

FIG.1

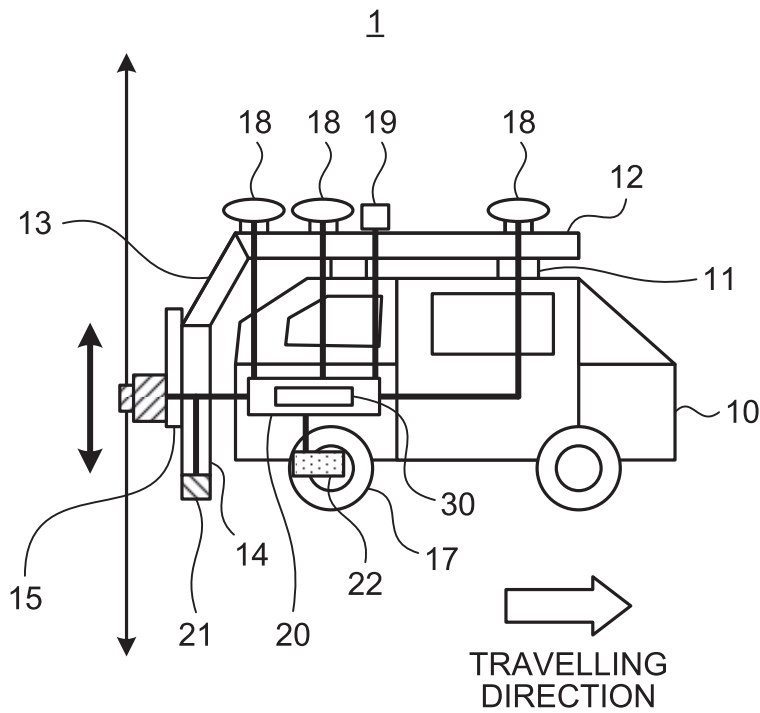


FIG.2

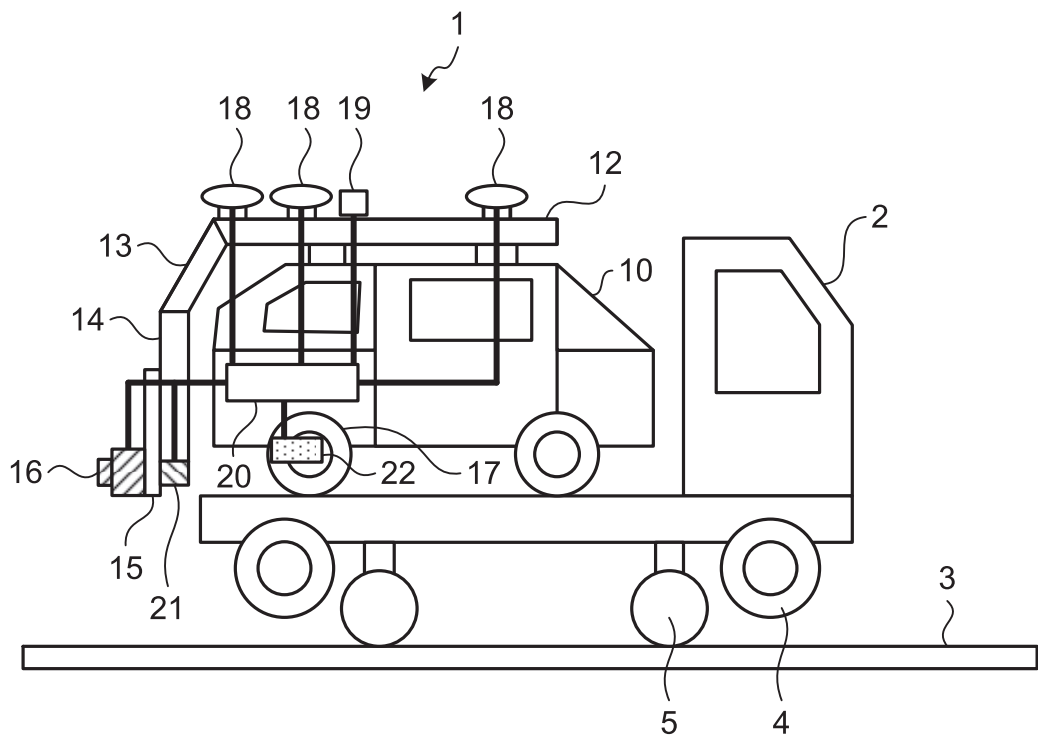


FIG.3

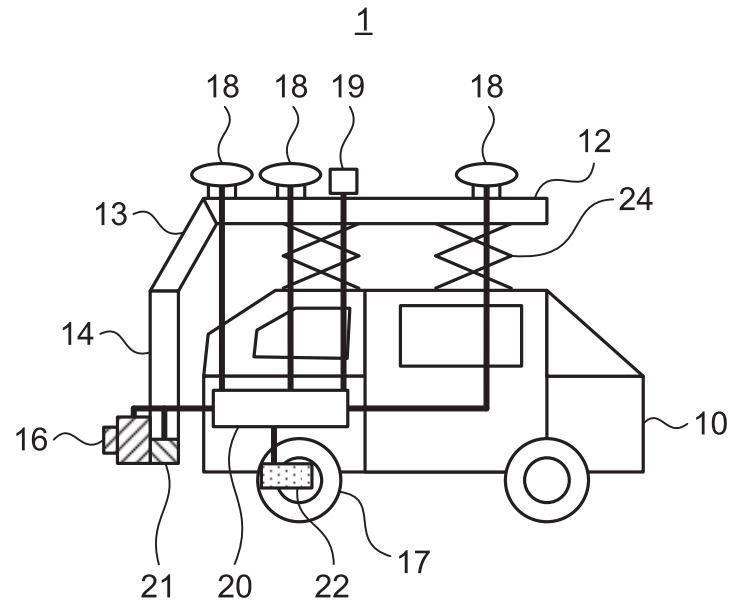


FIG.4

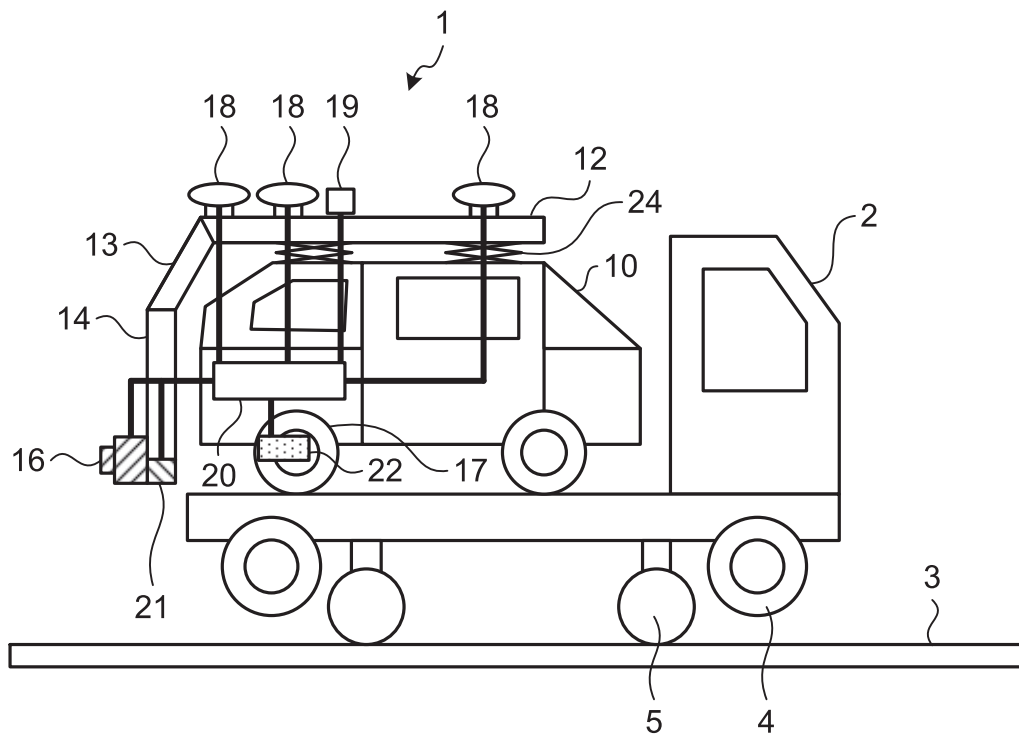


FIG.5

