



**OPERATING & MAINTENANCE MANUAL  
FOR COMBIFAB FAN  
(01 OCT05 Rev. 3.0)**

**DANTHERM FILTRATION  
102 Transit Ave.  
PO Box 429  
Thomasville, NC 27361-0429  
Telephone: (800) 533-5286  
Fax: (336) 821-0890**

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## Section 8.0: Combifab Extraction Fan

### 8.1: Combifab (Extraction Fan)

**Placing of fan:** Place the fan in accordance with the plant layout drawing while allowing for performance of servicing, including dismantling of runners, belt guard, access hatches, etc., while allowing for the power connection to be made.

**Assembly on foundation:** Combifab fans have been designed with a console, providing steady, continuous operation thus counteracting undesirable wear and tear due to unbalance of fan rotating parts.

The fan impellers have been carefully balanced by the manufacturer to provide vibration less operation. Using vibration dampers will not normally be necessary when a stable foundation of a suitable weight is available.

Concrete foundations are the best foundation type for ventilating fans. The foundation must be level and horizontal so as to minimize extra support for alignment of fan. For attachment, normal foundation bolts are used.

Smaller fans are frequently mounted on steel consoles placed on a wall or roof. Fans weighing less than 220 lbs. (approximately 4hp at 2,900 rpm) may be attached at the fan housing edge; however, belt-driven fans should always be mounted on the bottom sections. Steel consoles for fans weighing more than 550 lbs. (approximately 30hp at 2,900 rpm) shall be strength calculated. Vibration dampers should normally be used when mounting on steel console as vibrations in building structures may cause noise nuisances in adjoining rooms and break down the stability of the structure.

At the assembly, the fan shall be attached carefully to the foundation after being positioned correctly. The fan shaft shall normally be horizontal, and this is to be checked by level. If the fan shaft is to be mounted vertically, it shall be checked that the motor bearings are suitable for this position. After this, any ductwork fittings are removed, including any screw for locking of fan axle.

#### **Assembly of Duct connections:**

When the fan has been installed, the duct connections may be made.

**The fan outlet and any bends immediately after that should be positioned to eliminate risk from flying debris, should the duct wall become ruptured as a result of abrasion. (Min. steel wall .080 inches thick).**

Fans located on anti-vibration mountings should be connected to the duct system through flexible connections.

The flexible connections should be fixed so that they do not support the weight of adjacent ducts. The ducts must be supported independently.

The inside diameter of the flexible connections should match that of the duct and for chip-filled air there should be no possibility of wedging and wear of the inside surfaces of the flexible connections.

To eliminate build-up of static electrical charge, all flexible connections and associated ducts should be suitably cross-bonded and earthed, in general with a minimum conductor size of .004 in<sup>2</sup>. Flexible connections may also be used when the fan has not been installed on anti-vibration mounts.

**WARNING - WARNING - WARNING - WARNING - WARNING**

To prevent accidental access to rotating parts, all duct connections up to 39 inches from rotating elements must be made with flanged joints or other method requiring tools to open.

Inspection panels in the fan case or adjacent ducting must also require tools to be opened. Warning signs indicating such as "Rotating parts" should be fixed on or near each access point.

**Snap locks, handles, etc. by themselves are not permissible!**

**External emergency stop buttons must be placed within 150 feet from fan and associated machinery. These must in any case comply with local electrical safety regulations.**

**To prevent unintended access to the fan rotating parts, all pipe joints up to 39 inches from the fan joining flanges shall be made with flanged joint or similar so that access may be gained only by using tools.**

**Snap locks, handles etc. are not permitted!!**

***Power Connection of Fan Motor etc.:***

Power connection must be performed by skilled electricians and to current regulations, as well as to motor manufacturer directions enclosed in or attached to the motor.

Standard motor protection is required in accordance with local electrical regulations. A temperature sensor in the motor is advisable natural cooling air may be restricted.

The electrical installation must comply with local electrical installation and safety regulations.

