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Mobile Vacuum Loading System

for

Powders & Granules

Customer	: Roche Products Pty. Ltd.
Machine Type	: KM38-310SS
Manufactured	: February, 2001
Serial No.	: M010227SS/M010228SS

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Operating Instructions

The Klausen KM-Series mobile vacuum transfer system is designed for use with a minimal amount of installation. Proceed as follows:

- After unpacking, if vacuum transfer receiver is not mounted on the support arm on the column, the receiver should be placed on the arm and secured with the thumb screws or knobs.
- plug the connectors into the corresponding colour coded sockets on the junction box which is mounted on the column. The sockets are:
 - yellow - solenoid for filter cleaning air blasts
 - black - level sensor on receiver
 - green - solenoid for discharge butterfly valve (if applicable)
 - blue - vibrator on receiver (if applicable)
- if an external sensor is to be used to start/stop the receiver, the sensor should be mounted into the receiving hopper and the plug connected to the socket located under the main control box.
- connect the power (415 V, 3 Ph) by plugging into suitable power outlet
- connect compressed air to the connection box located on the mobile trolley
- turn main power switch on at control panel
- press start button and allow to run briefly before pressing stop button
- check direction of rotation of vacuum pump
- if direction is incorrect, cables connection must be exchanged by an electrician to reverse the direction
- connect the hose and suction wand to the inlet of the receiver
- raise receiver above filling hopper by turning column lift switch
- push the mobile trolley into position so that the receiver will discharge into the receiving hopper or container and lock the wheels into position
- press start button on control panel and check that vacuum is available at the end of the suction wand
- the system is now ready for operation

The optimal conditions for operating the vacuum transfer system will depend on the product being transferred, the method of pick-up of the product (through suction wand, dump hopper etc) and how it is discharged from the receiver.

We would recommend that the system be first operated with:

- operation with sensor
- vibrator off
- adjustment collar on suction wand closed or air inlet valve on dump hopper closed if dump hopper is used

If after operation, transfer time is short and the sensor triggers often, powder may be building up on the sensor causing it to trigger. This generally happens with fine powders on granules that can sit on top of the sensor. In this case, it would be better to operate on time (See control system instructions).

If product does not discharge freely from the receiver, the use of the vibrator may be required.

If product does not flow freely into the wand or from the dump hoppers, adjusting the collar of the suction wand or the air inlet valve of the dump hopper can increase the amount of air into the system.

1.0 Receiver

The receiver can be used for feeding processing and packaging machines using a vacuum conveying operation. Feeding is done batchwise.

The receiver is suitable for fluid powders as well as granular bulk materials.

General Description

The receiver consists of the following main parts:

- Stainless steel cover plate on which the compressed air tank is mounted. Included is a solenoid valve for cleaning the filters and also the clean air connection.
- Filter socks mounted on a filter plate to form the filter assembly.
- Main body of the receiver consisting of a cylindrical filter housing and conical receiver. The product inlet is welded to the cylindrical part of the receiver. The proximity switch is also mounted in this section.
- Butterfly discharge valve is mounted on the bottom of the receiver.
- The cover is mounted onto the body using three hook clamps.
- Compressed air connection to be installed from air up to the air pressure regulator. Hose $\text{Ø } 8 \times \text{Ø } 6$. Compressed air has to be free from oil and water, at a pressure of 4 - 5 bar over pressure.

Maintenance Instructions

- For products which are injurious to health, please consult the corresponding safety rules.
- Filters, cartridge filters or hose filters should be checked for tightness and damages:
 - once a week, and
 - if dust escapes at the clean air exhaust outlet

In order to check filter insert, remove top cover by loosening quick release clamp and lift filter insert out of the intermediate housing.

- Cleaning before disassembly of the conveying unit, switch off control, interrupt powder supply and compressed air supply. Release pressure of air tank by activating the diaphragm valve. Remove product conveying line and if applicable clean air exhaust line. By means of the quick release clamps, all separate parts can be disassembled for cleaning and inspection.