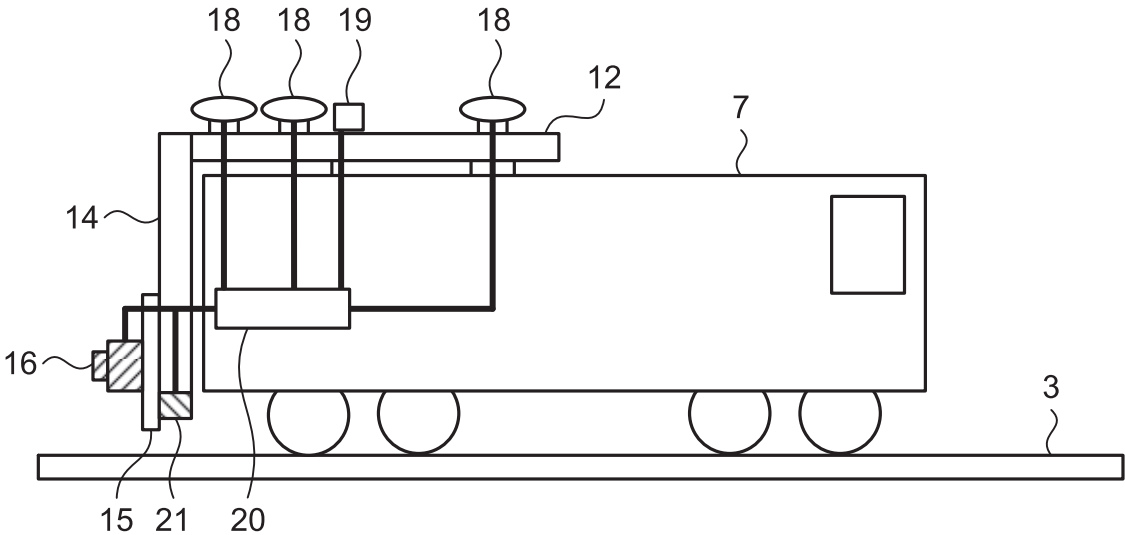


FIG.6

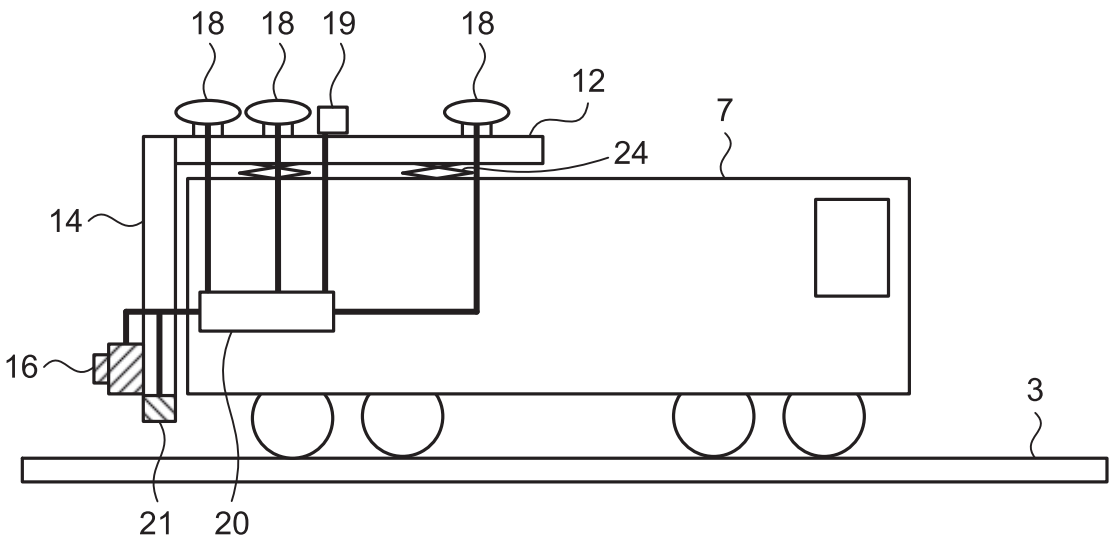


FIG.7

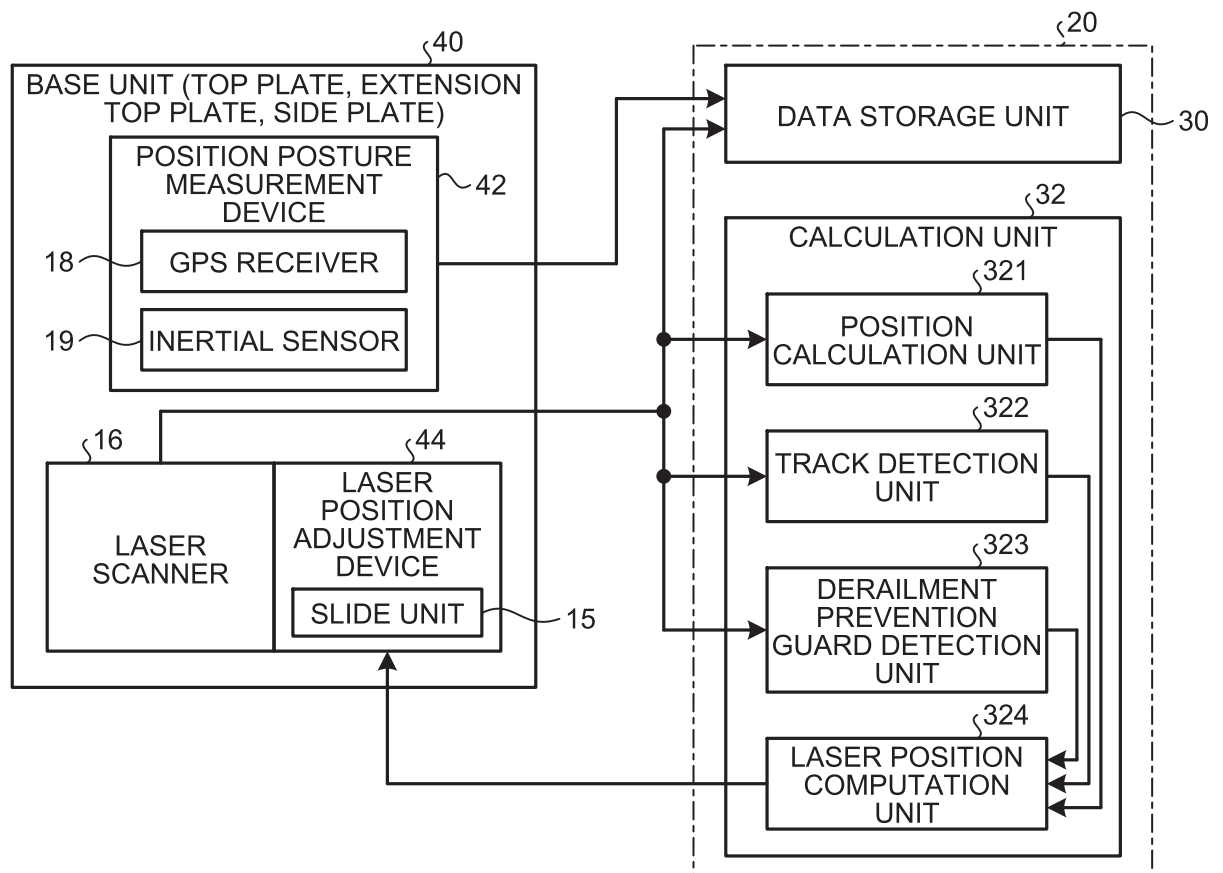


FIG.8

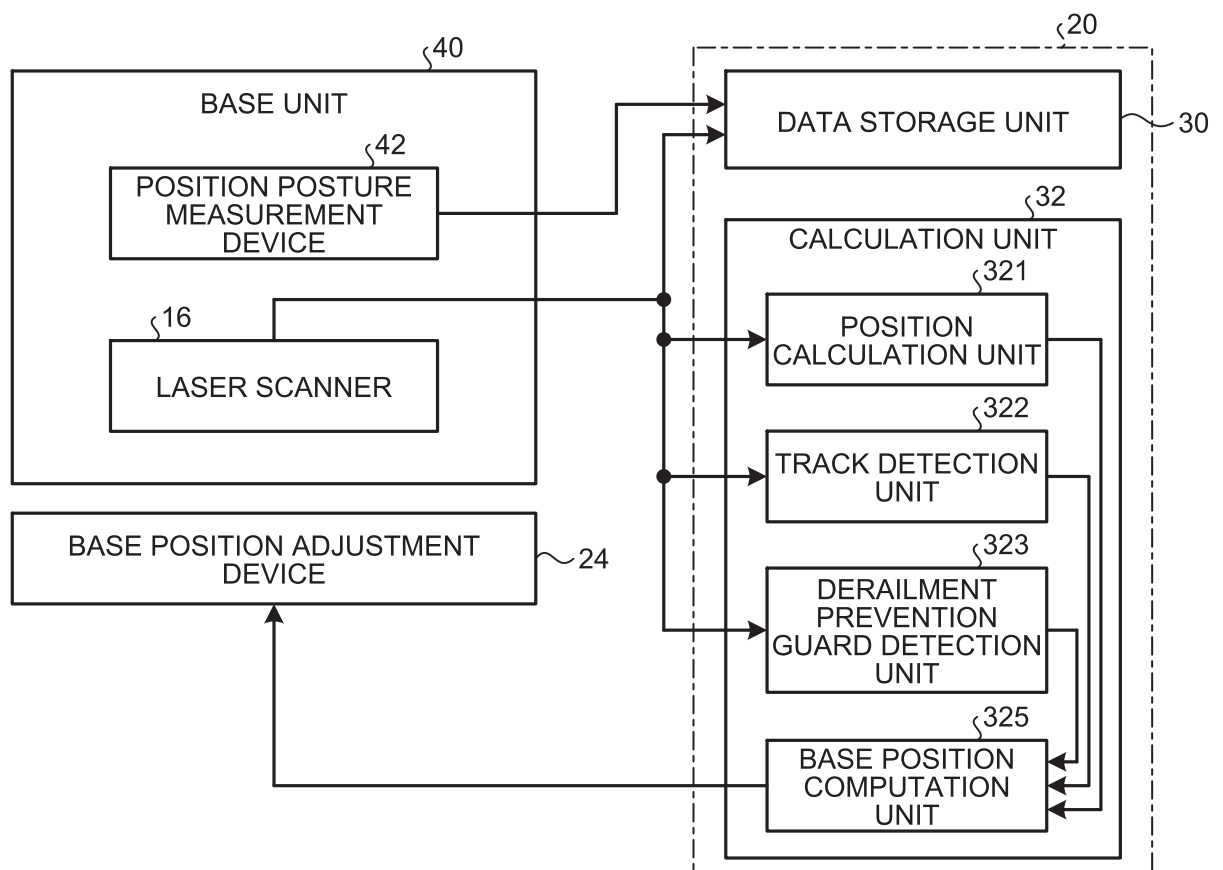


FIG.9

