

Modern Setup For Painting *Chrysler Cars*

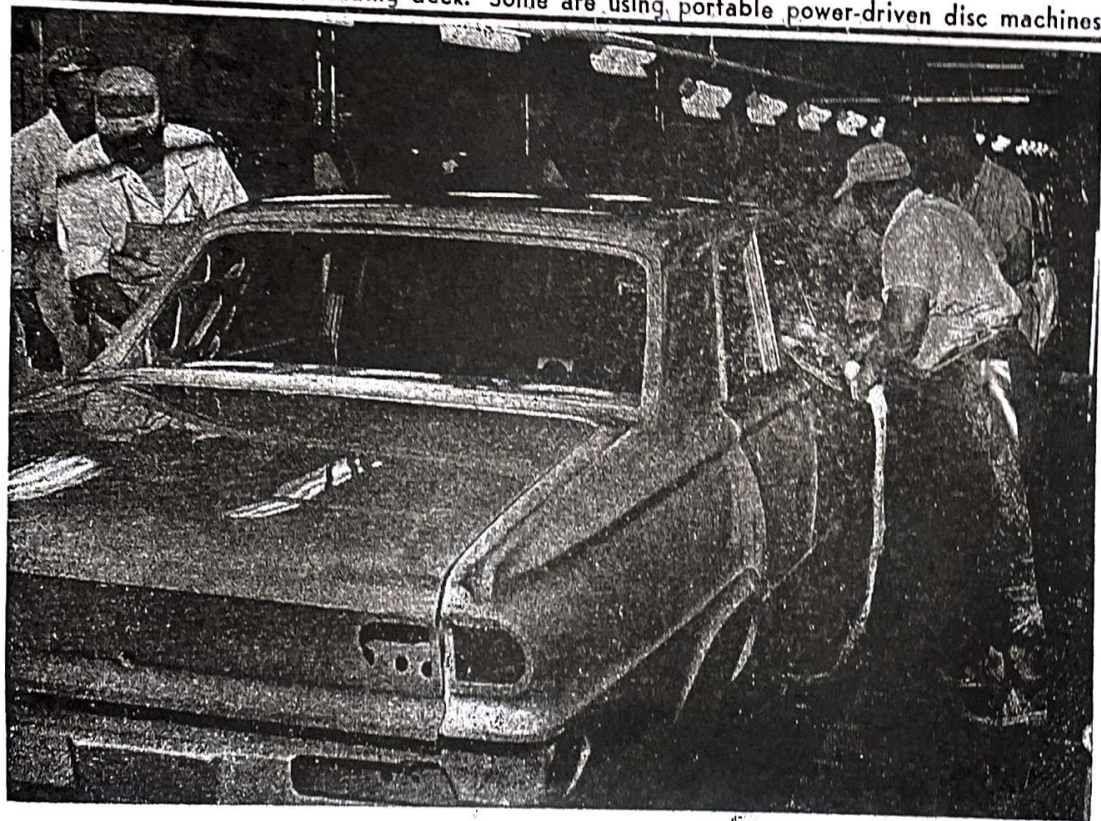
By P. C. Bardin, Field Editor

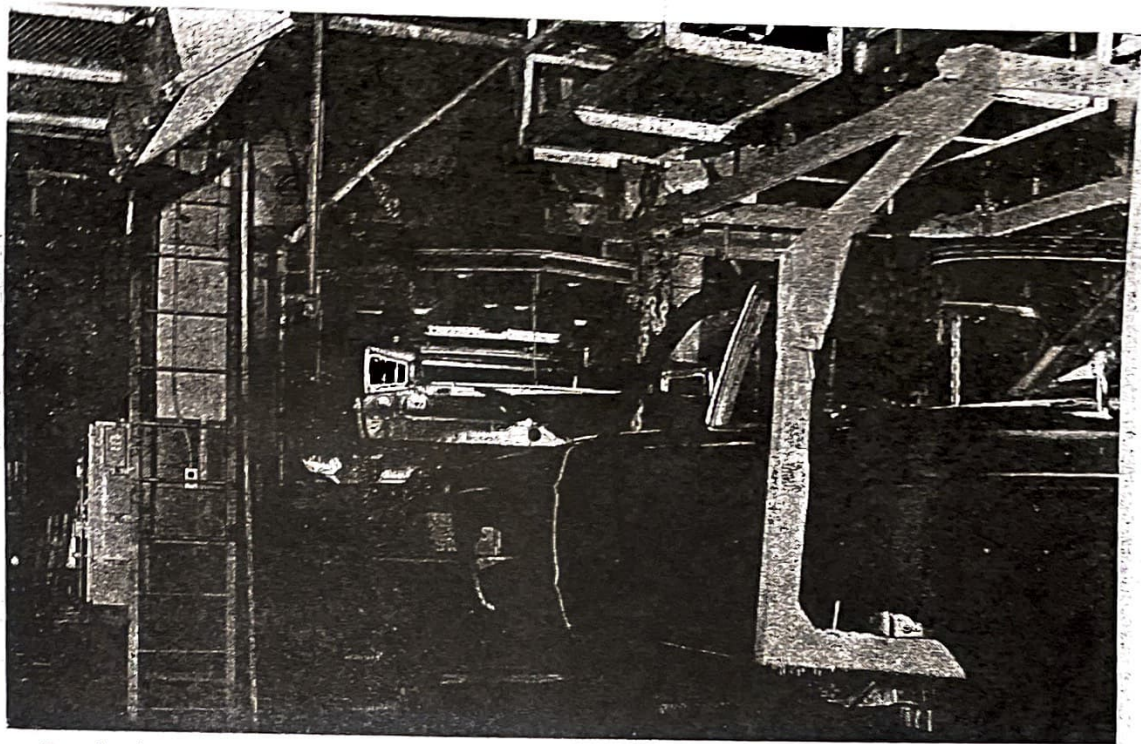
CHRYSLER CORPORATION of Canada takes great pride in the finish on all of its cars. The company's 1800-ft. long finishing system really includes three systems in one. One finishing line is for bodies; another line

is for all visible parts other than bodies. A third finishing line coats underbody parts and concealed parts. It includes a flow coater with flow enclosure and an oven located on the roof of the plant.

An interesting feature of this

Men at work on the wet sanding deck. Some are using portable power-driven disc machines.





Car bodies entering the six-stage machine wherein they will be cleaned for painting.

system is the two multi-line storage areas. The trim and body-in-white selectivity bank permits bodies to be stored on the conveyor storage lines to proceed as needed. The body bank offers a full complement of all models to proceed on schedule without delay. This makes for coordinated smooth running production.

Surface Preparation of Small Parts

Here, when I refer to "small parts" I have in mind instrument panels, interior mouldings, trim, etc.—in fact, all parts (other than bodies) that are visible. All of these parts are hung to an overhead monorail conveyor. Some small parts are hung in multiple on fixtures or work holders to go through the 6-stage power washer and phosphatiz-

