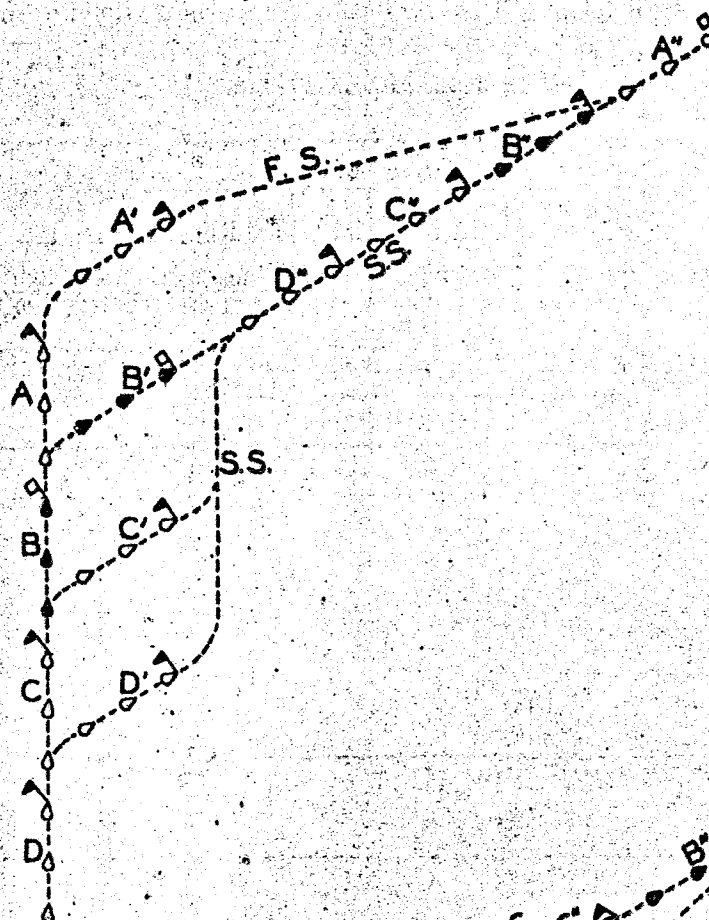
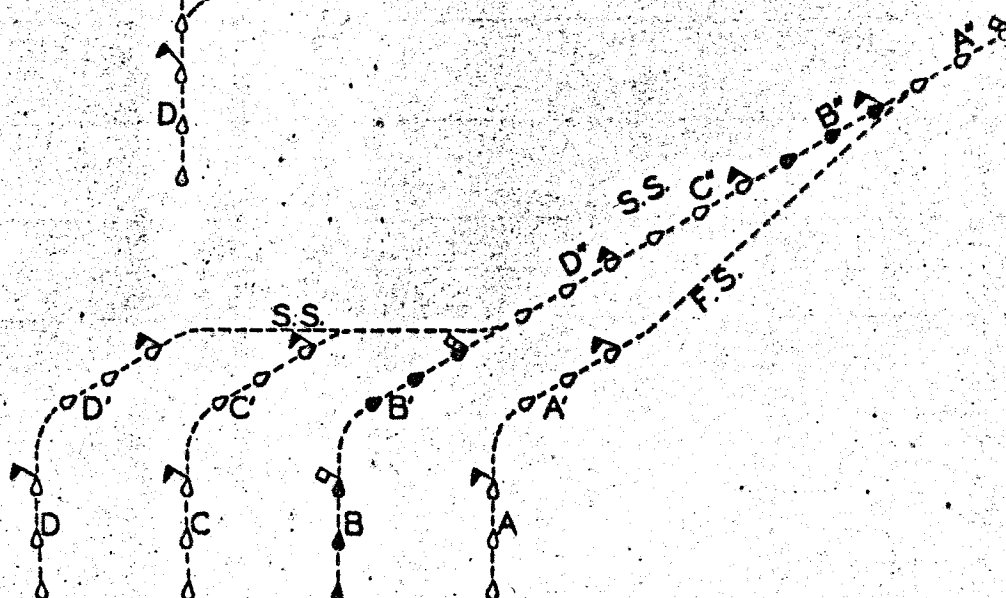


FIG. II
FOR LINE



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DEPLOYMENT OF THE BATTLE LINE.

