

# Film-Tech

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**ALTEC**  
LANSING

**A1-X, A1, A2-X,  
A2, A4-X, AND A4  
LOUDSPEAKER SYSTEMS**

**ASSEMBLY INSTRUCTIONS**

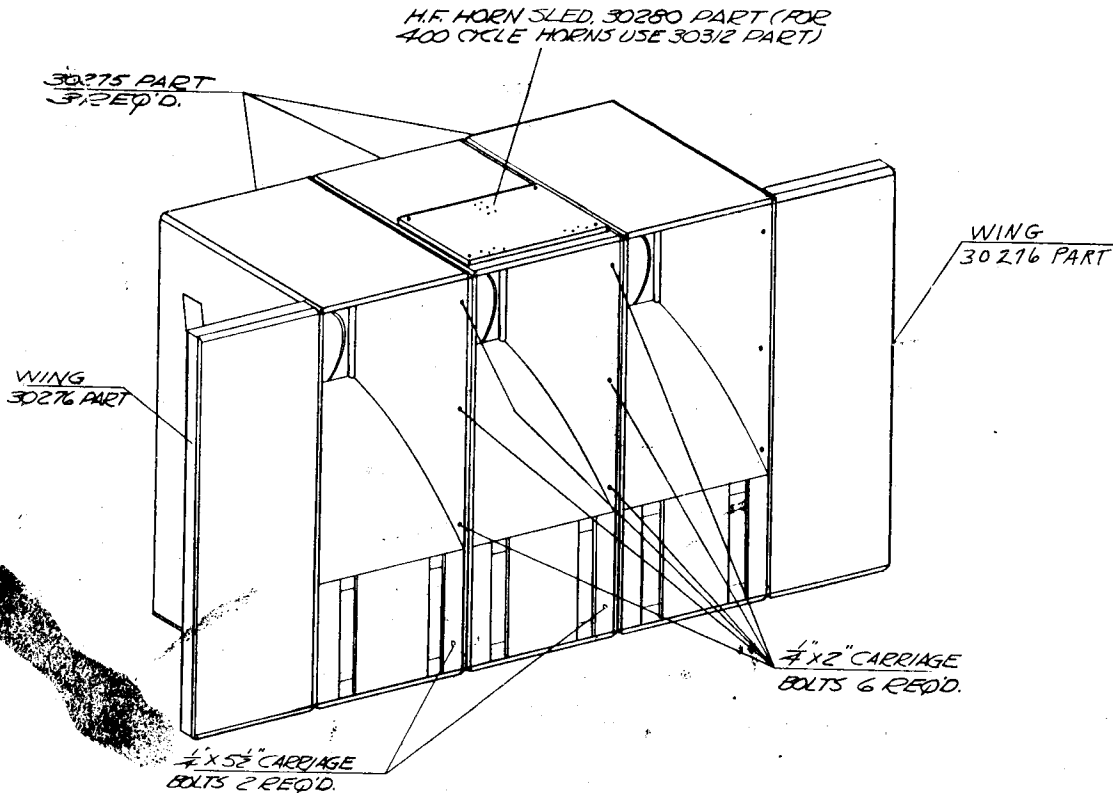


Figure 1. Front View of A1-X or A1 System

**A. INTRODUCTION.**

"The Voice of the Theatre"® speaker systems by Altec Lansing are used in more than 12,000 motion picture theatres, auditoriums, arenas, and other sound reinforcement installations throughout the world. An important component of each such system is the Altec low-frequency horn.

These large low frequency horns ensure proper loading that effects excellent air coupling and enhances the performance of the low-frequency loudspeakers. Exponential expansion, properly spatial phased with the high-frequency horn, assists the projection of the important mid-range frequencies.

Front loaded in design, Altec low-frequency horns have no folds or bends to produce 'holes' or 'hot spots' in the sound coverage. The elimination of any irregularities assures a uniform response across the dispersion angle of the horn, a factor

essential in the calculation of sound systems. The combination bass reflex/front loaded design prevents the boom and false accentuation often associated with public address systems that use other types of enclosures, reduces the amplitude of cone movement at resonant frequencies, and allows higher power input without distortion. The efficient use of the lower end of the sound spectrum contributes to the illusion of loudness and presence required to distinguish "The Voice of the Theatre" system from ordinary loudspeaker systems.

The exponential multicellular horns that are used in "The Voice of the Theatre" systems are the most efficient of all projectors for delivering top quality sound uniformly over a defined listening area. The unique excellence of the multicellular horn results from its distinctive design. Altec multicellular horns will accommodate as many as four drivers of the 288-type for indoor use, and were developed by the Bell Telephone Laboratories out of a necessity to ensure the success of early talking pictures.

*Specifications and components subject to change without notice. Overall performance will be maintained or improved.*



A Division of **LS** Ling Altec, Inc.

