

1/37

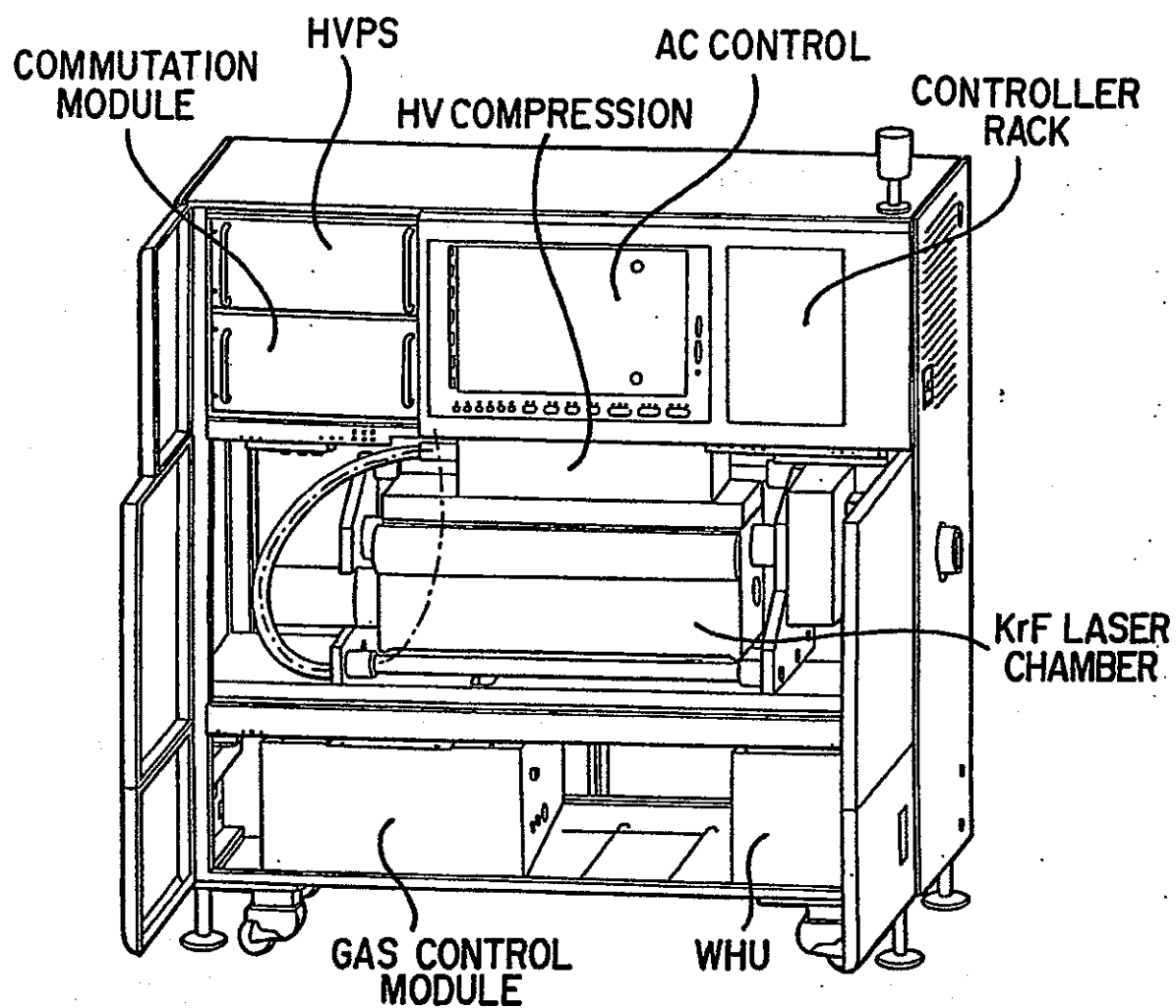


FIG.1 PRIOR ART

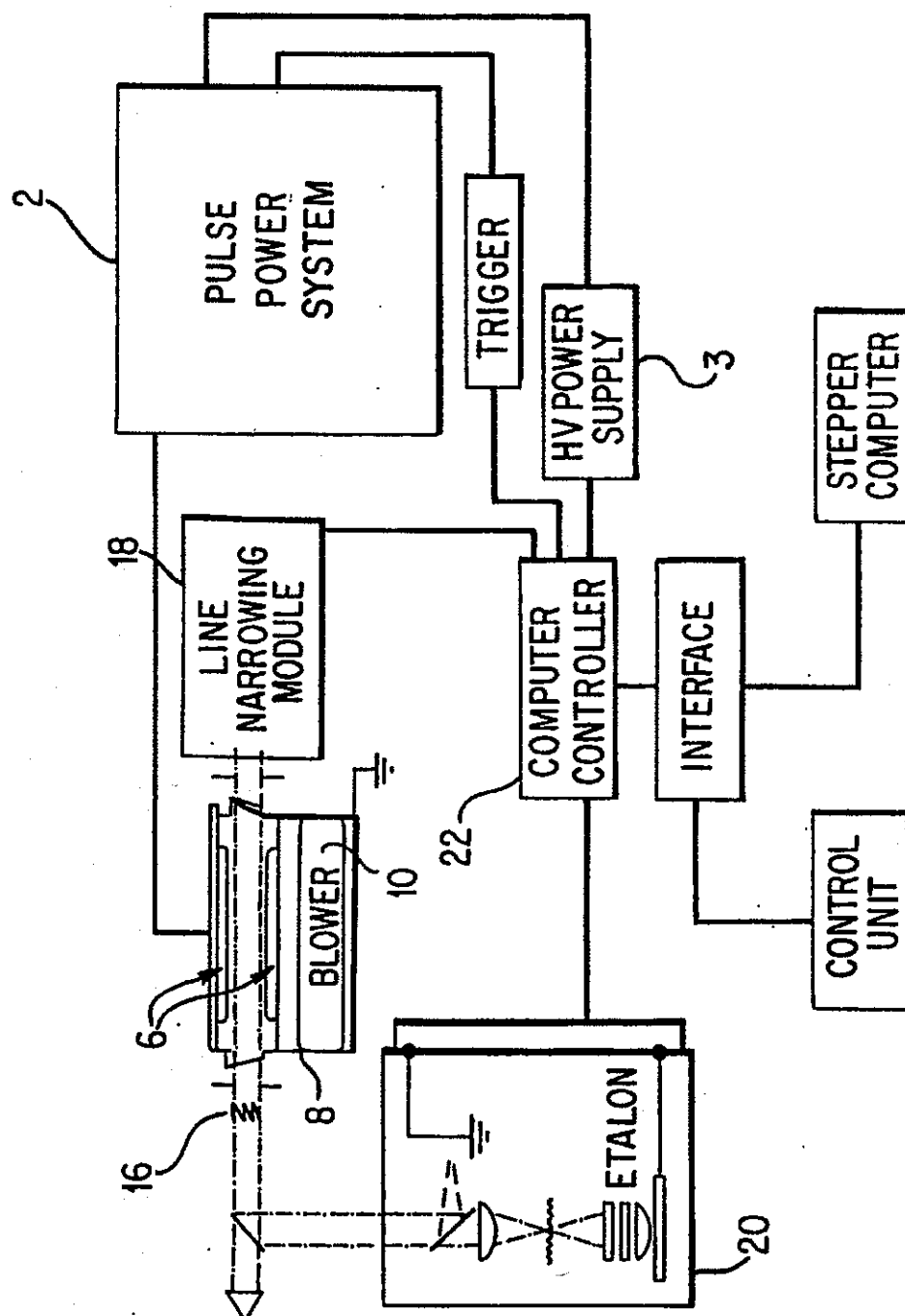


FIG. 1A PRIOR ART

3/37

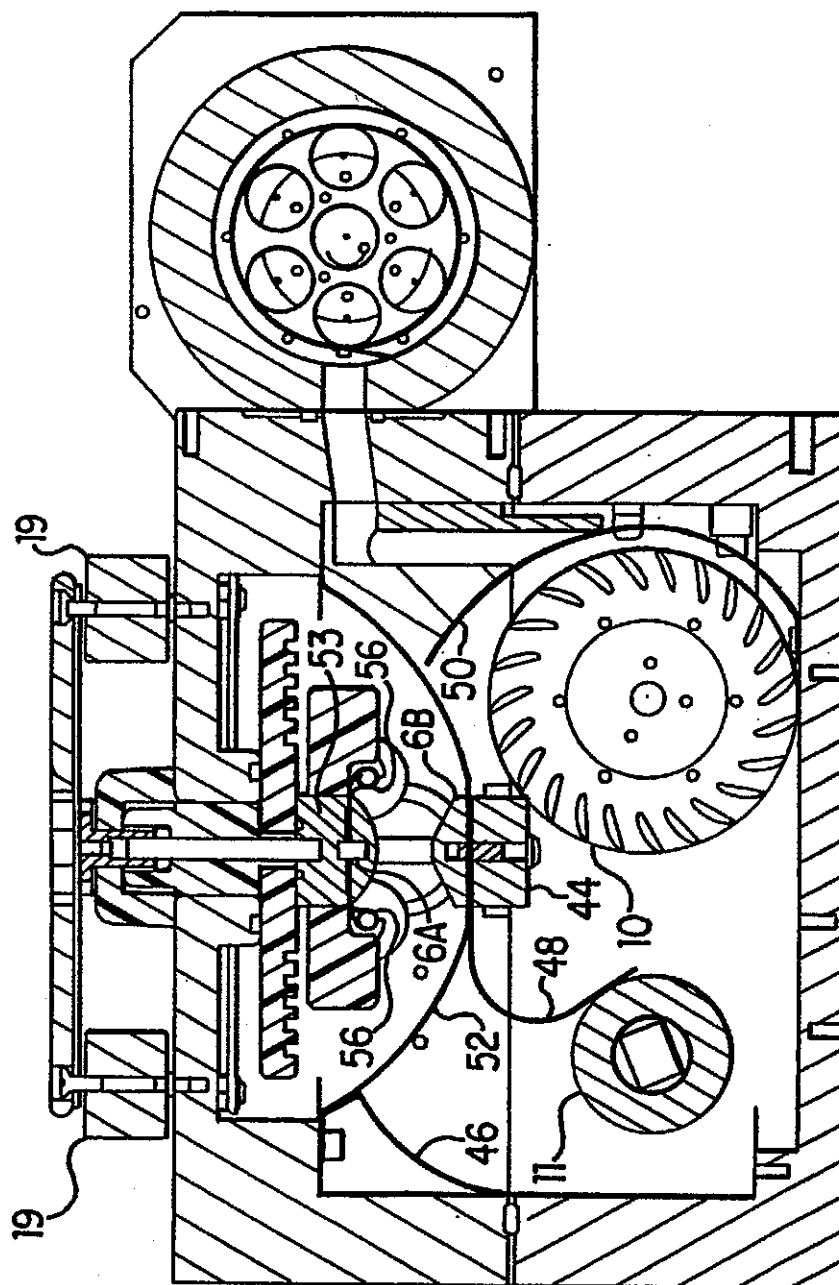


FIG. 1B PRIOR ART

4/37

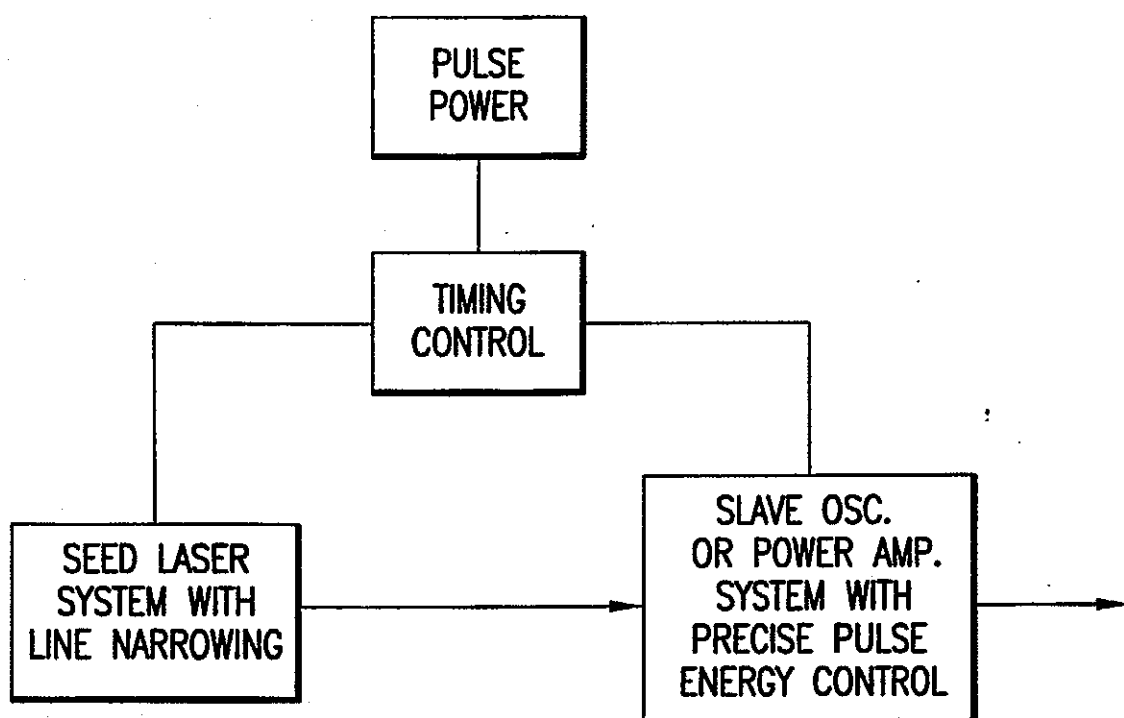


FIG.2

6/37

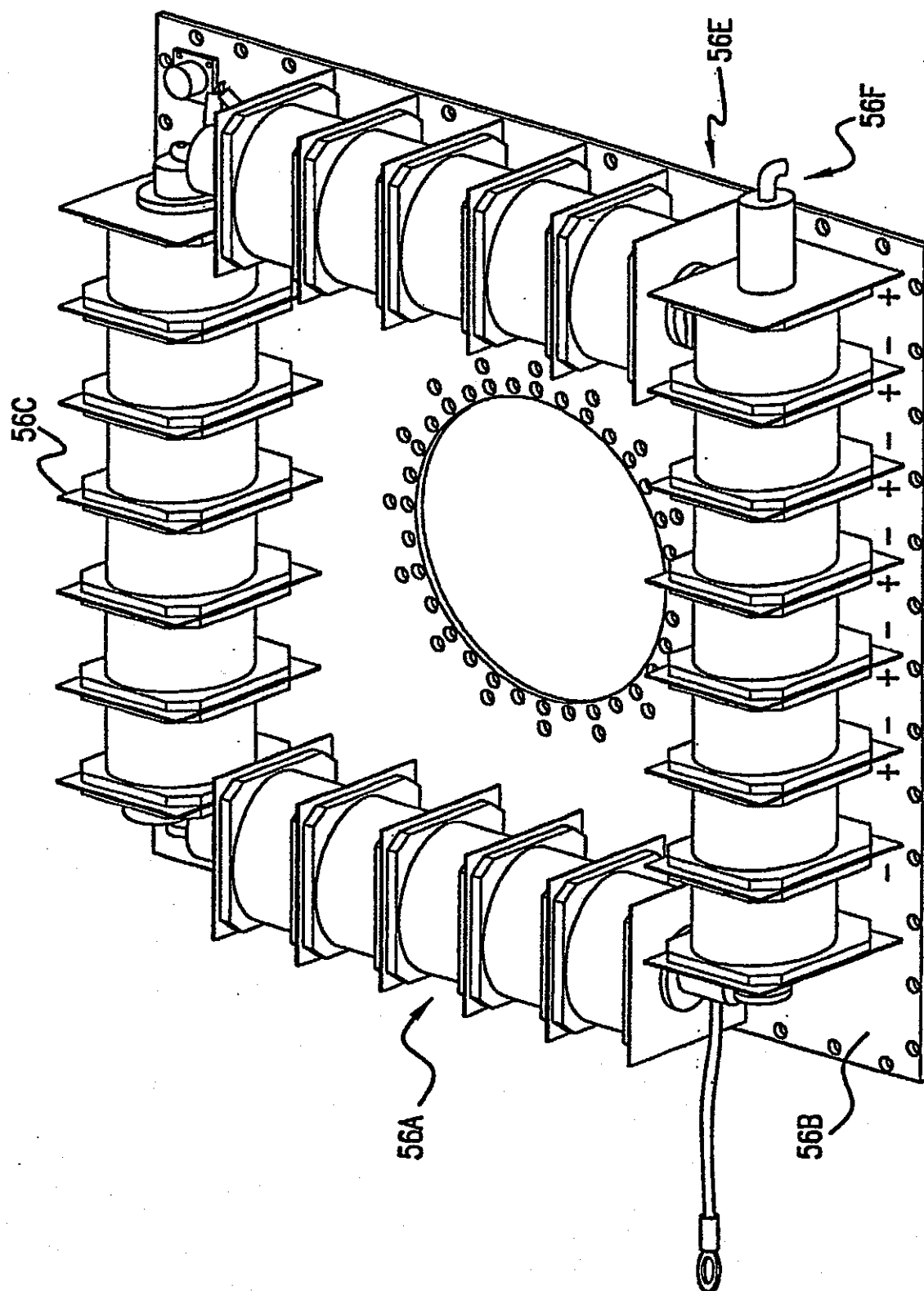


FIG. 3A

7/37

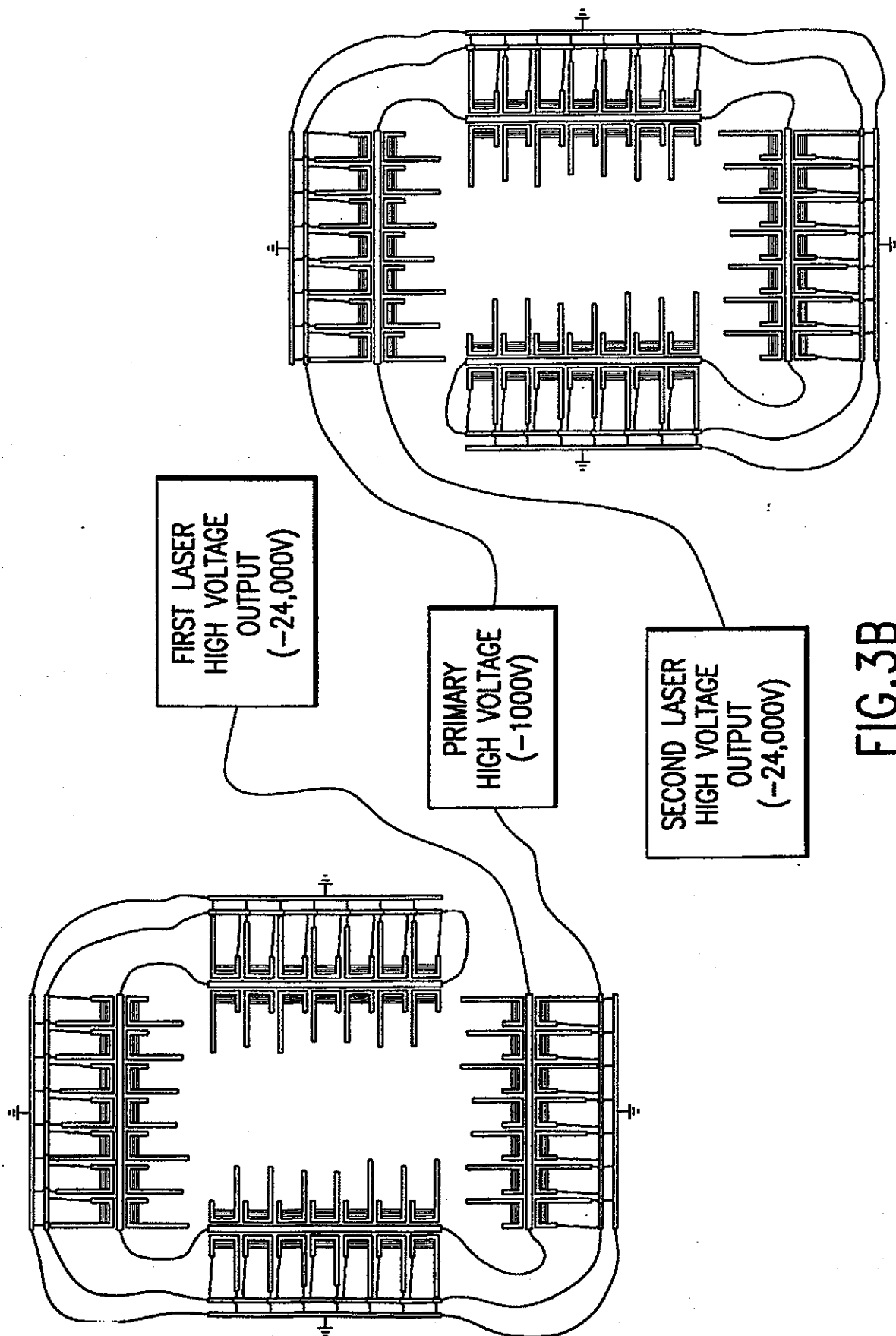