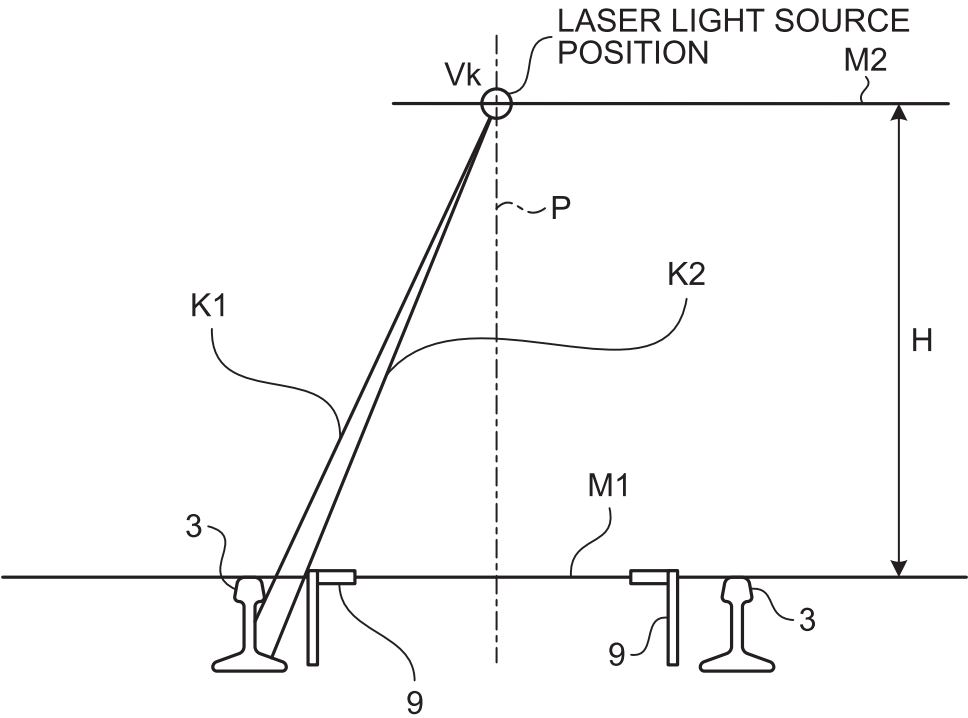


FIG.10

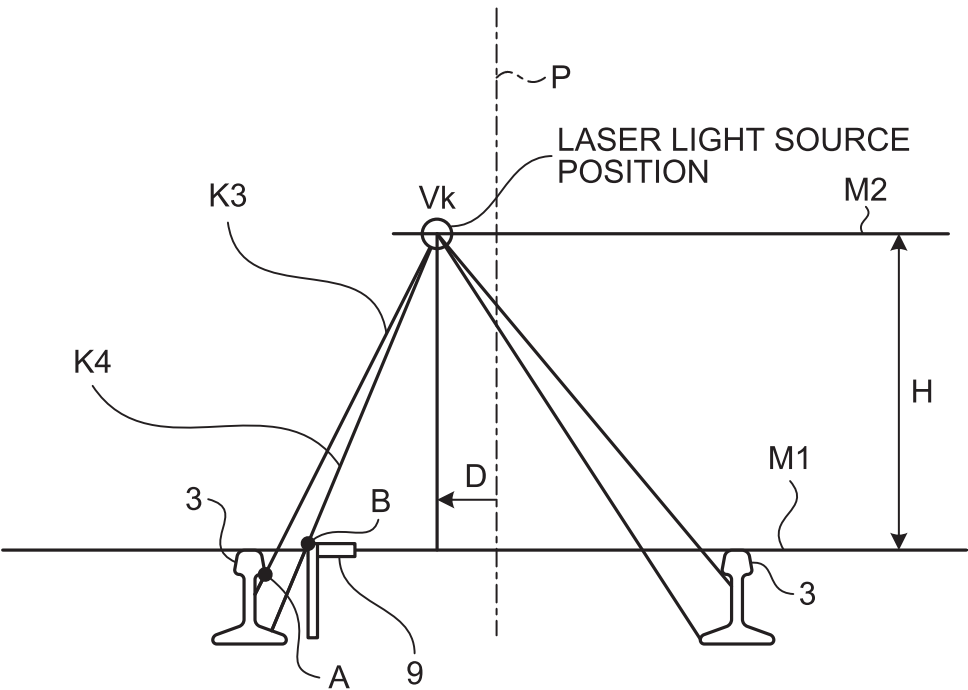


FIG.11

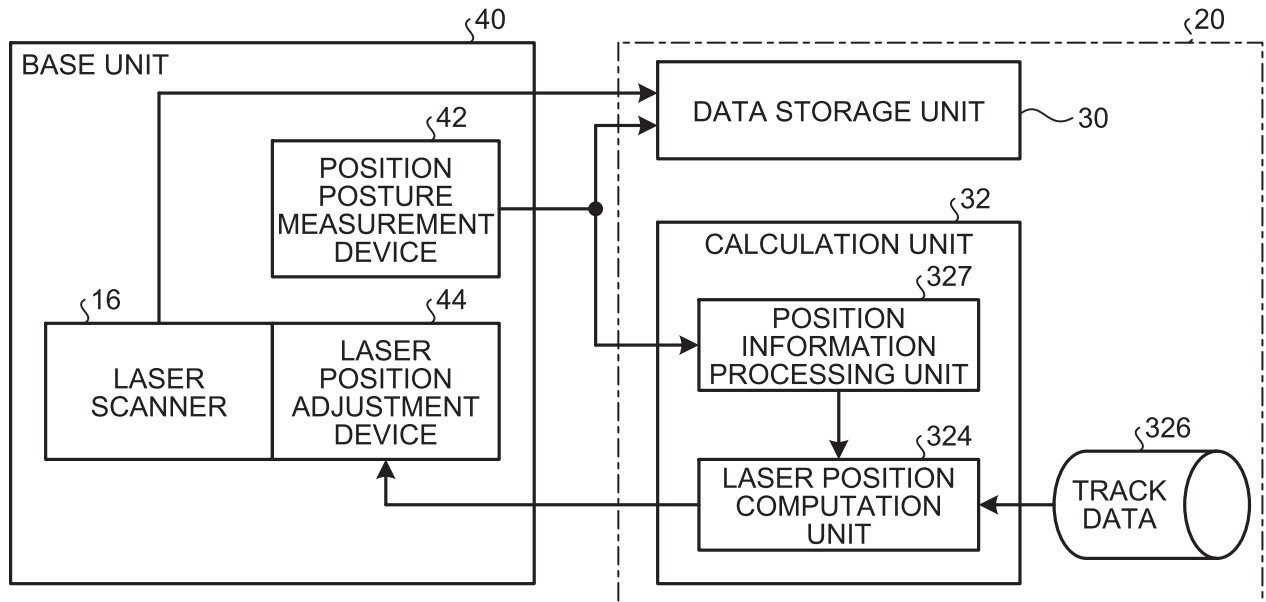


FIG.12

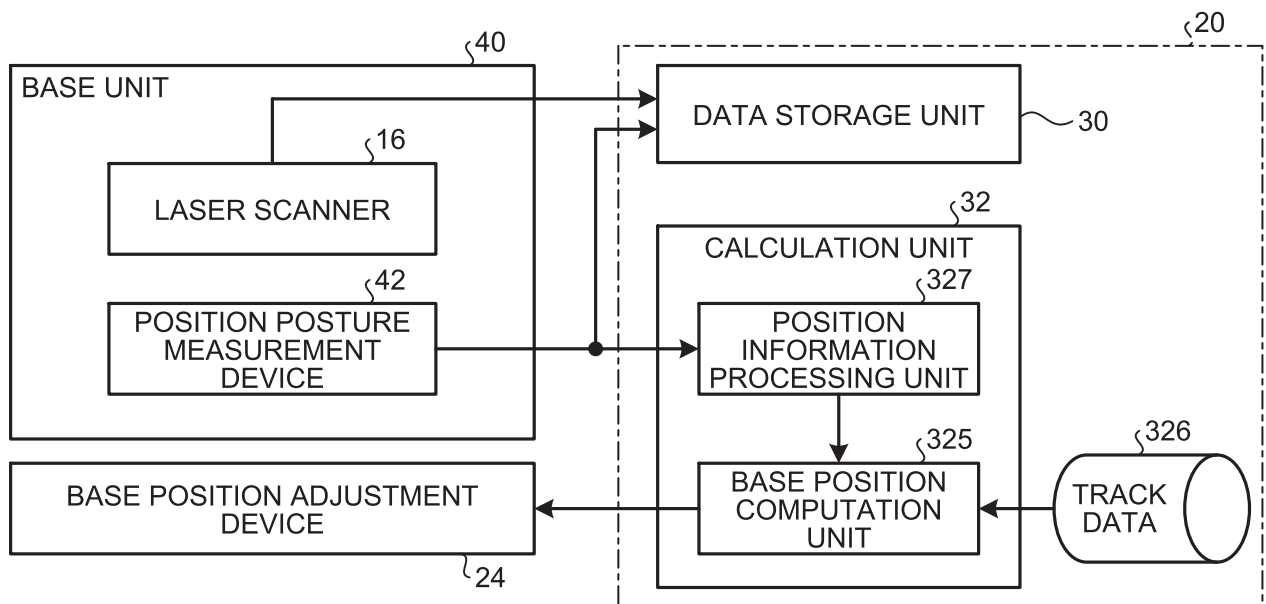


FIG.13

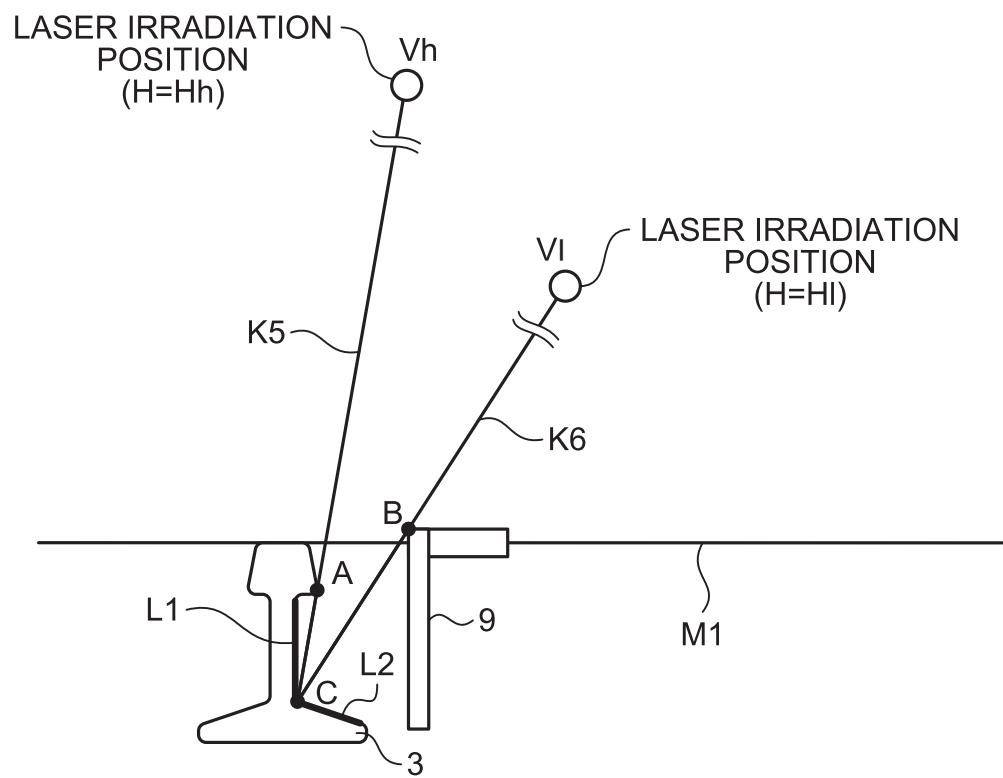
