



CENTRIFUGAL FANS

Ventilating / Industrial

SERVICE MANUAL

SECTION I

This manual has been prepared to help you keep your "Buffalo" fans and blowers operating efficiently with minimum expense for repairs or replacement. It is sectionalized to coordinate related information in a more easily useable form.

An assembly drawing, containing all pertinent data and dimensions, is prepared for the specific equipment furnished on your order.

You will also find it helpful to have a "Buffalo" catalog pertaining to the particular types of fans which you are using. These may be obtained

through your nearest "Buffalo" representative or by writing direct to Buffalo.

The contents of this manual cover our standard line of centrifugal fans only. For instructions and recommendations on engineered equipment for special requirements, contact your local Buffalo representative or the main plant in Buffalo.

In certain cases, especially where large fans are involved, it is advisable to have an experienced erector supervise installation of the equipment. Buffalo service men are available by arrangement through any Buffalo Forge sales office.

BUFFALO FORGE CO. / Buffalo, N. Y.

GENERAL INDEX

SECTION I

GENERAL

Introduction	1
Fan Designation	2-3
Standard Arrangements	4
Direction of Rotation and Discharge	5
Motor Position, Belt Drive	5
Shipping and Receiving	6
Handling	7
Sales Representatives	8

SECTION II

FOUNDATIONS, ASSEMBLY AND INSTALLATION

Foundations	2-3
Assembly and Installation	3-6
Wheel Designs and Rotations	7
Alignment	8-10
Motors	11
V-Belt Drives	12
Bearings	13-17
Flexible Couplings	18-19
Variable Inlet Vanes	20
Outlet Dampers	21
Stuffing Box	22
Heat Slingers	22
Ordering Spare Parts	23

SECTION III

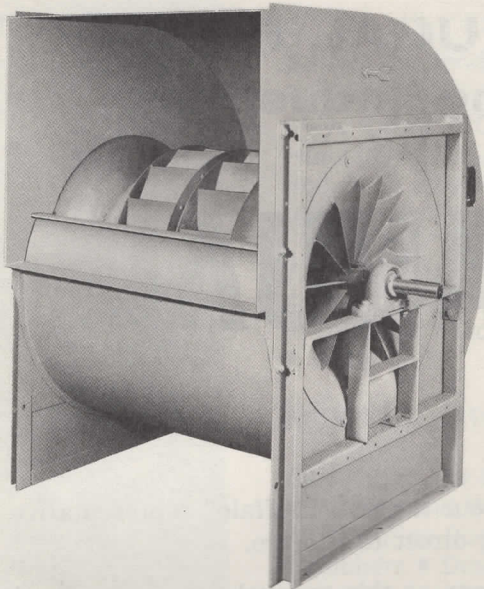
OPERATION

Before Start-Up	1
Start-Up	1
Fan Balancing	2
Maintenance	3-4

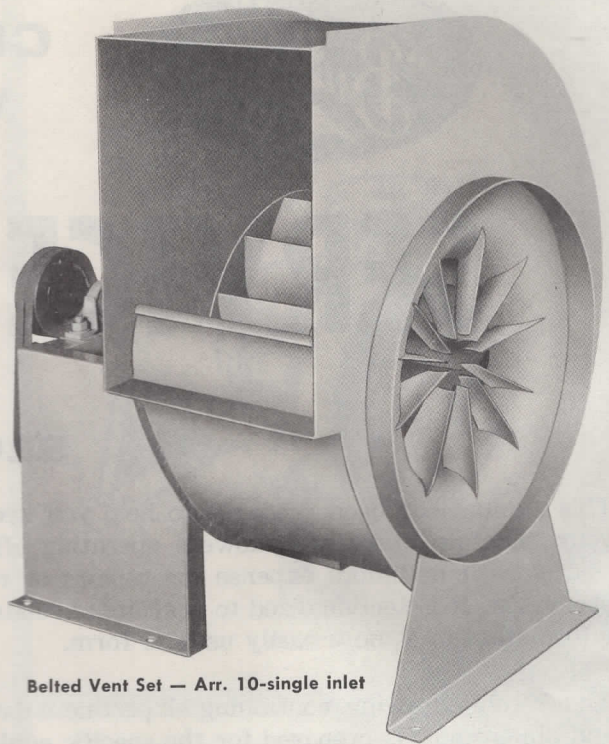
Fan Troubles/Correction	5
Lubrication or Anti-Friction Bearings	6
Lubrication of Sleeve Bearings	7
Cleaning of Bearings	8