FIG.3B

8/37

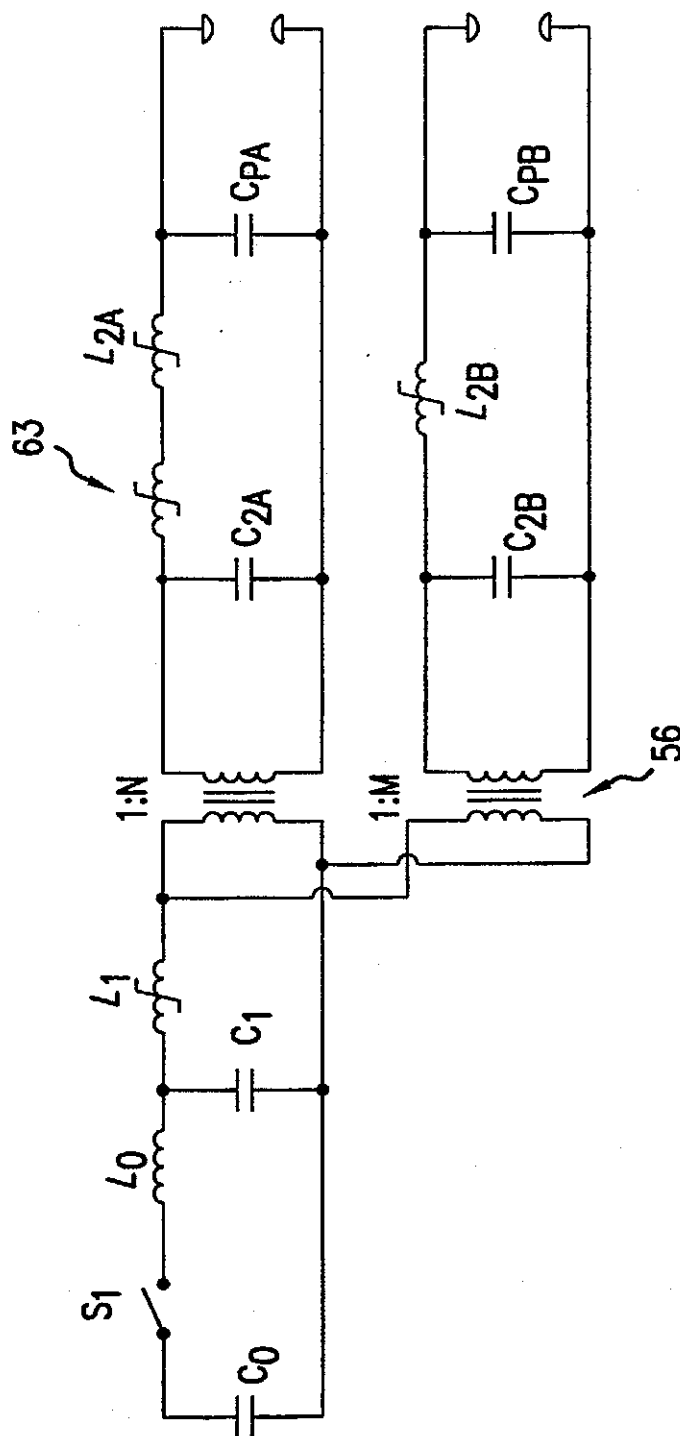


FIG. 3C

9/37

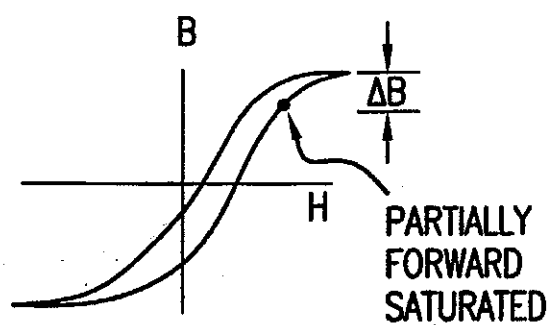


FIG.3C-1

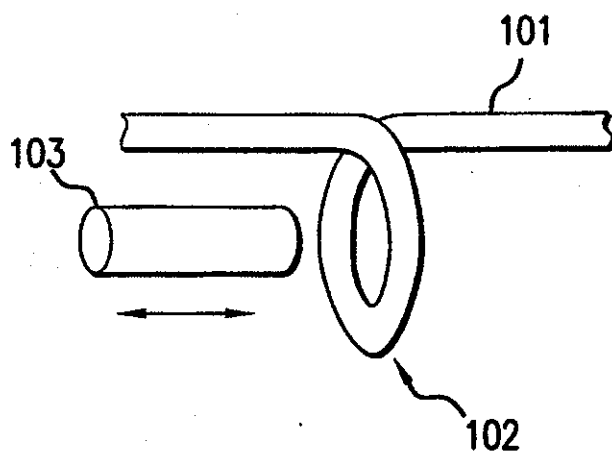


FIG.3D

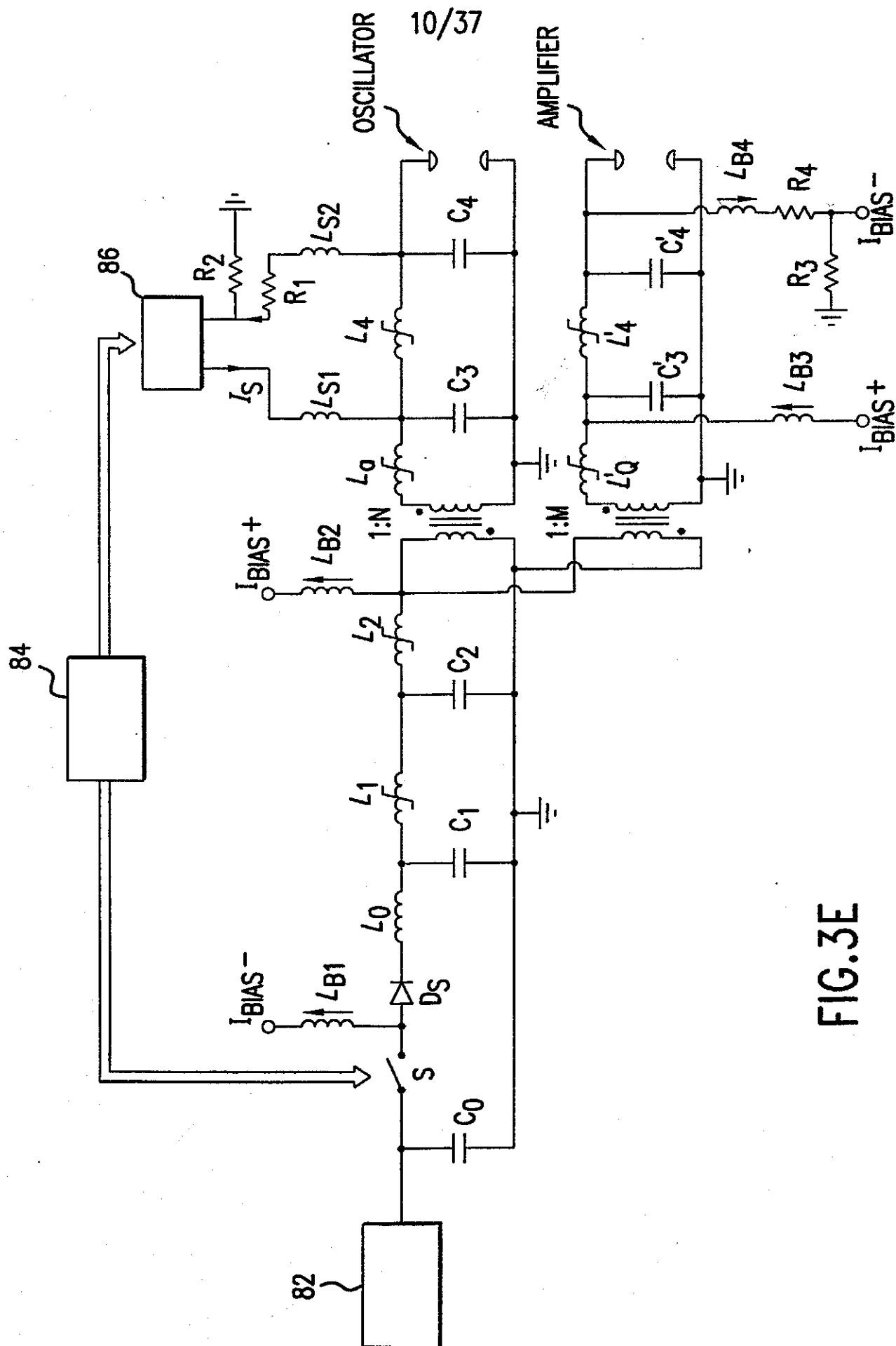


FIG.3E

11/37

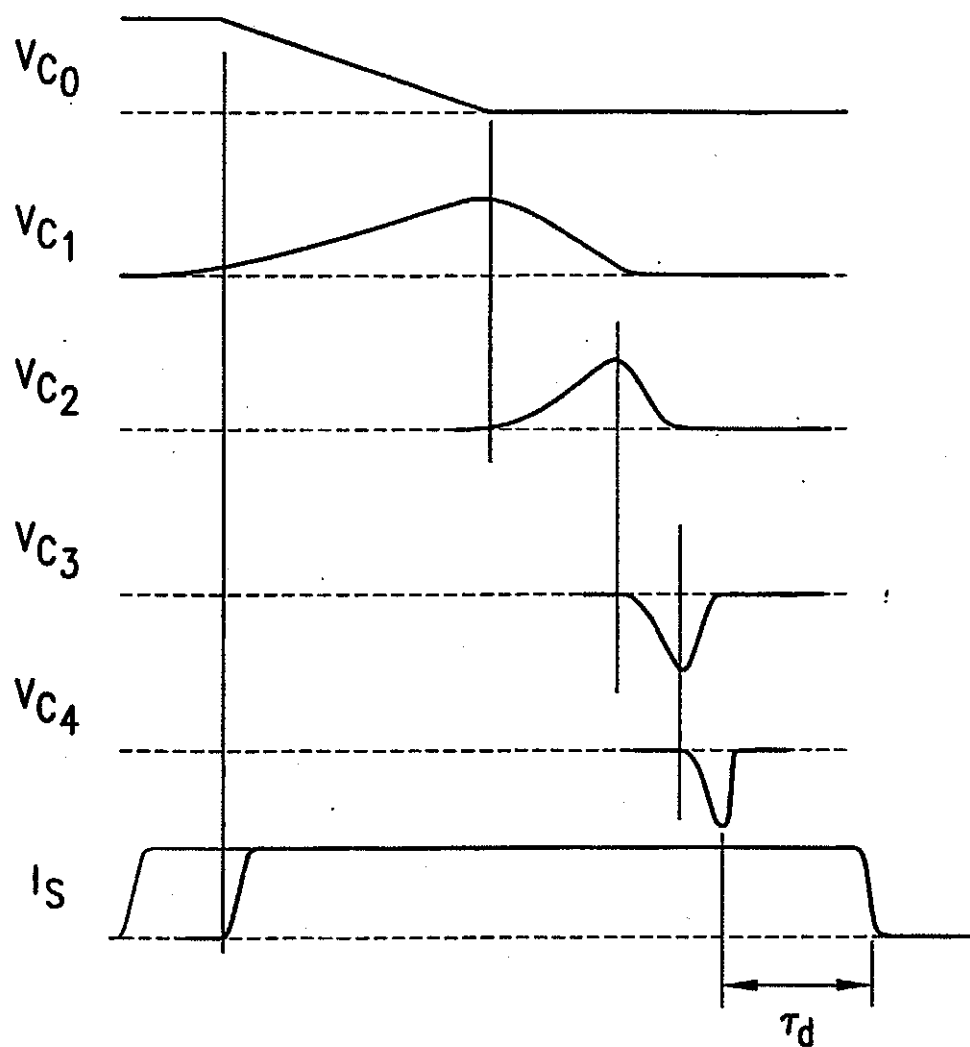


FIG.3F

12/37

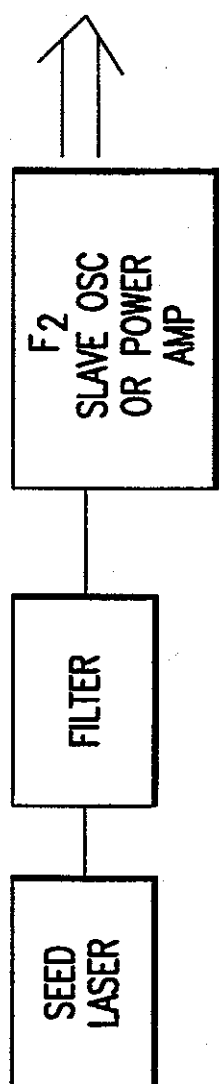


FIG. 4