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**New York**

30693-01

Price \$0.28

Litho in USA

LTV-58-1K

## B. PARTS LIST

SYSTEM	HF DRIVERS	HF HORN	THROAT	LF DRIVERS	LF HORN	NETWORK
A1-X	4 - 288C	1804B, or 1504B, or 1004B	2 - 30170 2 - 30170 2 - 30170	6 - 515B	610	N500-C
A1	2 - 288C	1505B, or 1005B	1 - 30172 1 - 30210	6 - 515B	610	N500-C
A2-X	4 - 288C	1804B, or 1504B, or 1004B	2 - 30170 2 - 30170 2 - 30170	4 - 515B	410	N500-C
A2	2 - 288C	1505B, or 1005B	1 - 30172 1 - 30210	4 - 515B	410	N500-C
A4-X	2 - 288C	1505B, or 1005B	1 - 30172 1 - 30210	2 - 515B	210	N500-C
A4	1 - 288C	1505B, or 1005B, or 804B, or 805B,	1 - 30166 1 - 30170 1 - 30172 30162	2 - 515B	210	N500-C
A5-X	1 - 288C	1505B, or 1005B, or 805B	1 - 30166 1 - 30210 1 - 30162	1 - 515B	825	N500-C

- NOTES:
1. The 288C HF drivers are 40-watt, 500 to 16,000 Hz, 24-ohm types.
  2. The HF horns are multicellular types with a cutoff frequency of 400 Hz in the A1-X and A2-X systems, and 500 Hz in the A1, A2, A4-X, A4, and A5-X systems.
  3. The 515B LF drivers are 50-watt peak, 20 to 1000 Hz, 16-ohm loudspeaker types.
  4. One 16-inch shielded cable, part number 30285, is provided with the A1, A2, and A4-X systems; two with the A1-X and A2-X systems.
  5. Two 15-foot lengths of No. 16 stranded cellac wire (one red, one green) are provided with the A2, A4-X and A4 systems; two 20-foot lengths with the A1-X, A1, and A2-X systems.
  6. One Jones terminal strip No. 4-142-W is provided with the A4-X and A4 systems; two with the A2-X and A2 systems; and three with the A1-X and A1 systems.
  7. One special adapter, part number 30296, is provided with the A1-X systems for coupling the four HF drivers to the HF horn.

## C. MECHANICAL ASSEMBLY

1. Place the cabinet(s), part number 9s) 30275, in their ultimate operating position. (See Figures 1, 3, and 5).
2. Remove wooden shipping slats from corners of each cabinet.
3. Remove wooden shipping braces from wings and braces, assembly number 30276.
4. Remove rear panel from each cabinet.

### CAUTION

In the following steps, when attaching one part to another, be sure to tighten the bolts securely to prevent vibration.

5. Secure each cabinet together using 1/4" x 2" and 1/4" x 5-1/2" carriage bolts in the front as shown in Figures 1, 3, and 5.
6. Secure each cabinet together at the rear as shown in Figures 2, 4, and 6 using 1/4" x 2" carriage bolts. The rear panel was removed in step 4 to provide access for securing these bolts.

7. Secure wings to cabinet using six 1/4" x 2-3/4" carriage bolts and two 1/4" x 4-1/2" carriage bolts as shown in Figures 2, 4, and 6. Insert carriage bolts from inside the cabinet(s) through pre-drilled holes shown in Figures 2, 4, and 6.

8. Secure wing brace to a wing using a 1/4" x 3-1/2" carriage bolt. Perform this step and the next successively for each wing brace.

9. Secure wing brace to cabinet using a 1/4" x 3" carriage bolt. The rear panel was removed in step 4 to provide access for securing these bolts.

### NOTE

In the following steps, when mounting a throat with a male fitting to a Model 288C driver, a 0.02" thick gasket, part number 20466, must be inserted between throat and driver. These gaskets are supplied with each throat and driver.

When mounting a throat with a flush face to a Model 288C driver, a 0.125" thick gasket, part number 21270, must be inserted between throat and driver. These gaskets are also supplied with each throat and driver.

Be sure to use the correct gaskets for proper operation of the loudspeaker system.