ing machine. Surface preparation operations are enumerated and listed in the accompanying table.

Stage	Solution	Temp. °F.
1	Alkali Cleaner	165
2	Mild alkali cleaner	160
3	water rinse	145
4	zinc phosphate	140
5	water rinse	room
6	chromic acid	140

Dry-off oven for 6 minutes at 375° F.

Leaving the dry-off oven, the parts cool for ten minutes before they reach the distribution station. Here all concealed parts, such as fender shields, inspection covers, cross frames and underbody parts are transferred to another overhead monorail conveyor. They travel up to the roof where they enter a flow coater which applies a coat

of black gilsonite paint. This paint is used at a viscosity of 35 seconds at 79°F., as measured in a No. 4 Ford cup. Attached to the exit end of the flow coater is a solvent vapor enclosure in which the parts travel to drain for 20 minutes. All excess paint that drains off the parts in the solvent vapor drain enclosure flows back into the sump of the flow coater. The coating is baked for 30 minutes at 360°F. The parts cool as they travel down to the distribution station.

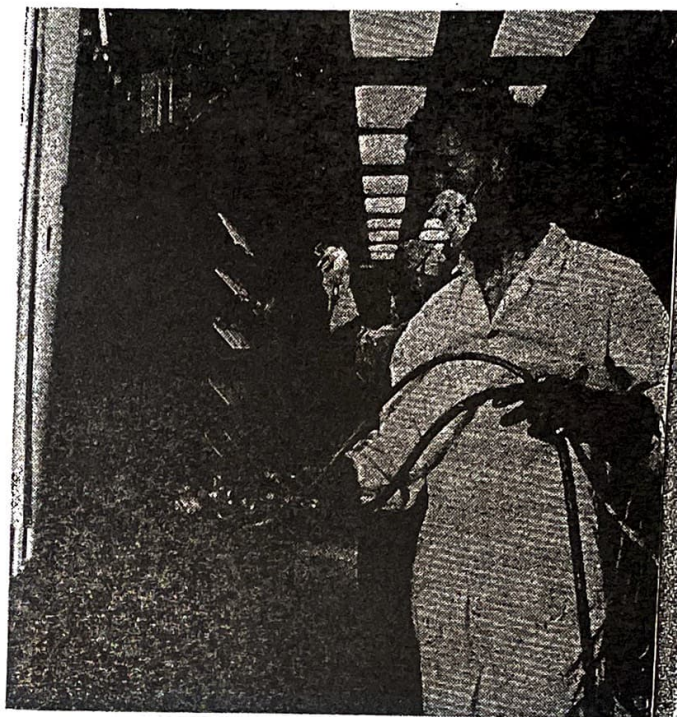
Painting Small Parts; Fast Color Changes