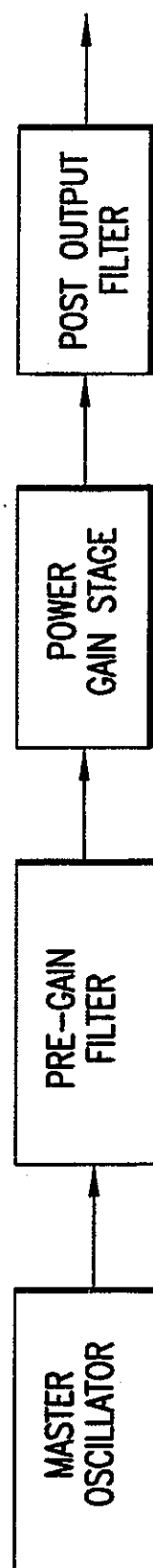


FIG. 5

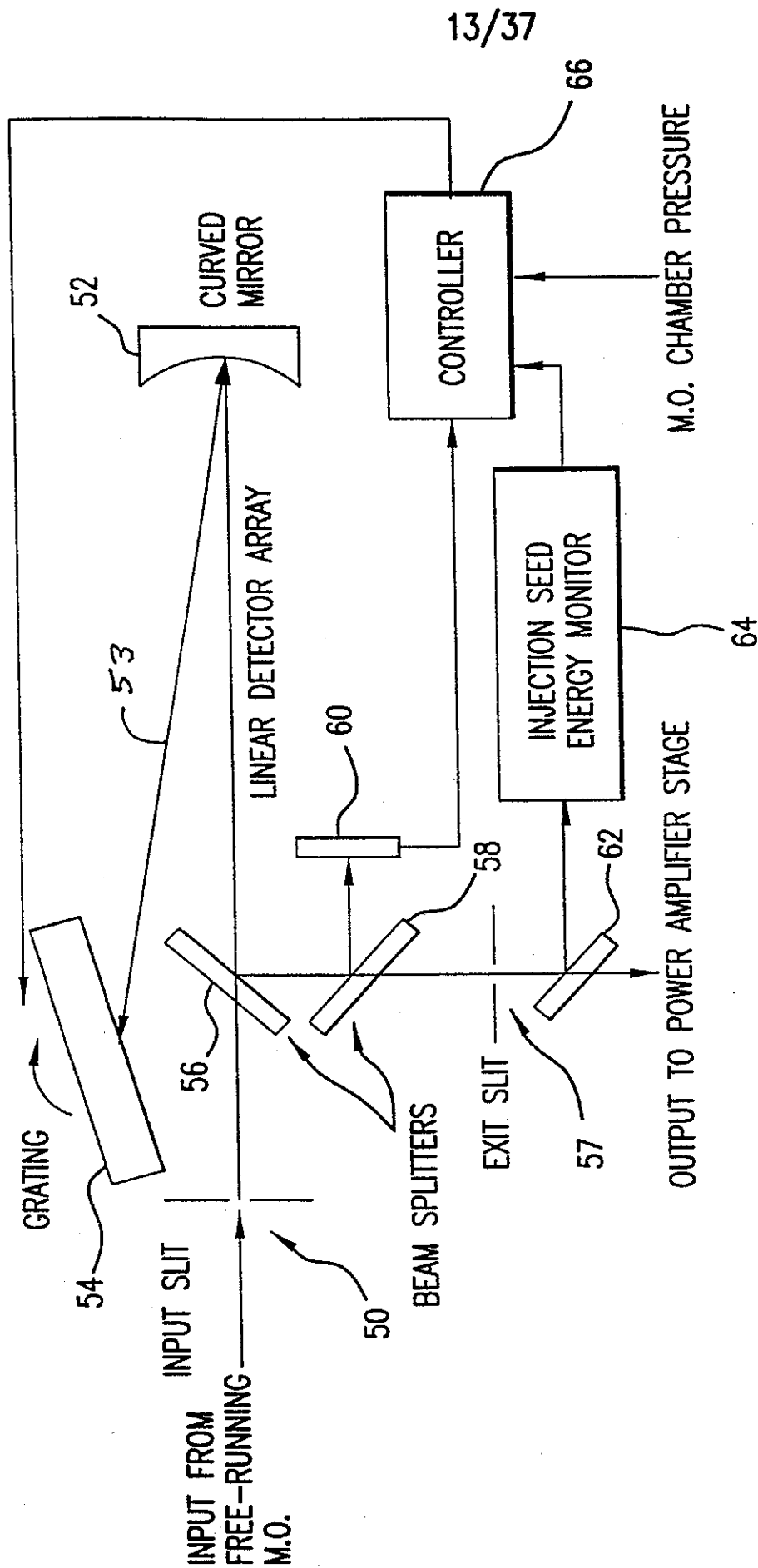


FIG. 6

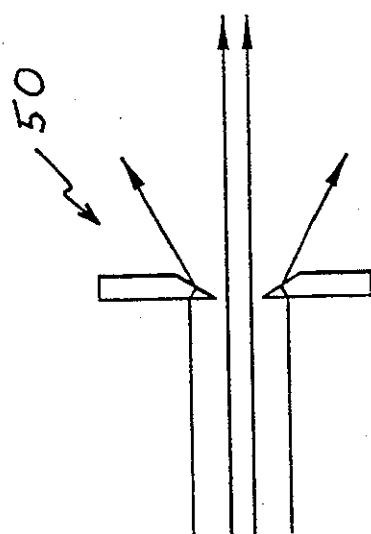


FIG. 6A

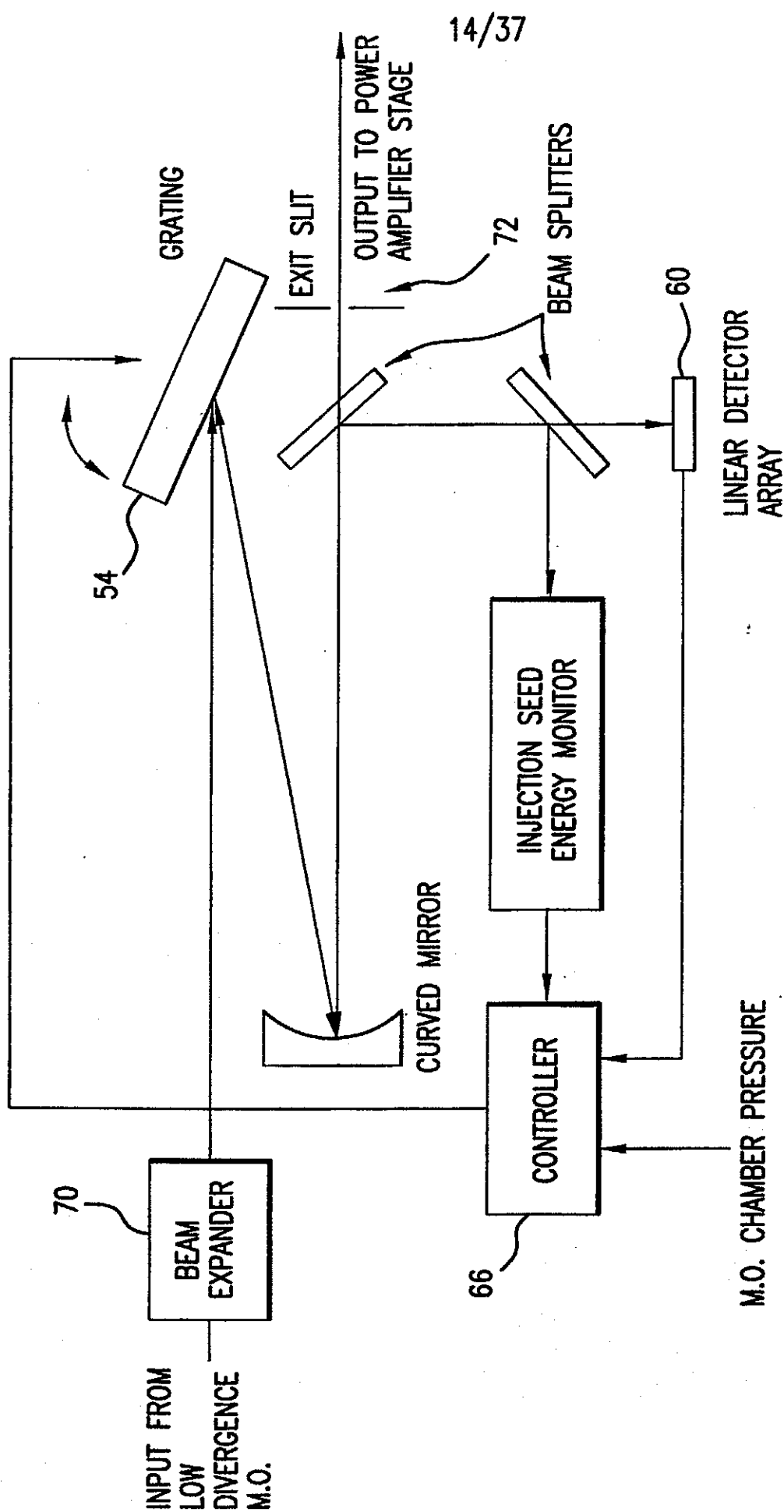


FIG. 7

15/37

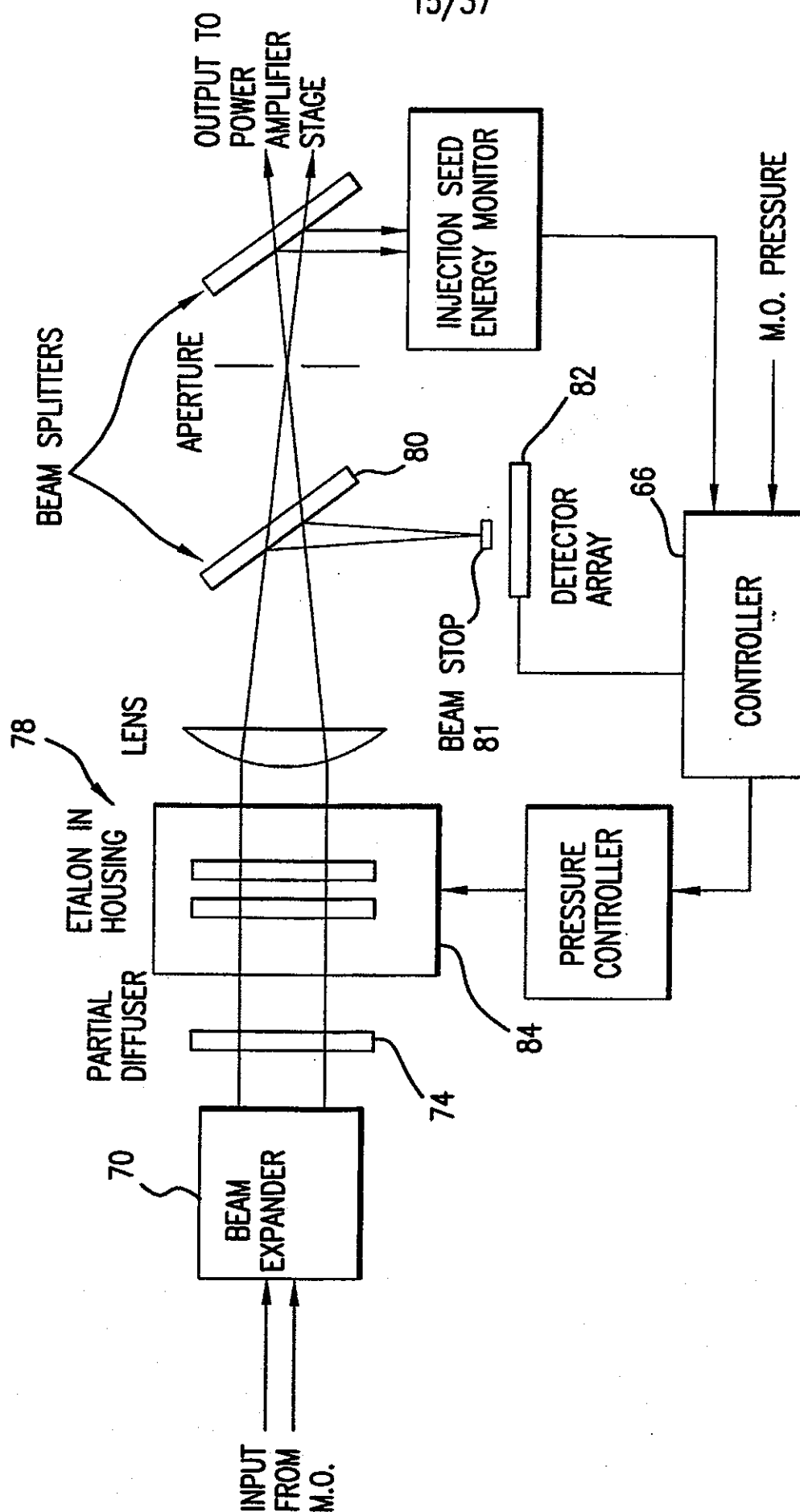


FIG. 8

16/37

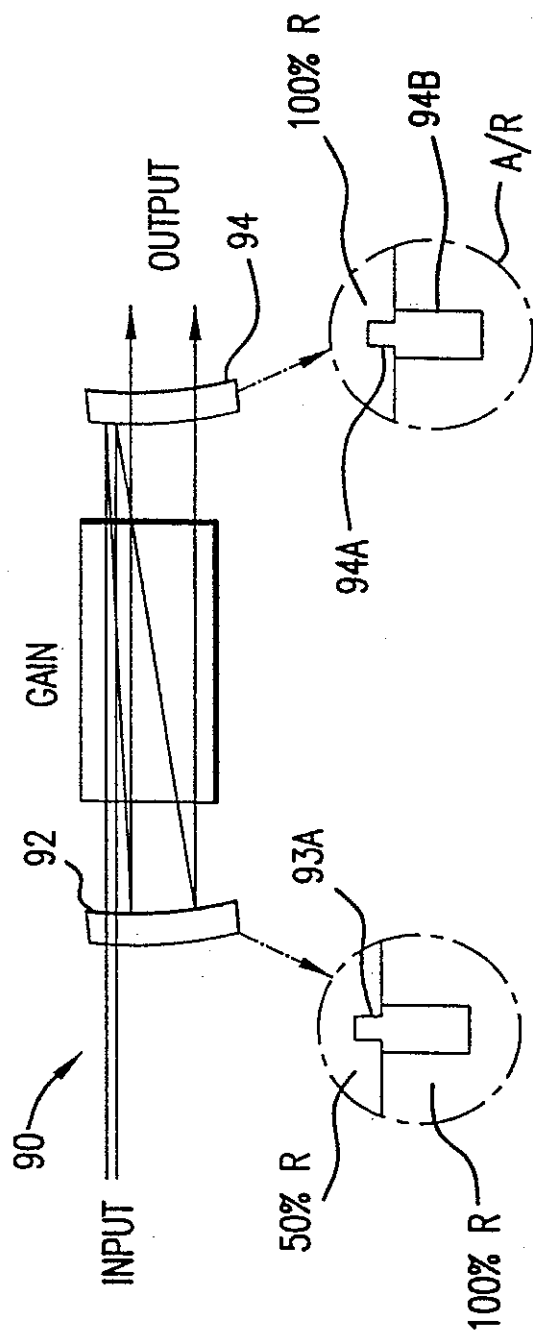


FIG. 9

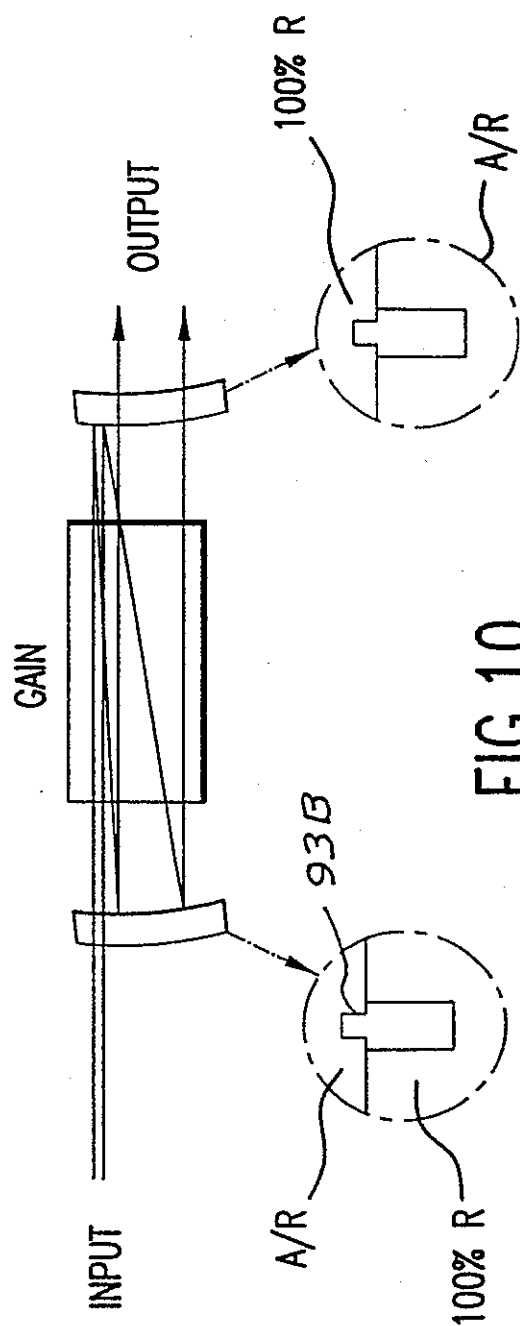