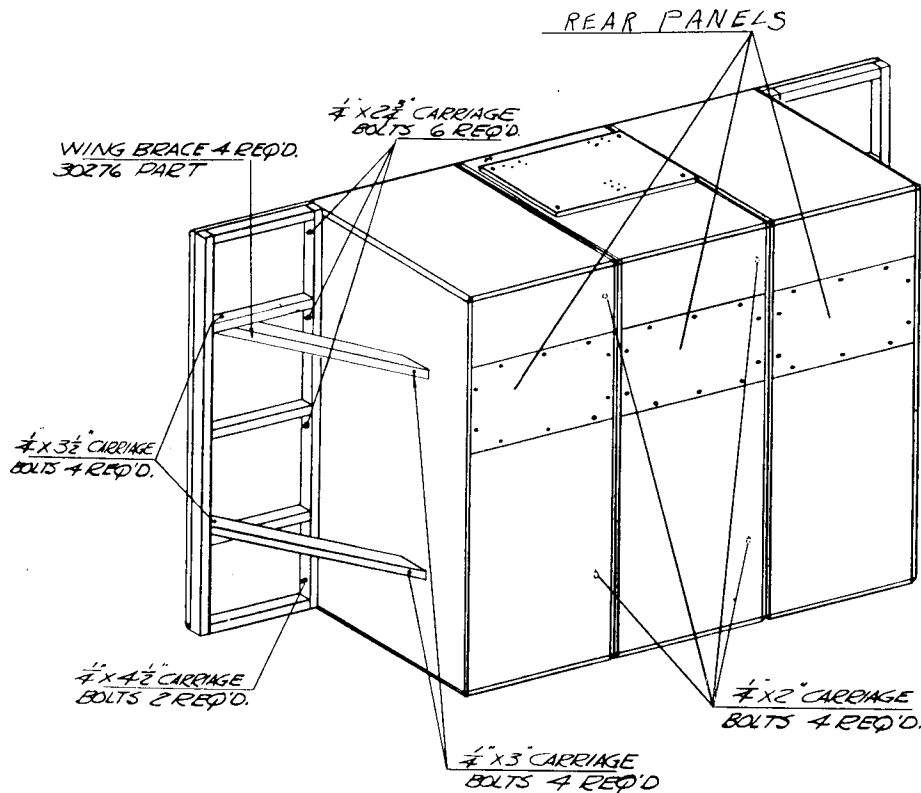


Figure 2. Rear View of A1-X or A1 System

10. On A1-X and A2-X systems assemble two 288C HF drivers to each Model 30170 throat.

11. On A1, A2, and A4-X systems if Model 1505B multicellular horn is being installed, assemble the 288C HF drivers to Model 30172 throat; if Model 1005B horn is being installed, assemble the 288C HF drivers to Model 30210 throat.

12. On A4 systems, if Model 1505B multicellular horn is being installed, assemble the 288C HF driver to Model 30166 throat; if Model 1005B horn is being installed, assemble the 288C HF driver to Model 30162 throat.

13. On A1-X and A2-X systems, assemble high-frequency multicellular horn to the two throat-driver assemblies, through the special intermediate throat adapter, part number 30296, then mount high-frequency horn and driver assembly on horn sled, part number 30280, using 1/4" x 1-1/4" carriage bolts, before mounting sled on top of cabinet.

14. On A1, A2, A4-X and A4 systems mount the high-frequency horn-driver assembly on horn sled, part number 30280, using 1/4" x 1-1/4" carriage bolts, before mounting sled on top of cabinet.

15. Find the 1/2" pre-drilled hole located 4" from the rear and 38" from the top of the cabinet on the right-hand panel. Then, mount Jones terminal strip(s) (No. 4-142-W) approximately two inches below the 1/2" pre-drilled hole and three inches from rear edge of cabinet; when more than one is used, mount the Jones terminal strips adjacent to one another using wood screws, 1/4" No. 20, supplied with each terminal strip.

16. Mount Model N500-C dividing network approximately four inches below the Jones terminal strip(s) and three inches from rear edge of cabinet; use 1/4" x 1-1/4" carriage bolts. (Four 1/4" holes will have to be drilled to accommodate the network; use the network as a template for locating the mounting holes before drilling.)

17. Install the two Model 515B LF speakers from rear of baffle board in each cabinet, located inside cabinet, using four 1/4" No. 20 filister head screws for each speaker.

#### NOTE

Until the proper position of the HF horn in relation to the LF speakers for correct phasing has been determined, it is best that the horn sled not be secured to the cabinet. Once the proper position has been determined through tests, then fasten the horn sled with four 1-1/2" No. 10 wood screws.

#### CAUTION

Do not overtighten mounting screws. Screws should be tightened just enough so there are no air leaks around the speaker flanges. They should not be tightened with such force that the speaker frames are forced out of alignment. Tighten the screws evenly, a little at a time, moving around the circle as many times as necessary.