SECTION IV

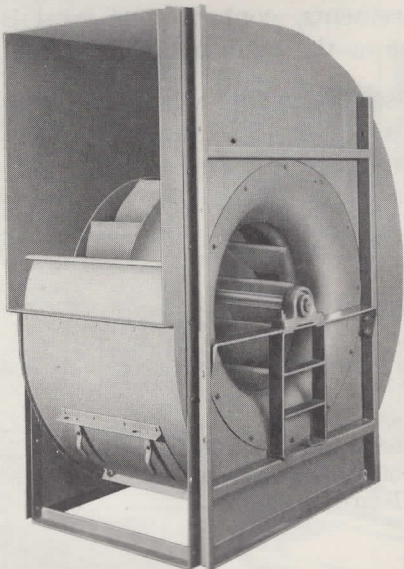
FAN PARTS LIST	1
BL & BL-Aerofoil Single Inlet	2
BL & BL-Aerofoil Double Inlet	3
L39, L33, L25 & L21 Single Inlet	4
L39, L33, L25 & L21 Double Inlet	5
Size 2-1/2 C.I. LL Single Inlet	6
Size 400 C.I. BL Single Inlet	7
Industrial Exhausters	
MW, AW & OW Single Inlet	7
Baby Vent Set Single Inlet	8
Type HVA Double Inlet	8
BVS Limit Load Belted Vent Sets Single Inlet	9
"V" Volume Fans Single Inlet	10
"E" Blowers &	
Exhausters Single Inlet Arr. 4	11
E Blowers & Exhausters	
Gas Boosters & Exhausters Single Inlet	12
RE Blowers & Exhausters	
Gas Boosters & Exhausters Single Inlet	13
"CB" & "R" Single Inlet	14
Outlet Dampers Parts List	15
Design 4 & 5	15
Design 6	16
Design 7	16
Variable Inlet Vanes	17



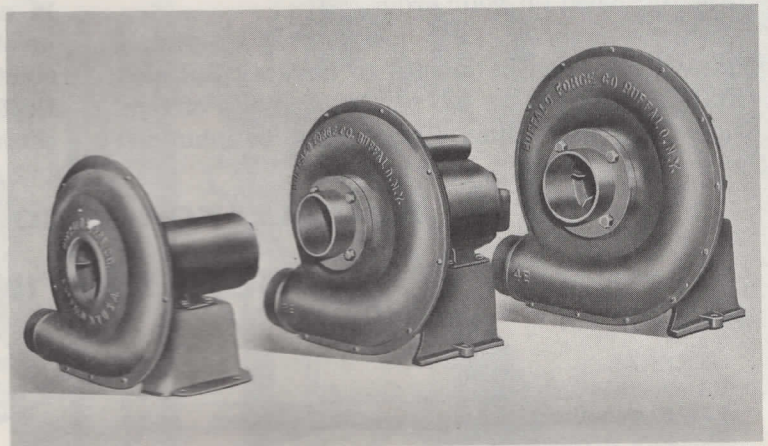
Type BL — Arr. 1, 2, 3, 4, 7, 8, 9-single inlet — Arr. 3 & 7-double inlet



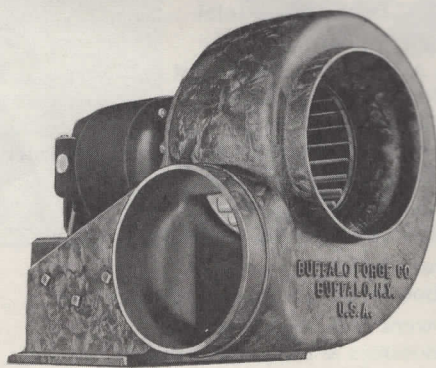
Belted Vent Set — Arr. 10-single inlet



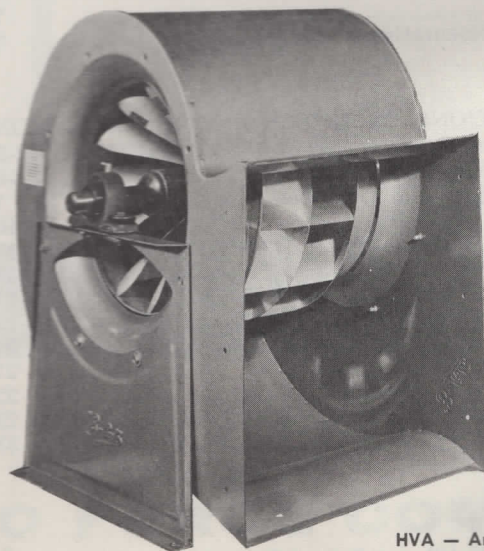
Type BL-Aerofoil — Arr. 1, 3, 4, 7 & 8-single inlet — Arr. 3 & 7-double inlet