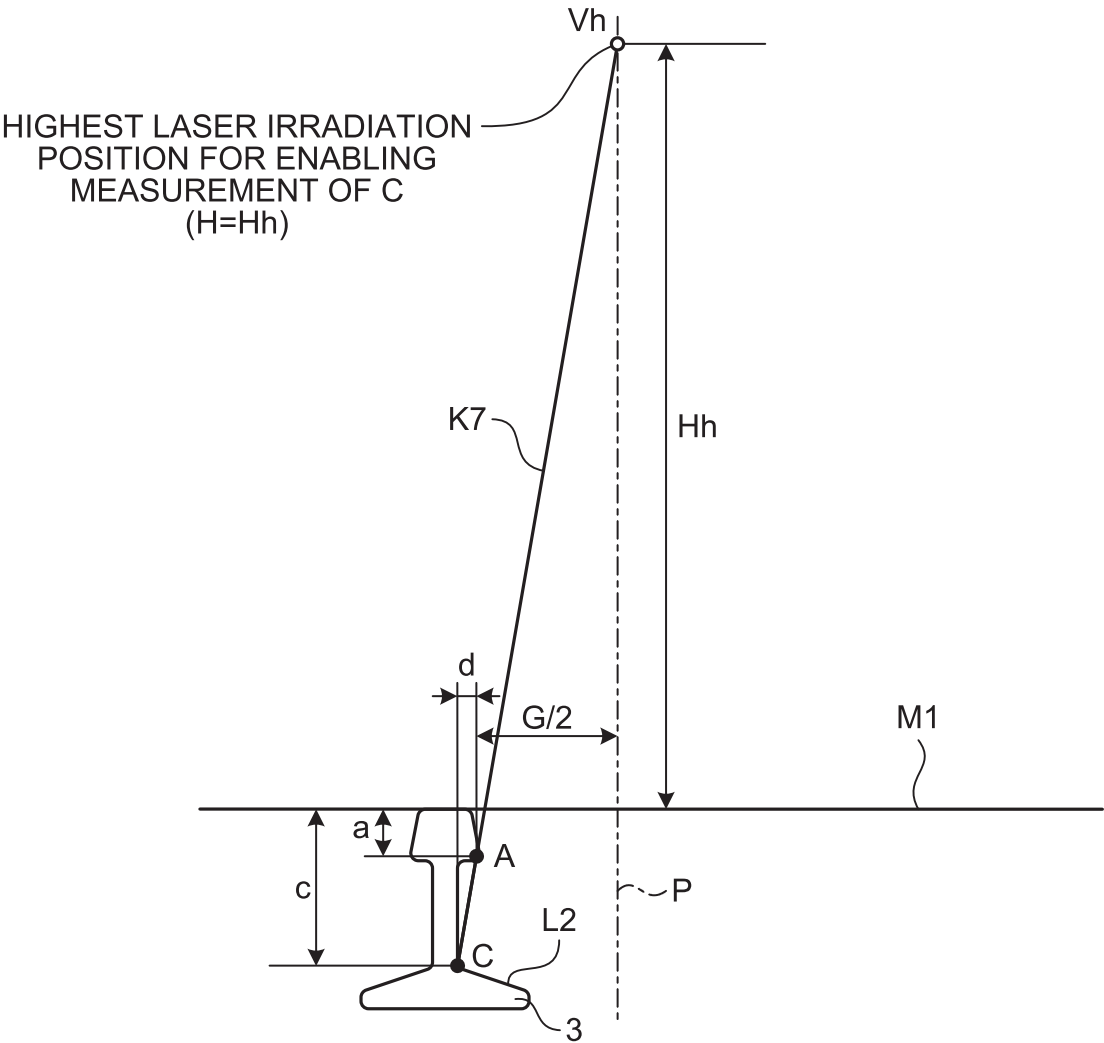


FIG.14



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FIG.15

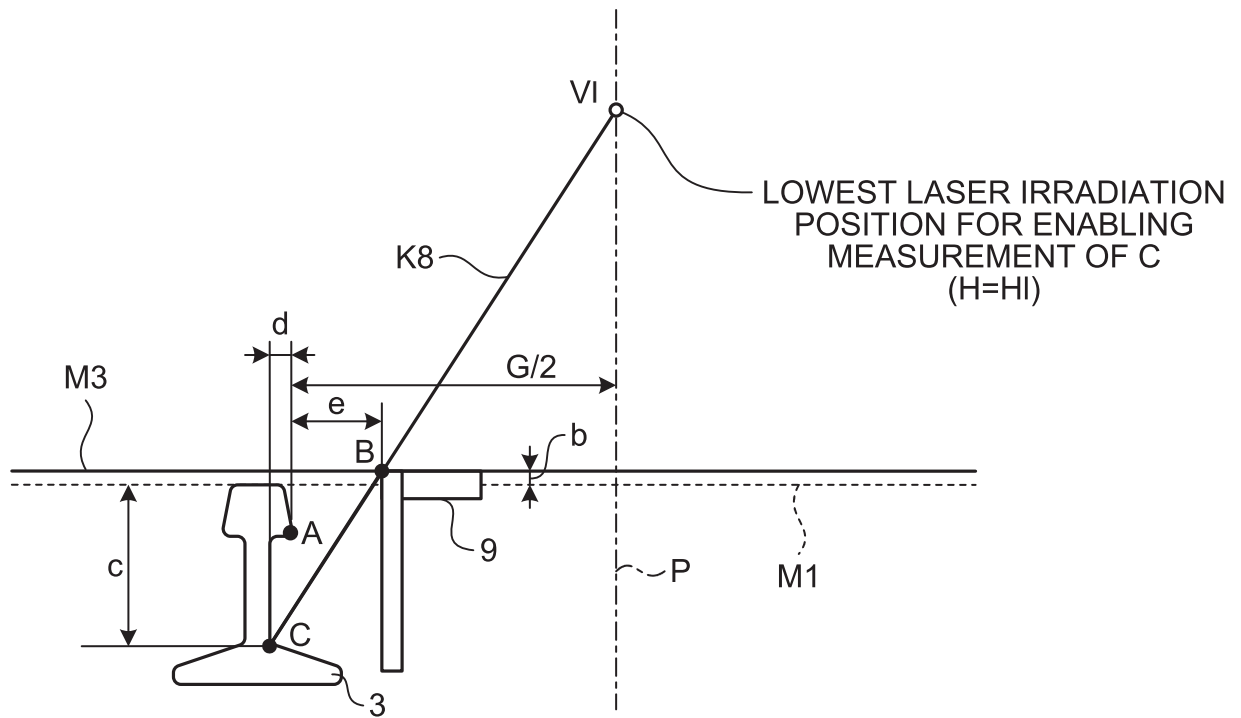
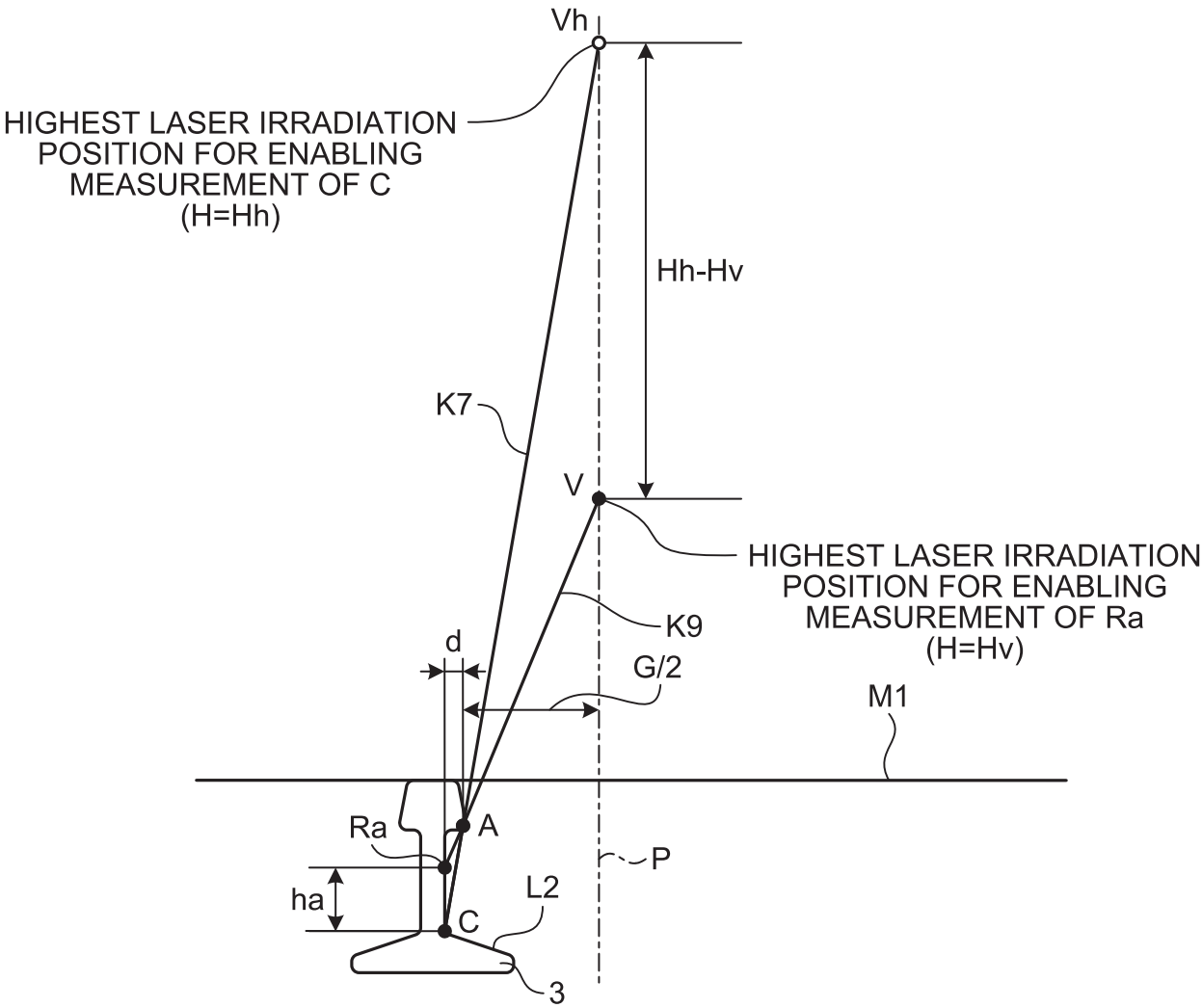