Important

The filter on the vacuum pump must be checked and cleaned on a daily basis. If the filter is dirty or clogged with material, then it is a sign that there is a leak in the filter socks or plate, or the product may be too fine for the filter. The fault must be investigated before proceeding with any further material transfer.

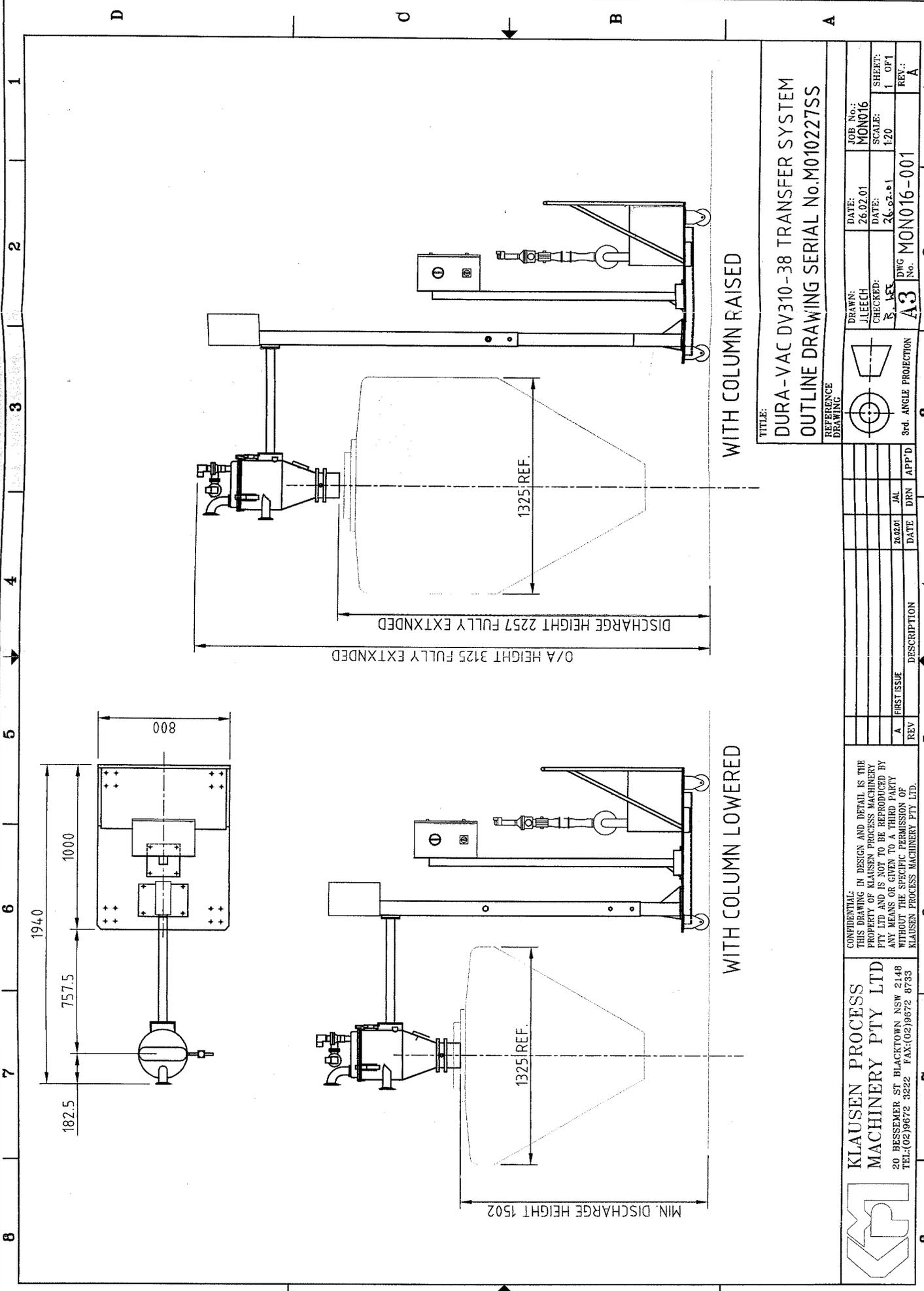
Functional Description

The control system should work as follows:

- On starting conveying to a receiver, the angle valve to that receiver should open and the other angle valve closed.
- If the receiver butterfly valve is closed, the vacuum pump is started
 - ♦ The vacuum is built up via the receiver and the conveying line to the product inlet wand
 - ♦ The product is sucked via the wand and the conveying line into the receiver. It collects in the receiver
 - ♦ The conveying air is cleaned in the filter and passes through to the vacuum pump where it escapes at the blow-off outlet
- Once conveying starts, a conveying timer starts and conveying continues until product level builds up to the proximity switch or the timer times out depending on the mode selected
- Upon completion of conveying, the vacuum pump stops and the butterfly valve is opened. Two timers
 - butterfly valve open timer, and
 - delay timerare started
 - ♦ Due to the weight of the material, the hopper discharges. (For non- free flowing materials an optional vibrator can be installed. When connected, the vibrator would operate whenever the valve is open)
- When the delay time expires, filter cleaning is started by allowing compressed air in the air tank to flow to the filters
 - ♦ The pulse of compressed air cleans the filters and aerates the receiver
 - ♦ The delay timer allows some material to discharge from the hopper before filter cleaning to reduce the amount of dust in the receiver, caused by the air jet
- When the butterfly valve timer expires, the valve closes and the system starts on the next cycle

Technical Data

Receiver	:	KM38-310 SS
Normal Width	:	38 mm
Capacity	:	13 Litres
Permissible Ambient Temperature	:	50°C
Filter Area	:	2 x 0.23 m ²
Filter Material	:	Polycster
Compressed Air	:	Water and oil free
Compressed Air Pressure	:	4 - 5 bar
Compressed Air Consumption	:	Approx. 5 litres / impulse