FIG. 10

17/37

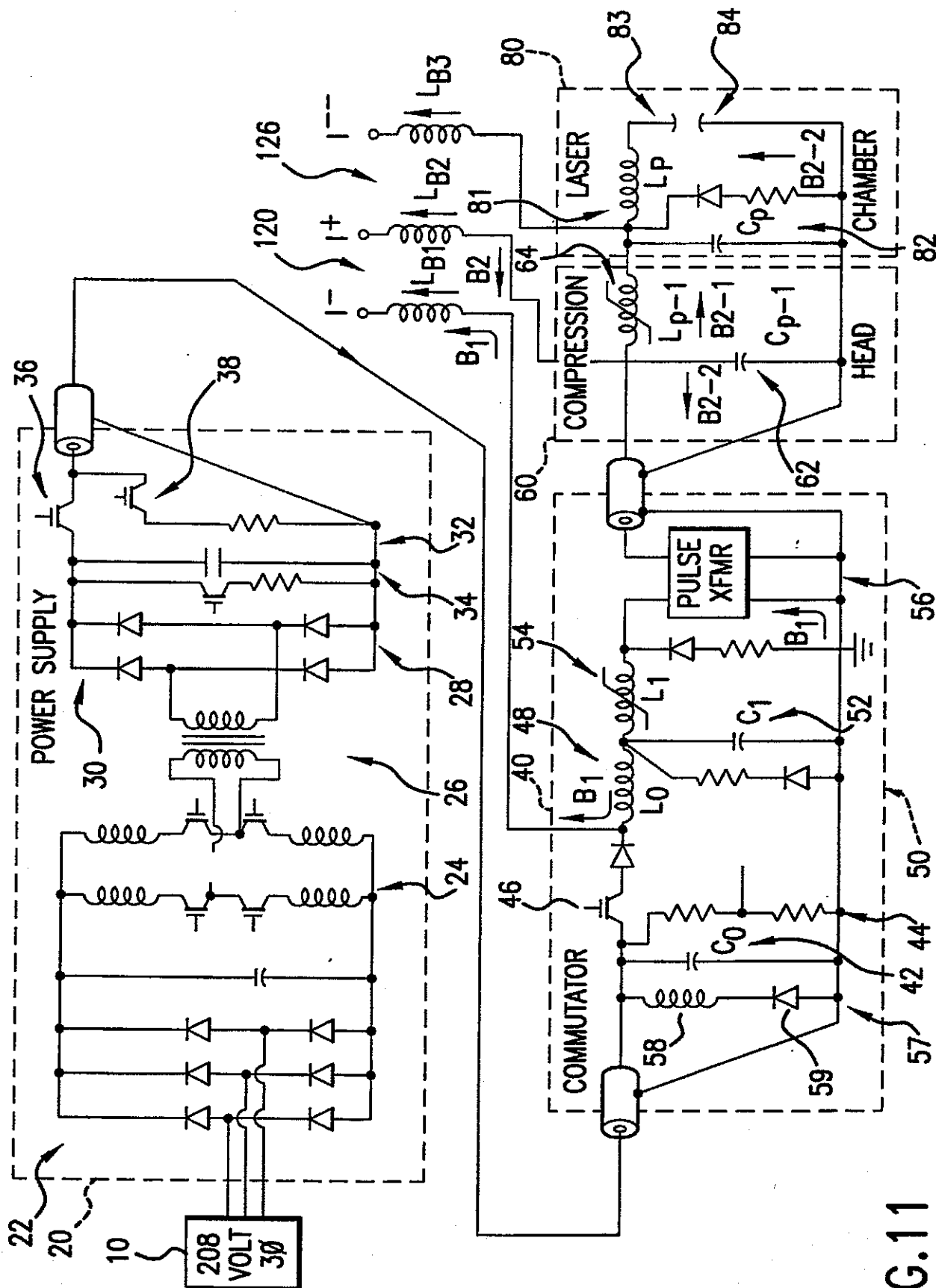


FIG.11

18/37

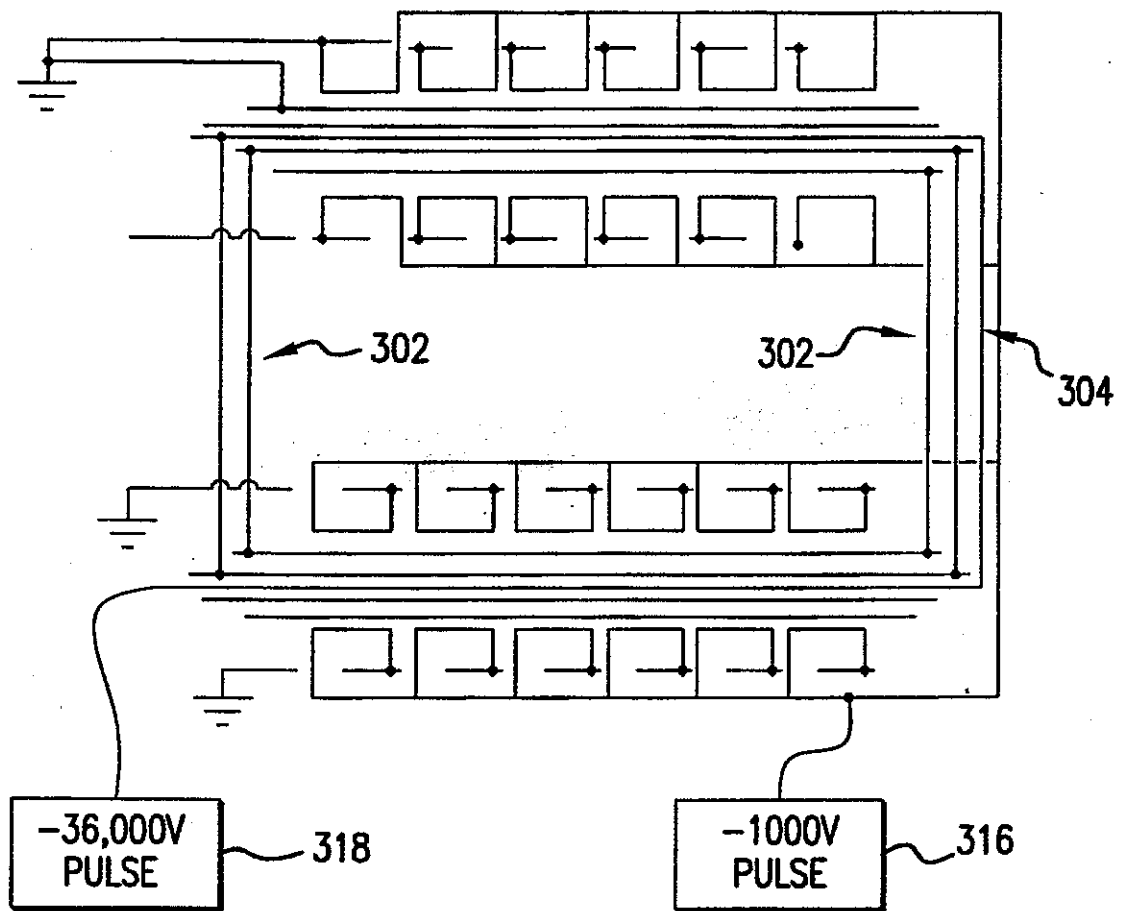


FIG.11A



FIG.11B



FIG.11C

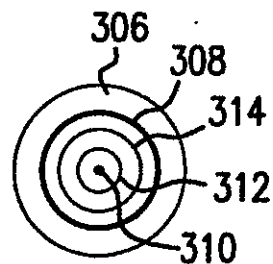


FIG.11D

19/37

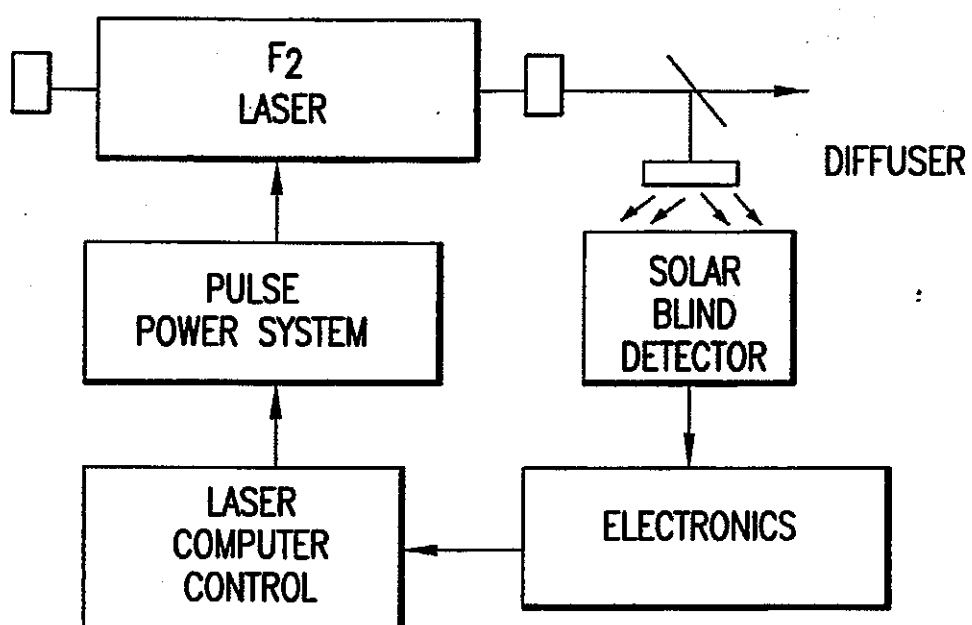


FIG.12

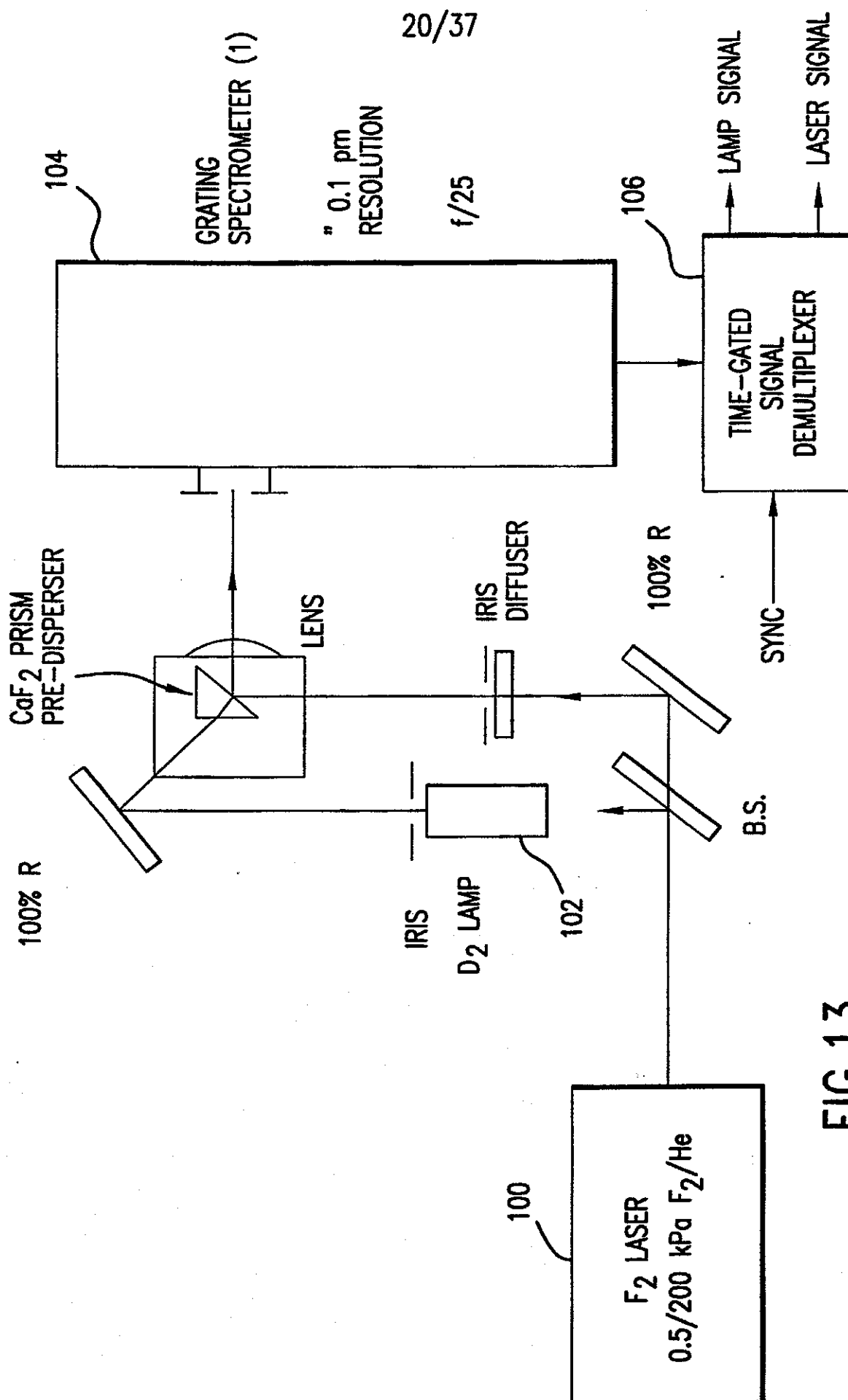
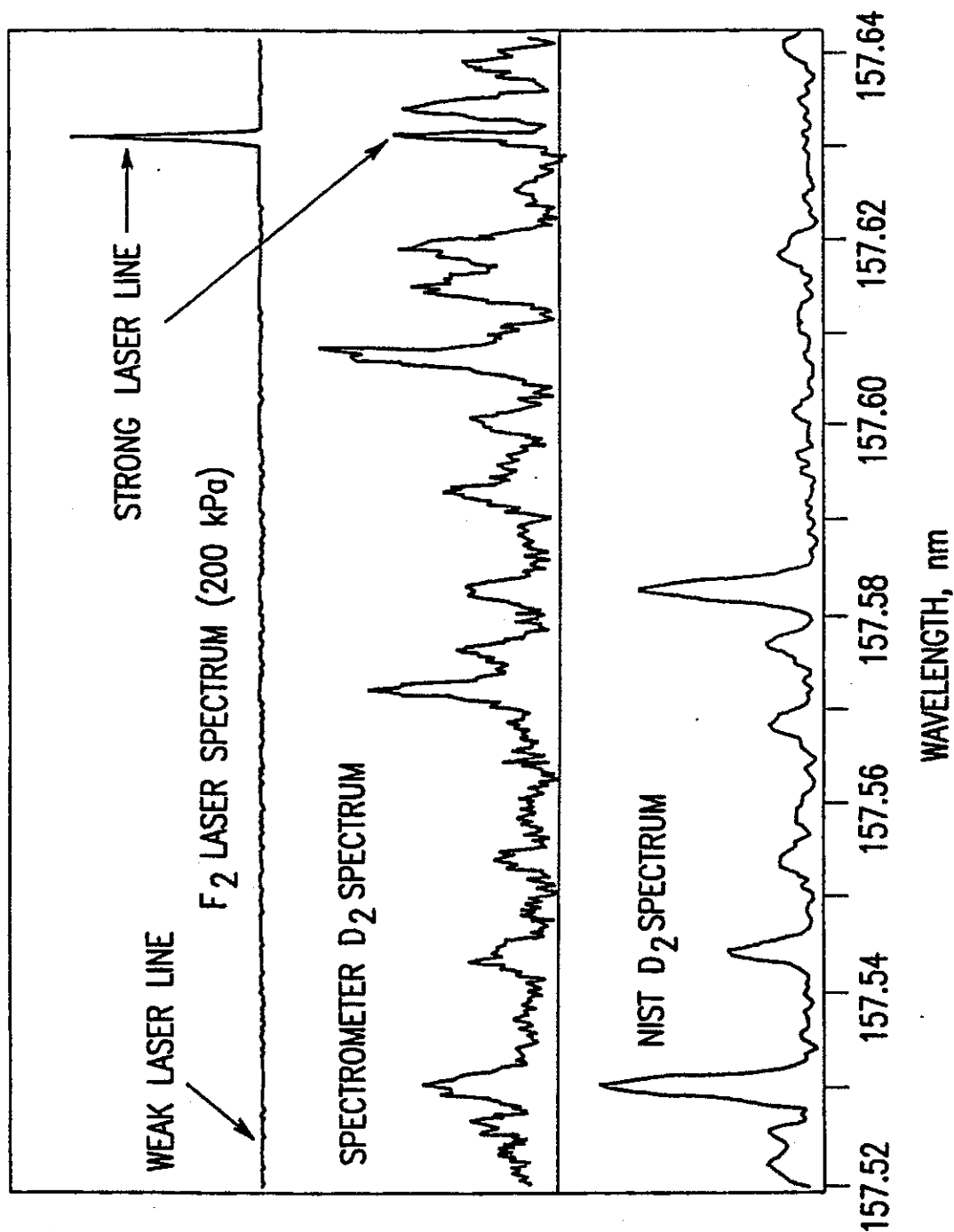