FIG.16



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FIG.17

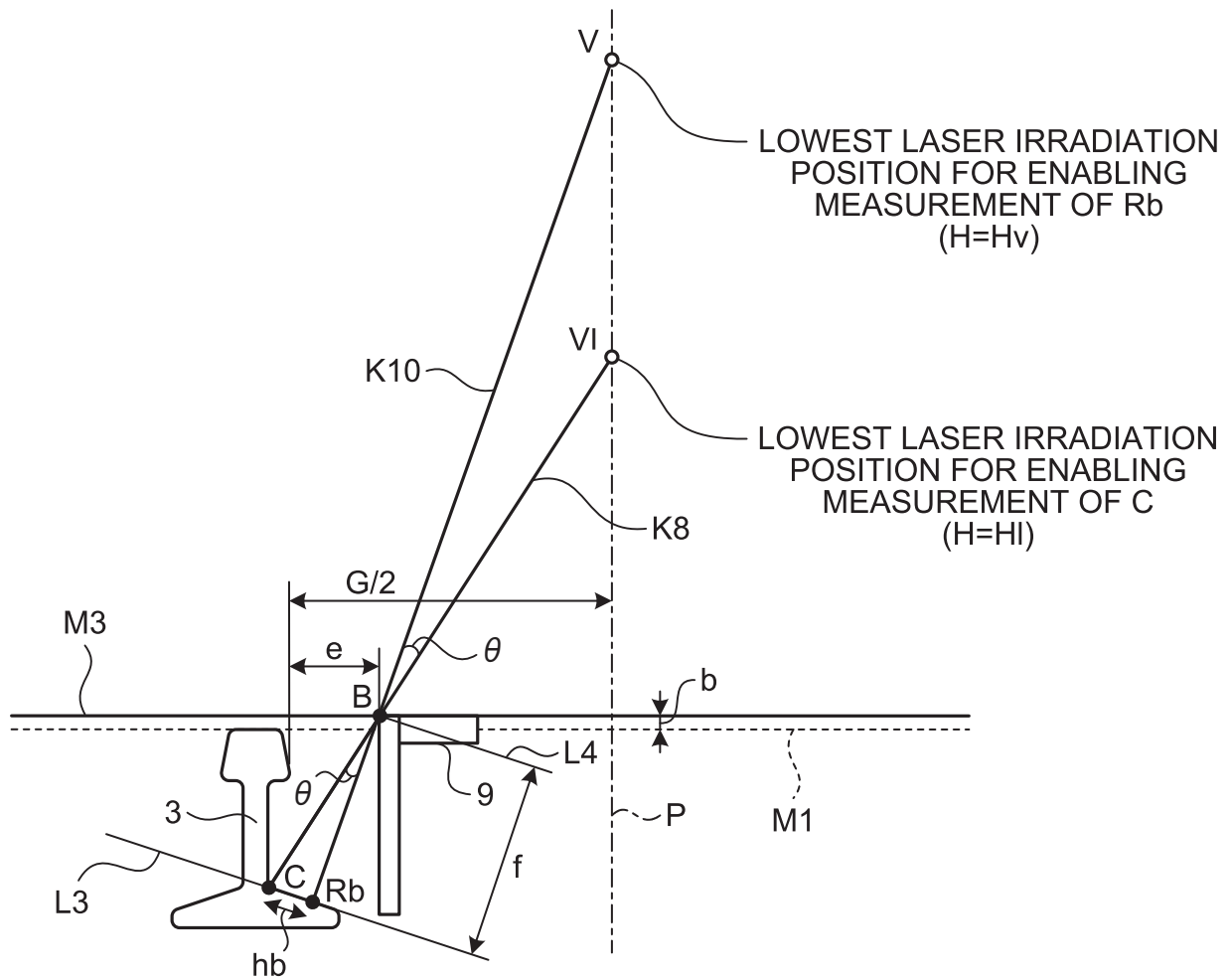


FIG.18

<EXEMPLARY VALUES OF VARIABLES FOR MAJOR RAILS>

VARIABLE	60 kg RAIL (BULLET TRAIN)	50 kgN RAIL (CONVENTIONAL LINE)
a	40.875 mm	37.2 mm
c	143.9 mm	123 mm
d	24.25 mm	25 mm

