

- NOTES:**
- 1 HANGER SUPPORTS REQUIRED EVERY EIGHT FEET OR TO SUPPORT PIPING WITHOUT SAGS.
  - 2 ALWAYS STUB VACUUM AND AIR LINE INTO WALL OR FLOOR JUNCTION BOX PER MANUFACTURER'S TEMPLATE. IF 1/2" IS REQUIRED, YOU MAY REDUCE PIPE SIZE AS CLOSE AS POSSIBLE TO TERMINATION POINT. IF A LARGER SIZE IS REQUIRED, THIS CHANGE MUST BE MADE WITHIN JUNCTION BOX.
  - 3 ALL VACUUM PIPING ILLUSTRATIONS AND DRAWINGS ARE SHOWN WITH PVC PIPE SCH 40 AND DWV TYPE FITTINGS. ALWAYS USE DWV FITTINGS. NOT AVAILABLE BELOW 1 1/4".
  - 4 ALL VACUUM PIPING SHOULD GRADE TOWARD EQUIPMENT LOCATION 1/4" IN TEN FEET.
  - 5 WHEN INSTALLING AN OVERHEAD SYSTEM, USE THE NEXT LARGER VACUUM PUMP MODEL FOR BEST RESULTS.
  - 6 IF OVERHEAD SUCTION LINE TERMINATES IN A FLOOR JUNCTION BOX, USE THIS EXAMPLE. TRAP MUST BE INSTALLED BEFORE LINE RISES AS SHOWN. SEE FIG. 5.
  - 7 INSTALL TRAP IN MAIN LINE JUST BEFORE HOOKING TO FLEXIBLE INTAKE HOSE CONNECTION TO PUMPS. SEE FIG. 1, EXAMPLE B.
  - 8 IN AN OVERHEAD SYSTEM, THE MAIN VACUUM LINE WILL DROP DOWN TO THE WHIRL-VAC LOCATION USING REQUIRED PIPE SIZE. ALL OVERHEAD SYSTEMS ARE SIZED IN THE SAME MANNER AS THE SYSTEM SHOWN HERE.
  - 9 DO NOT RUN POLY FLO TUBING BELOW SLAB. ALWAYS RUN PIPE UP ABOVE SLAB, THEN MAKE POLY FLO CONNECTION.
  - 10 FIG. 2 LINE SIZING CHART SHOWS MAIN VACUUM LINE SIZE DIAMETER FOR 4, 5 AND 6 OPERATORIES AS 1 1/2" DIAMETER. IF 1 1/2" DIAMETER IS NOT AVAILABLE, YOU MAY USE 1 1/4" DIAMETER.
  - 11 RISER ASSY. MUST ALWAYS BE USED. SEE FIG. 1 EXAMPLE A FOR RISER ASSY. SPECIFICATIONS.
  - 12 CONTROL PANEL SUPPLY LINES SHOULD BE CONNECTED CLOSE TO EQUIPMENT ROOM AND MUST ALWAYS CONNECT VERTICALLY TO MAIN LINE AS SHOWN.
  - 13 ALTERNATE CLEAN AIR INTAKE SOURCE SHOULD BE EITHER PVC OR COPPER PIPE, CONNECTED TO HVC, RETURN AIR DUCT. SEE AIR COMPRESSOR DESIGNAGRAM FIG. 4.

**HOW TO SIZE A VACUUM AND AIR SYSTEM.**

BOTH THE DRAWING AND THE SIZE CHART ARE SIZED TO ACCOMMODATE AN AIR AND VACUUM SYSTEM FOR 100% USE. THIS IS DONE TO PRODUCE GOOD AIR AND VACUUM PRESSURES AND FLOWS AT ALL TIMES FROM ALL OPERATORIES. NORMALLY, YOU WOULD ONLY USE TWO OR THREE STATIONS SIMULTANEOUSLY, BUT YOU WOULD ALWAYS USE THIS DESIGN FOR A PROPER SYSTEM IN THE EVENT ALL SIX OPERATORIES ARE USED SIMULTANEOUSLY; YOU WOULD NOT HAVE ANY SUCTION LOSS DUE TO IMPROPERLY SIZED MAIN OR BRANCH LINES.