(See Article 705(a), FTP 142)

(FTP 199, 11-1-05)

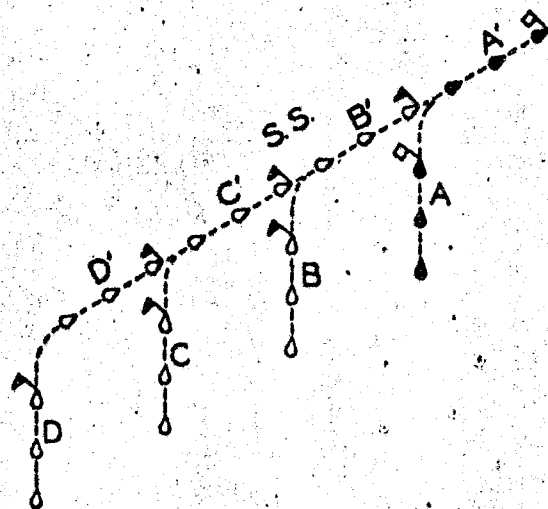
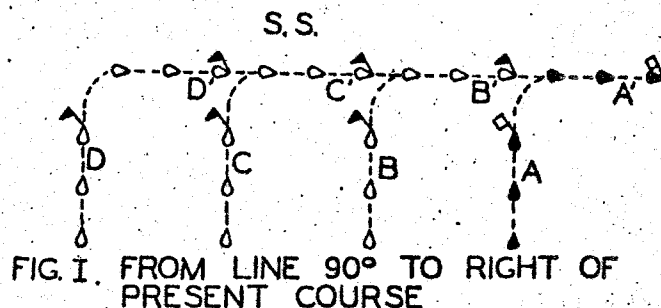
TO DEPLOY FROM LINE OF DIVISIONS OR FROM LINE OF BEARING OF DIVISIONS.

CASE: Flank division as base unit on a course 90° to right (or left) of present course, or;
Advanced division as base unit on course to right (or left) of present course, which is reciprocal of present line of bearing.

SIGNAL: Deploy on right (or left) flank division on course to right (or left) of present course (indicating course right or left).

MOVEMENTS REQUIRED.

Form column of division guides from line or line of bearing of division guides on flank division as base unit on course indicated to the right (or left) of present course.



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DEPLOYMENT OF THE BATTLE LINE.

(See Article 705(a), FTP-142)
(FTP 199) 11-12-05

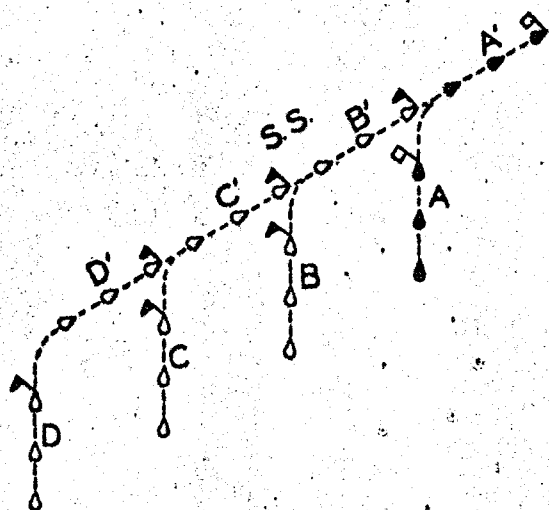
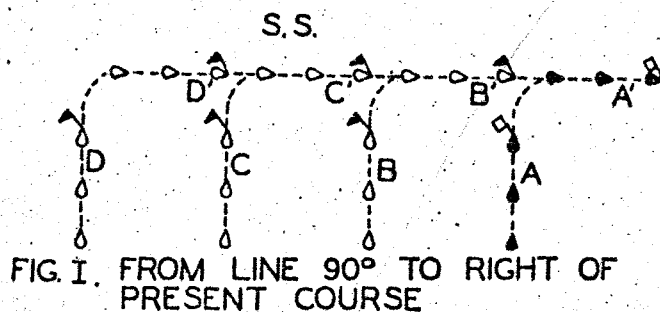
TO DEPLOY FROM LINE OF DIVISIONS OR FROM LINE OF BEARING OF DIVISIONS.