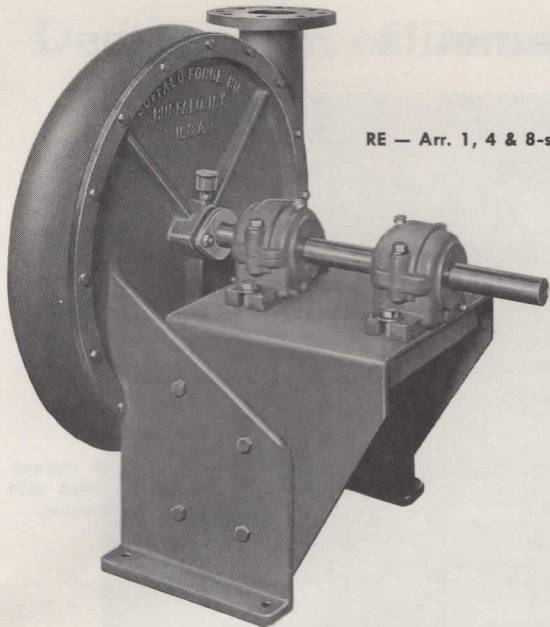
Small "E" — Arr. 4-single inlet



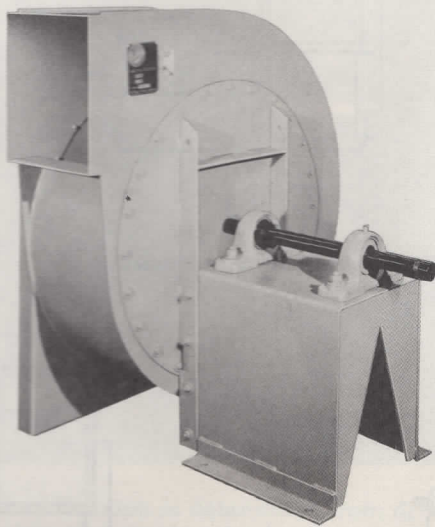
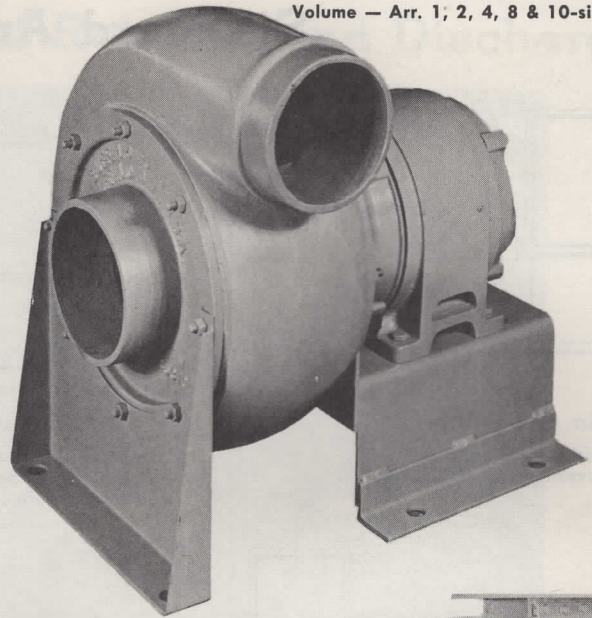
Baby Vent Set — Arr. 4-single inlet



