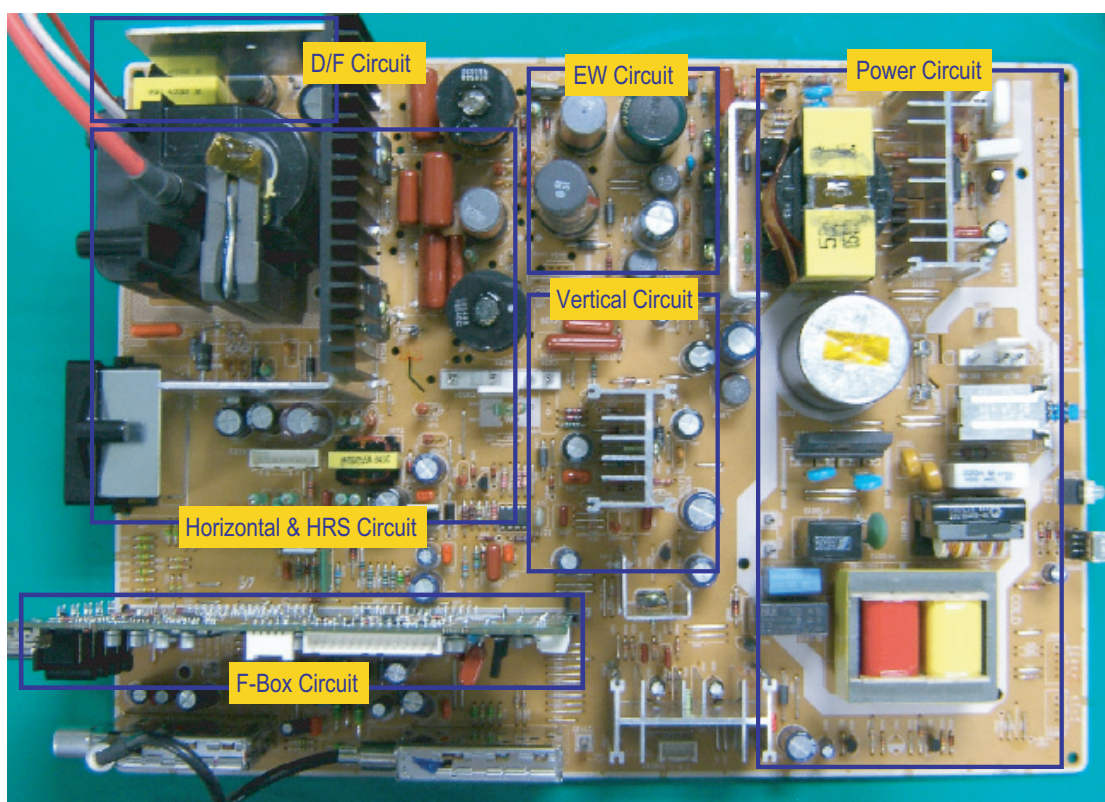


13. Circuit Description

13-1 Overall Block Description



※ Bias Circuit structure of S63A is the same as the existing S62A Circuit.

■ Circuit Constitution.

1. Horizontal Bias Part

- Controls the high voltage generation and horizontal bias.. FBT, HDT, CT condenser etc.

2. Vertical Bias & Vertical (North / South) Correction Circuit

- While mostly controlling the vertical bias, also corrects the picture lowering of top and bottom. ..LA7845, Vertical TRANS, etc.

3. HRS (Horizontal Raster Shift) Correction Circuit

- A correction circuit of Linearity distortion on the left and right side of a picture which is caused by awry electron beam from an electron gun.. Correction S/W and surrounding circuits.