Instrument panels, interior mouldings, etc., are transferred to the small parts spray booth. In this booth we are equipped to apply as many as 43 different colors. Three are acrylic-resin-base enamels and the others are alkyd-resin-base enamels. Acrylic enamels are used at a viscosity of 17 seconds at 79°F., as measured in a No. 4 Ford cup. The alkyd enamels are used at a viscosity of 21 seconds at 79°F., as measured in a No. 4 Ford cup.

We apply three coats consecutively to all parts, with a 1½ minute flash-off period after the first and second coats. A final flash-off of six minutes is allowed before the finish is baked for 30 minutes at 260°F. These parts then cool as they travel to the distribution station.

Frequent color changes offer no problem. One spray gun will handle as many as 17 different colors. Snap-on couplings promote very fast color changes. We use the numbered tag system attached to

the conveyor to indicate the required color that parts are to be painted. With the exception of the crash instrument panel, which is in one color, all other instrument panels are finished in two tones,



Spray painting small parts as they move along from left to right by conveyor.

with a high gloss enamel on the lower face section and a semi-gloss enamel on the top side to prevent light reflection.

Treatment of Body Surfaces; Sanding; Putty Glaze; Cleaning

After the completion of all sanding and grinding operations, and before any surface preparation is done on bodies, a lead-free putty glaze is applied, with both brush and knife, to all solder joints. The glaze air dries for two hours. This length of drying time is not really necessary; however, drilling operations on the body permits this long air-dry period. [To page 40]

The drilling operation is performed while the body is mounted on a carriage on a floor conveyor. At the end of the drilling line, the body is transferred by air hoist to hangers suspended from an overhead monorail conveyor. Bodies travel through the 6-stage power washer and phosphatizing machine. Surface preparation operations are given in an accompanying table.

Stage	Solution	Temp. °F.
1	alkali cleaner	165
2	alkali cleaner	165
3	water rinse	145
4	zinc phosphate	140
5	water rinse	room
6	chromic acid	140

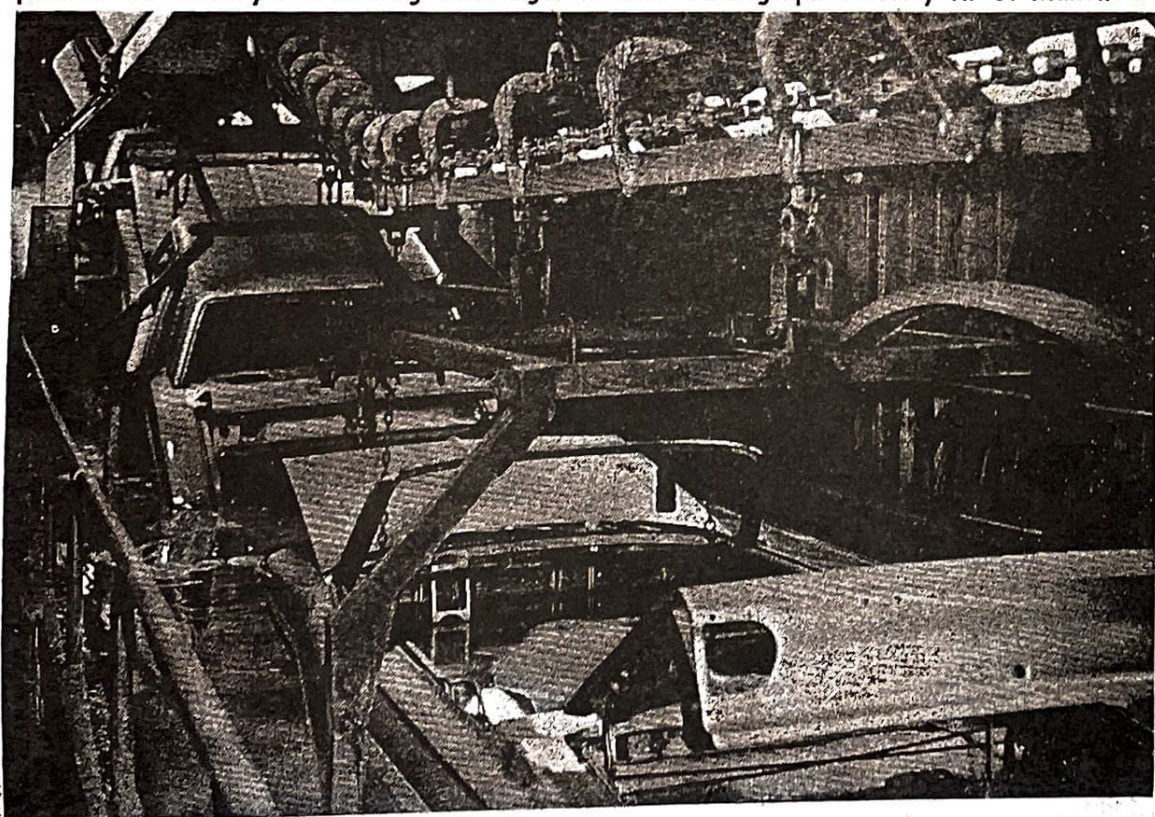
Dry-off oven for 8 minutes at 375°F.