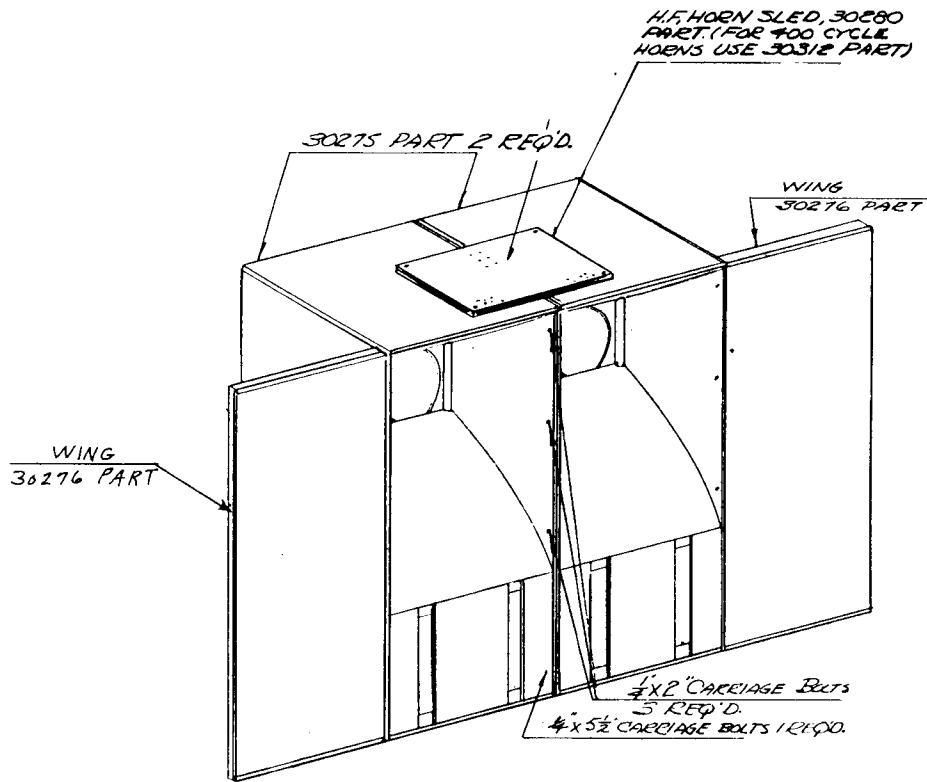


Figure 3. Front View of A2-X or A2 System

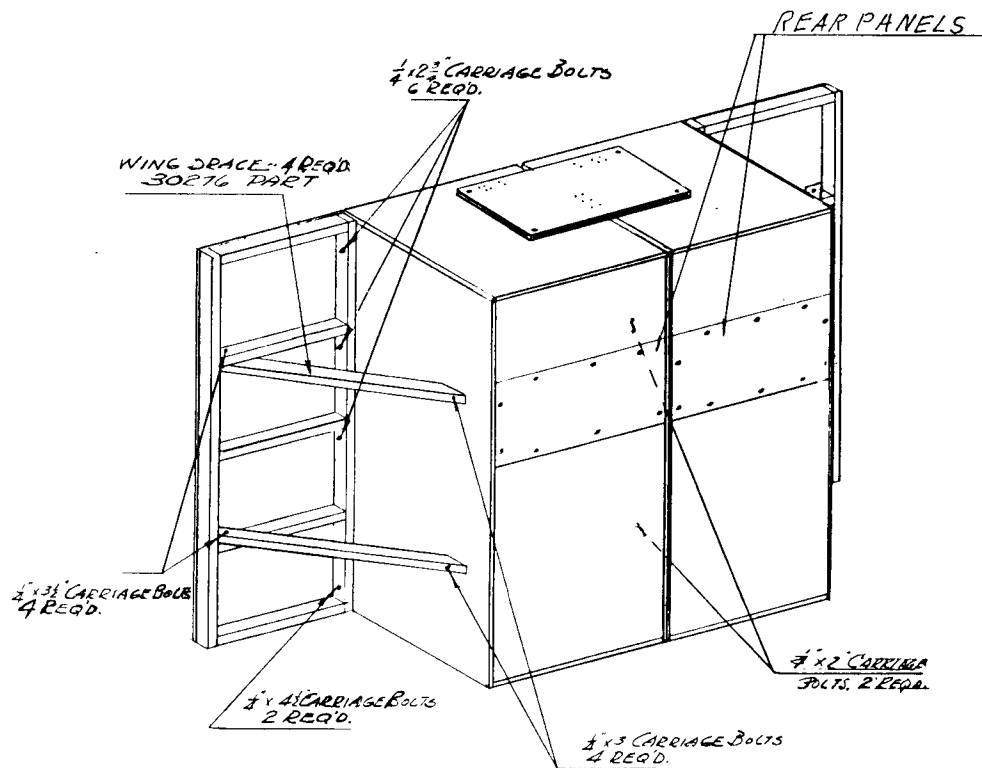


Figure 4. Rear View A2-X or A2 System

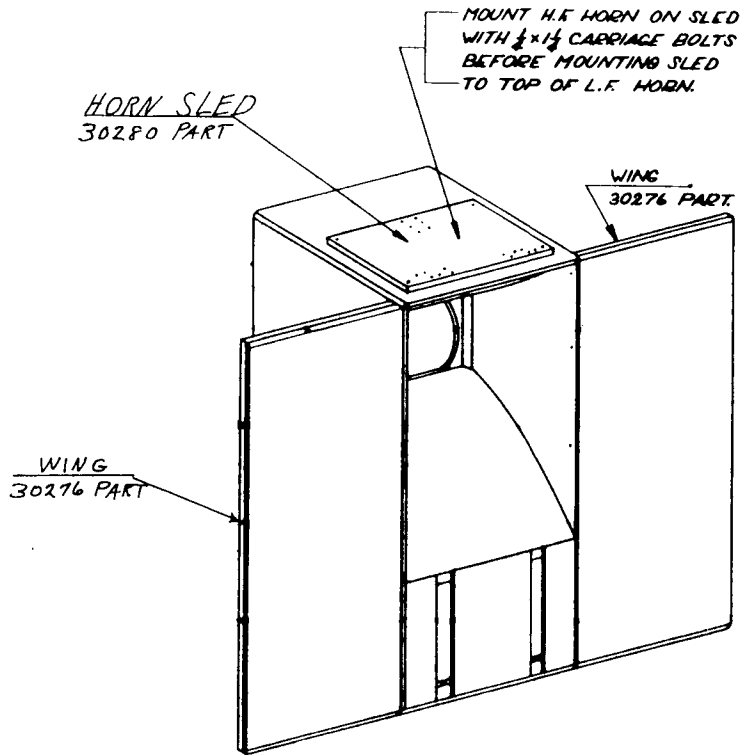


Figure 5. Front View A4-X or A4 System

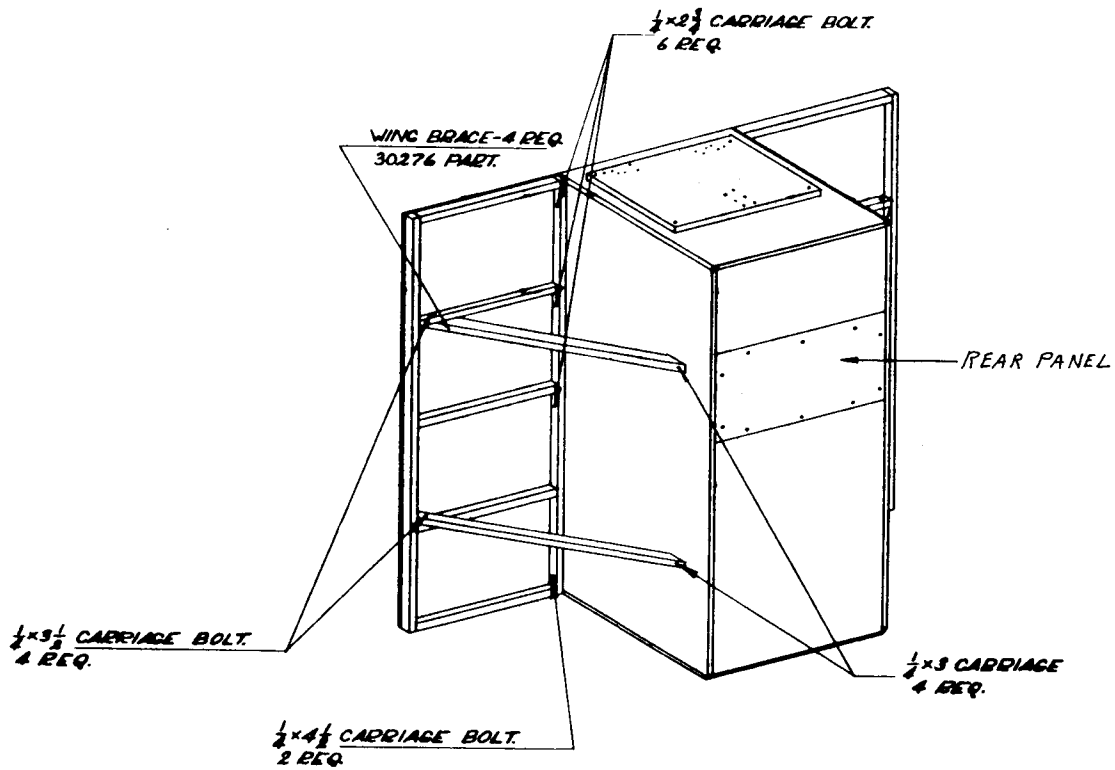


Figure 6. Rear View A4-X or A4 System

#### D. ELECTRICAL CONNECTIONS

Connect the HF drivers, LF speakers, and dividing network exactly as shown in Figures 7 through 12 for the Loudspeaker Systems as applicable. Exact connections are important for the proper electrical phasing of the speakers.

Secure wires from HF drivers to the cabinet at 6-inch intervals with insulated staples. When wiring the Model 515B LF speakers,

run wires from speakers to Jones terminal strip out through the 1/2" pre-drilled hole in the right side of the cabinet(s). Use electrical tape to wrap speaker wires at 3-inch intervals inside the cabinet(s). Connect wires from program source to N500-C dividing network; one wire to the INPUT terminal, the other wire to one of the COMMON terminals. Replace rear panel(s) to cabinet(s) and perform system test to determine proper location of HF horn, which must be secured. (Reference paragraph C, step 14.)