**IMPORTANT: DO NOT FIGURE OR DRAW ANY NITROUS OR SINK EVACUATION TERMINATIONS UNTIL YOU HAVE A COMPLETE SYSTEM SHOWING TERMINATION TO HIGH VOLUME EVACUATION CONNECTIONS NORMALLY FOUND IN DENTAL UNIT JUNCTION BOX.**

**ADDITIONAL 1/4" VACUUM LINES FOR NITROUS OXIDE SCAVENGE AND EVACUATOR SINKS CAN BE ADDED WITHOUT AFFECTING MAIN OR BRANCH LINE SIZES. SEE FIG. 8. EXCEPT IN AN OVERHEAD SYSTEM SEE FIG. 5.**

- STEP 1. COUNT THE TOTAL NUMBER OF OPERATORIES TO BE PLUMBED AND SELECT THE VACUUM LINE SIZE FOR EITHER PVC OR COPPER PIPE. SEE THE LINE SIZING CHART IN FIGURE 2.
- STEP 2. THIS PIPE SIZE YOU HAVE SELECTED WILL BE THE STARTING LINE OR MAIN LINE AND BEGINS AT THE EQUIPMENT LOCATION. THE VACUUM LINE WILL USE A MAIN LINE RISER ASSEMBLY AS SHOWN IN FIGURES 1 AND 3.
- STEP 3. AFTER FIGURING YOUR MAIN LINE SIZE, YOU MAY SELECT THE BEST LOCATION TO SPLIT YOUR PIPING LINES TO BEST ACCOMMODATE THE OPERATORIES. IN FIGURE 3 WE HAVE SELECTED TO SPLIT THE SYSTEM INTO TWO ZONES. A AND B. EACH ZONE BECOMES ITS OWN SYSTEM FOR PURPOSES OF SIZING THE LINES PROPERLY. IF OPERATORIES ARE IN A STRAIGHT LINE, ZONE SPLITTING WILL NOT BE REQUIRED; SEE NOTE FIG. 2.
- STEP 4. STARTING FROM ZONE SPLIT LOCATION, COUNT REMAINING OPERATORIES AND LOOK AT THE SIZING CHART IN FIGURE 2 TO SELECT CORRECT BRANCH ZONE LINE DIAMETER. IN FIGURE 3, ZONE B HAS 3 OPERATORIES REMAINING WHICH CORRESPONDS WITH 1" VACUUM LINE AND 1/2" AIR LINE IN FIGURE 2 LINE SIZING CHART. THIS SIZING LOGIC WILL CONTINUE TO THE LAST INLET ON ALL ZONES.