FIG.19

<EXEMPLARY VALUES OF VARIABLES
FOR DERAILMENT PREVENTION GUARD>

VARIABLE	VALUE
b	20 mm
e	85 mm

FIG.20

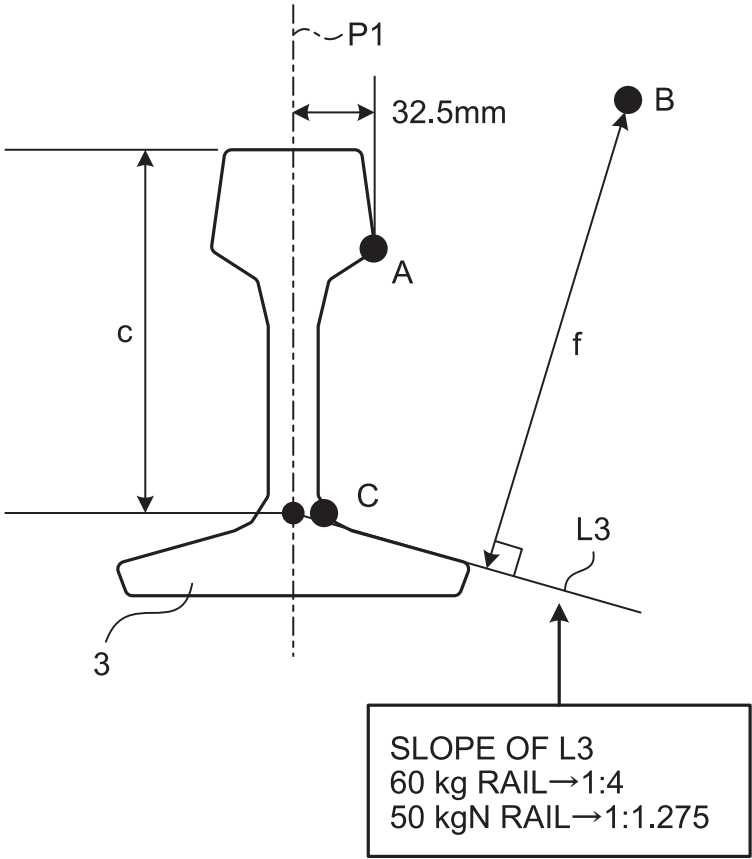


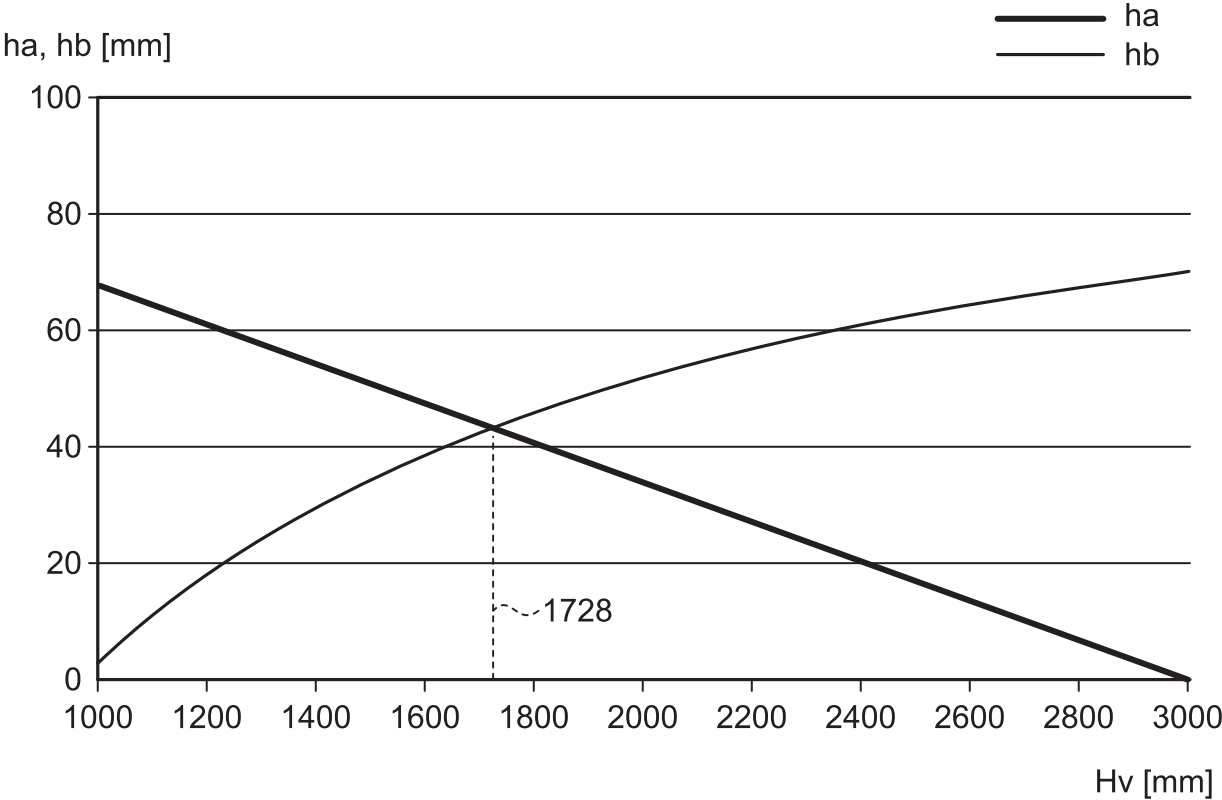
FIG.21

<VALUES OF VARIABLE f ASSOCIATED WITH VALUES OF
VARIABLES IN FIGS. 18 AND 19>

VARIABLE	60 kg RAIL (BULLET TRAIN)	50 kgN RAIL (CONVENTIONAL LINE)
f	185.5 mm	172.0 mm

FIG.22

<ha AND hb FOR 60 kg RAIL WITH STANDARD GAUGE>



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FIG.23

<ha AND hb FOR 50 kgN RAIL WITH STANDARD GAUGE>

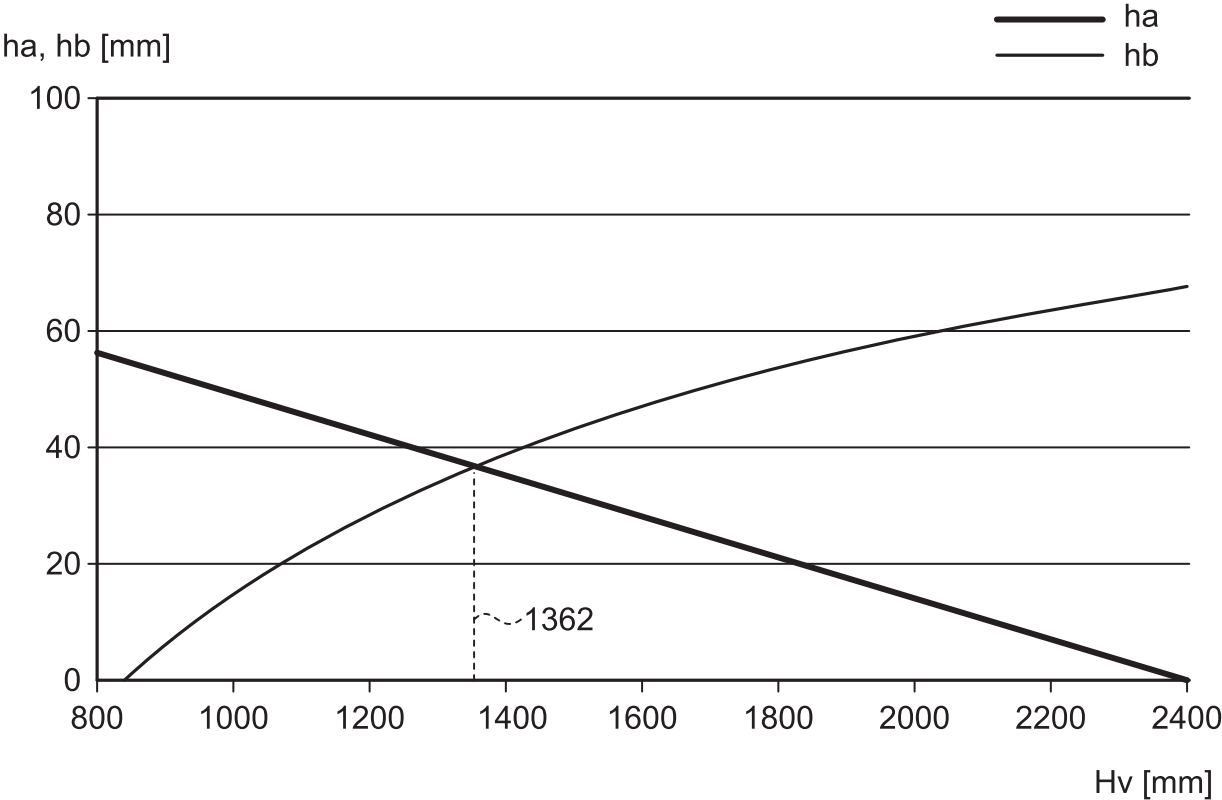
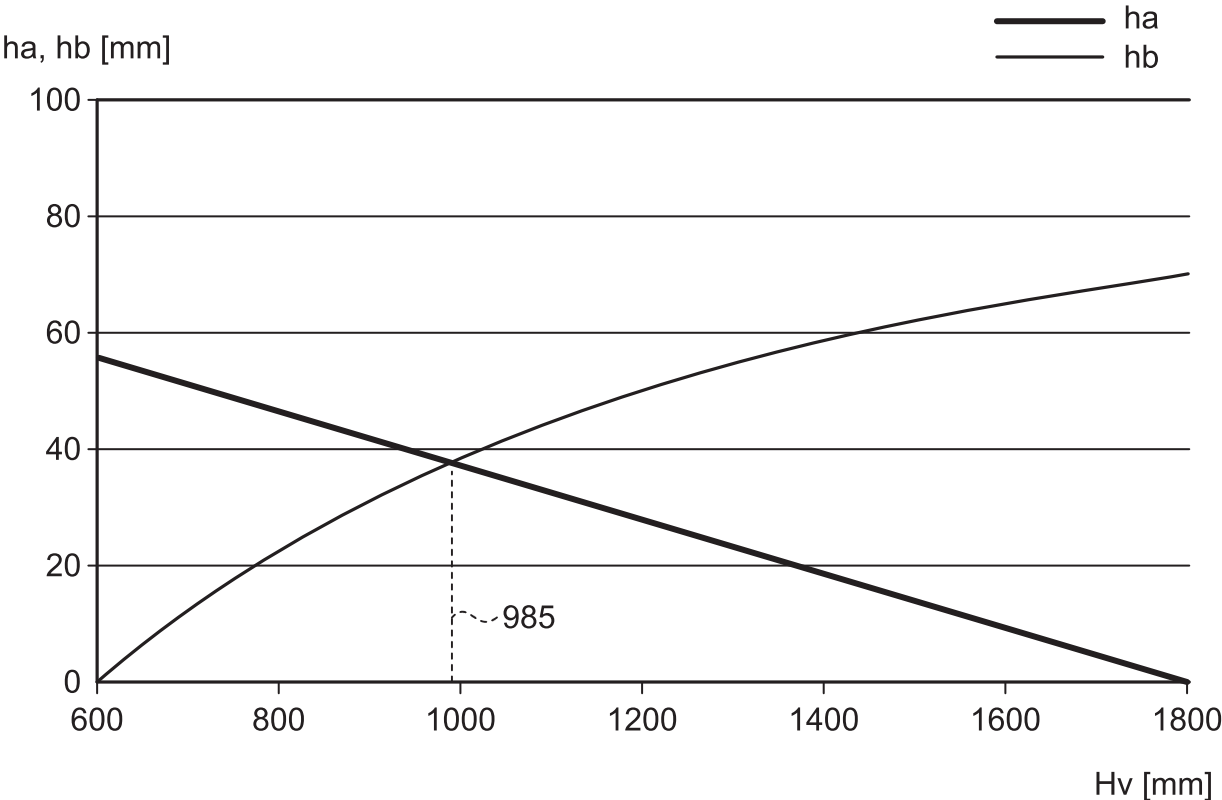