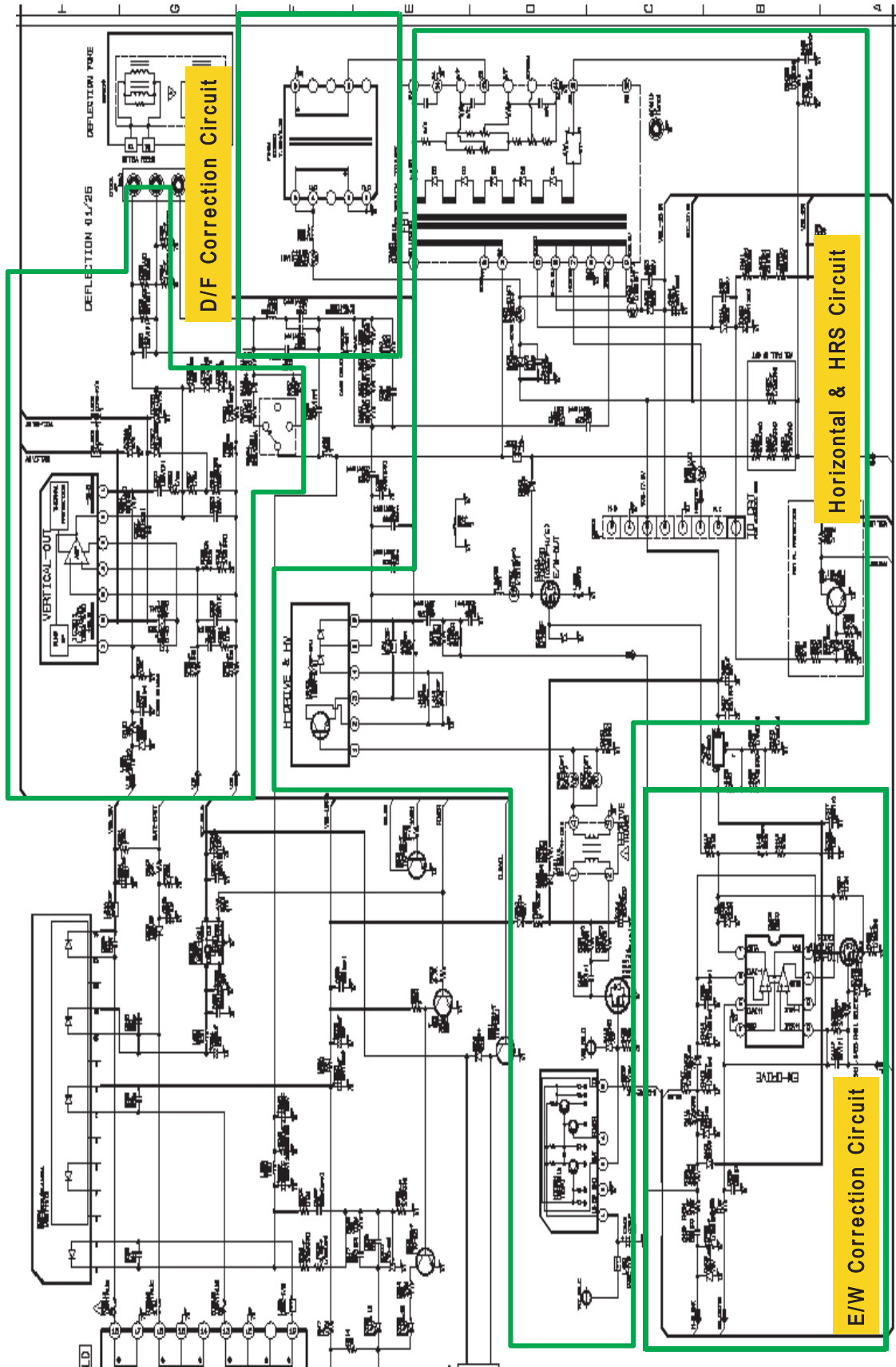
4. D/F (Dynamic Focus) Correction Circuit.

- Improved Focus feature circuit due to the widened angle of a picture!..D/F Trans, Vertical/Horizontal circuit