FIG.13

21/37



■ THE D₂
SPECTRUM HAS
EXTRA SPECTRAL
FEATURES

D₂ SPECTRUM
COURTESY JOHN
BURNETT, NIST

FIG.13A

22/37

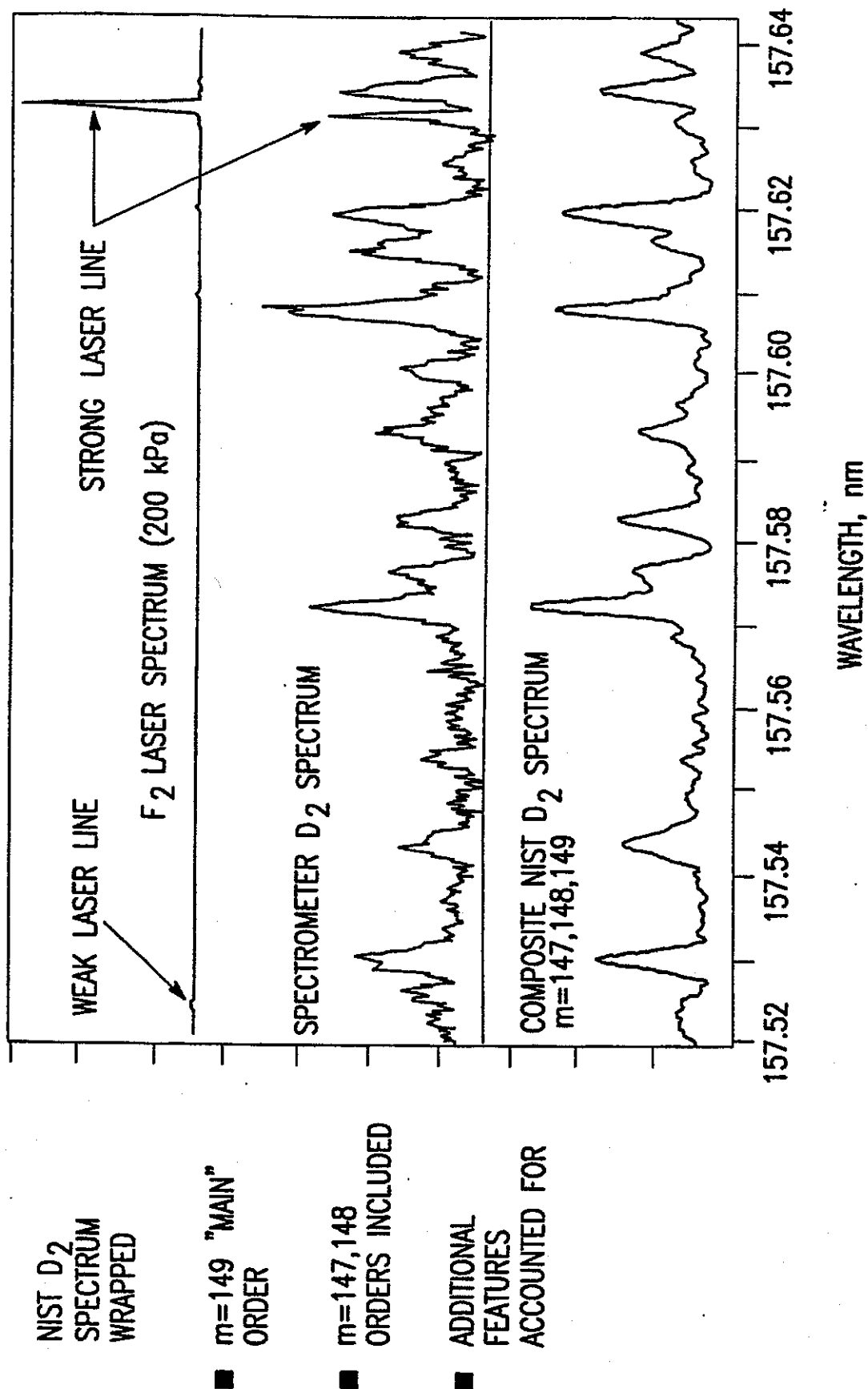


FIG.13B

23/37

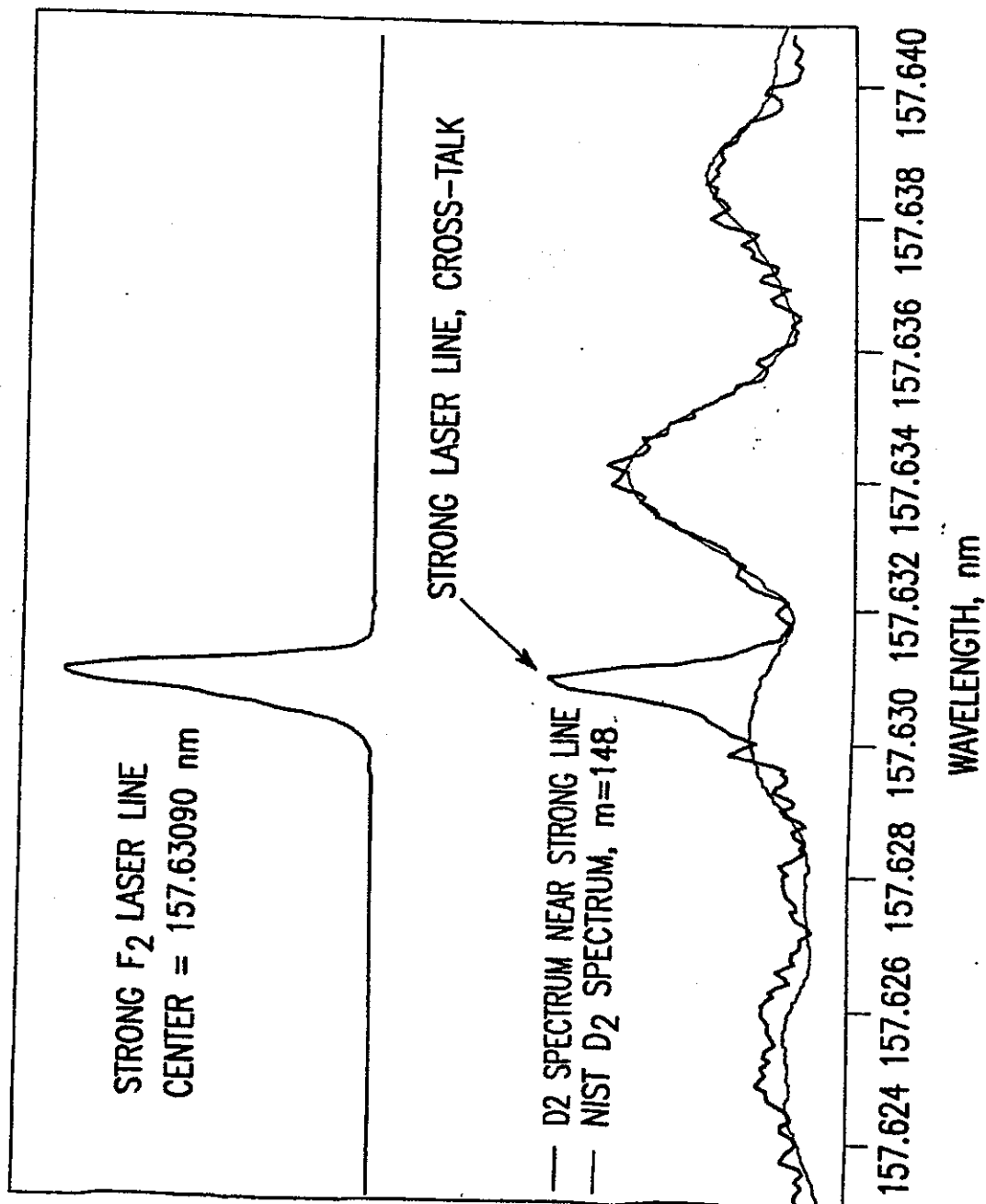


FIG.13C

■ P=200 kPa,
He BUFFER

■ STRONG LASER
LINE CENTERED
AT 157.63090
nm

■ ESTIMATED
ERROR ± 0.1 pm

24/37

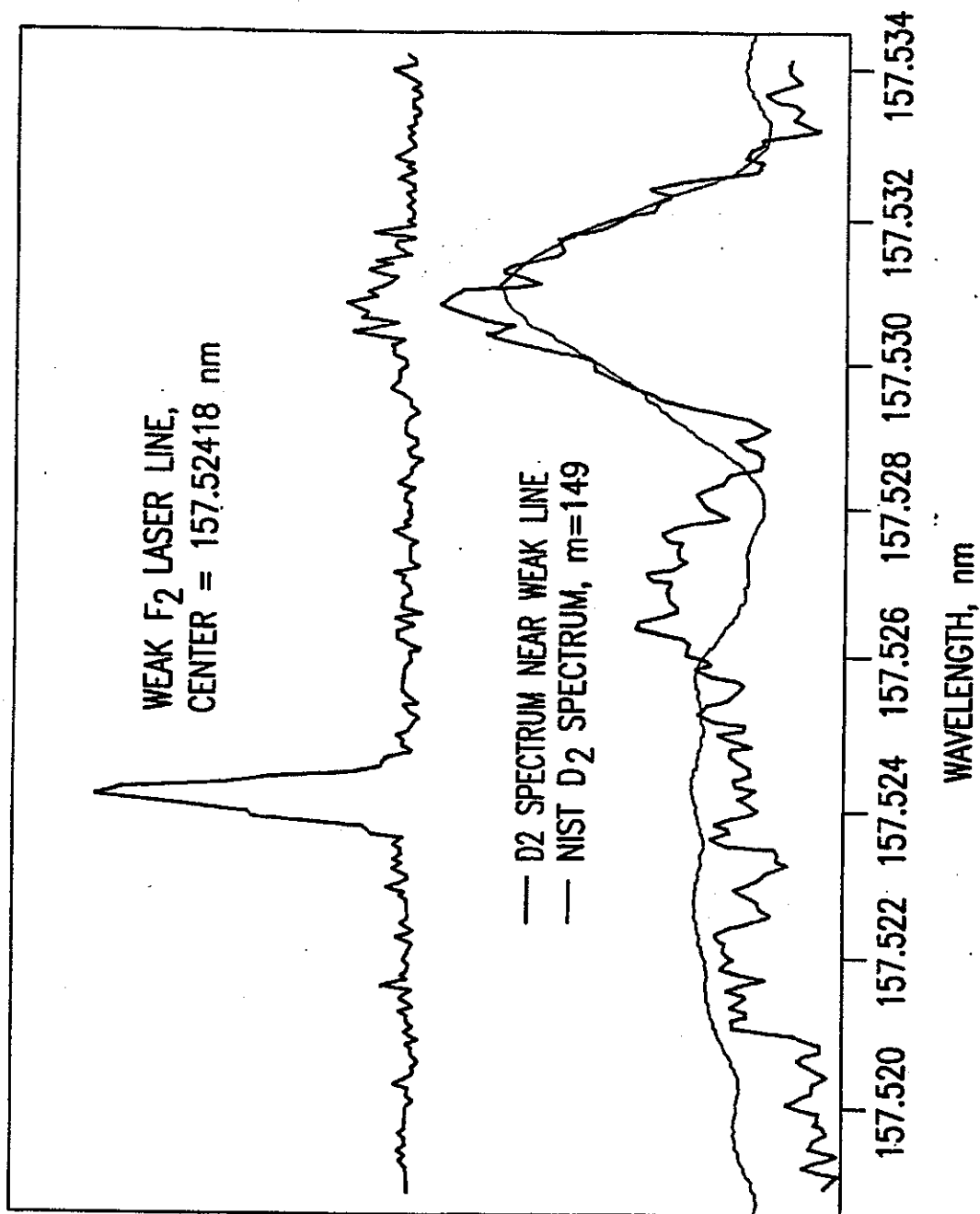