Dip Coat Priming of Under Body Surfaces

Car bodies cool for six minutes as they travel to the dip tank room. In this enclosed room there is a 10,000 gallon dip tank which contains a gray water-miscible latex primer. The bodies descend into the tank to thoroughly coat their lower halves in the primer. This corrosion inhibiting primer is constantly agitated to keep all ingredients in full suspension.

As the car bodies leave the dip tank the primer is washed off all of the outside surfaces with water, because this primer is really intended to protect the underside and inside surfaces from corrosion. Bodies then enter a dry-off oven through which they travel for 25

Car bodies are submerged to coat the lower half in a water miscible corrosion inhibiting primer. The conveyor is moving from right to left. Photograph courtesy R. C. Mahon Co.



minutes at 250°F. After leaving the dry-off oven the car bodies are transferred from the overhead monorail conveyor to a floor conveyor which carries them through the remainder of the system.

Bodies pass through the seam and joint sealer line where all seams and joints are sealed, using flow guns. Hand washing with solvent follows to make sure that no finger marks or other soil remains on the surface before the bodies enter the prime coat booth.

Automatic Contour Spraying Applies 2-Coat Primer

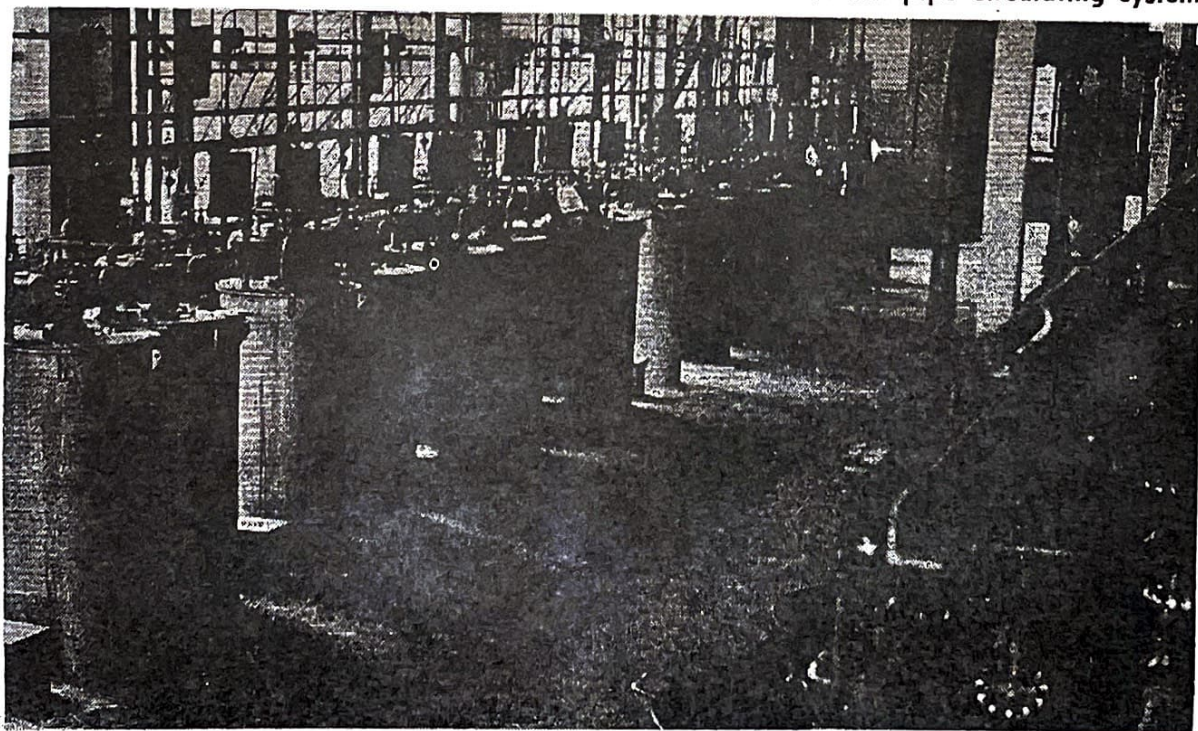
In the prime-coat spray booth there are two identical automatic spray units, each of which includes two vertical reciprocating contour gun carriages (one on each side), one top horizontal reciprocating contour gun carriage to coat the roof, and two stationary floor