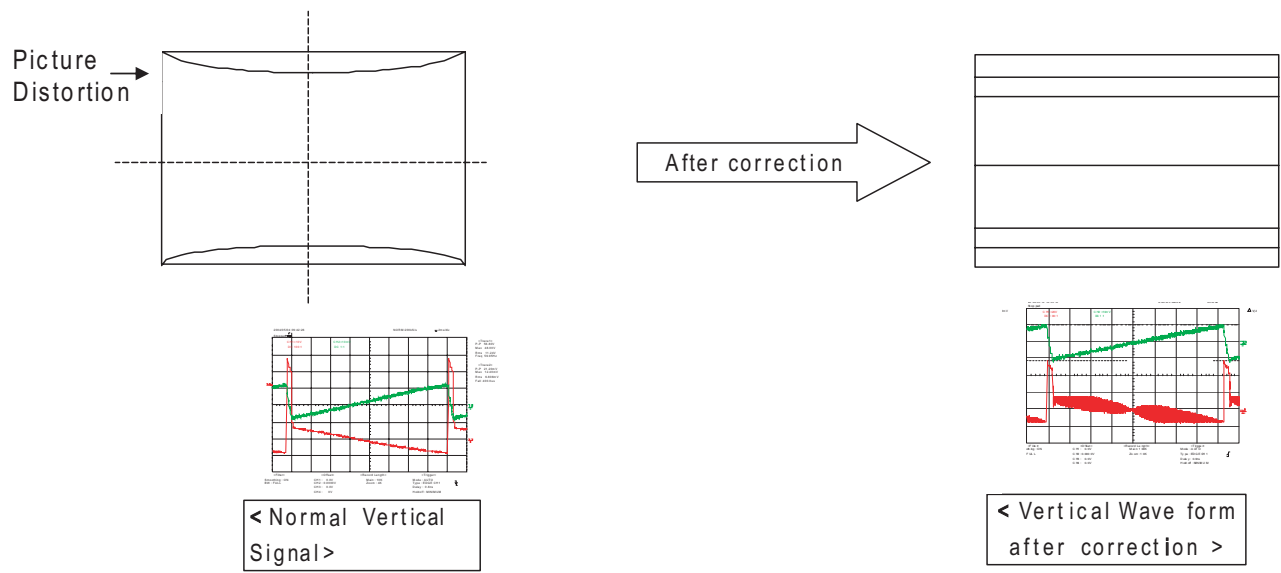
5. E/W (East / West) Correction Circuit.

- A circuit for correcting the spool shape which appears on the left and right part of a picture. This is caused by the difference between the distances from the center of a picture to each corner. KA393, FQP630 etc. (Adopt PWM circuit)

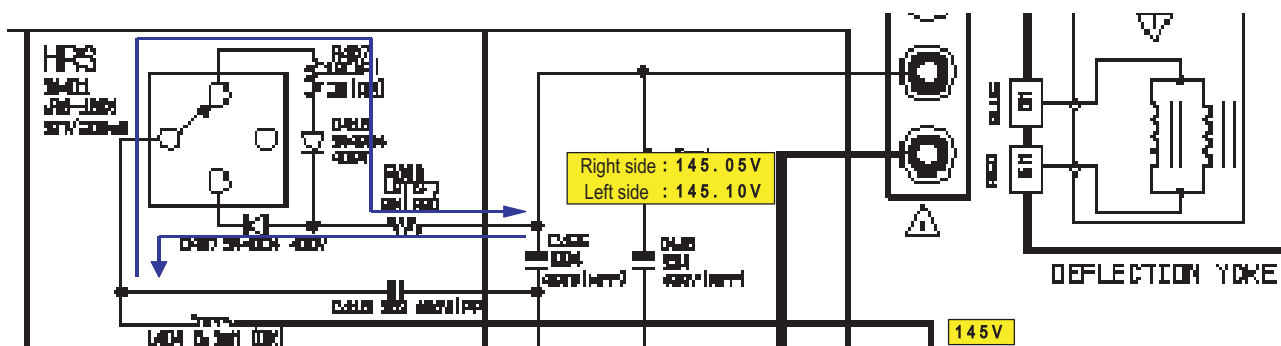
Vertical Bias Correction Circuit



② Comparison before and after of Vertical signal correction



13-2-2 HRS Correction



① Understanding and Constitution of HRS Correction

► What is HRS (Horizontal Raster Shift) circuit?

- When electron BEAM emanates from CRT, it must form the image evenly on the center of a screen. However, the left-right linearity can be awry due to the micro-distortion of horizontal angle while producing CRT. HRS is a compensatory circuit which crosses DC voltage over CS condenser on horizontal output board to correct the distortion.

② HRS Circuit Operation and Picture Movement

► Operational Principle.

- HRS circuit consists of R407, D415, D407, SW401, C415, L404. If switch SW401 (Service S/W) to the direction of R407, it raises the C426 CS condenser voltage through D415 and the picture moves to right. If switch SW401 to the direction of D417, the picture moves to left.

C415 is functioning as a condenser which stops generating current. It can control the left-right movement since the rechargeable voltage varies as the condenser capacity value varies.