FIG.13D

P=200 kPa,
He BUFFER

■ WEAK LASER
LINE CENTERED
AT 157.52418
nm

■ ESTIMATED
ERROR ± 0.1 pm

25/37

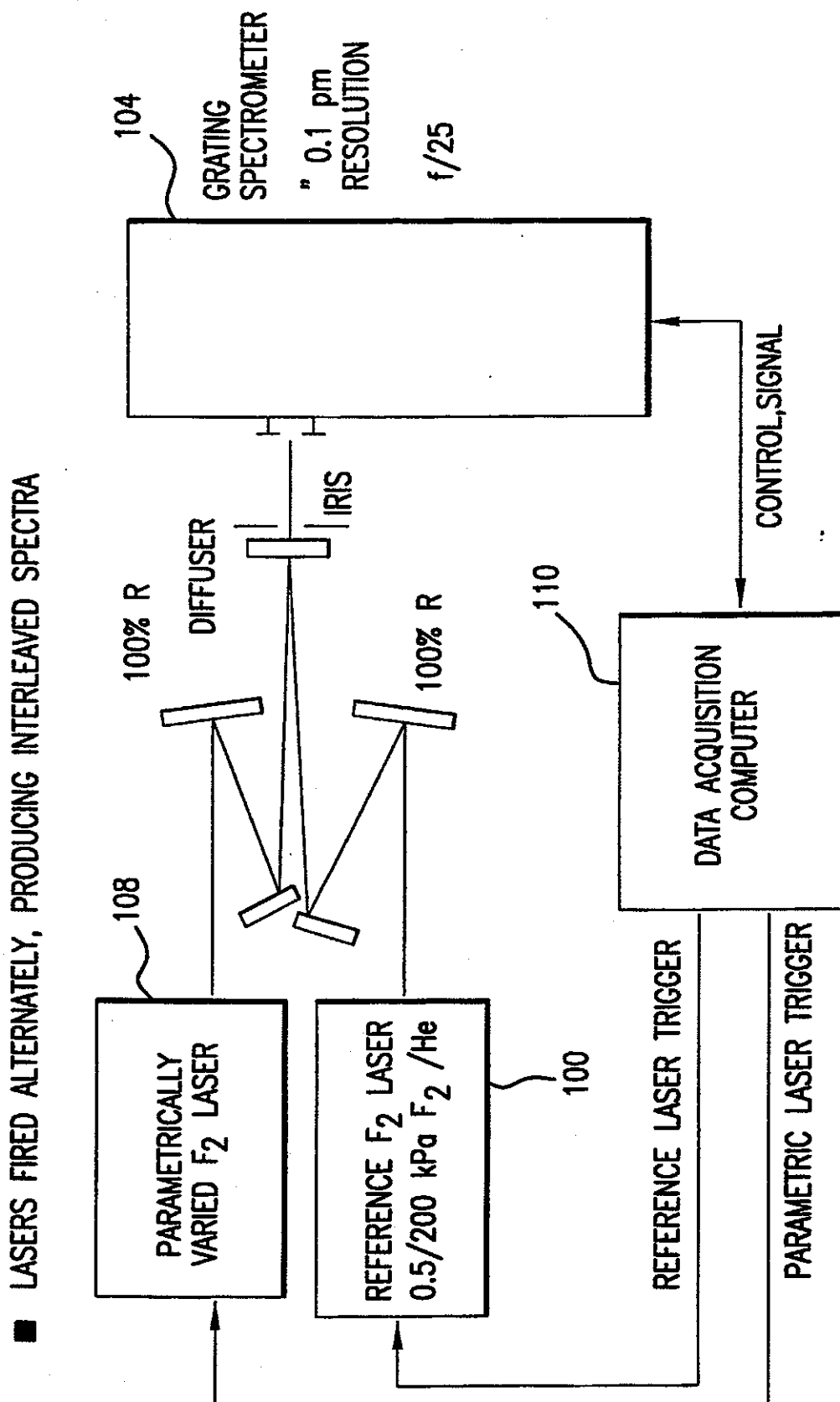


FIG.14

26/37

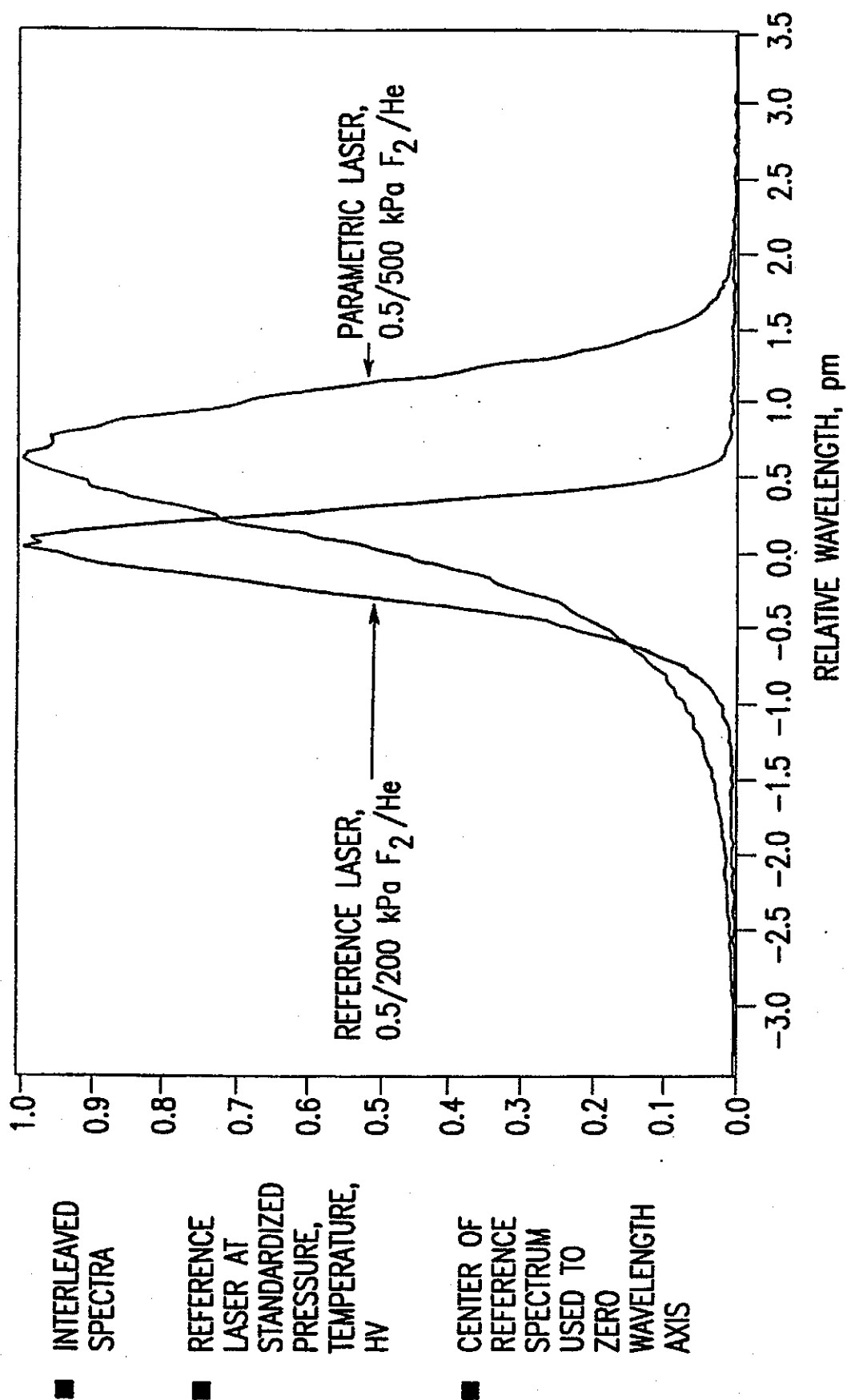


FIG. 14A

27/37

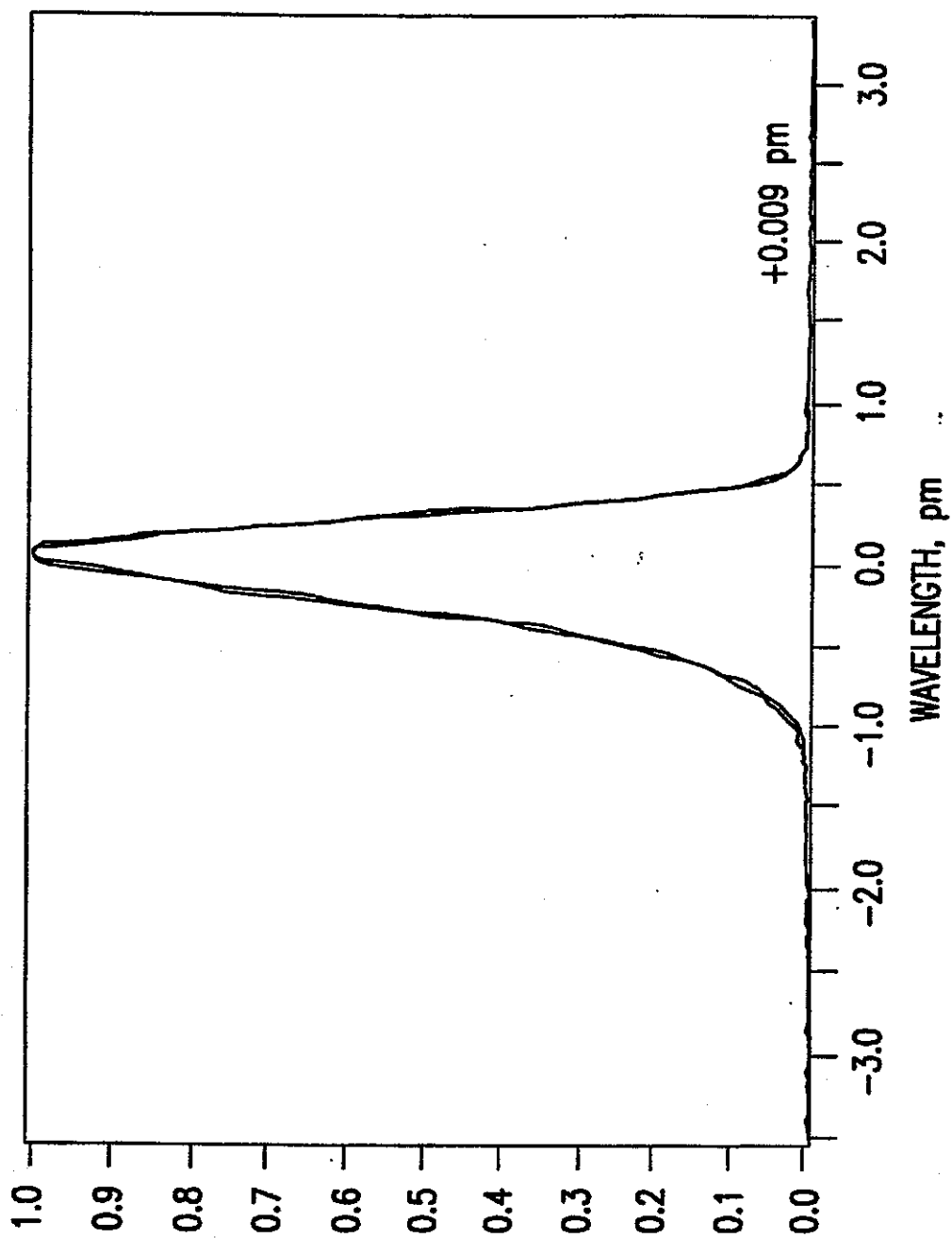


FIG.14B1

28/37

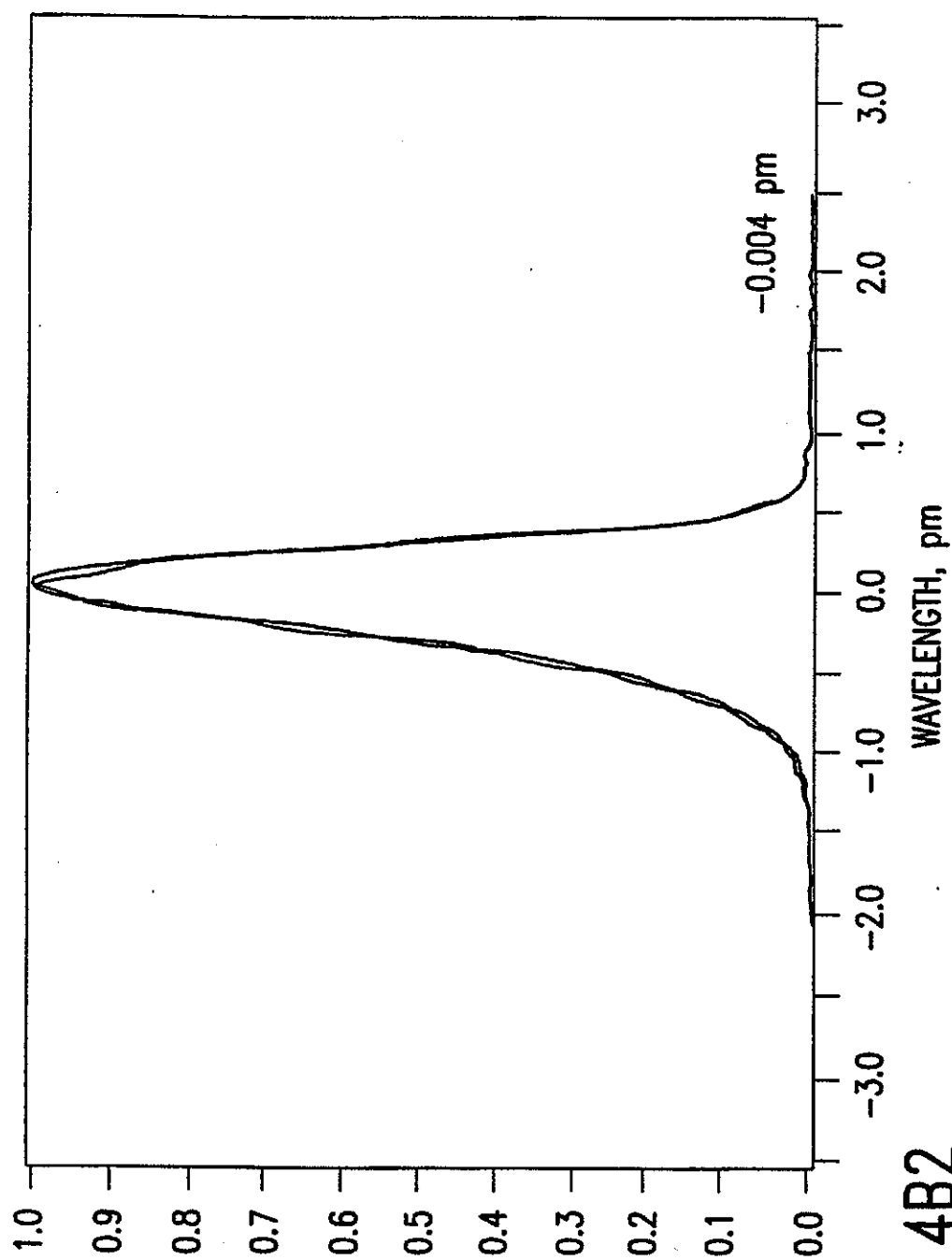
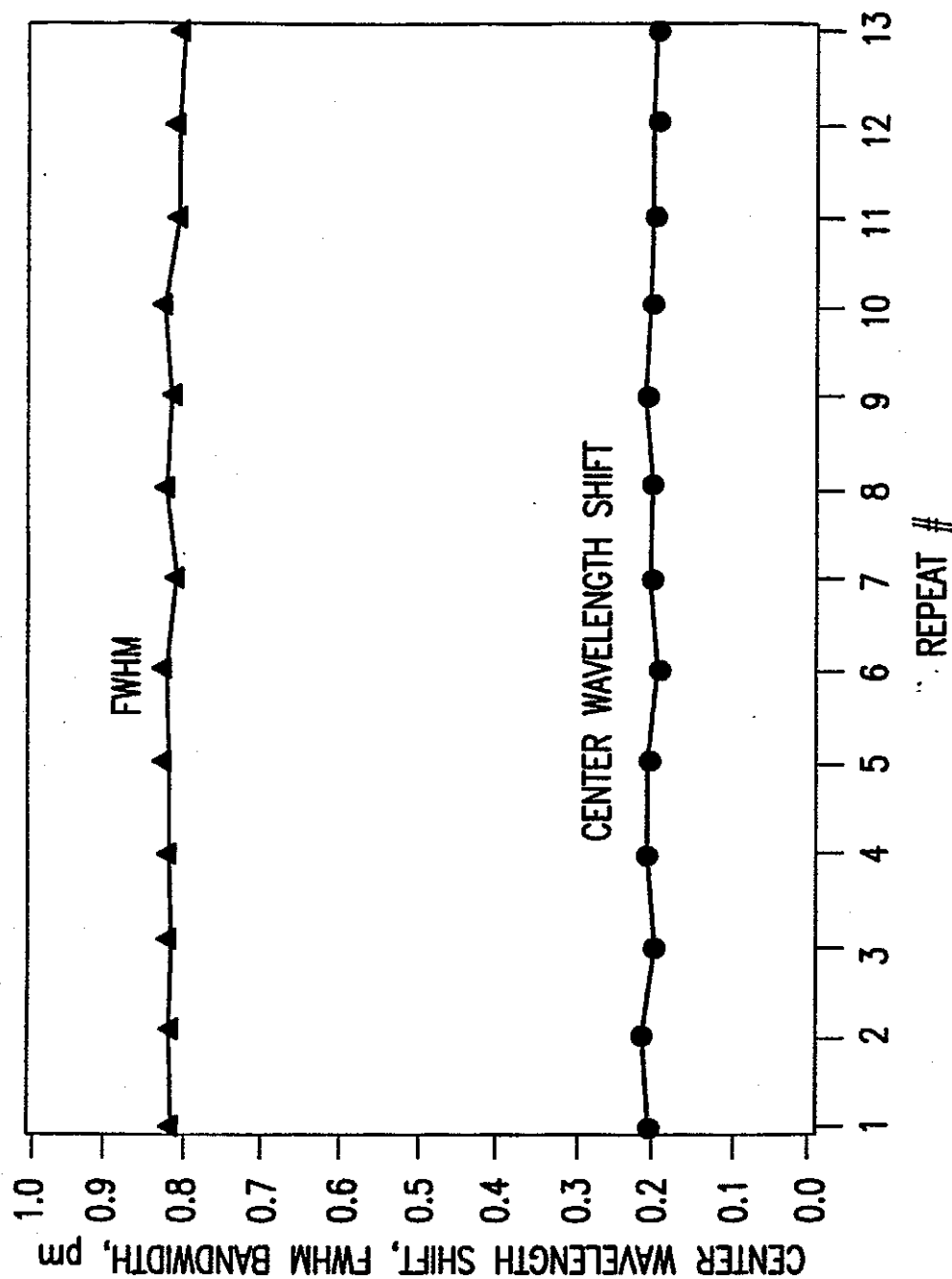