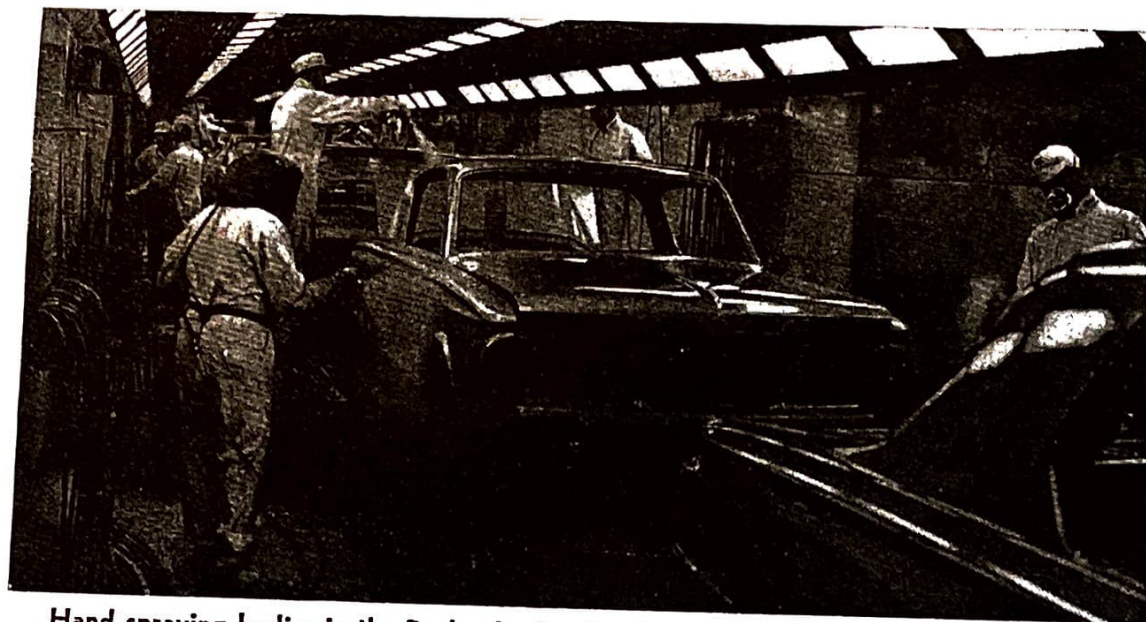
mounted guns for underbody coating. The first unit applies a red epoxy-resin-base primer which is used at a viscosity of 20 seconds at 79°F., as measured in a No. 4 Ford cup.

A flash-off period of three minutes follows after which the body reaches the second automatic unit where a gray epoxy primer is applied at the same viscosity as the red primer and with an identical spraying setup. Before bodies leave the prime coat booth the inside of the trunk and engine compartment are sprayed with the same color that will be applied to the finished car.

The prime coat is allowed to flash-off (air dry) for five minutes before the bodies enter an oven where the finish is baked for 30 minutes at 360°F. Immediately after leaving the oven the bodies enter and travel through a cold water spray

The main paint mixing and supply room which is the center of the pipe circulating system.