***Operation out of sight:***

If the fan forms part of a plant in which the fan is out of sight of the operator and in which fan malfunction may cause a dangerous situation to arise, the fan operation should be monitored (for example by a pressure switch) so that any fault will immediately be notified to the operator.

***Initial start:***

Before starting for the first time, the COMBIFAB safety code must be read carefully.

Before starting, the duct system should be inspected and any foreign bodies should be removed.

If possible the rotating parts should be rotated manually and checked for any faults. The fan impeller and the motor shaft should rotate freely. Wedge belt drives should be straight and perpendicular to the shaft direction.

Any faults should be remedied before starting. Before the starting for the first time, about 60% of the dampers and suction points should be closed as a precaution to prevent initially overloading the motor.

Energize the motor briefly, to check for correct direction of rotation. Correct if direction is the opposite to that shown by the fan direction indicator. After this, the fan may be started and the motor current measured.

The motor current is then measured as the exhaust points are being opened successively until the max. airflow planned is reached.

Automatic dampers open and close quickly are adjusted to a lower closing speed in order to reduce the shock load on ducts and fan. If the motor current is too high when the max. airflow planned is reached, the fan should stopped and a Dantherm Filtration technician consulted.

***COMBIFAB OPERATING INSTRUCTIONS:***

Read the COMBIFAB safety code carefully before commencing work. If any deviations are made from the safety code, this may cause severe personal injury. Access hatches should only be opened in accordance with the safety code. Before starting the fan, guards, hatches, etc. should be closed and secured.

Your COMBIFAB fan has been produced by :

**DANTHERM FILTRATION**  
102 Transit Ave.  
Thomasville, NC 27361  
Telephone: 1-800-533-5286

Fan users will usually work in areas connected to the fan via a duct system. So there is no fixed operator workplace for fan users.

Start and stop is activated by means of an electric controller, which will generally be situated near the normal operator's workplace, i.e. physically separated from the fan.

**Initial start**

The first start must be in accordance with the COMBIFAB assembly guide and by suitably trained personnel.

**Normal Start**

Normal start is accomplished by pressing the start button on the electric controller connected to the fan. If there is a remote start/stop facility, this may be used.

**Normal Stop**

Normal stop is accomplished by pressing the stop button of the electric controller or the remote start/stop if fitted.

**The emergency stop button must not be used for a normal stop!**

Before commencing inspection or maintenance work, the fan must be stopped completely, and the power supply suitably isolated. Also please refer to the safety code.

**Emergency Stop**

In emergency, activating the emergency stop will shut the fan down. **DO NOT USE THIS AS A MEANS TO TURN THE FAN OFF EVERYDAY.**

**Area of Application**

COMBIFAB fans have been designed to transport of air with a content of dust and material. The volume of material permissible will depend particularly on the fan impeller type but other aspects are also relevant to the area of application of the particular fan such as impeller type. The fan impeller type (R, S or T) is indicated on the serial plate on the fan.

A T-impeller is used particularly for heavy material volume, or for transport of coarse chip, long chips or similar in the air passing through the fan.

An S-impeller is used particularly for smaller material volume consisting of dust, sawdust, short chip-wood, and similar.

An R-impeller is used particularly for clean air or air with a low volume of fine dust.