CASE: Flank division as base unit on a course 90° to right (or left) of present course, or;
Advanced division as base unit on course to right (or left) of present course, which is reciprocal of present line of bearing.

SIGNAL: Deploy on right (or left) flank division on course to right (or left) of present course (indicating course right or left).

MOVEMENTS REQUIRED.

Form column of division guides from line or line of bearing of division guides on flank division as base unit on course indicated to the right (or left) of present course.



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TO DEPLOY FROM LINE OF DIVISIONS.

CASE: On a flank division as base unit on course 90° to right (left) of present course; when divisions of unequal strength are at less than natural interval from the base unit.

The diagram illustrates deployment on the right flank when guides are at such interval from the left flank that deployment upon the left flank would form column with no gaps in the formation (all ships at standard distance).

NOTE: The procedure herein prescribed for this interval situation will be followed if the deployment is from line of bearing of division guides on a course the reciprocal of the line of bearing.

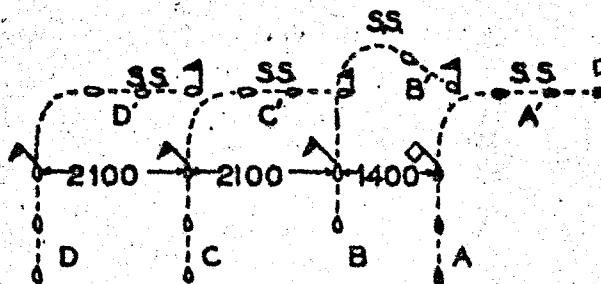
BASE UNIT: The flank division opposite to that from which interval has been taken.

SIGNAL: Deploy on the right (left) flank division (or on unit designated) on course to the right (left) of present course as indicated (indicating 90° to right (left) of present course).

MOVEMENTS REQUIRED.

Base unit, division A or D, and divisions C and D (C and A) change course right (or left) to course indicated.

Division B should open the interval from Division A (C) as soon as the deploy signal is made. If the signal is executed before division B succeeds in opening the interval, B should steam past the turning point 500 to 600 yards before turning to the deployment course and should then maneuver into column.



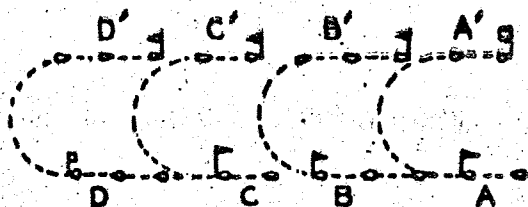
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TO COUNTERMARCH BY DIVISION HEAD OF COLUMN CHANGE MOVEMENTS.

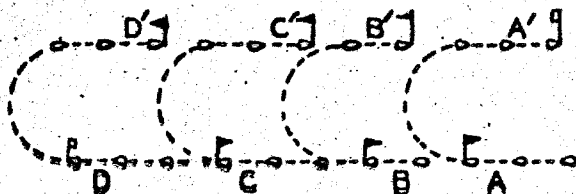
CASE: Divisions of unequal numerical strength; divisions at natural interval (after a signal to Division Commanders to close gaps or after any signal putting battleships of the battle line in battle formation).

SIGNAL: Divisions change course as indicated (indicating column right (or left) 180°).

