DIFFERENCE AMPLIFIER

LM358P
DUAL OPAMP
NOTE: PIN"GND"
   =−VSUPPLY (4)
   +VSUPPLY (5)

1. Ri = Rf = R3 = R4 = 10K OR 20K'S
2. CONNECT V1 TO (1), V2 TO (2)
   MEASURE: V1-V2, V1'-V2', V2'-'V1', V2-V1, V1', V1, V2', V2,
   VOUT CALC V2'-V1', V2-V1, CALC VOUT/(V2-V1)
   MEASURE V1' WITH DVM
3. CONNECT V1 TO (2), V2 TO (1)
   REPEAT 2
4. REPEAT WITH Rf = R4 = 20K, Ri = R3 = 10K
   CALCULATE VOUT/(V2-V1)
   DOES VOUT/(V2-V1) = Rf/Ri?

OUT= RF/Ri (V2-V1)
Rf = R4, Ri = R3+− 1%
SUMMING (ADDITION CIRCUIT)

SET UP USING LM358P NOTE: PIN GND = -VS

1. SET VIN SO VOUT IS NOT DISTORTED
   MEASURE VIN, V1, VOUT CALC VOUT/VIN, VOUT/ V1, V1/VOUT
   CK. VOUT = -Rf/R1(V1) -Rf/R2(VIN)
2. REPEAT FOR R1+ 15K, R2= 20K
3. SUMMING CIRCUIT (POSITION CONTROL)

1. SET WIPER OF R4 ALL THE WAY UP. MEASURE VX (VDC)
   OBSERVE VOUT AC & DC COUPLED. MEASURE DC VOLTS AT VOUT.
2. SET WIPER OF R4 FOR VX = 1VOLT DC. REPEAT 1.
3. SET WIPER OF R4 FOR VX = 2 VOLTS DC. REPEAT 1.
4. SET WIPER OF R4 FOR VX = -1 VOLT DC. REPEAT 1.
5. SET WIPER OF R4 FOR VX = -2 VOLTS DC. REPEAT 1.
7. OBSERVE VOUT (DC COUPLED) VARY R4 WIPER UP AND DOWN
   NOTE VOUT DISPLACEMENT (CRO POSITION CONTROL)