**COMBIFAB Trouble Shooting Section:**

<u>FAULT</u>	<u>POSSIBLE CAUSE</u>	<u>ACTIVITY PROPOSAL</u>
Fan vibrating	Fan wheel rotating the wrong way Foreign bodies in fan wheel A belt pulley mounted wrongly/with wrong moment Fan wheel damaged and thus unbalanced Fan not securely mounted, or mounted askew	Interchange two of the phases of the power connection Clean fan wheel Mount the belt pulley correctly per maintenance instructions Balance fan wheel, or mount a new one Adjust position and secure fan
Noise from bearings	Bearings not lubricated Fault in bearing Bearing over dimensioned	Lubricate bearings per maintenance instructions Mount a new bearing Contact a Dantherm technician
Bearings overheating	Bearings lubricated with wrong lubricant Bearings supplied with wrong bearing tolerance V-belts tightened excessively	Relubricate bearings with recommended lubricant type Mount new bearings Adjust V-belt drive
Bearings burned	Refer to "Bearings overheating" and "Fan vibrating"	
Motor burned out	Faulty or wrongly adjusted protective motor switch	Adjust or change motor protective switch
Excessive power consumption	Fan working at too low differential pressure	Increase loss of pressure by installation of control dampers Close some suction points
Noise from inlet	Fan wheel scraping against inlet	Align inlet
Non-Performance	Fan wheel rotating the wrong way (opposite direction of arrow) Encrustation/ Clogging of fan wheel Pipe system clogged	Interchange two of the phases of the electrical connection Clean fan wheel Localize and remove clogging
Fan running hot	Too little air flow through the fan Fan wheel rotating the wrong way (opposite direction of arrow)	Increase air flow for instance by opening more suction points Interchange two of the phases of the electric connection
V-belts sliding in track	V-belt pulleys not exactly opposite each other Wrong V-belt section in pulley V-belt track faulty Abnormal vibrations in belt transmission Too little belt tightening Foreign bodies in V-belt track	Check V-belt alignment Replace wrong component Replace V-belt pulley Replace all V-belts Adjust V-belt tension Clean V-belt track and remove cause of pollution

<b>FAULT</b>	<b>POSSIBLE CAUSE</b>	<b>ACTIVITY PROPOSAL</b>
Abnormal wear of V-belt sides	Excessive start moment  Wrong angle on/faulty V-belt track  V-belt pulleys not exactly opposite each other  Minimum pulley diameter not met  V-belt not tightened properly  V-belts hitting each other	Adjust YD time to a higher value. With frequency adjusted fans, reaction time parameters must be adjusted to a lower level  Replace V-belt pulleys  Adjust positions of V-belts  Contact Dantherm technician for new DP calculation  Adjust V-belt tightening  Align V-belt transmission so that the belts will not drag on each other
Abnormal noise from belt transmission	V-belt pulley not exactly opposite each other  V-belt not tightened properly  V-belt transmission constantly overloaded	Check V-belt alignment  Check/tighten V-belts  Check power consumption if too high, reduce air flow
V-belts decomposed, and flanks sticky	V-belts affected by oil, fat or other chemical pollution	Screen V-belt transmission against the impact of these  Mount oil proof V-belts  Remember to clean Pulleys prior to mounting new V-belts
Irregular V-belt extension	V-belt tracks faulty  New and old V-belts in same belt drive  Various makes in same belt transmission	Replace V-belt pulleys  All V-belts to be replaced at the same time  All V-belts to be replaced to same make
V-belts breaking after few hours of operation	Wrong mounting of V-belts  Foreign body in V-belt tracks  Belt transmission overloaded  Too few V-belts mounted  Belt transmission has been blocked	To be mounted loosely on belt pulleys as specified in maintenance instructions  Clean V-belt tracks and check belt guard  Check power consumption. If too high, reduce airflow by closing some suction points  Mount all V-belts in belt transmission  Locate and remove cause of blockage

<b><u>FAULT</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>ACTIVITY PROPOSAL</u></b>
Breaks and cracks in lower part of V-belts	Minimum belt pulley diameter disregarded	Mount special V-belts or increase V-belt pulley diameter
	Abnormal high heat impact	Screen belt transmission. Mount heat resistant V-belts
	Abnormally high cold impact	V-belts to be run warm before being loaded. Mount cold resistant V-belts
	Abnormal slip of belt	Check V-belt tightening
	Chemical impact on V-belts	Screen belt transmission. Mount special V-belts
	Any outside tightening roll wrong for small diameter	Contact a DANThERM FILTRATION technician
Abnormally high Vibrations in V-belts	V-belt transmission undersized	Contact a Dantherm technician
	Shaft distance too long in relation to V-belt pulley diameters	Contact a Dantherm technician
	High impact load	Mount special V-belts
	Too low V-belt tension	Check/tighten V-belts
	V-belt pulleys not in dynamic balance	Balance V-belt pulleys at correct RPM
V-belts cannot be tightened any further	Setting potential on belt transmission too small	Contact a Dantherm technician
	Abnormal V-belt extension due to constant overload	Check power consumption. If too high, reduce airflow
	Wrong V-belt length mounted	Replace to shorter V-belts