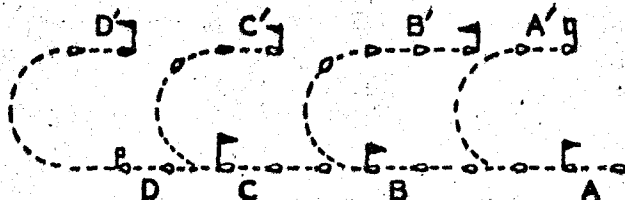
Should a COUNTERMARCH of 180 degrees be ordered by simultaneous division head of column change movements while steaming at such an interval that all ships are at standard distance from the next ahead, the division or divisions having the largest number of ships will execute the column change on execution of the signal and become, in effect, the base unit or units for the maneuver. Divisions containing a smaller number of ships will stand on present course such distances before starting the reversal that each ship will be at standard distance from the ship ahead when the maneuver is completed.



A AND C DIVISIONS STAND ON 350 YARDS BEFORE TURNING



B DIVISION STANDS ON 350 YARDS BEFORE TURNING



**A AND D DIVISIONS STAND ON 700 YARDS BEFORE TURNING
C DIVISION STANDS ON 350 YARDS BEFORE TURNING**

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TABLE I

(A)

FORM 9

FORM 9- FORM ON RELATIVE BEARING RIGHT 90° FROM GUIDE LINE			
9 FORM- " " " " " " " " "		LEFT " " " "	
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
1-1/8	AWAY FROM GUIDE	1°	100°
"	"	1°	110°
"	"	2°	120°
"	"	2°	130°
"	"	3°	140°
"	"	4°	150°
"	"	4°	160°
"	"	5°	170°
"	"	6°	180°

(B)

FORM 10

FORM 10—FORM ON RELATIVE BEARING RIGHT 100° FROM GUIDE			
10 FORM—		LEFT	
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
2/3	TOWARD GUIDE	1°	90°
1-1/8	AWAY FROM GUIDE	1°	110°
"	"	2°	120°
"	"	3°	130°
"	"	4°	140°
"	"	4°	150°
"	"	5°	160°
"	"	6°	170°
"	"	7°	180°

2/3	TOWARD GUIDE	1 °	90 °
II	II	2 °	100 °
1-1/8	AWAY FROM GUIDE	3 °	120 °
II	II	3 °	130 °
II	II	4 °	140 °
II	II	5 °	150 °
II	II	6 °	160 °
II	II	7 °	170 °
II	II	8 °	180 °

(D)

FORM 12

FORM 12-FORM ON RELATIVE BEARING RIGHT 120° FROM GUIDE			
12 FORM-	II	II	II
	II	II	II
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
2/3	TOWARD GUIDE	8 °	90 °
II	II	6 °	100 °
II	II	3 °	110 °
1-1/8	AWAY FROM GUIDE	4 °	130 °
II	II	5 °	140 °
II	II	6 °	150 °
II	II	7 °	160 °
II	II	8 °	170 °
II	II	9 °	180 °

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TABLE I

(E)

FORM 13

FORM 13--FORM ON RELATIVE BEARING RIGHT 130° FROM GUIDE			
13 FORM-		LEFT	
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
2/3	TOWARD GUIDE	11°	90°
II	II II	11°	100°
II	II II	9°	110°
II	II II	5°	120°
1-1/8	AWAY FROM GUIDE	6°	140°
II	II	7°	150°
II	II	8°	160°
II	II	10°	170°
II	II	11°	180°

(F)

FORM 14

FORM 14--FORM ON RELATIVE BEARING RIGHT 140° FROM GUIDE			
14 FORM-		LEFT	
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
2/3	TOWARD GUIDE	15°	90°
II	II II	15°	100°
II	II II	11°	110°
3/4	II II	11°	120°
II	II II	6°	130°
1-1/8	AWAY FROM GUIDE	8°	150°
II	II	10°	160°
II	II	11°	170°
II	II	13°	180°

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TABLE I.