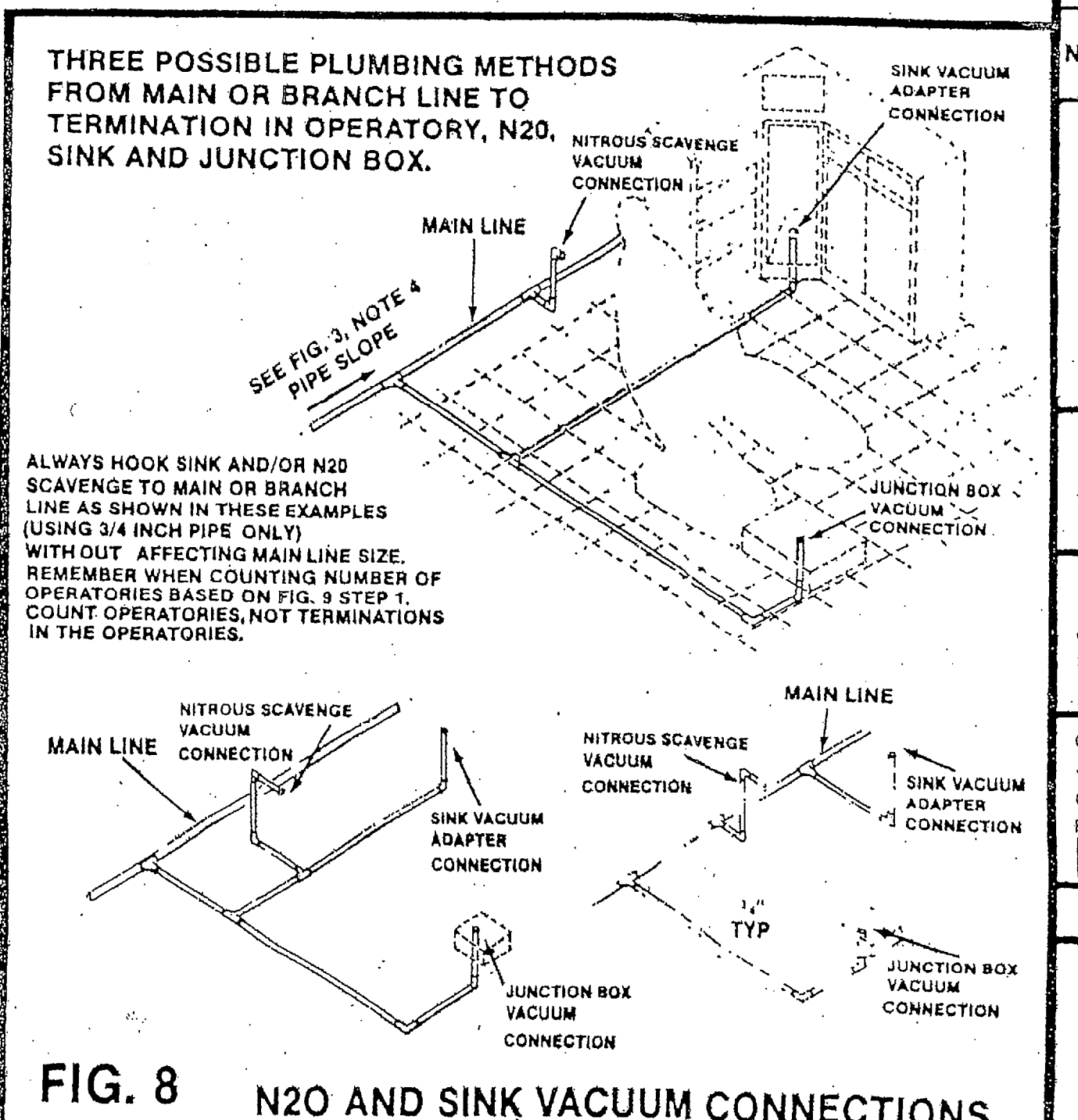
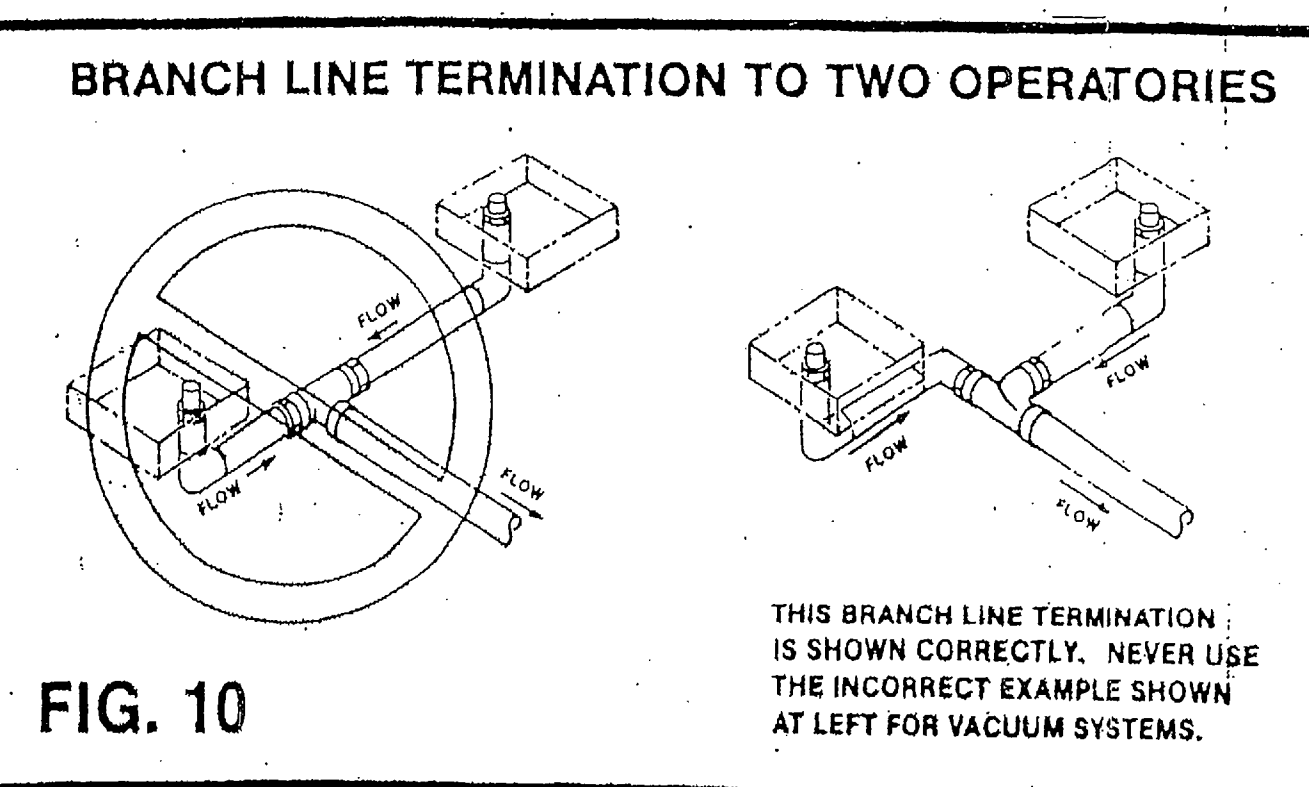
**FIG. 9**