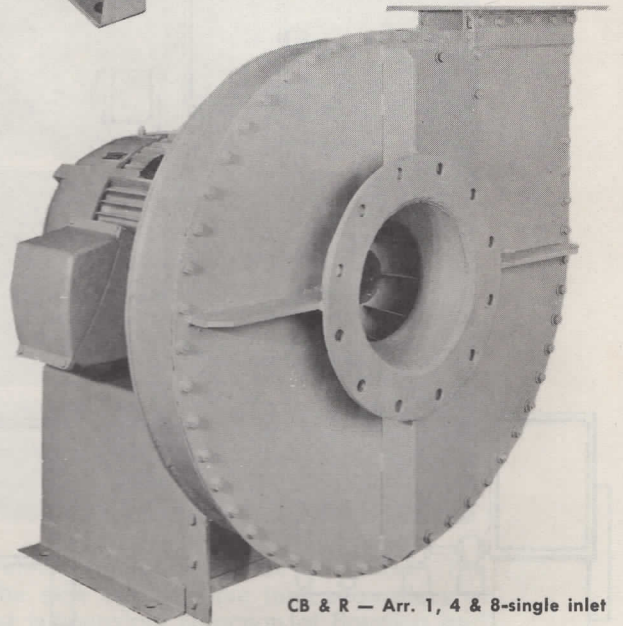
HVA — Arr. 3-double inlet



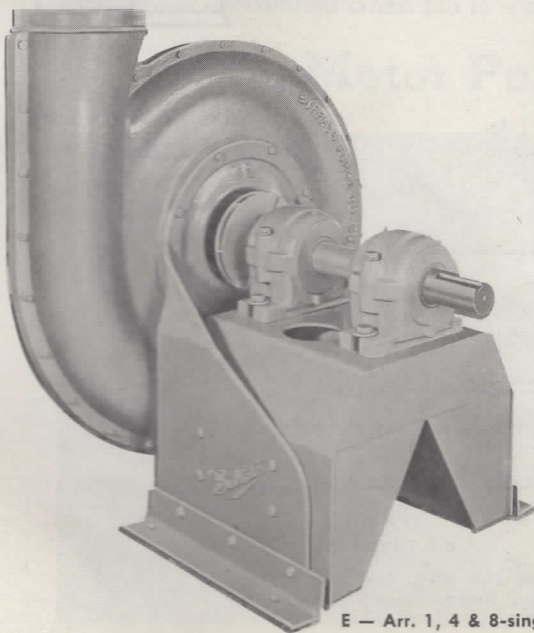
RE — Arr. 1, 4 & 8-single inlet



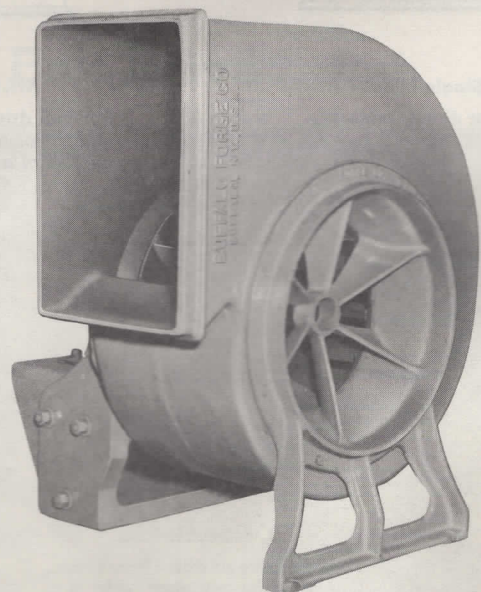
Type MW, OW, AW — Arr. 1, 4, 8, 9 & 10-single inlet



CB & R — Arr. 1, 4 & 8-single inlet

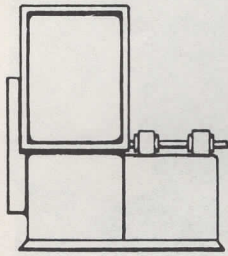


E — Arr. 1, 4 & 8-single inlet



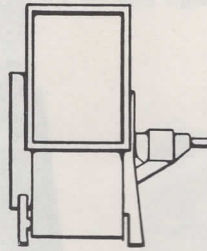
2-1/2 Cast Iron LL — Arr. 1 & 4-single inlet

Standard Arrangements



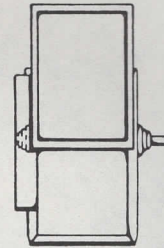
Arr. 1, Single Inlet.

For belt drive or direct connection. Wheel overhung. Two bearings on base.



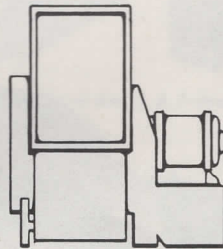
Arr. 2, Single Inlet.

For belt drive or direct connection. Wheel overhung. Bearings in bracket supported by fan housing.



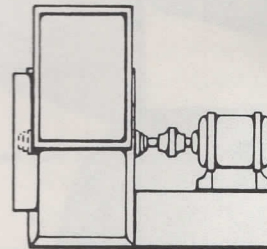
Arr. 3, Single Inlet.

For belt drive or direct connection. One bearing on each side and supported by fan housing.



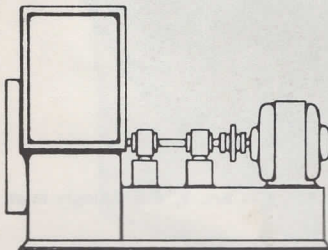
*** Arr. 4, Single Inlet.**

For direct drive. Wheel overhung on prime mover shaft. No bearings on fan. Base or equivalent for prime mover.



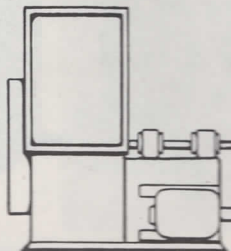
Arr. 7, Single Inlet.

For belt drive or direct connection. Arrangement 3 plus base for prime mover.



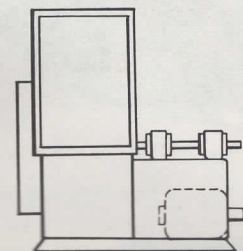
Arr. 8, Single Inlet.

For belt drive or direct connection. Arrangement 1 plus base for prime mover.



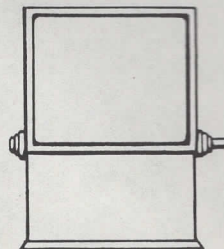
Arr. 9, Single Inlet.

For belt drive. Arrangement 1 designed for mounting prime mover on side of base.



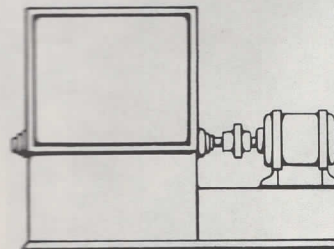
Arr. 10, Single Inlet.

Same as 9 except prime mover inside base.



Arr. 3, Double Inlet.