(G)

FORM 15

FORM 15-FORM ON RELATIVE BEARING RIGHT 150° FROM GUIDE			
15 FORM-			
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
2/3	TOWARD GUIDE	19°	90°
3/4		15°	100°
4/5		16°	110°
		16°	120°
		12°	130°
5/6		5°	140°
1-1/8	AWAY FROM GUIDE	8°	160°
		12°	170°
		15°	180°

(H)

FORM 16

FORM 16-FORM ON RELATIVE BEARING RIGHT 160° FROM GUIDE			
16 FORM -			
SPEED RATIO	CHANGE OF COURSE		PRESENT RELATIVE BEARING
3/4	TOWARD GUIDE	15°	90°
		19°	100°
5/6		22°	110°
		20°	120°
		17°	130°
4		14°	140°
1		8°	150°
1-1/8	AWAY FROM GUIDE	7°	170°
		14°	180°

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TABLE I

(I)

FORM 17

FORM 17—FORM ON RELATIVE BEARING RIGHT 170° FROM GUIDE			
17FORM—	“	“	“
SPEED RATIO	CHANGE OF COURSE	PRESENT RELATIVE BEARING	
3/4	TOWARD GUIDE	19°	90°
4/5	“ “	17°	100°
1	“ “	25°	110°
1	“ “	24°	120°
1	“ “	22°	130°
1	“ “	19°	140°
1	“ “	15°	150°
1	“ “	7°	160°
1-1/8	“ “	9°	180°

(J)

FORM 18

FORM 18—FORM ON RELATIVE BEARING RIGHT 180° FROM GUIDE			
18FORM—	“	“	“
SPEED RATIO	CHANGE OF COURSE	PRESENT RELATIVE BEARING	
4/5	TOWARD GUIDE	17°	90°
5/6	“ “	17°	100°
1	“ “	25°	110°
1	“ “	25°	120°
1	“ “	25°	130°
1	“ “	23°	140°
1	“ “	19°	150°
1	“ “	14°	160°
1	“ “	9°	170°

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TABLE II
FOR USE BY DIVISIONS.

COURSE ANGLES FOR DROPPING BACK THE BEARING
WITHOUT CHANGE OF INTERVAL, WITHOUT CROSSING THE
TRACK OF THE GUIDE, GUIDE MAINTAINING STANDARD SPEED.

RED FIGURES INDICATE TURN TOWARD GUIDE
BLACK FIGURES INDICATE TURN AWAY FROM GUIDE
COURSE ANGLES ARE FOR STANDARD SPEED EXCEPT
COURSE ANGLES IN SQUARES ARE AT 2/3 SPEED
COURSE ANGLES IN CIRCLES ARE AT 1/3 SPEED
COURSE ANGLES IN DIAMONDS ARE AT 1/2 SPEED

PRESENT RELATIVE BEARING & NO OF DIV FROM THE GUIDE	NEW RELATIVE BEARING FROM GUIDE																		PRESENT RELATIVE BEARING & NO OF DIV FROM THE GUIDE
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
	← READ IN CONNECTION WITH LEFT HAND COLUMN									← READ IN CONNECTION WITH RIGHT HAND COLUMN →									
0°	1														40	30	30	10	1
	2	10	20	30	40	50	60	70	80	90	1	1	1	1	40	40	30	20	2 90°
	3														50	40	40	20	3
10°	1								90	90					40	40			1
	2					60	70	80	90	90	90	1	1	1	40	40	90	80	2 100°
	3		15	25	35				90	90					50	50			3
20°	1								80	80	90	90							1
	2					80	90		90	90	90	90	1	1	1	1	90	80	2 110°
	3			25	35	45			90	90	90	90							3
30°	1								70	80	90	90	90						1
	2							35	90	90	90	90	90	1	1		70	60	2 120°
	3			35	45	55			90	90	90	90	90		(15)	(40)			3
40°	1								70	80	90	90	90	90					1
	2					35	25	15	90	90	90	90	90				60	50	2 130°
	3				45				90	90	90	90	90	(15)	(40)	(15)			3
50°	1									70	80	90	90	70					1
	2					25	15	15	10	90	90	90	90	90			50	40	2 140°
	3									90	90	90	90	90	(15)	(40)			3
60°	1									70	70	70	80	80					1
	2						15	10	5	5	90	90	90	90			40	30	2 150°
	3									90	90	90	90	90	(15)				3
70°	1										80	80	80	80	80				1
	2							5	5	5	0	70	70	70	70	80	30	20	2 160°
	3											90	90	90	90	90			3
80°	1													30	30	50	50	40	1
	2								5	0	1	1	1	60	60	50	50	40	2 170°
	3													80	80	70	60	50	3
← READ IN CONNECTION WITH LEFT HAND COLUMN																			