**FIG. 2. VACUUM AND AIR LINE SIZING CHART**  
ONE TO TWELVE OPERATORIES  
FOR OVERHEAD SYSTEM SEE FIG. 5.

NUMBER OF OPERATORIES SEE NOTE	VACUUM LINE PIPE DIAMETER		AIR LINE PIPE DIAMETER
	PVC sch 40	COPPER TYPE "M"	COPPER TYPE "M"
1	3/4"	3/4"	1/2"
2	1"	1"	1/2"
3	1"	1"	1/2"
4	1 1/4" - FIG. 3 (10)	1 1/4"	1/2"
5	1 1/4" - FIG. 3 (10)	1 1/2"	1/2"
6	1 1/4" - FIG. 3 (10)	1 1/2"	1/2"
7	1 1/2"	1 1/2"	3/4"
8	1 1/2"	1 1/2"	3/4"
9	1 1/2"	2"	3/4"
10	2"	2"	3/4"
11	2"	2"	1"
12	2"	2"	1"

IF AN OPERATORY CONNECTION RUNS MORE THAN 40' AWAY FROM A ZONE BRANCH LINE OR THE NOTE MAIN LINE RUNS MORE THAN 50' AWAY FROM THE EQUIPMENT LOCATION TO THE FIRST ZONE OR OPERATORY TEE, USE THE NEXT LARGER PIPE SIZE SHOWN ON THE CHART.

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