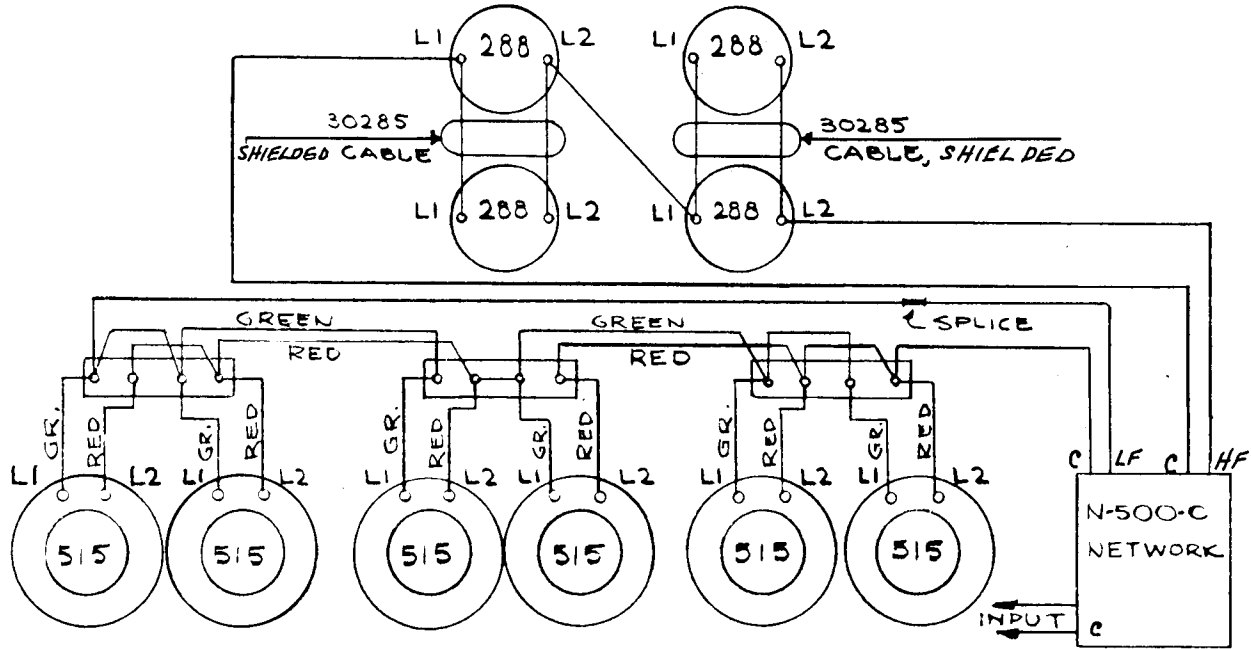


Figure 7. A1-X Wiring Diagram

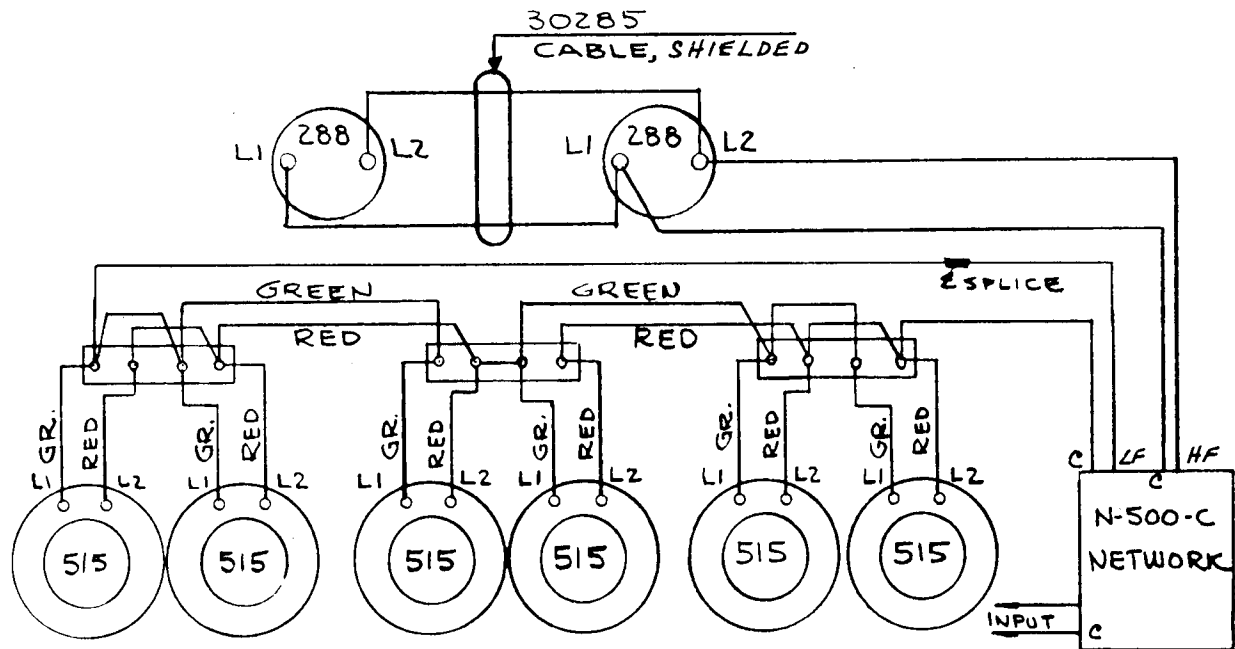


Figure 8. A1 Wiring Diagram