**COMBIFAB REM. MAINTENANCE INSTRUCTIONS**

Read the COMBIFAB safety code carefully before commencing work. If any deviations are made from the safety code, severe personal injury may result. Prior to restarting, guards, hatches, etc. should be closed, secured and locked. Please note in particular:

**Before commencing any kind of inspection or maintenance activities, the fan must have been stopped completely, and the power supply shall have been cut and secured against unintended start-up, by suitable isolation procedures. Restarting must not occur until all guards, hatches, etc. have been correctly secured. Use only original DANTHERM FILTRATION spare parts.**

**Initial start**

The initial start should be in accordance with the COMBIFAB installation guide and carried out by trained personnel. Please note in particular that prior to starting up, the duct system should be checked for foreign bodies, and rotating parts should be rotated manually, if practicable, to confirm unimpeded operation.

**Fan**

The fan impeller has been carefully balanced by the manufacturer to ensure vibration free operation. If vibration occurs during operation, this will usually be caused by dust accumulation on the impeller. Vibration should cease after cleaning the impeller. If the vibration does not cease after cleaning the impeller, a service technician should be called, as vibration may reduce fan life.

**Motor**

Motor maintenance normally covers cleaning of motor, as well as lubrication of bearings. Please refer to the motor maintenance instructions.

**The motor maintenance instructions are supplied with the motor. If the motor maintenance instructions have not been received, these may be ordered from DANTHERM FILTRATION, stating motor type, make, etc.**



**Fan maintenance schedule**

The items mentioned below should be maintained regularly at the intervals stated. The shorter times given in months or hours should be used. If excessive wear is found, faulty parts should be replaced as soon as possible. As safety hazards may arise due to faulty parts, the appropriateness of any continued operation with faulty parts should be evaluated by the company safety manager. Use only original DANTHERM FILTRATION spare parts.

	<u>Months Operating Hours / Interval</u>
Check fan housing, fan inlet and outlet for signs of wear and corrosion	6 / 1,000
Check fan housing for vibration damage and wear	3 / 500
Check flexible connections for wear and leaks. At the same time check electric connections.	3 / 500
Lubricate bearings (*) (#)	1 / 500
Check V-belt transmission and replace if necessary. (*)	6 / 1,000
Check belt guard for signs of corrosion	6 / 1,000
Check sealing of shaft/fan housing and lubricate (+)	6 / 1,000
Check anti-static cross bonding connections for signs of corrosion	6 / 1,000
Clean outside of motor and fan	1 or as required

**Check motor as per motor maintenance instructions**

(\*) You will find a detailed guide on the following pages

(#) At 185 degrees F operating temperature, every 250 hours, and at 210 degrees F every 125 hours

(+) Shaft seal on fans with cooling disc cannot be lubricated and must be replaced if faulty

**NOTE: The above is a recommended maintenance schedule however; you may need to adjust the schedule accordingly based on your production schedule.**

**Replacement of Fan Impellers**

Fan impeller types R - S - T are shown in Figure 3. The fan impeller may be replaced after removing the duct connection at the inlet side and then removing the cover plate complete with the inlet. Note the position of the impeller on the shaft and replace in the same position.

For T - types and flue gas fans etc., a puller may be used to withdraw the impeller boss. The boss is usually made with two threaded holes for attachment of the puller. Before withdrawing the impeller, remove lock washer and locking screw of shaft center.

For other R - and S - types, a taper-lock boss is used. The impeller is released by removing all screws in the boss and then screwing one of these into the release hole (thread at centre side). If there are several release holes, these may be used simultaneously. The impeller must be replaced in the same axial position on the shaft. The distance from the impeller inlet to the fixed inlet on the fan case is critical to the fan efficiency.