FIG.24

<ha AND hb FOR 50 kgN RAIL WITH NARROW GAUGE>



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FIG.25

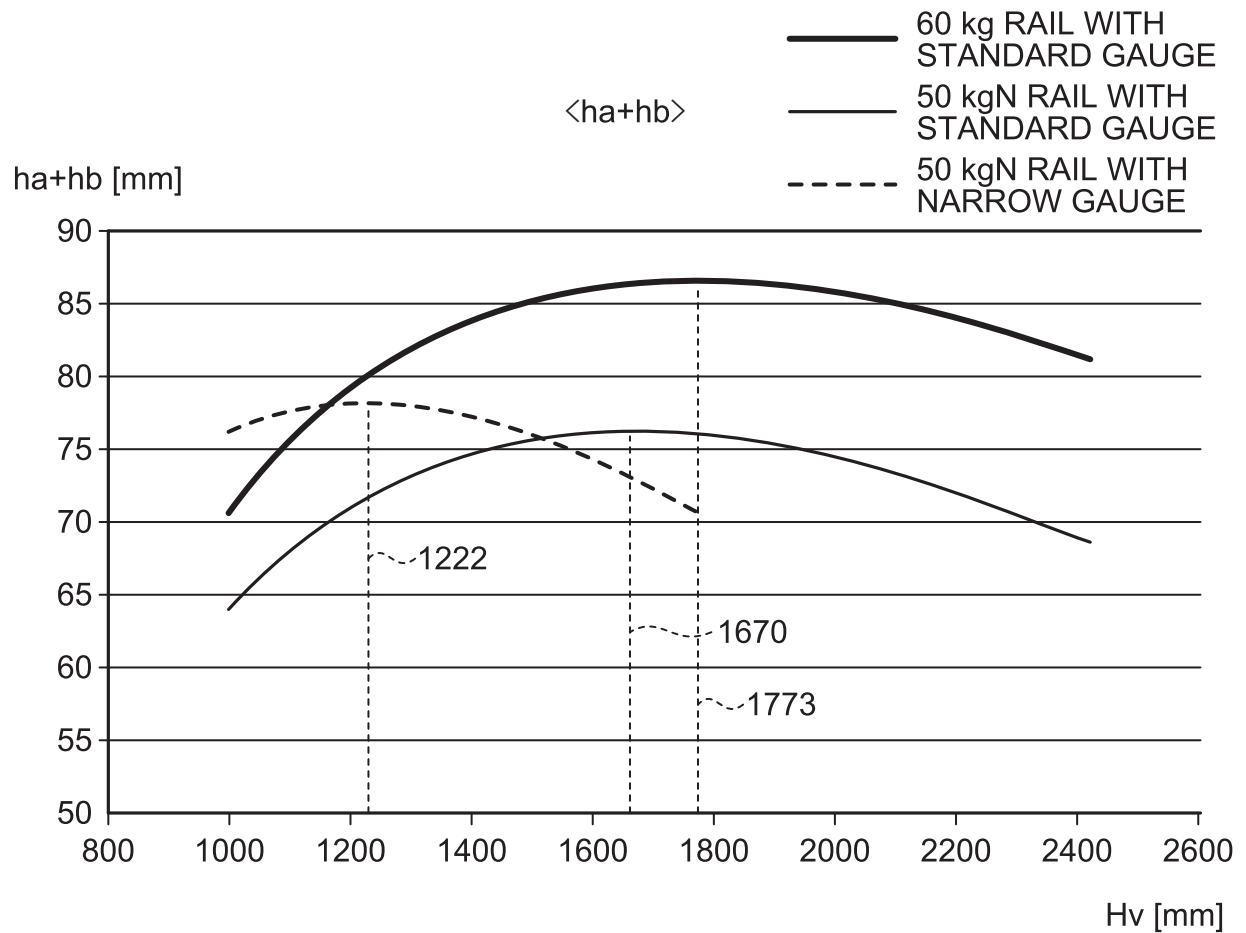


FIG.26

<APPROPRIATE LASER IRRADIATION POSITIONS(Hv)>

GAUGE(G)	STANDARD GAUGE(1435 mm)		NARROW GAUGE (1067 mm)
RAIL	60 kg RAIL	50 kgN RAIL	
(1) Hv	1728 mm	1362 mm	985 mm
(2) Hv	1773 mm	1670 mm	1222 mm

FIG.27

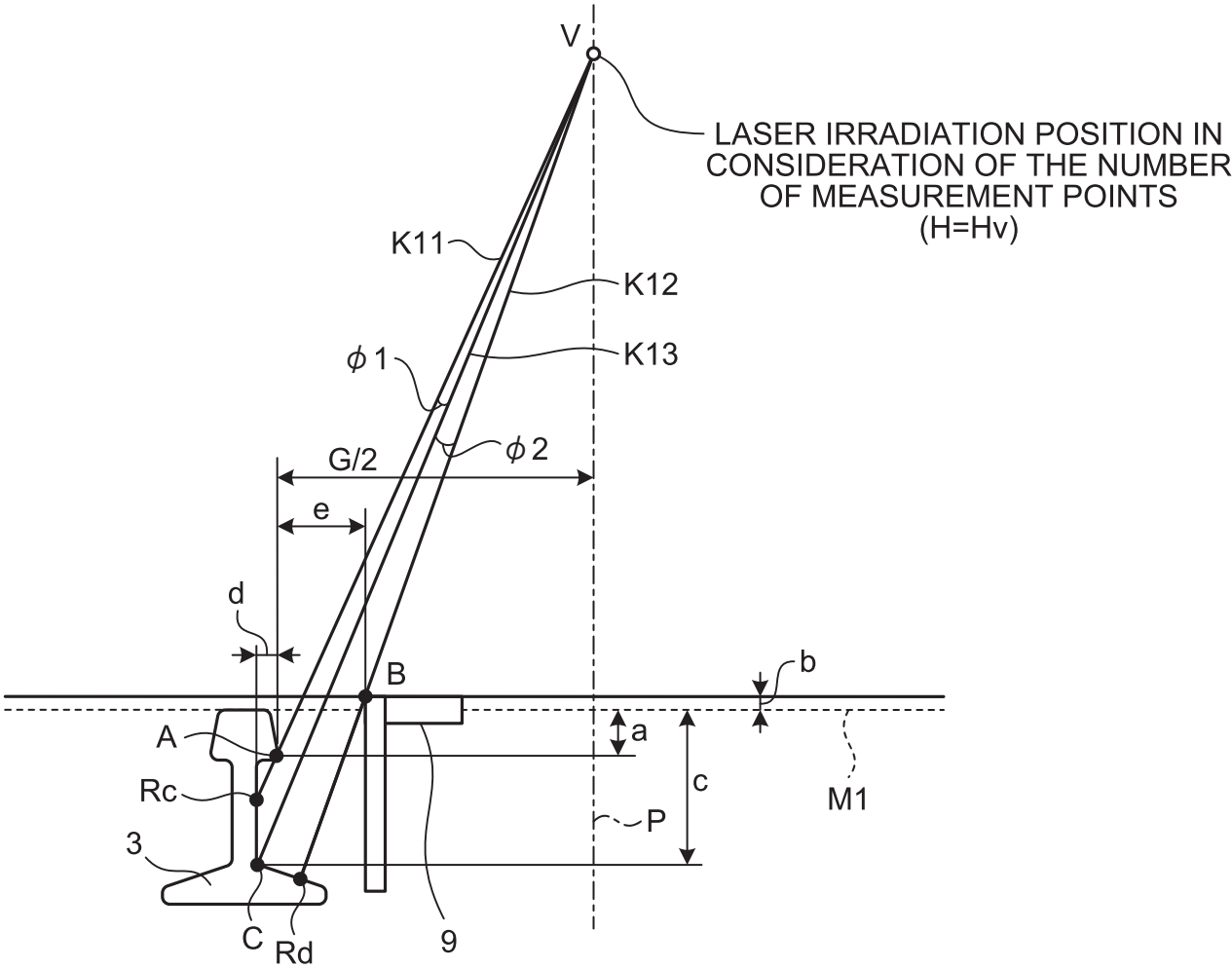


FIG.28

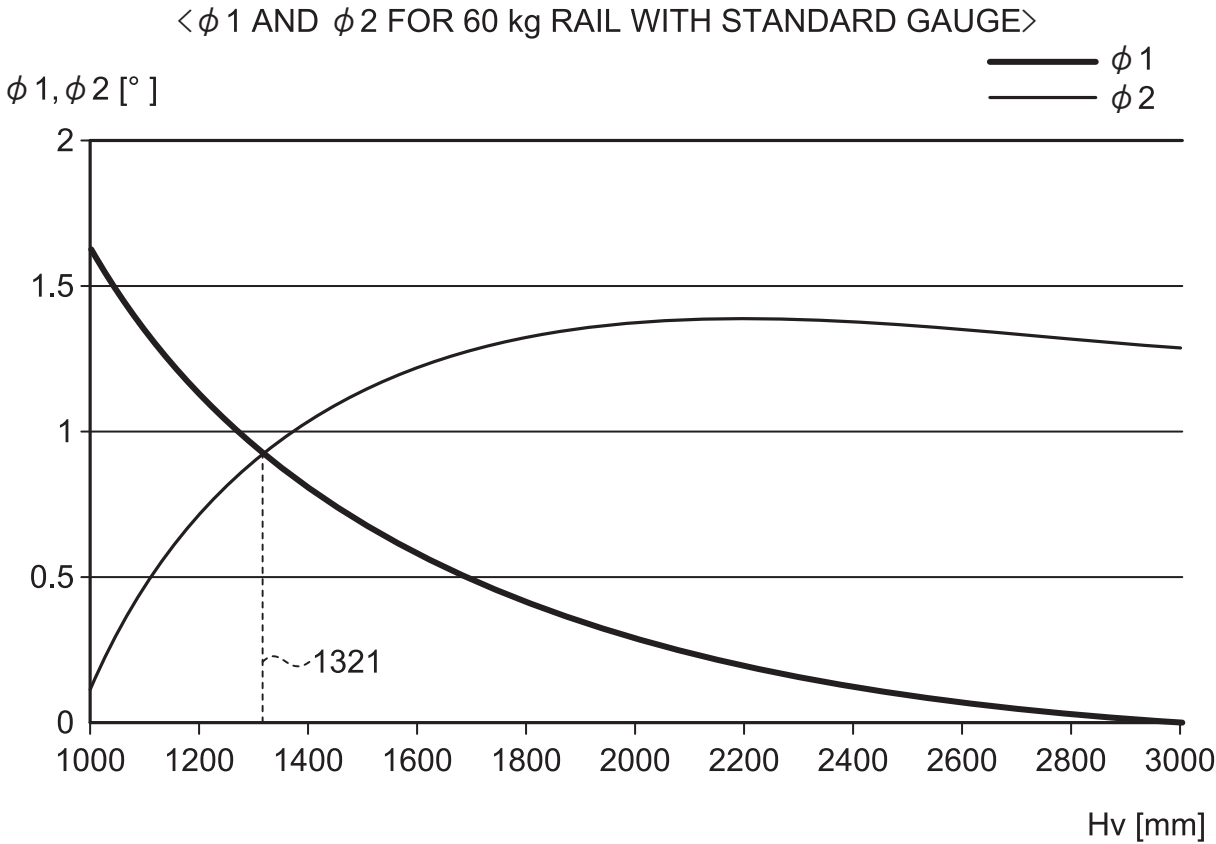
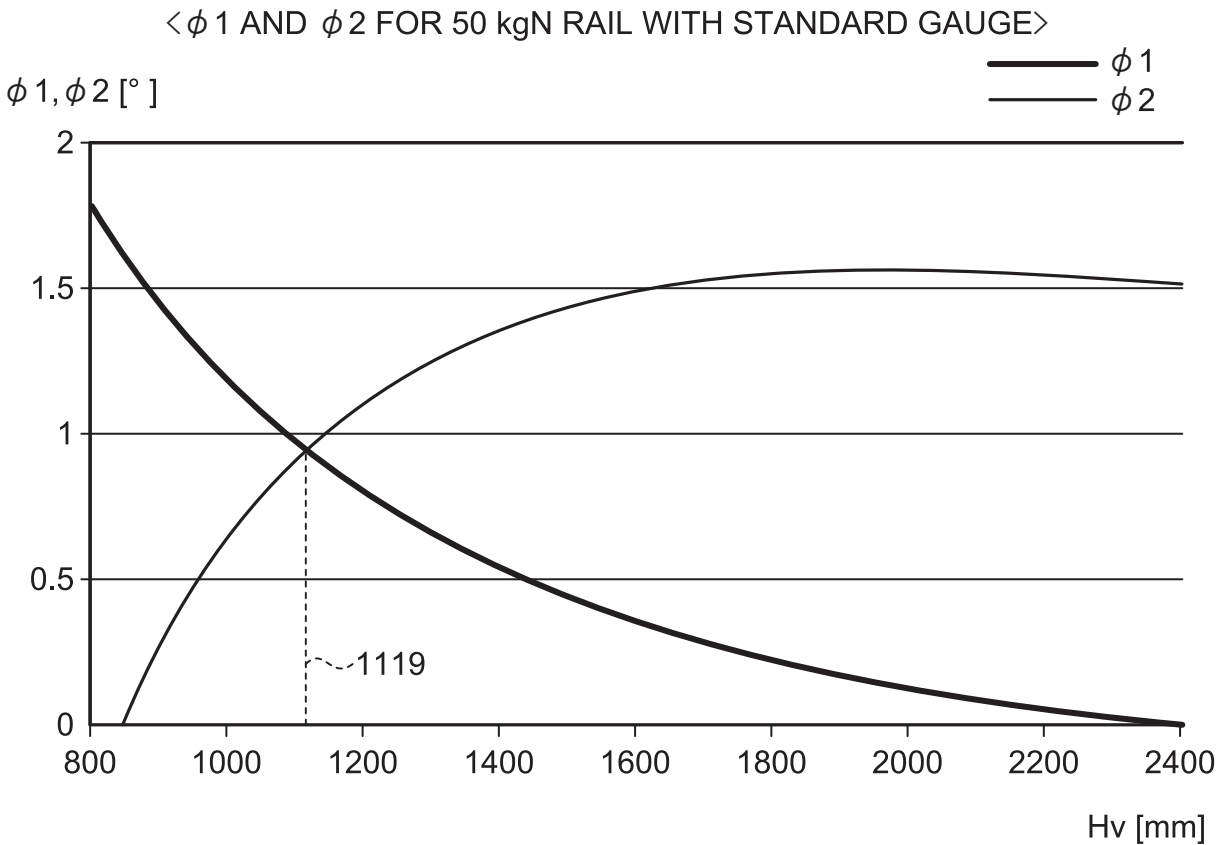