WITH COLUMN RAISED

WITH COLUMN LOWERED

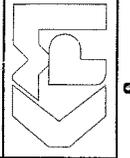
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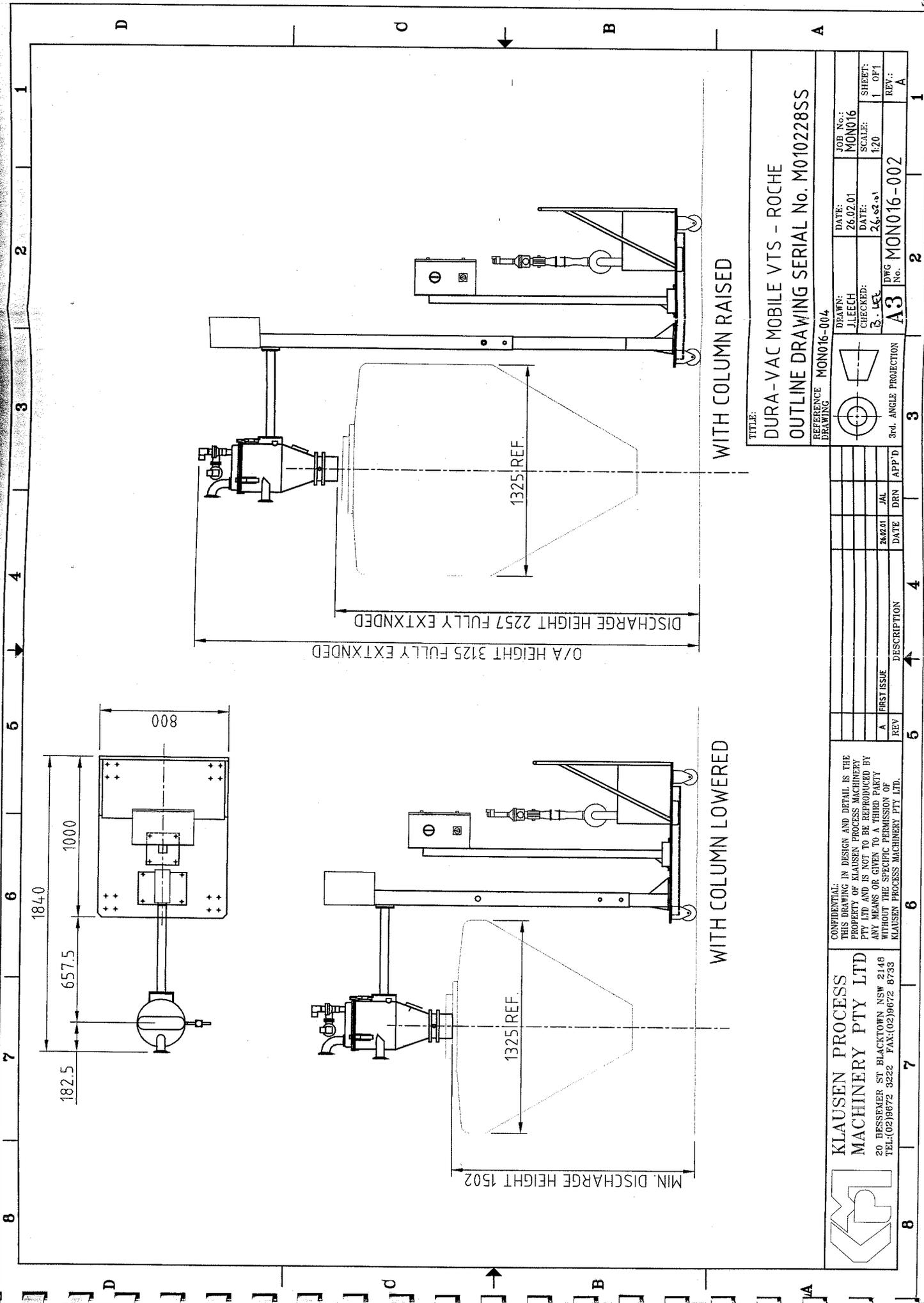
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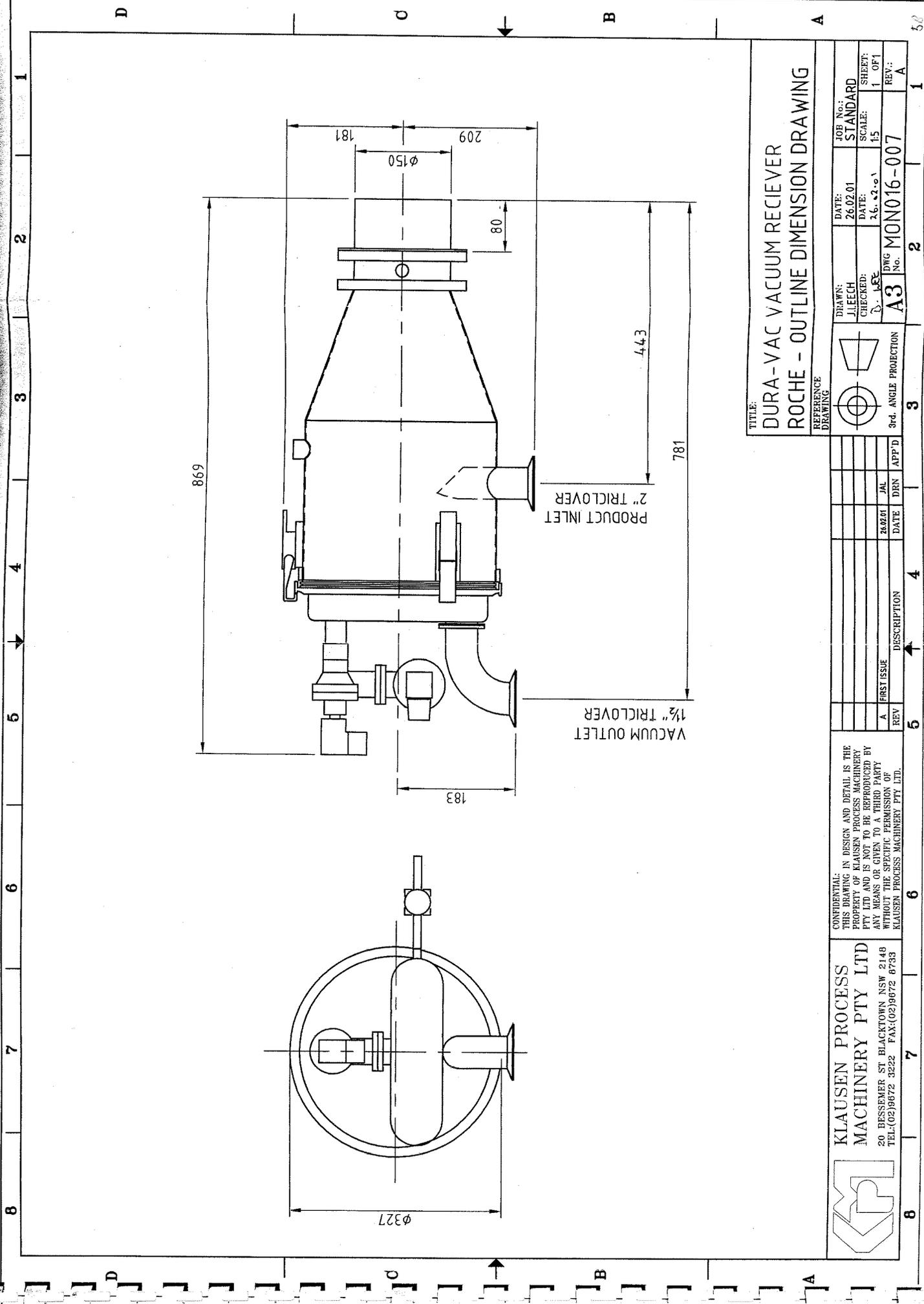
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TITLE: DURA-VAC VACUUM RECEIVER
ROCHE - OUTLINE DIMENSION DRAWING