FIG.14B2

29/37



0.5/300 kPa F₂/He MIX,
850 V

■ CURVE-FITTING USED TO
DETERMINE CENTER AND
FWHM

■ AVERAGE SHIFT=0.2035
pm, STANDARD
DEVIATION=3.8 fm

■ AVERAGE FWHM=0.83
pm, STANDARD
DEVIATION=5.8 fm

FIG.14C

30/37

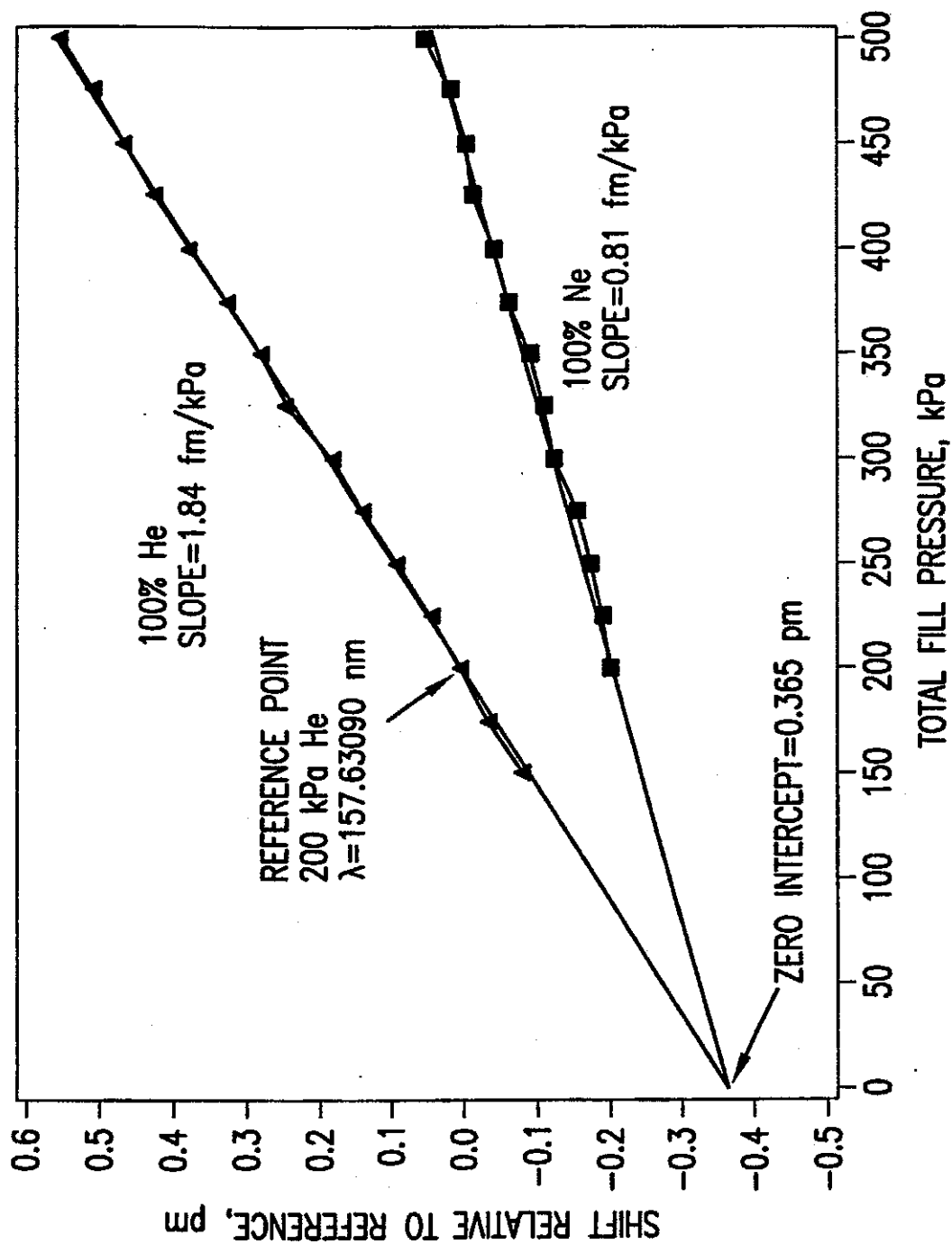


FIG. 14D

LINEAR PRESSURE
DEPENDENCY

■ PRESSURE SHIFT
COEFFICIENTS:
He : 1.84 fm/kPa
Ne : 0.81 fm/kPa

■ SLOPES
PROPORTIONAL TO
SQUARE ROOT OF
MASS:
 $1.84/0.81 = 2.27$
 $\sqrt{20/4} = 2.24$

■ COMMON ZERO
PRESSURE
INTERCEPT

31/37

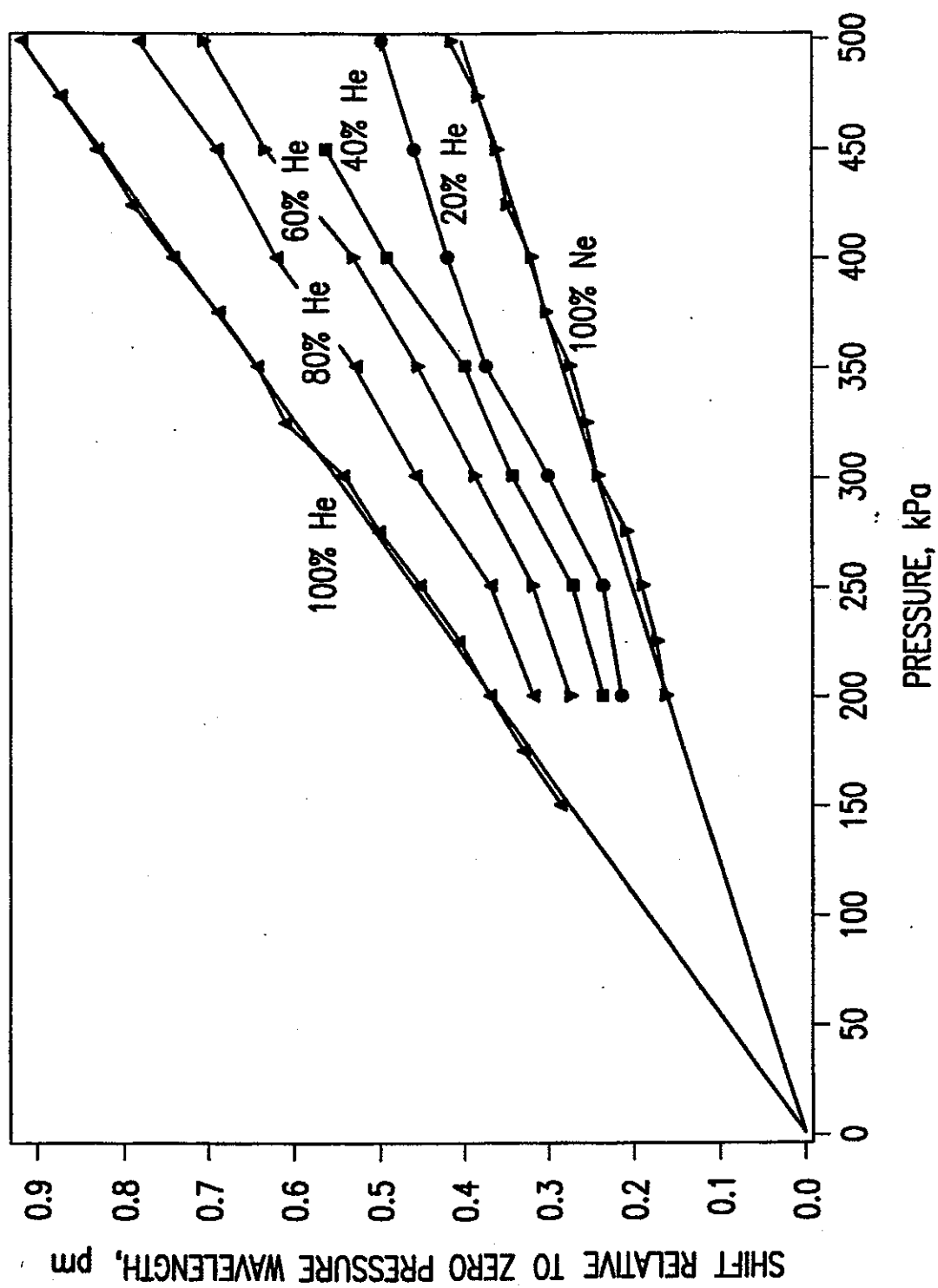


FIG.14D1

32/37

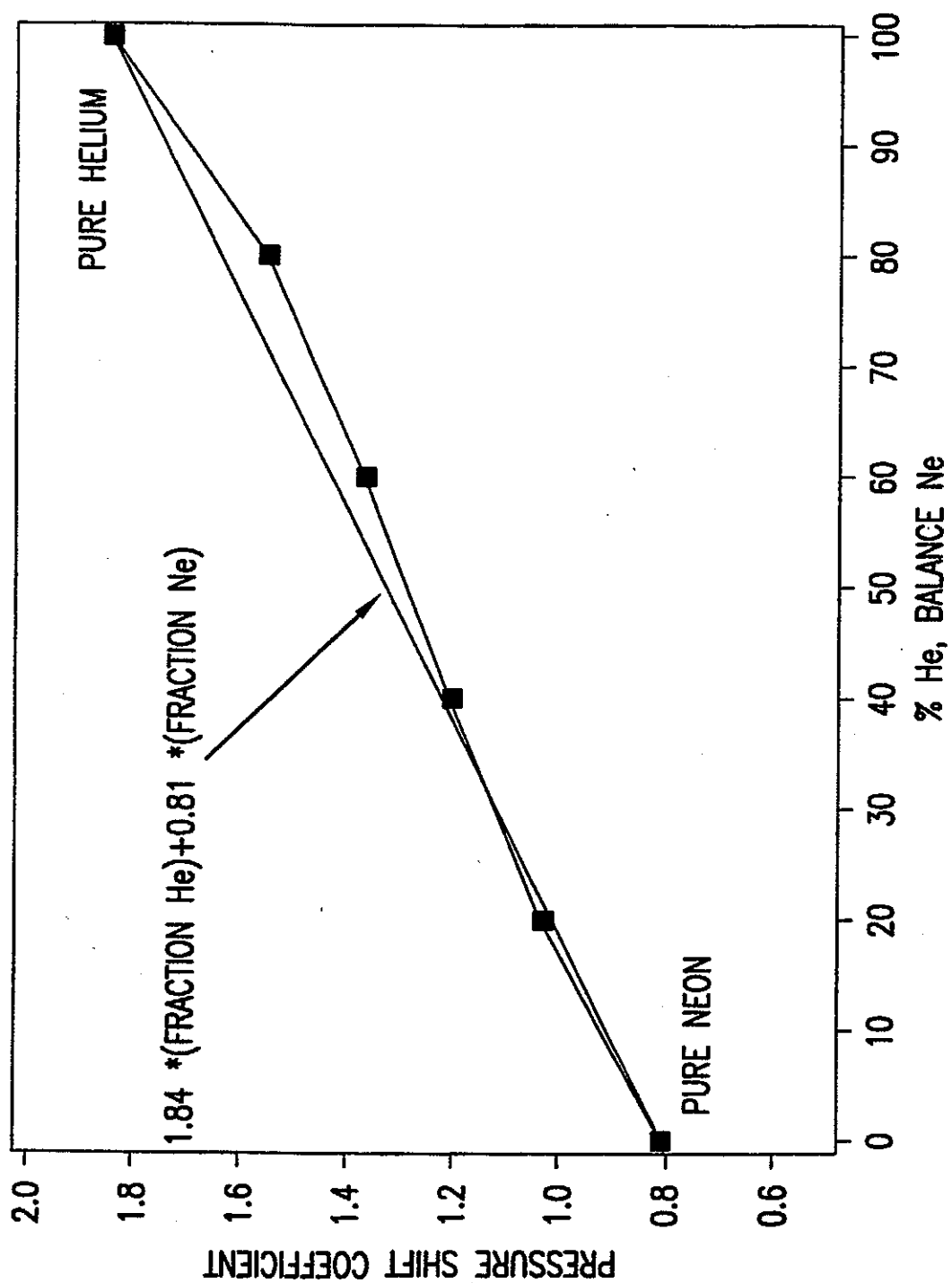


FIG.14D2

33/37

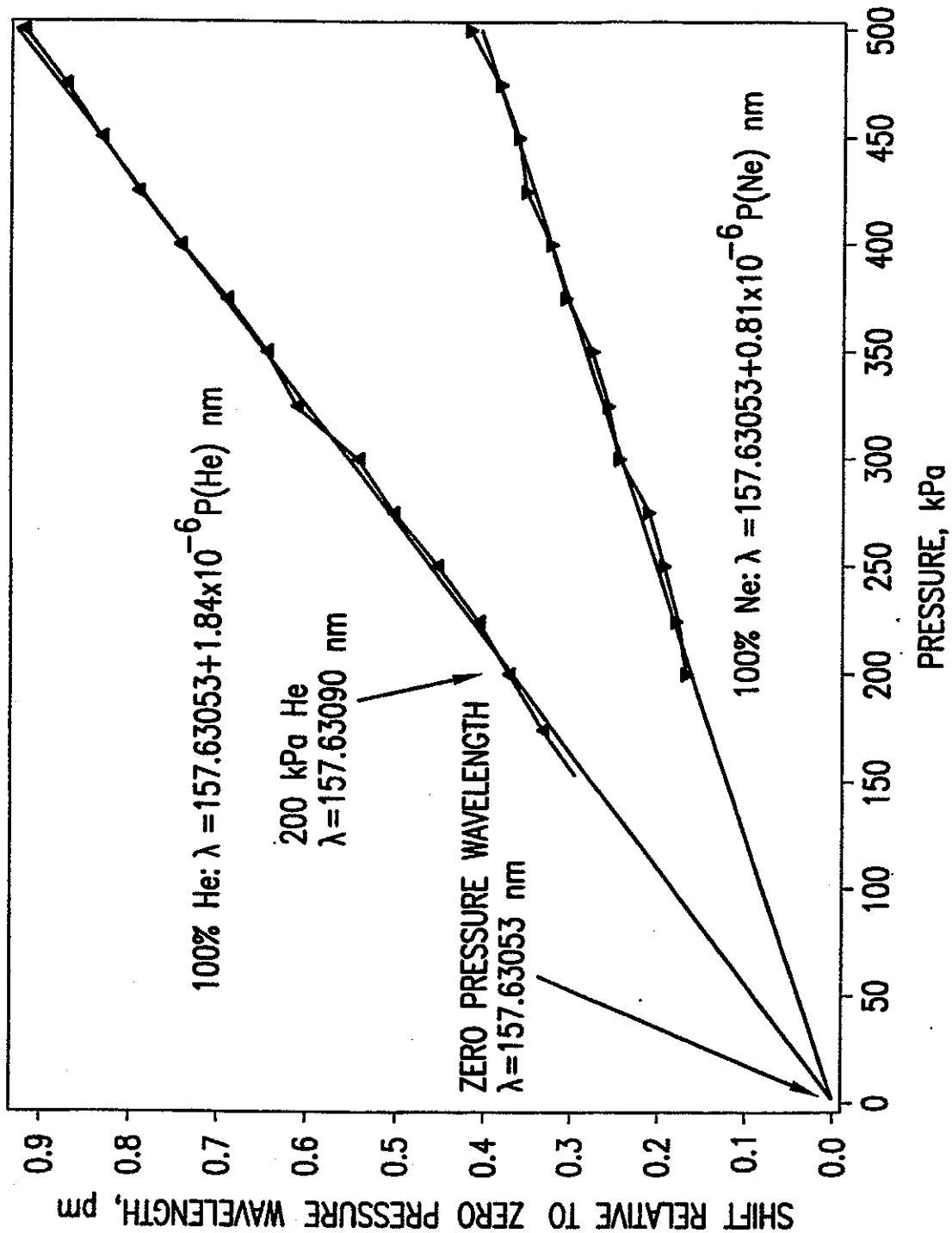


FIG.14E