R : Overlap  $\frac{3}{4}$ " to 1-7/8"

S : Distance of impeller inlet to fixed inlet  $\frac{3}{4}$ "

T : Distance of impeller inlet to fixed inlet  $\frac{25}{64}$ "

T - types and similar with a fixed boss should be secured using a lock washer and lock screw, as shown in figure 3.

R - and S - types should be secured by careful tightening of the taper-lock boss. All securing holes should have screws inserted (thread at the outside). **Screws must not be left in the release holes.** The securing screws should be tightened successively so that the impeller will be aligned perpendicular to the shaft. This may be checked by turning the impeller manually before fitting the cover plate. When the cover plate has been fitted, the impeller should be turned again to check that it does not catch on the inlet component. Any problems should be remedied before the ducts are fitted.

**Belt Transmission – Replacement**

When a faulty belt in a multi-belt transmission requires replacement, all belts should be replaced at the same time. All belt transmissions have been designed for specific duties. Before fitting the belts, align the belt pulleys. Slacken the belt pulleys to enable the belts to be fitted without force. This will prevent damage to the belts, particularly to their transmission surfaces and core structure. Over-tightening or slackness will reduce belt life. Check belt tension according to "Belt Transmission - tension check".

After operation for up to 4 hours with new belts at full load, check belts again. If abnormal heat temperatures, vibration, etc. occur, please consult operating instructions fault location table.

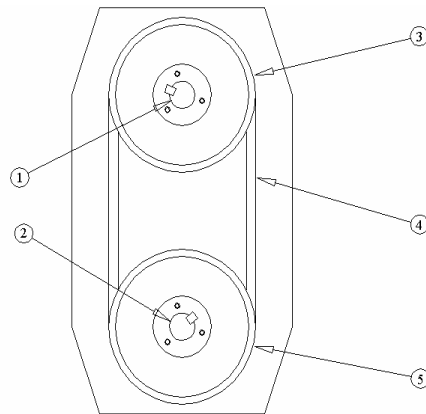
For optimum efficiency, check the belt tension regularly. Belt spray and belt wax should not be used unless actually specified by DANTHERM FILTRATION.

### Fan Belt Tension Measurement and Adjustment

Before following the steps to find out the tension in each of the fan belts, use safe maintenance practices.

#### Instructions for Inspection of Fan Belt Tension

1. Put on protective eye wear and hearing protection
2. Turn OFF the motor that turns the fan ON
3. Allow the system to come to a complete stop
4. Disconnect the power source that activates the system
5. Remove the bolts from the outer housing that covers the Fan Belt Assembly
  - a. Bolts are located on the top, bottom, and both sides of the housing
6. Remove the outer housing and you will see an assembly similar to **Figure 1**
7. Begin the fan belt tension test using your fist with your thumb extended outward
8. Using your thumb apply force midway between the two pulleys on the outside face of a fan belt
9. Push the fan belt inward with enough force such that it just begins to stretch
10. Refer to **Figure 2** to see how a flexed fan belt looks on the Fan Belt Assembly
11. Using a ruler, measure the deflection of each fan belt
12. Deflection distance should range from ¼" to ½"



#### **COMPONENT LIST**

1. SHAFT OF MOTOR
2. SHAFT OF FAN
3. MOTOR PULLEY
4. FAN BELT
5. FAN PULLEY

**FIGURE 1.** Typical Fan Belt Assembly

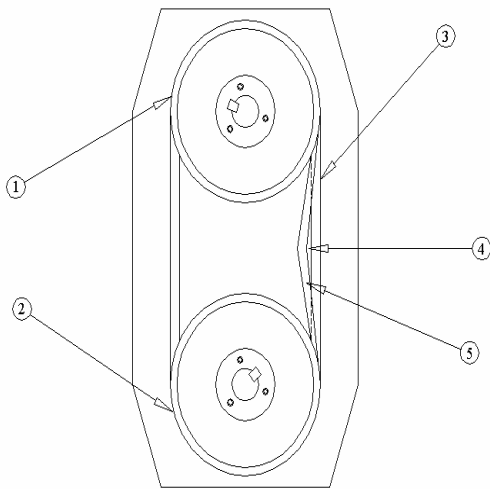
#### Belt Tension in relation to Deflection Distance

By measuring the deflection distance is used to find out the amount of tension in the fan belts. The measurement of deflection distance is the distance between the top of a fan belt to the top of that same fan belt after it is flexed. When a fan belt is experiencing loading such that it is flexed, it is said to be in its as-flexed position. To see a diagram of a fan belt in its as-flexed position refer to **Figure 2**.