READ IN CONNECTION WITH LEFT HAND
COLUMN

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TABLE III-A
COURSE ANGLES FOR ADVANCING THE BEARING
WITHOUT CHANGE OF INTERVAL - USING
FULL SPEED, GUIDE STANDARD.

RED FIGURES INDICATE TURNS TOWARD GUIDE.
BLACK FIGURES INDICATE TURNS AWAY FROM GUIDE.

PRESENT RELATIVE BEARING FROM GUIDE	NEW RELATIVE BEARING FROM THE GUIDE																	PRESENT RELATIVE BEARING FROM GUIDE	
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°		170°
10°	20	4	4	3	2	2	1	1	0	1									100°
20°	18	15	3	2	2	1	1	0	1	1	1								110°
30°	15	13	11	2	1	1	0	1	1	2	2	3							120°
40°	13	11	10	8	1	0	1	1	2	2	3	3	4						130°
50°	11	10	8	7	6	1	1	2	2	3	3	4	5	6					140°
60°	10	8	7	6	5	4	2	2	3	4	4	5	6	7	8				150°
70°	8	7	6	5	4	3	3	3	4	4	5	6	7	8	10	11			160°
80°	7	6	5	4	3	3	3	3	4	5	6	7	8	10	11	13	15		170°
90°	6	5	4	3	3	3	3	3	4	5	6	7	8	10	11	13	15	21	180°

TABLE III-B

COURSE ANGLES FOR ADVANCING THE BEARING
WITHOUT CHANGE OF INTERVAL - USING STANDARD
SPEED - GUIDE 2/3 SPEED.

PRESENT BEARING FROM GUIDE	NEW RELATIVE BEARING FROM GUIDE																	PRESENT BEARING FROM GUIDE	
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160		170
10°	14	14	11	11	1	4	3	2	11										110°
20°	10	10	8	7	0	4	4	4	4	4									120°
30°	10	10	8	5	3	2	0	2	4	5	7	9							130°
40°	10	10	8	5	3	2	0	2	4	5	7	9	11	13					140°
50°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17			150°
60°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	160°
70°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	170°
80°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	180°
90°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	190°
100°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	200°
110°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	210°
120°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	220°
130°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	230°
140°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	240°
150°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	250°
160°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	260°
170°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	270°
180°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	280°
190°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	290°
200°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	300°
210°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	310°
220°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	320°
230°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	330°
240°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	340°
250°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	350°
260°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	360°
270°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	370°
280°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	380°
290°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	390°
300°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	400°
310°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	410°
320°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	420°
330°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	430°
340°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	440°
350°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	450°
360°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	460°
370°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	470°
380°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	480°
390°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	490°
400°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	500°
410°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	510°
420°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	520°
430°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	530°
440°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	540°
450°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	550°
460°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	560°
470°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	570°
480°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	580°
490°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	590°
500°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	600°
510°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	610°
520°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	620°
530°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	630°
540°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	640°
550°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	650°
560°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	660°
570°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	670°
580°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	680°
590°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	690°
600°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	700°
610°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	710°
620°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	720°
630°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	730°
640°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	740°
650°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	750°
660°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	760°
670°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	770°
680°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	780°
690°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	790°
700°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	800°
710°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	810°
720°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	820°
730°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	830°
740°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	840°
750°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	850°
760°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	860°
770°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	870°
780°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	880°
790°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	890°
800°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	900°
810°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	910°
820°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	920°
830°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	930°
840°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	940°
850°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	950°
860°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	960°
870°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	970°
880°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	980°
890°	10	10	8	5	3	2	0	2	4	5	7	9	11	13	15	17	19	22	