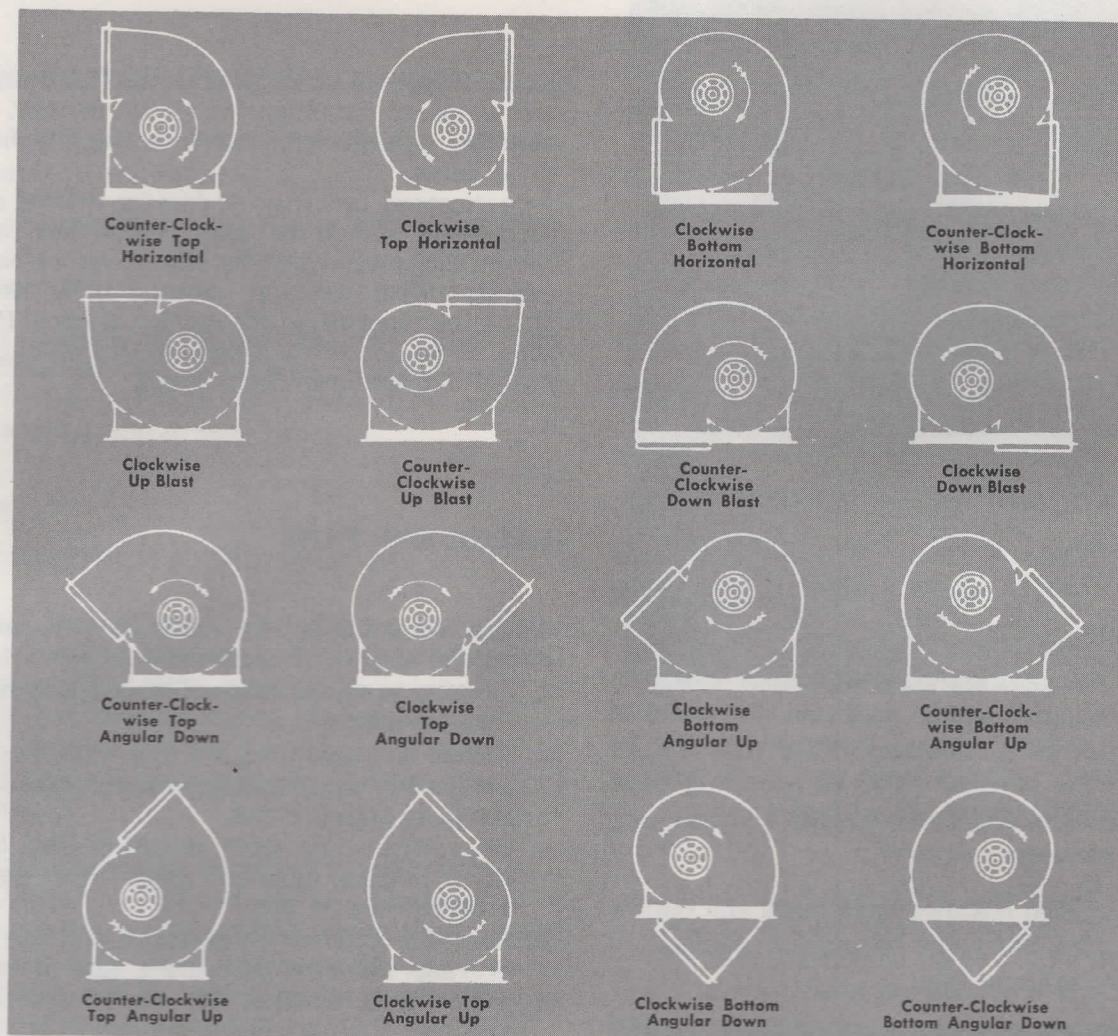
For belt drive or direct connection. One bearing on each side and supported by fan housing.



Arr. 7, Double Inlet.

For belt drive or direct connection. Arrangement 3 plus base for prime mover.

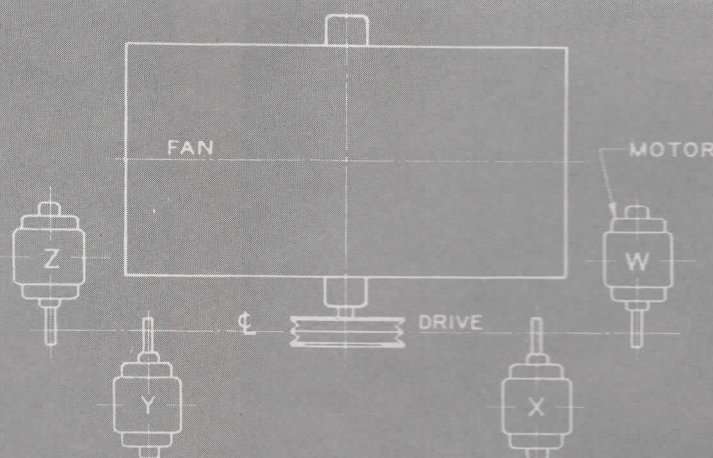
Designation of Direction of Rotation and Discharge



Direction of Rotation is determined from drive side for either single or double inlet fans. (The driving side of a single inlet fan is considered to be the side opposite the inlet regardless of actual location of the drive.) For fan inverted for ceiling suspension, Direction of Rotation and Discharge is determined when fan is resting on floor.