Hand spraying bodies in the final color booth. Conveyor is moving from right to left.

station for two minutes to cool the metal. Next comes wet sanding of the tops, soldered areas and 2-tone areas, using No. 360 wet-or-dry sandpaper. Solder areas are reglazed before the bodies are hand washed with water. Then the bodies enter and pass through a dry-off oven for six minutes at 375°F. Upon leaving this oven they pass through a cooling tunnel for four minutes to reduce the metal temperature to 100°F.

Bodies now enter a down-draft water-wash spray booth. In the forward section of this booth the surfaces are tack ragged to remove any dust particles. Here the door jambs, all soldered areas and 2-tone areas are sprayed with either an acrylic or alkyd-resin-base enamel surfacer coat, according to specifications. The acrylic enamel is used at an average viscosity (slightly different for different colors) of 17 seconds at 79°F., as measured in a No. 4 Ford cup. The alkyd-resin

enamel is used at an average viscosity of 20 seconds. The surfacer coat is allowed to flash-off for six minutes before the coating is baked for 30 minutes at 250°F.

Again the bodies enter a cold water spray to cool the metal before the outside surfaces (excepting the 2-tone areas) are wet sanded with No. 360 wet - or - dry sandpaper. After passing through a water spray station to rinse the sanded surfaces, the bodies are washed with water and force dried for six minutes at 375°F. They travel through a cooling tunnel for three minutes. Then the 2-tone areas are masked with brown kraft paper and masking tape. Inspection and any necessary touch-up work follows before all exposed surfaces are hand washed with solvent.

Bodies enter the forward section of the top-coat booth where their surfaces are tack-ragged to clean off any particles of dust. In this booth either an acrylic or alkyd-

resin base enamel is applied by manual spraying. Three coats are applied, with a flash-off period of three minutes following each coat. Viscosities are the same as used for the surfacer coat. After leaving this booth the finish is allowed to flash-off for eight minutes before the top coats are baked for 30 minutes at 260°F.

The bodies cool as they travel to the inspection station where masking paper and tape are removed. Then they proceed to the bank area for distribution, or to the paint repair line. On this paint repair line any defects are sanded out and the same finishing procedure is followed as has already been described. With this system we obtain a dry film thickness of $1\frac{1}{3}$ -mils on the undercoats and better than 2-mils. dry film thickness on the finished car.

Paint Supply and Mixing; Continuous Circulation

One main paint-mixing and supply room has 40 mixing and supply tanks which supply primer (sprayed), surfacer and top-coat enamels for the small parts finishing line, for body paint and for

paint repair. This circulating system has a capacity of 450 gallons per line. Due to the length of the system, the paint goes out under 80 to 120-lbs. pressure with 20-lbs. return pressure. One junior paint system is included in the main paint mixing and supply room; it supplies paint for repair finishing.

Three Junior Paint Mixing Supply Rooms Required

Three other junior paint systems are in separate enclosures located at strategic points. Each one supplies eight standard colors of enamel, with an average of 30 gallons per line. These lines supply the smaller users.

The circulating systems operate 24 hours a day except on Sundays and holidays when it is on stand-by service. That is to say, the paint is circulated for 40 minutes and is shut down for 20 minutes. This prevents any settling of solids or pigments, or clogging of the lines.

Drum storage areas are adjacent to the paint mixing and supply rooms. Solvents are stored in 10,000 gallon tanks in a tank farm which is far removed from the main plant.

Dust and Fume Control Catalog

A new 36-page catalog on dust and fume control systems is now available from The Kirk & Blum Mfg. Co., 3131 Forrer St., Cincinnati, Ohio 45209. The catalog illustrates and describes various air systems designed, fabricated and installed by Kirk & Blum. These are for dust and fume control, materials handling, and scrap removal.

A 4-page section on the engineering of air systems is included. A copy is available on request.

For more data, circle 1 on colored card.

Air Compressor Catalog

Lincoln St. Louis announces a new 16-page air compressor catalog describing more than 200 electric motor-driven compressors, including a line of newly added water cooled models.

Specifications cover single and 2-stage compressors in both tank and base-mounted models. Horsepower ranges from $\frac{1}{4}$ to 25-h.p.

For a copy, write Lincoln St. Louis, 4010 Goodfellow Blvd., St. Louis, Mo. 63120.

For more data, circle 2 on colored card.