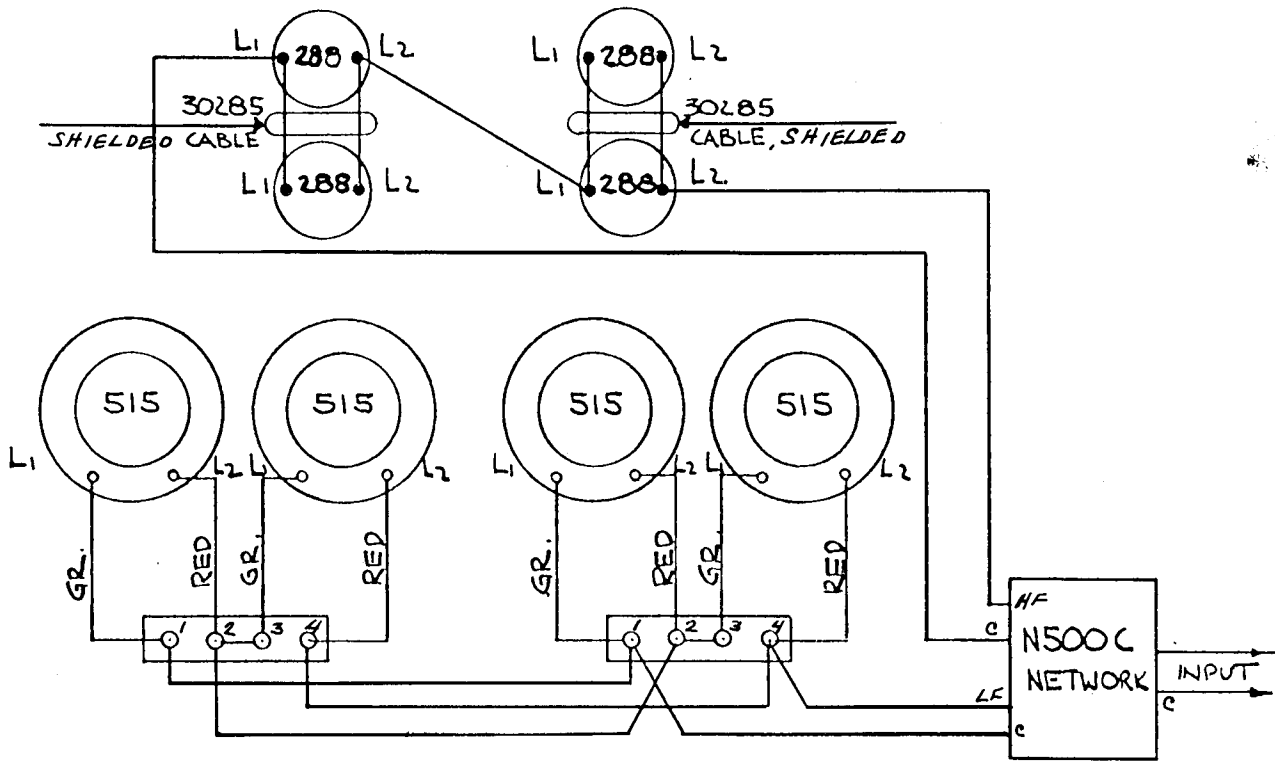


Figure 9. A2-X Wiring Diagram

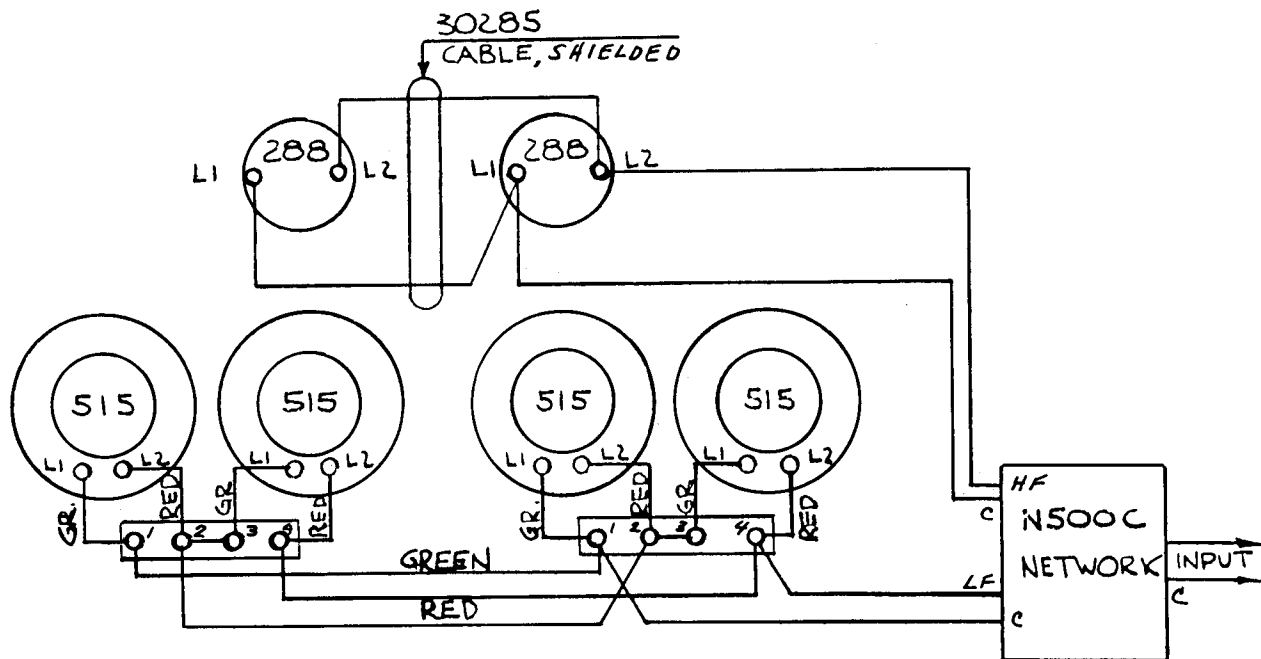


Figure 10. A2 Wiring Diagram