Motor Position, Belt Drive

Location of motor is determined by facing the drive side of fan or blower and designating the motor position by letters W, X, Y or Z as the case may be.



SHIPPING and RECEIVING

BUFFALO STANDARD TERMS OF SALE

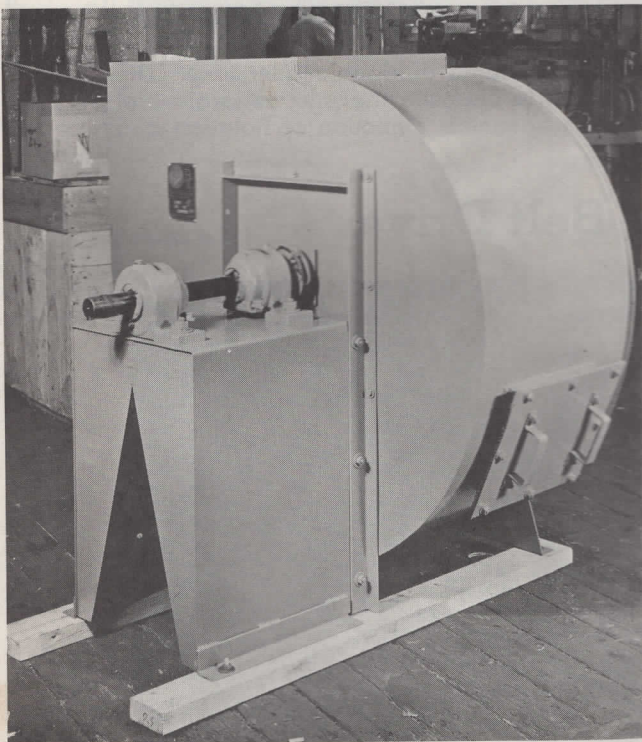
F.O.B. factory Buffalo, N. Y. with freight allowed or not allowed as stated in the proposal. It is, therefore, to the interest of the buyer to carefully inspect all shipments before they are accepted from the carrier. Upon delivery, be sure that all items listed on the bill have been received. (Partial shipments are often made.)

SMALL AND MEDIUM SIZE FANS

Usually shipped completely assembled, skidded or crated to comply fully with rail or trucking requirements.

Shafts are normally coated with a black rust preventive compound which need not be removed unless you deem it necessary. Fans that will be exposed to the weather prior to operation have bearing pillow blocks covered with a plastic bag to exclude moisture and dirt.

Fans with special coatings have inlets and outlets covered during shipment to prevent damage to coatings on inside of fan.



Medium size fan on skids

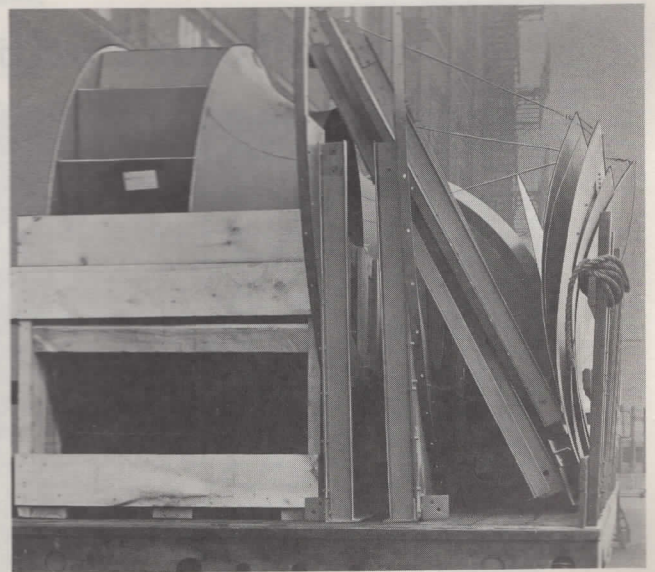
Even though all equipment is carefully inspected and prepared for shipment at the factory, rough handling enroute may cause damage to fan and drive parts.

Any shortage, breakage or damage noticed at time of delivery should be indicated on the carrier's freight bill and signed by the driver or carrier's representative. Damage, noticed after delivery, should be reported to the carrier at once. Request their inspection of the shipment and fill out a concealed damage inspection report.

LARGE SIZE FANS

Assembled at the factory, these fans are knocked-down and shipped in sections as listed:

1. Housing — match-marked on inside if in more than one piece.
2. Wheel.
3. Shaft with keys, housing bolts and gasket material in an attached box.
4. Or . . . wheel and shaft mounted with keys in place; housing bolts and gasket material in an attached bag or box.
5. Bearings mounted on pedestals and sole plates, bearings mounted on bearing base or bearings mounted on housing side sheets with bearing races covered or bearings crated in boxes.
6. Variable inlet vanes, outlet dampers and sub base.