Measuring the deflection of a fan belt in its as-flexed position is easy to do. The deflection distance of a fan belt in its as-flexed position can be measured by using the neighboring un-flexed fan belts. By hand, one can measure the deflection distance relative to the other fan belts. The deflection distance for each fan belt should be between ¼ of an inch (7 millimeters) and ½ of an inch (12 millimeters).

If the deflection distance is greater than  $\frac{1}{2}$  of an inch (12 millimeters), then tighten the fan belts until the deflection distance is less than  $\frac{1}{2}$  of an inch (12 millimeters) but more than  $\frac{1}{4}$  of an inch (7 millimeter).

After correctly measuring the deflection distance, put the housing back on with the bolts in place, and turn ON the dust collecting system. Allow the system to run at operating speed for about twenty hours (20 hours). Then, measure the Belt deflection distance again to ensure that none of the fan belts have become loosened. If any of the fan belts have become loose, then adjust them accordingly such that their tension is within operating recommendations. Once the tensions in the fan belts have been properly adjusted, then put the housing back on with bolts because the system is ready for use. When the belts have been properly tightened, they should not squeal, whine, or chirp during start-up or during operation. These noises are signs that the belts are still loose.



### COMPONENT LIST

1. MOTOR PULLEY
2. FAN PULLEY
3. FAN BELT in TENSION Un-FLEXED
4. POINT and DIRECTION OF APPLIED LOAD
5. FAN BELT in As-FLEXED POSITION

**FIGURE 2.** Typical Fan Belt Assembly (with As-Flexed Fan Belt)

#### **Fitting a TAPER-LOCK Belt Pulley**

Before fitting the TAPER-LOCK, clean and degrease all surfaces. Put key in key-way. Locate pulley loosely on bush with all holes aligned and put securing screws in loosely (thread in belt pulley). Also please refer to Figure 5.

Push belt pulley with bush in onto shaft, and align. Tighten screws evenly, and fasten using the torque stated in table 1. In table 1, :

A = Bushing size, B = torque (Nm), C = Number of Screws,  
D = Screw size (inches), E = Hexagon size (mm)

To remove, unscrew all securing screws. Then put one screw in release hole (thread in bushing). As the screw is screwed in, the bush should loosen. Slide pulley gently off shaft. Do not use a hammer as this may cause damage.

#### **Replacement of Bearings**

Motor bearings can normally not be replaced. On belt-driven fans with double bearing in a mono-block unit, single bearings can normally not be replaced. Skilled personnel must only perform bearing replacement.

**Lubrication of Bearings**

Lubrication of double bearings type BL-W and type DFL should be performed according to instructions below. Other bearing types may occur in special cases, and these must then be lubricated according to manufacturer's instructions. DANTHERM will usually use SKF or FAG bearings in such cases.

The electric motor bearings are to be lubricated to motor manufacturer instructions.

**Lubrication of BL-W Bearings and DFL Bearings**

For normal loading within a temperature range from -4 degrees F to 150 degrees F, and standard LM grease with anti-corrosion additives is suitable. At a higher operating temperature, a special lubricant must be used.

As grease lubricant service life varies greatly, we recommend that bearings be re-greased every month with the grease volumes stated in table 2 (at normal operating temperature). **The grease volumes are max. values for each re-greasing.** If these values are exceeded, there will be a risk that bearings may run hot during the subsequent start-up. This will usually result in ruined bearings.