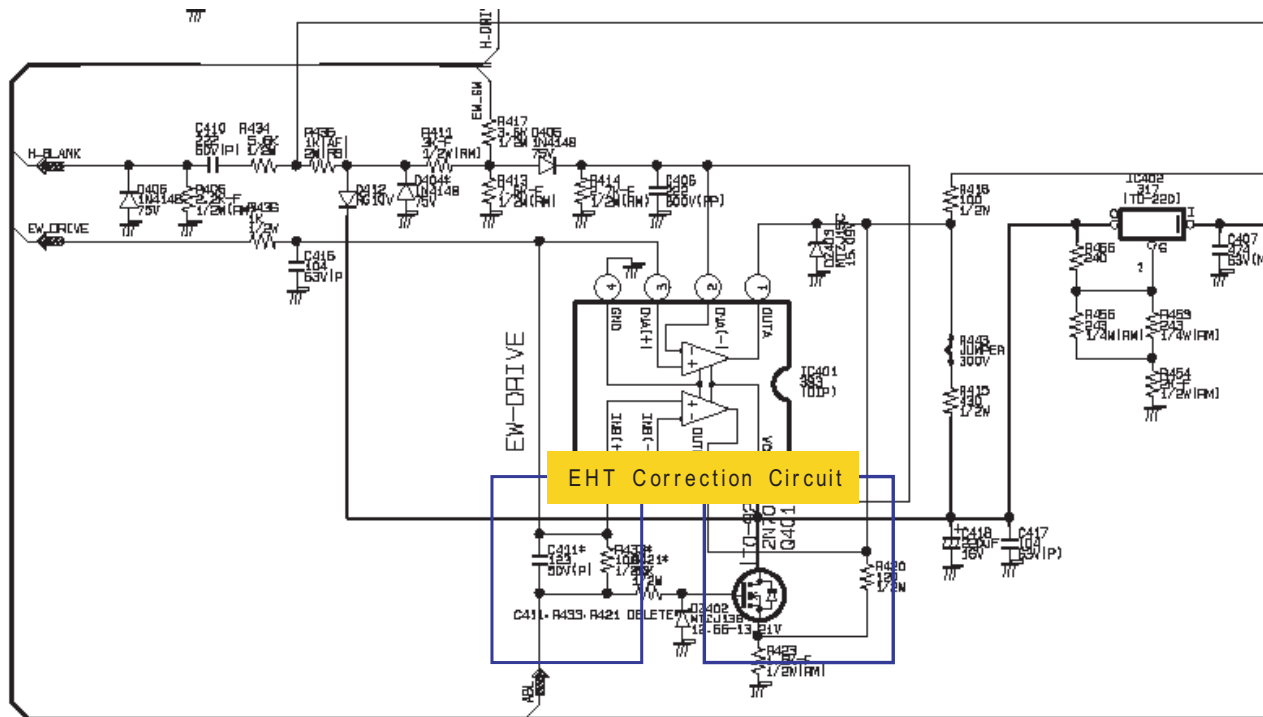
That is, the larger the C415 capacity value becomes, the bigger the left-right movement will be.

► Picture Movement during 0HRS Connection

- * Direction of SW407 Switch Center : Not corrected.
- D415 : moves to the right of a picture
- D417 : moves to the left of a picture

Condition	Total Length of a Picture Moved (m/m)					
	Left		Center		Right	
	To Left	To Right	To Left	To Right	To Left	To Right
After	5.5	6.5	1.5	2	6.5	6

13-2-3 E/W Circuit Block



a) Understanding of E/W Circuit

► What is an E/W (East / West) Correction Circuit?

- If the bias angle of a picture widens, the distance from the center of a picture to each corner becomes farther as it moves to periphery. This causes the picture being distorted (Picture Lowering) horizontally in a shape of a spool because of the strong bias at four corners where are the farthest from the center. E/W is a circuit which corrects the spool-shape on the left and right part by crossing Parabolic wave form over the horizontal output board and controls the current which flows through terminal no.47. Parabolic wave comes out from terminal no.47 of CXA2165 CHROMA IC(IC31)
- It also controls the horizontal-related factors of Factory data such as picture size, size change and Parabola gain change. It has an essential role of minimizing the picture swaying (High Voltage Regulation)

b) E/W Circuit Constitution and Operation

► E/W Circuit Constitution and Operation Principles.