REFERENCE DRAWING

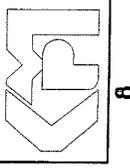
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A B D

**Specification Sheet
for
Klausen Vacuum Transfer System Filter Cartridges**

Filter Model No. : 135 - 200 Pharma.
Main Body : Stainless Steel
End Cap : Stainless Steel
Filter Material : Spun bonded, heat pleated Axtar Polyester (G2260-IS)

Material Specifications

Weight (g/m ²)	:	260
Thickness (mm)	:	0.61
Tensile Strength (kg/15 mm)	Warp :	27.3
	Weft :	16.2
Tearing Strength (kg)	Warp :	10.8
	Weft :	10.3
Bursting Strength (kg)	:	27.3
Resistance to Bending (at 50000 times)	Warp :	Not Cut Off
	Weft :	Not Cut Off
Air permeability (cc/cm ² /sec. at 1/2° WG)	:	11.5
Pressure Loss (mmAq)	:	3.8
Efficiency (%)	0.5 u :	60.8
	1.0 u :	72.2
Pore Size (u)	min. :	23
	Peak :	29
	Max. :	54

2.0 Suction Wand

The suction wand is used for product input into the feed lines. This wand is designed for product input out of barrels, containers etc.

General Description

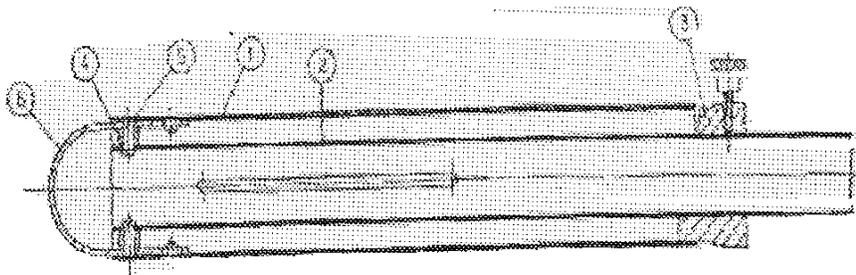
The suction wand consists of an outer tube (Item 1) and inner tube with air slit (Item 2), together with a breather ring (Item 3) for air supply.