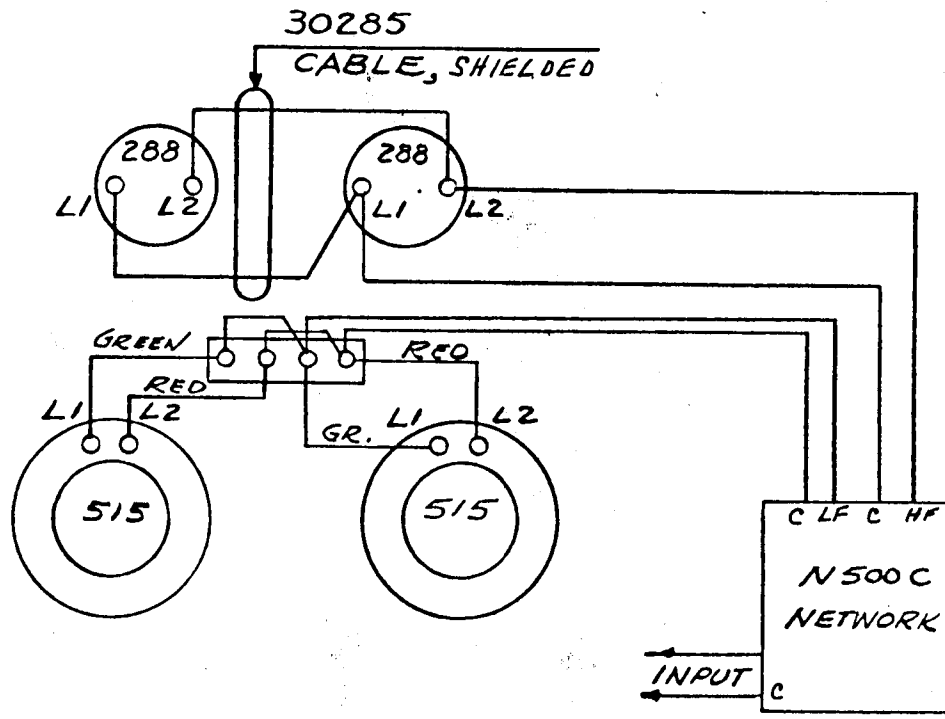


Figure 11. A4-X Wiring Diagram

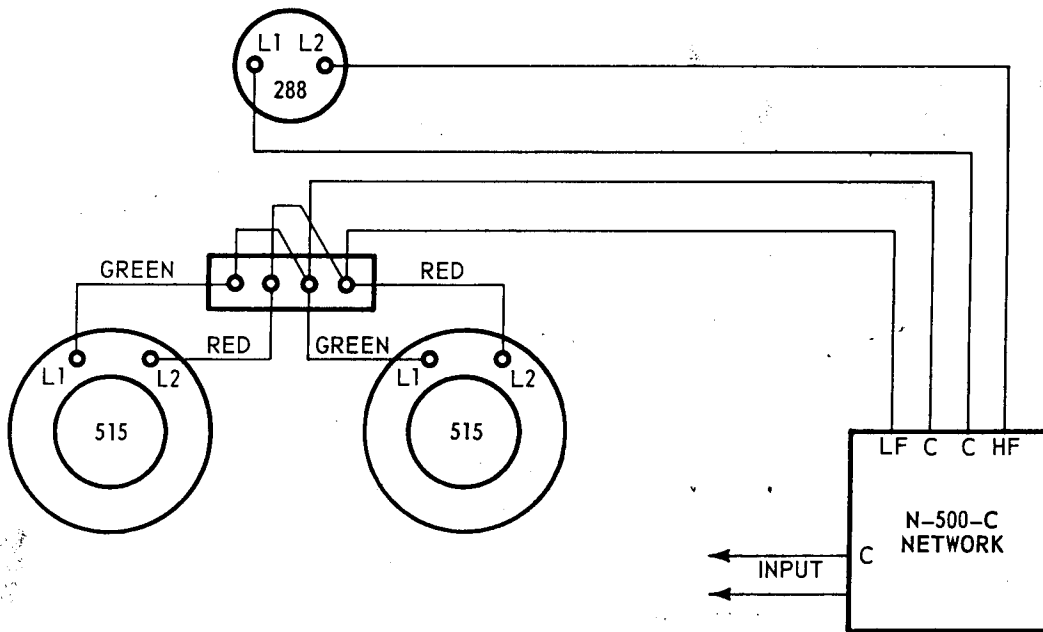


Figure 12. A4 Wiring Diagram