34/37

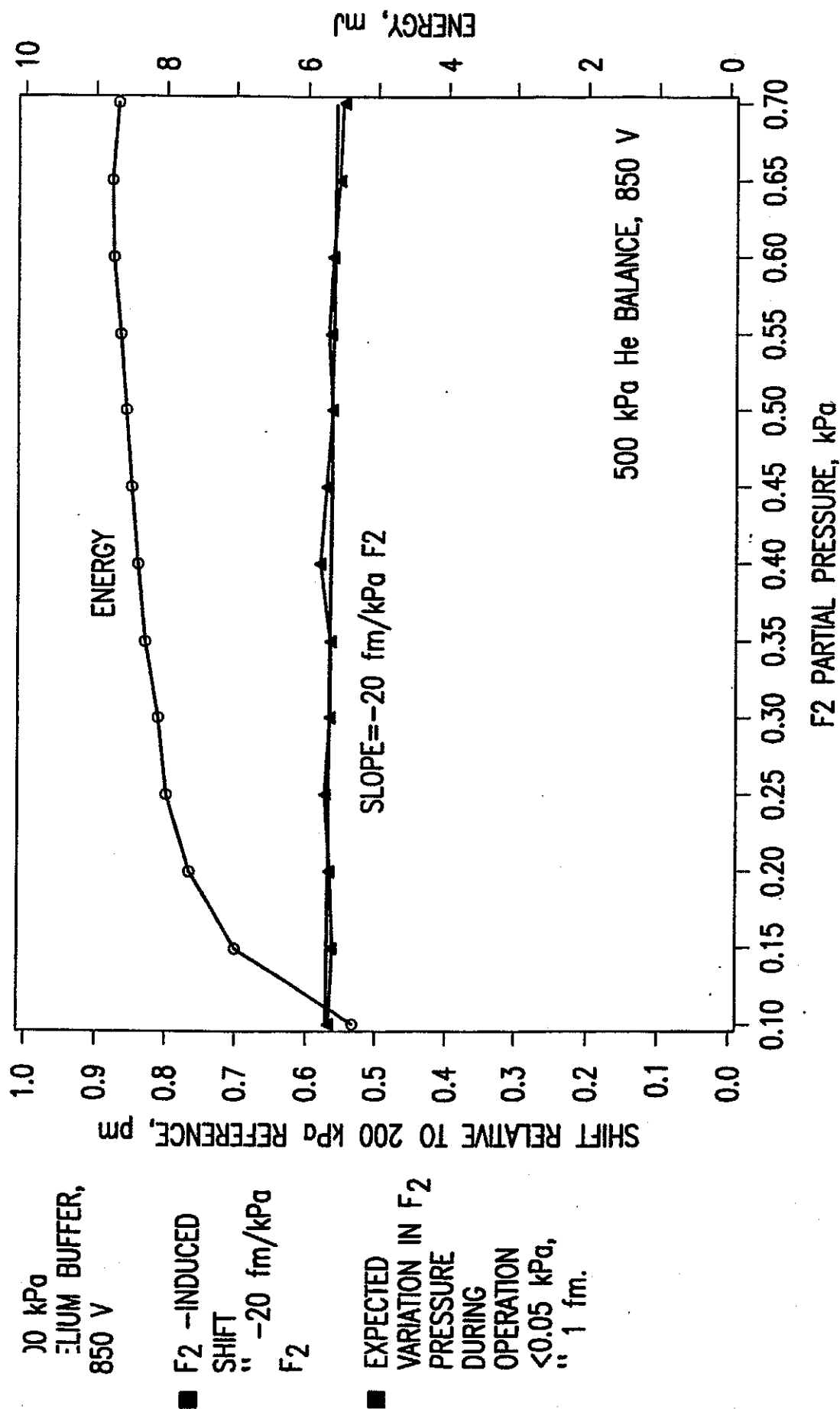


FIG.14E1

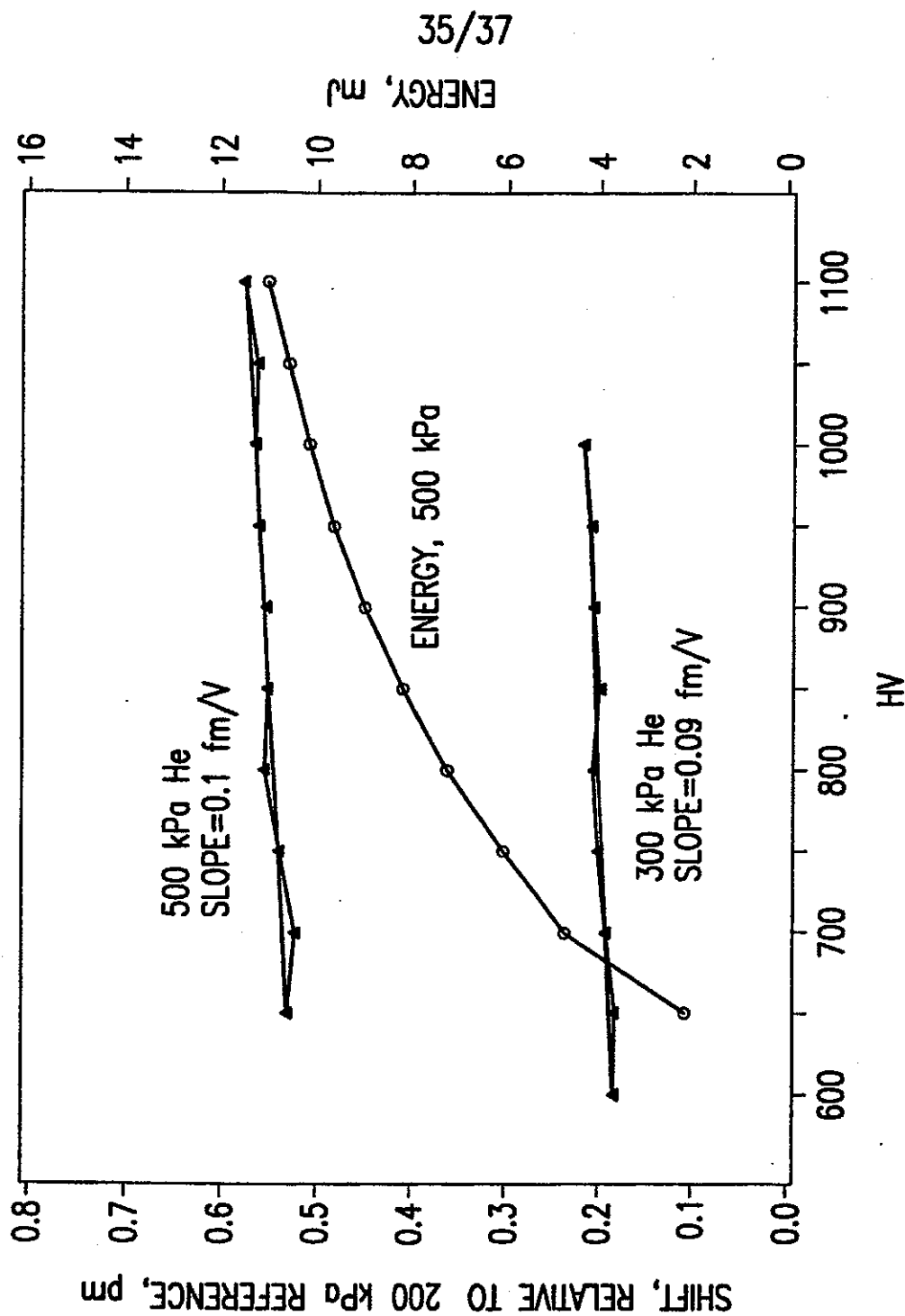


FIG.14F

HELIUM BUFFER AT
300, 500 kPa

■ HV-INDUCED SHIFT
" 0.1 fm/V

■ EXPECTED VOLTAGE
VARIATION DURING
OPERATION
" 200 V,
= 20 fm.

■ MIGHT THE VARIATION
WITH HV ACTUALLY BE
CAUSED BY CHANGES
IN OUTPUT ENERGY?

36/37

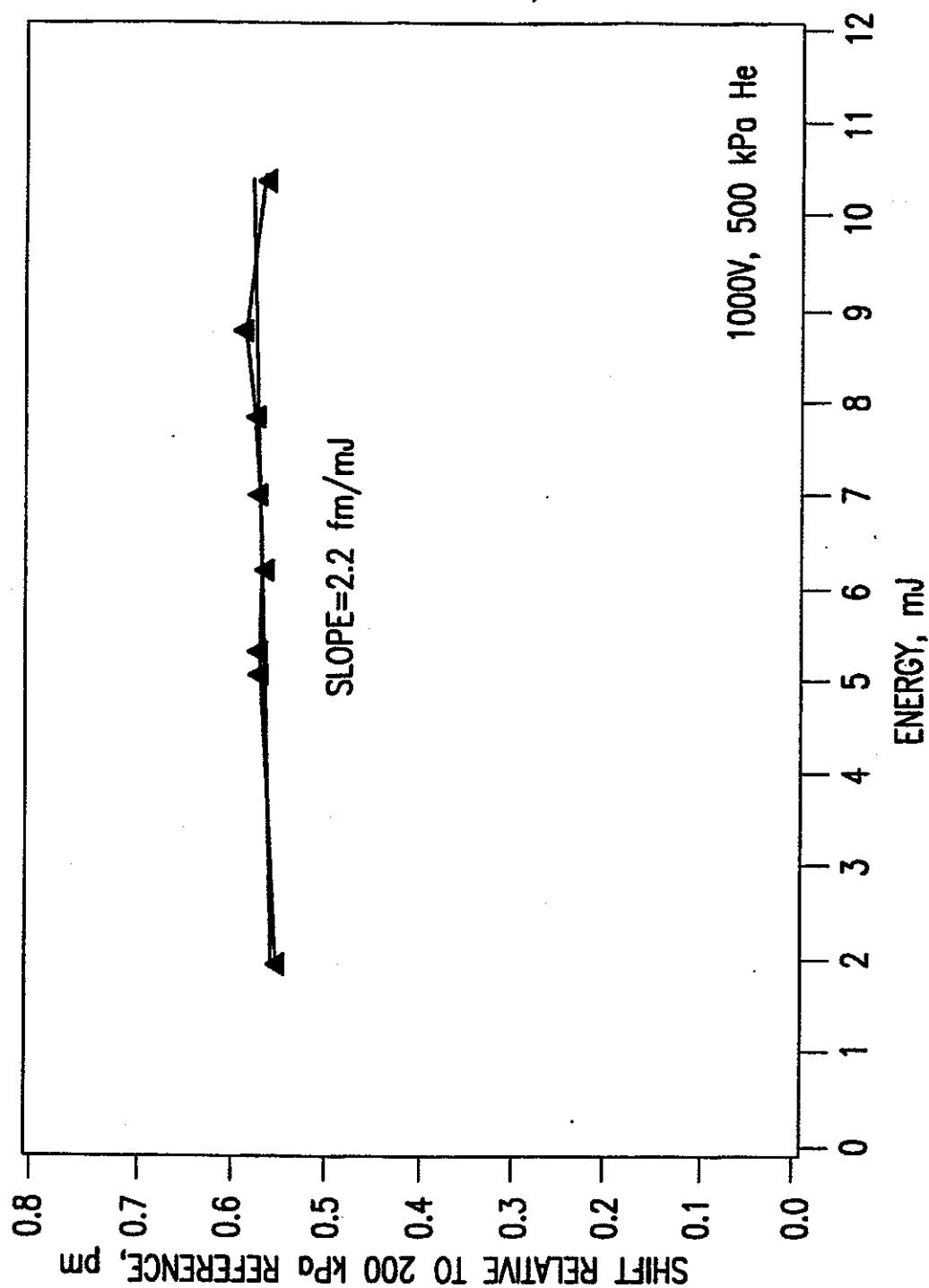


FIG.14G

ISCHARGE
PARAMETERS KEPT
ONSTANT:
000V,500 kPa He

■ LASER RESONATOR
MIRROR REFLECTIVITIES
VARIED TO PRODUCE
RANGE OF ENERGIES

■ WEAK DEPENDENCY
ON ENERGY:
2.2 fm/mJ

■ EXPECTED ENERGY
VARIATION (DYNAMIC
RANGE):
" 2 mJ,
=5 fm

37/37

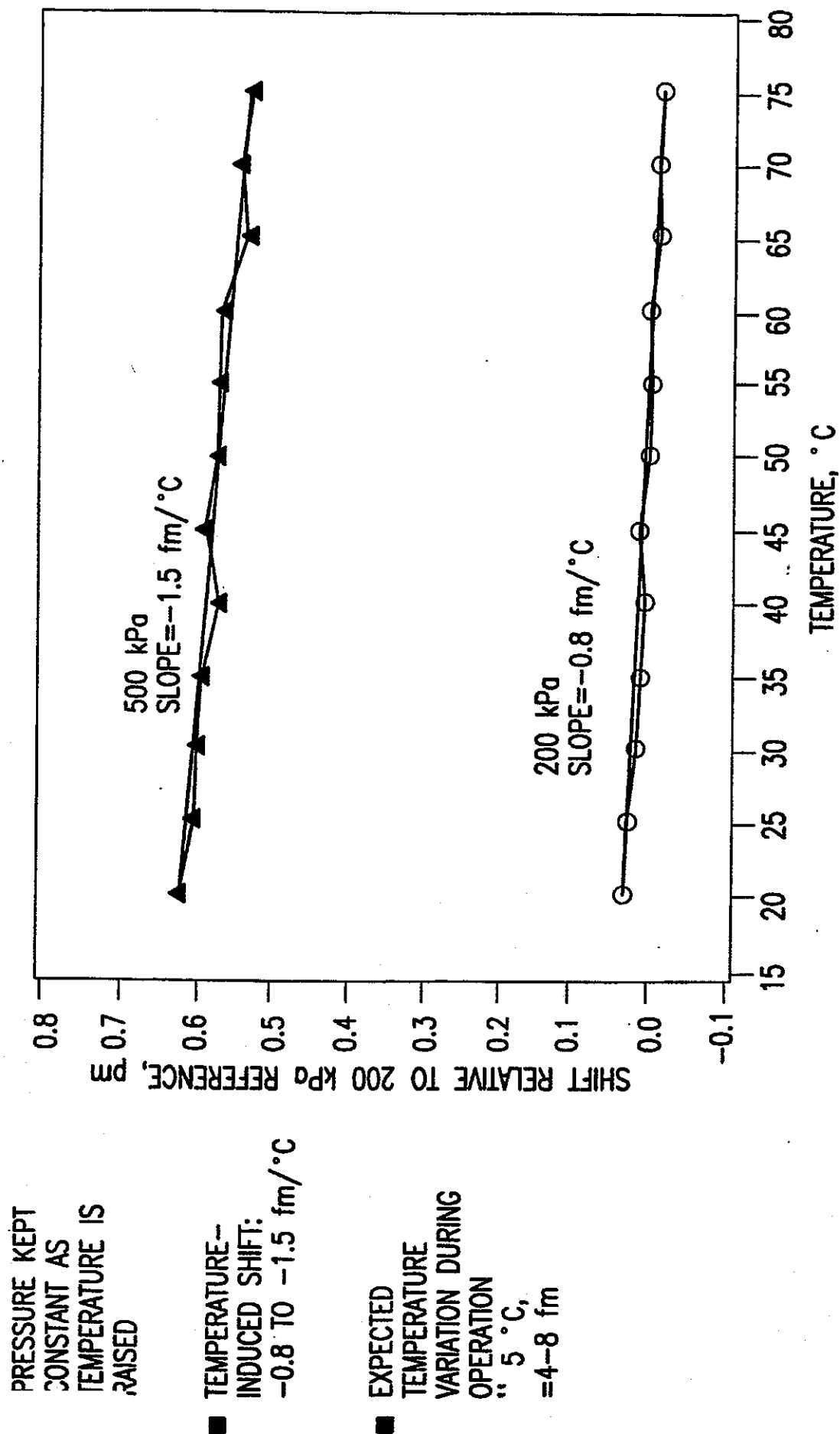


FIG.14H