- E/W circuit consists of KA393(comparator), FQP630(output TR), and other parts. This uses a method in which PWM controls the circuit using a comparator. The advantage of this PWM Control method is that POWER Loss hardly occurs and generates little heat when using low H/S.
- Input E/W signal to terminal no 3,5 of IC401(KA393) and carrier wave to terminal no 2,6. Carrier wave can be made by reducing the horizontal collector voltage and integrating the wave form using D405,R414 and C406.
- Then the carrier wave is compared with E/W signal in IC401 and outputs PWM(Pulse Width Modulation) wave form. Bias current shall be controlled using Q404.
- Picture swaying occurs as the picture brightness varies. To correct this, control the high voltage regulation using Q401(1N7000), R433 and C411 That is, Q401 is a circuit for correcting Static Regulation and used to prevent the picture size changing as the picture brightness varies.
- It detects the ABL voltage and inputs to Q401 Gate through R423 resistance. Then the ABL voltage change is sent to IC401(KA393) output and controls the DC of Q404(FQP630) Gate terminal, to keep the picture size from changing.

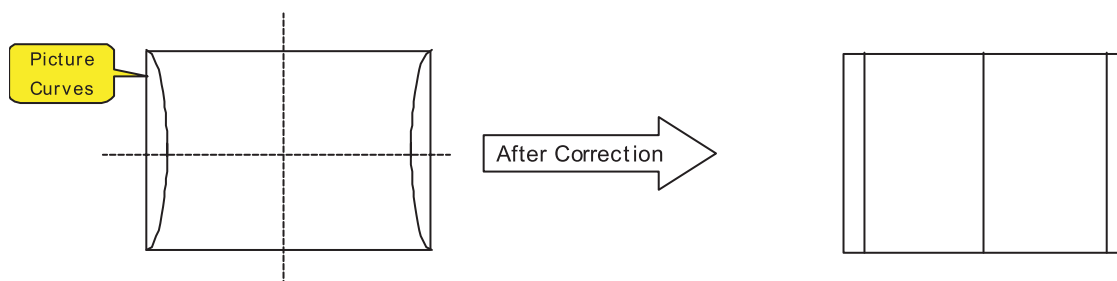
► E/W Circuit Constitution and Operation Principle.

Also, E/W circuit functions as a compensatory circuit against the picture shaking by reversely compensating the picture swaying. This is possible by inputting ABL voltage to E/W using R433 as the picture brightness varies.

There are H,V, PIN-COMP as well in Factory data and these correct the high voltage regulation. If the H-COMP capacity value increases, correction vector increases too and this causes a strong picture swaying. On the other hand, if the H-COMP capacity value decreases, correction vector decreases causing extensive picture size change. V-COMP, likewise, controls the vertical correction vector and operates in the same mechanism as H-COMP.

PIN-COMP is a function which corrects the movement of four corners of a picture. If the capacity value is excessive, a picture curves outwards when the picture is bright. COMP capacity value, therefore, should be varied ± 1 step from the factory-adjusted condition, since a gain widely varies dependant on the SET distribution.

► Before and After of E/W Circuit Correction



13-3 IC Line up

■ F-Box Board

Items	Descriptions	Remarks
Micom, Scaler, Switching, Sound Processor	VCT69xyP	
Deflection Processor	CX2165	
PIP Processor	TW9906	
HDMI IC	MST3383	
DC/DC Converter	MP1410ES	
EEPROM	24C02	2Kbit
EEPROM	24C16	16Kbit
Regulator	SI-3002KWM-TL	Multi Regulator
Regulator	KA78R09CTU	9V Regulator
Regulator	78D05	5V Regulator

■ Main Board

Items	Descriptions	Remarks
BRIDGE DIODE	GSIB660	
Didode	SLA1004L	
Trans Switching	53B135-SC	
Trans Switching-ST BY	EE2020	
STR	STR-6759 (Asia)	
STR	STR-6750 (Europe/CIS)	
EW Driver	KA393	
Vertical Focus	MC4558C	
FET	FQP630	
Horizontal DEF	FJ6920, FMP3FU	

■ CRT Board

Items	Descriptions	Remarks
DRIVE IC	TDA6111Q	
IC HYBRID	STK396-130	
AMP	TDA2030	