Larger size fan knocked down

HANDLING

UNITS SHIPPED COMPLETELY ASSEMBLED

Where slings are used, they should be placed under the motor or bearing base.

Holes are usually punched in the tops of fan housing side sheet bracing to facilitate lifting with a hook and chain.

On arrangement 3 fans with bearings on the housing, slings may be placed under end of bearing — **NOT UNDER THE SHAFT**. Protect the oil cups, oil sight gauges or grease fittings.

UNITS SHIPPED KNOCKED-DOWN

Parts of fans shipped knocked down also require special care. In handling the shaft or wheel and shaft assembly with a hoist or crane, rope slings should be placed around the shaft near the wheel position. **NEVER** place slings on the ground shaft surfaces where bearings or wheel are to be mounted.

Oil bearing surfaces of the shaft and cover with heavy paper, burlap or canvas. Chain or wire slings should be well padded where they contact wheel and shaft. Small marks on bearing surfaces and thrust collars should be removed with fine emery cloth or a stone and carefully cleaned.

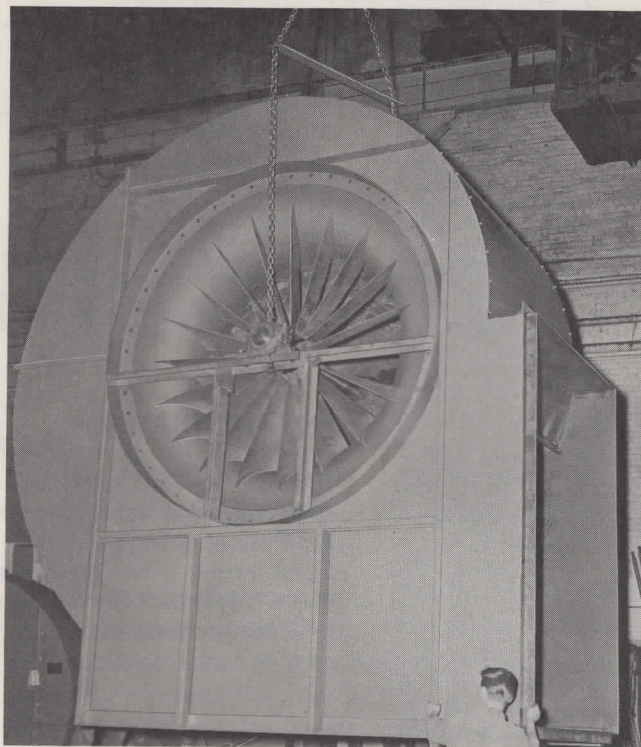
Where a single hoist is used, a "spreader" will keep the sling from binding against the sides of the wheel.

When fan wheel is received separate from shaft, timber can be placed through the hub for lifting (care must be taken not to damage finished bore of the wheel). A rope sling may also be used. It is passed through the blades and around the hub.

Special coverings and coatings such as rubber, phenolic enamels, etc. require extreme care as they are easily damaged. Even a small chip will break the continuity of the coating and destroy its protective value . . . touch up prior to erection.

Fan wheels are factory-balanced to provide smooth vibration-free operation. To prevent unbalance or damage, follow these basic rules:

1. Never lift wheel by blades or flanges.
2. Never roll wheels.
3. Never rest entire wheel weight on the housing side plates. Block up shaft to prevent this.



4. Never set wheel down so that wheel supports the shaft; use wood supports under shaft to support wheel by the shaft. Bent shafts cause unbalance.
5. Never lift double width, double inlet housing by putting timber or sling through inlets. To lift, use skid under housing or sling around housing or through holes provided in side sheet bracing.

STORAGE

Store in a dry, protected area being sure fan shaft, bearings and wheel are protected against dust and corrosion.

If necessary to store outdoors or within a building under construction, special care must be taken to prevent moisture, corrosion, dirt or dust accumulation. Coat the shaft with grease or rust preventive compound. Cover and seal bearings to prevent entrance of contaminants. If stored outdoors for any length of time, cover completely with a tarp or heavy waterproof paper. Block wheels to prevent rotation. Do not allow material of any kind to be piled on top of a fan housing or bearing base and never allow walking on housing or shaft.

Where large disassembled units are stored outdoors, block the shaft on supports sufficiently above ground level to avoid snow cover or submergence under surface water.