**Original lubrication is :** *SHELL Alvania G3.*

**Options usable are:** *Castrol LM - Optimol Longtime PD 2 - TEXACO Multifax 30/20 - Mobil Mobilux 3 - Molykote BR 2 plus - Molub Alloy 3/2 - SKF LGMT 3 - FAG L 71 / L 135.*

Regreasing requirements, in grammes per bearing and strokes with a standard grease gun, are shown in Table 2, in which:

A : Grammes of grease per bearing,      B : Number of strokes.

If the bearing bracket is taken apart, remove all lubricant and replace using a new lubricant.

**Exchange of Fan Impeller**

A special COMBIFAB fan feature is that the fan impeller may be changed for one of a different type if the application of the fan is changed.

Generally, the T - impeller is for the most difficult applications, for instance transport of chip, shavings, etc. The S - impeller is for dust and small chips whereas the R - impeller is for clean air and air with a small dust content. Prior to changing, a DANTHERM FILTRATION technician should be consulted.

Changing between R, S and T fan impellers will require axial adjustment of inlet nozzle position. This adjustment is made by grinding away the tack welds (H) indicated in Figure 6, adjusting the axial position, then welding the inlet nozzle in the new position after which the welds are cleaned and surface treated.

The inlet nozzle position in relation to the fan impeller front edge should be :

R : Overlapping  $\frac{3}{4}$ " to 1-7/8"

S : Distance from front edge-nozzle  $\frac{3}{4}$ "

T : Distance from front edge-nozzle  $\frac{25}{64}$ "

The fan impeller is exchanged as described in section "Replacement of Fan Impeller".

Table 1

A	B (Nm)	C	D (Inch)	E (mm)
1008	5,6	2	1/4	3
1108	5,6	2	1/4	3
1210	20	2	3/8	5
1610	20	2	3/8	5
1615	20	2	3/8	5
2012	30	2	7/16	6
2517	50	2	1/2	6
3020	90	2	5/8	8
3030	90	2	5/8	8
3525	115	3	1/2	10
3535	115	3	1/2	10
4030	170	3	5/8	12
4040	170	3	5/8	12
4535	190	3	3/4	14
4545	190	3	3/4	14
5040	270	3	7/8	14
5050	270	3	7/8	14

Table 2

	A (gram)	B
BL-W 50	8	5
BL-W 60	8	5
BL-W 70	12	8
BL-W 80	12	8
BL-W 90	20	13
BL-W 100	20	13
DFL 205 NS	4	2
DFL 206 NS	4	2
DFL 207 NS	4	2