FIG.29



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FIG.30

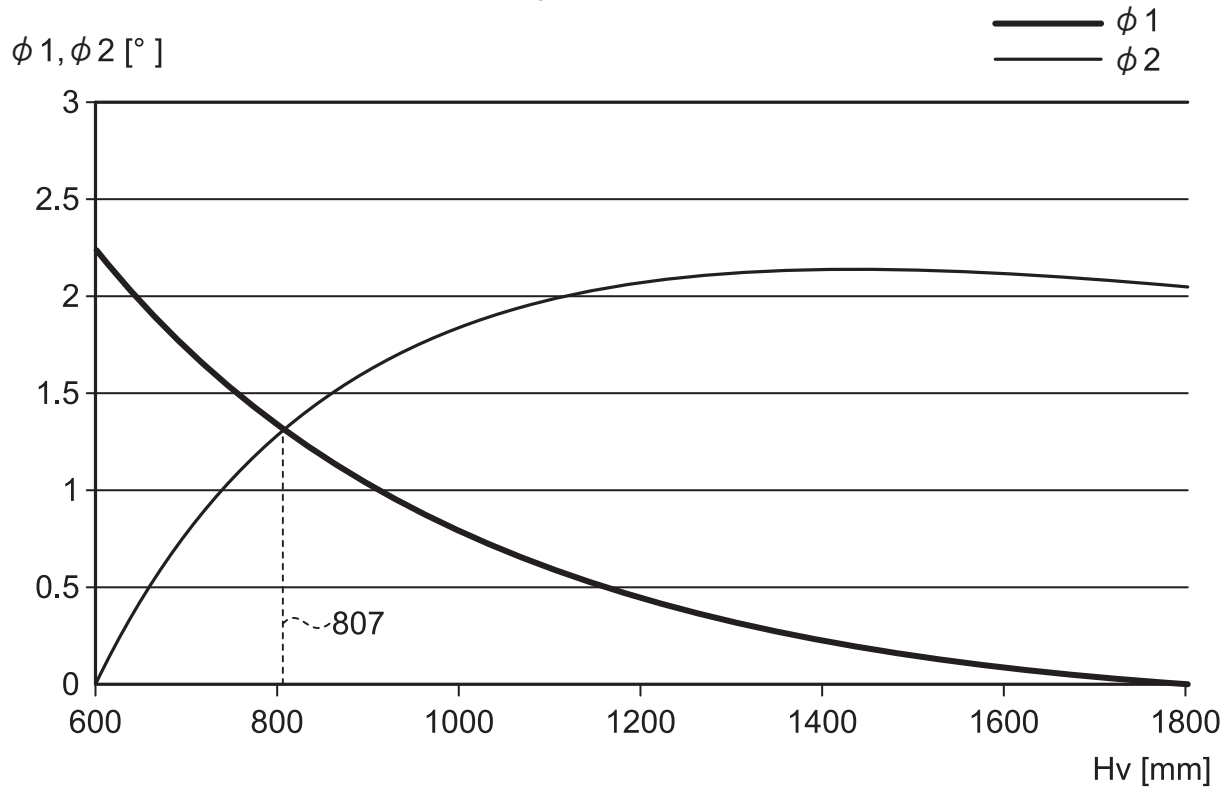
< $\phi 1$ AND $\phi 2$ FOR 50 kgN RAIL WITH NARROW GAUGE >

FIG.31

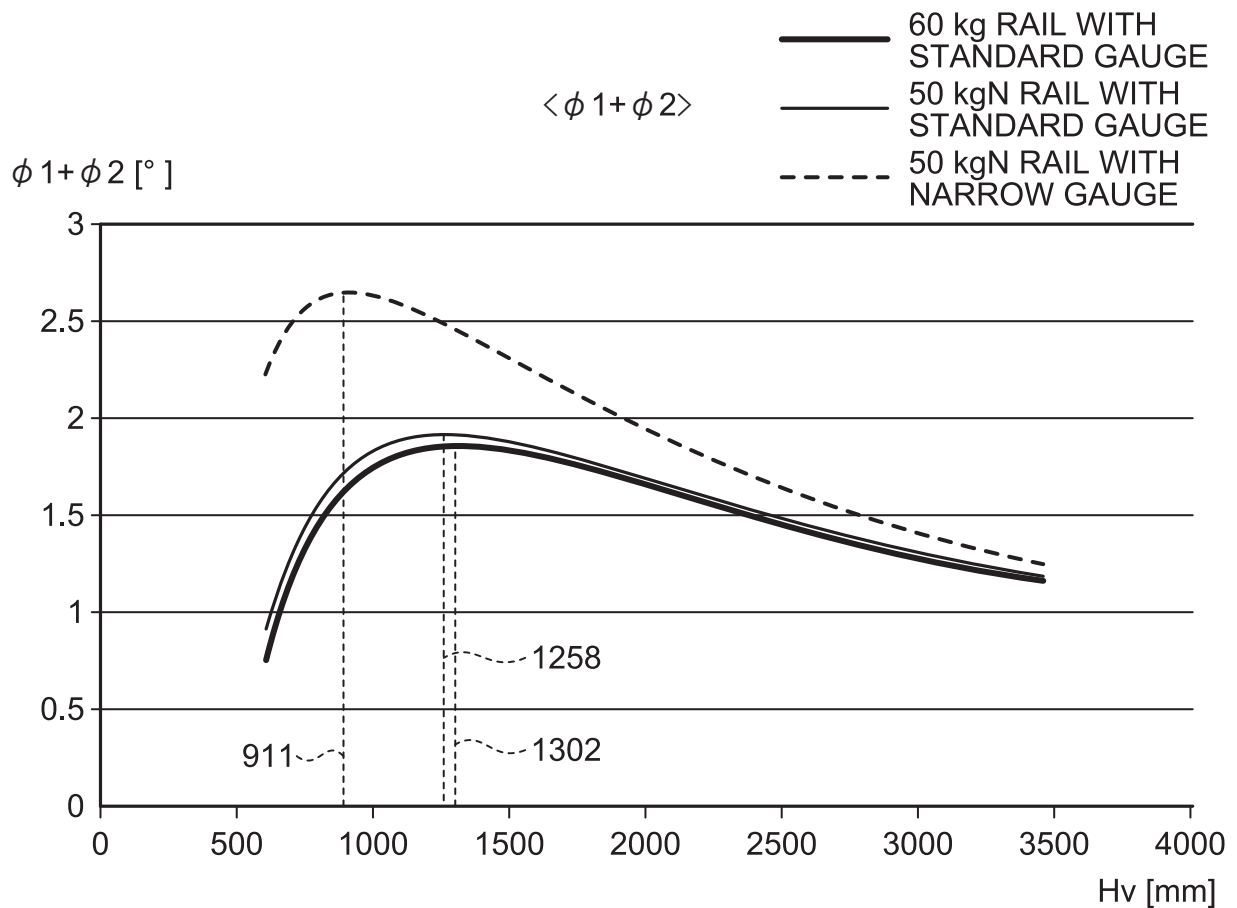


FIG.32

<APPROPRIATE LASER IRRADIATION POSITIONS(Hv)>

GAUGE(G)	STANDARD GAUGE(1435 mm)		NARROW GAUGE (1067 mm)
RAIL	60 kg RAIL	50 kgN RAIL	
(3) $\phi 1 = \phi 2$	1321 mm	1119 mm	807 mm
(4) $\phi 1 + \phi 2$	1302 mm	1258 mm	911 mm

FIG.33

<LASER IRRADIATION POSITIONS FOR ENABLING MEASUREMENT OF TWO OR MORE POINTS ON EACH OF RAIL WEB AND RAIL BOTTOM(Hv)>

GAUGE(G)	STANDARD GAUGE(1435 mm)		NARROW GAUGE (1067 mm)
RAIL	60 kg RAIL	50 kgN RAIL	
MINIMUM VALUE	1006 mm	873 mm	619mm
MAXIMUM VALUE	2339 mm	1955 mm	1509 mm

FIG.34