SALES REPRESENTATIVES

ALBANY, NY
ALLENTOWN, PA
ATLANTA, GA
BALTIMORE, MD
BIRMINGHAM, AL
(BOSTON) WAKEFIELD, MA
BOUND BROOK, NJ
BUFFALO, NY
CHARLOTTE, NC
CHICAGO, IL
CINCINNATI, OH
CLEVELAND, OH
COLUMBUS, OH
DALLAS, TX
DAVENPORT, IA
DENVER, CO
DES MOINES, IA
(DETROIT) SOUTHFIELD, MI
GREENSBORO, NC
GREENVILLE, SC
HARTFORD, CT
HOUSTON, TX
INDIANAPOLIS, IN
JACKSONVILLE, FL
KANSAS CITY, MO
KNOXVILLE, TN
LOS ANGELES, CA
LOUISVILLE, KY
MEMPHIS, TN
MIAMI, FL
MILWAUKEE, WI
MINNEAPOLIS, MN
NEW ORLEANS, LA
NEW YORK, NY
OKLAHOMA, OK
(PHILADELPHIA)
WYNNEWOOD, PA
PHOENIX, AZ
PITTSBURGH, PA
RICHMOND, VA
ROCHESTER, NY
ST. LOUIS, MO
SALT LAKE CITY, UT
SAN ANTONIO, TX
SAN FRANCISCO (SOUTH), CA
(SEATTLE) BELLEVUE, WA
SYRACUSE, NY
TAMPA, FL
TOLEDO, OH
TUCSON, AZ
TULSA, OK
WASHINGTON, DC

In Canada:

EDMONTON, ALTA.
HAMILTON, ONT.
KITCHENER, ONT.
MONTREAL, QUE.
OTTAWA, ONT.
SAINT JOHN, N.B.
SARNIA, ONT.
SASKATOON, SASK.
TORONTO, ONT.
VANCOUVER 10, B.C.
WINNIPEG, MAN.

In Mexico:

MEXICO CITY, D.F.
MONTERREY, N.L.

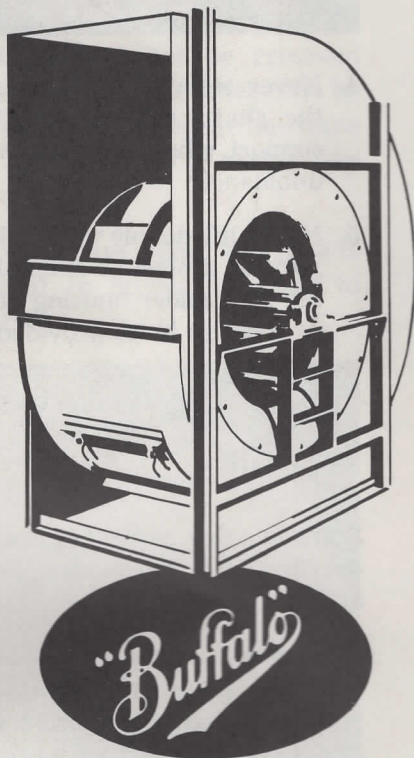
Buffalo Air Handling Equipment to —

Move • Heat • Cool •
Humidify • Dehumidify
and clean air and
other gases —

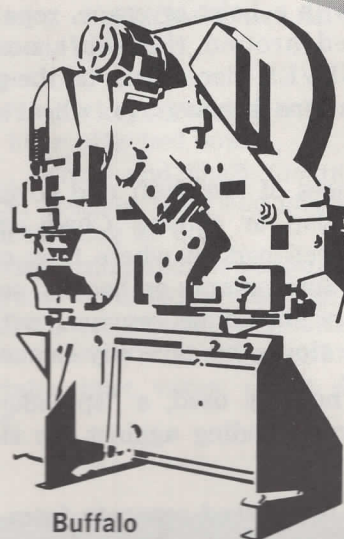
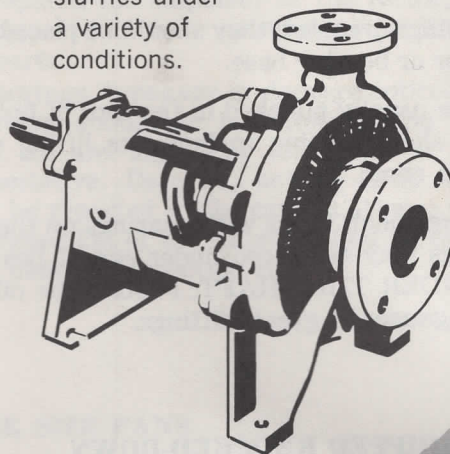
FANS - Centrifugal •
Axial Flow • Propeller
• Industrial Process
• Heavy Duty.

ROOF VENTILATORS

CABINETS - Air Conditioning
• Heating and Ventilating •
Air Pollution Control •
Scrubbers • Dust Collectors
• Air Washers • Humidifiers
• Dehumidifiers, etc.



Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.



Buffalo Machine Tools
to Drill • Punch
Shear • Slit •
Notch and Cope for
production and/or
plant maintenance.

BUFFALO FORGE COMPANY

AIR HANDLING DIVISION / BUFFALO, NEW YORK
Canadian Blower & Forge Co., Ltd. / Canada Pumps, Ltd. / Kitchener, Ont.