Figure 3

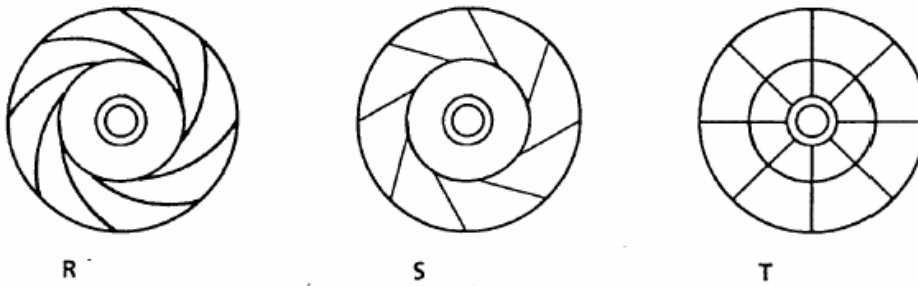


Figure 4

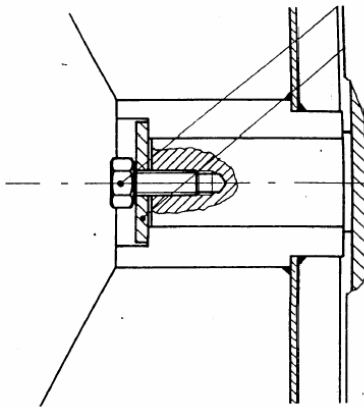


Figure 5

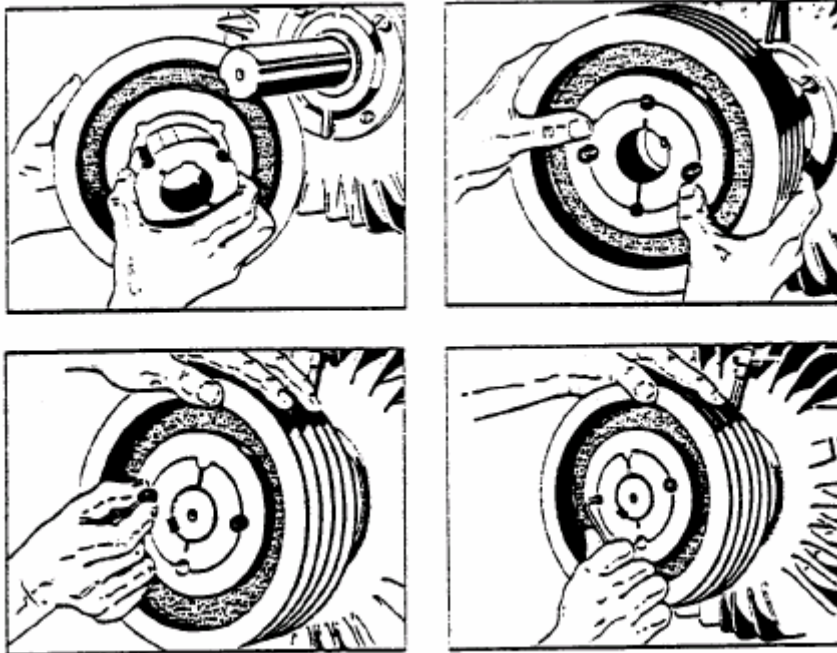
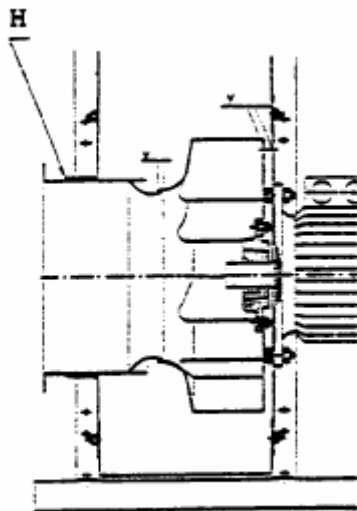


Figure 6





**LIST OF SPARE PARTS for COMBIFAB**

For all orders for spare parts, please state fan type, motor size, item, and serial number. This information will be found on the fan serial plate. Please state fan position as shown in Figure 1 (fan viewed from shaft or drive side).

For directly driven fans (fan impeller mounted directly on motor shaft), the following components are regarded as spare parts:

- Item 1 - Fan Impeller
- Item 2 - Electric Motor
- Item 3 - Fan Housing
- Item 4 - Fan Outlet
- Item 5 - Vibration Dampers
- Item 6 - Flexible Connections
- Item 7 - Cross-bonding for grounding of static electricity.

For fans with belt drives, the following components are also regarded as spare parts :

- Item 8 - V-belts
- Item 9 - V-belt pulley wheel incl. bush
- Item 10 - Shaft Block with bearings
- Item 11 - Shaft Seal in fan housing

Optionally, a COMBIFAB fan may be supplied with an inspection panel, speed monitor, wear insert, drain pipe branch, cooling disc, enclosure silencer, anti-noise lining, as well as a special surface finish and color.

Of the optional supplies mentioned here, the following are regarded as spare parts:

- Item 12 - Wear Plate
- Item 13 - Speed Monitor.

When ordering, please state, in addition to the data mentioned in the introduction, the above item number.

For item 8 and item 9, also please state type from the printout of the computer calculation on the V-belt transmission.

For the electric motor, item 2, please state the make, type, voltage, insulation class, etc.

For item 10 or item 13, please state the type number stated on the component.

For item 4, item 5, item 6, item 10, and item 11, please state the diameter.

When ordering item 1 or item 3, please state any special surface treatment.