The two tubes are joined together with spacer bushes (Item 4) and blind rivets (Item 5). A space stirrup (Item 6) is also mounted on the bottom of the wand to prevent the wand from attaching itself to the container bottom and blocking the product line.

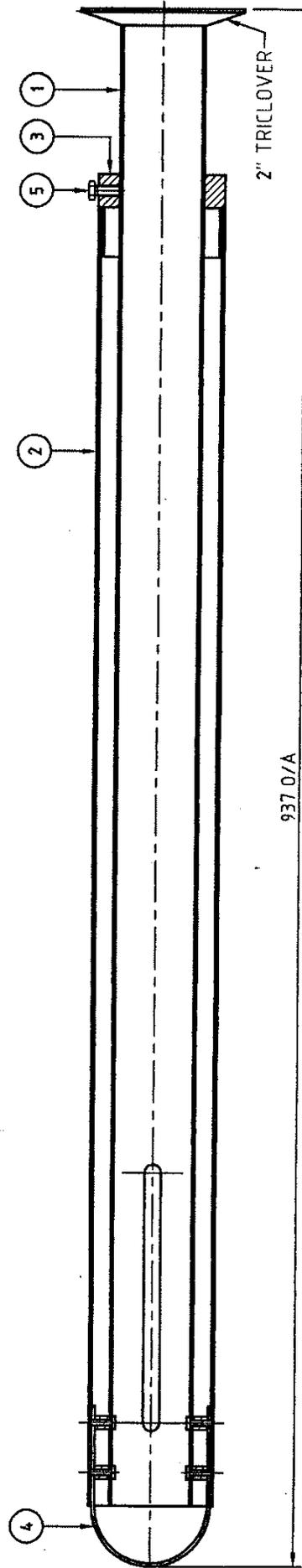
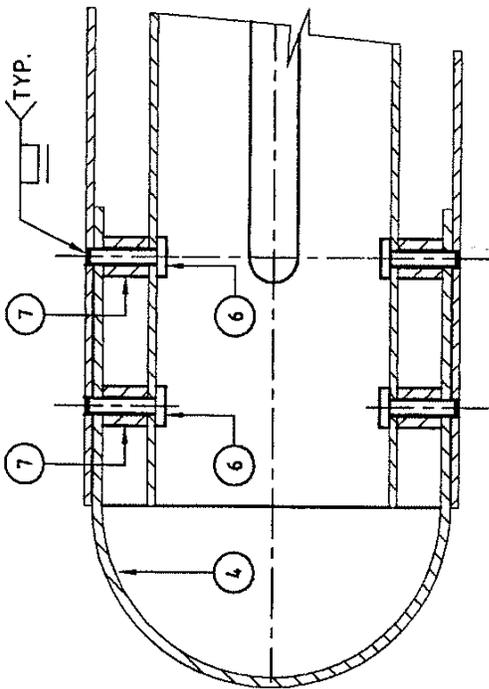
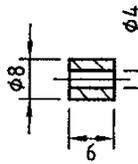
Functional Description

The vacuum in the feed draws through the wand into the feed line. The throughput can be modified by adjusting the breather plug to change the amount of air that is sucked in.

The suction wand should be inserted into the product to such a depth so that the air holes in the breather plug remain clear.



ITEM No.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	CENTER TUBE	SS316	DV-STD-026
2	1	OUTER TUBE	SS316	DV-STD-027
3	1	AIR INTAKE COLLAR	SS316	DV-STD-028
4	1	STIRRUP	SS316	DV-STD-029
5	1	HEX. HD SCREW M6 x 15	GALV.	
6	4	SOLID RIVOT	SS316	
7	4	SPACER	SS316	REFER DETAIL



NOTES:

- WELDING:**
ALL WELDS WIRE BRUSHED (SS WIRE BRUSH).
ALL WELD DISCOLOURATION REMOVED.
ALL IRREGULAR WELDS DRESSED.
- SURFACE FINISH:**
PHARMACEUTICAL GRADE POLISH



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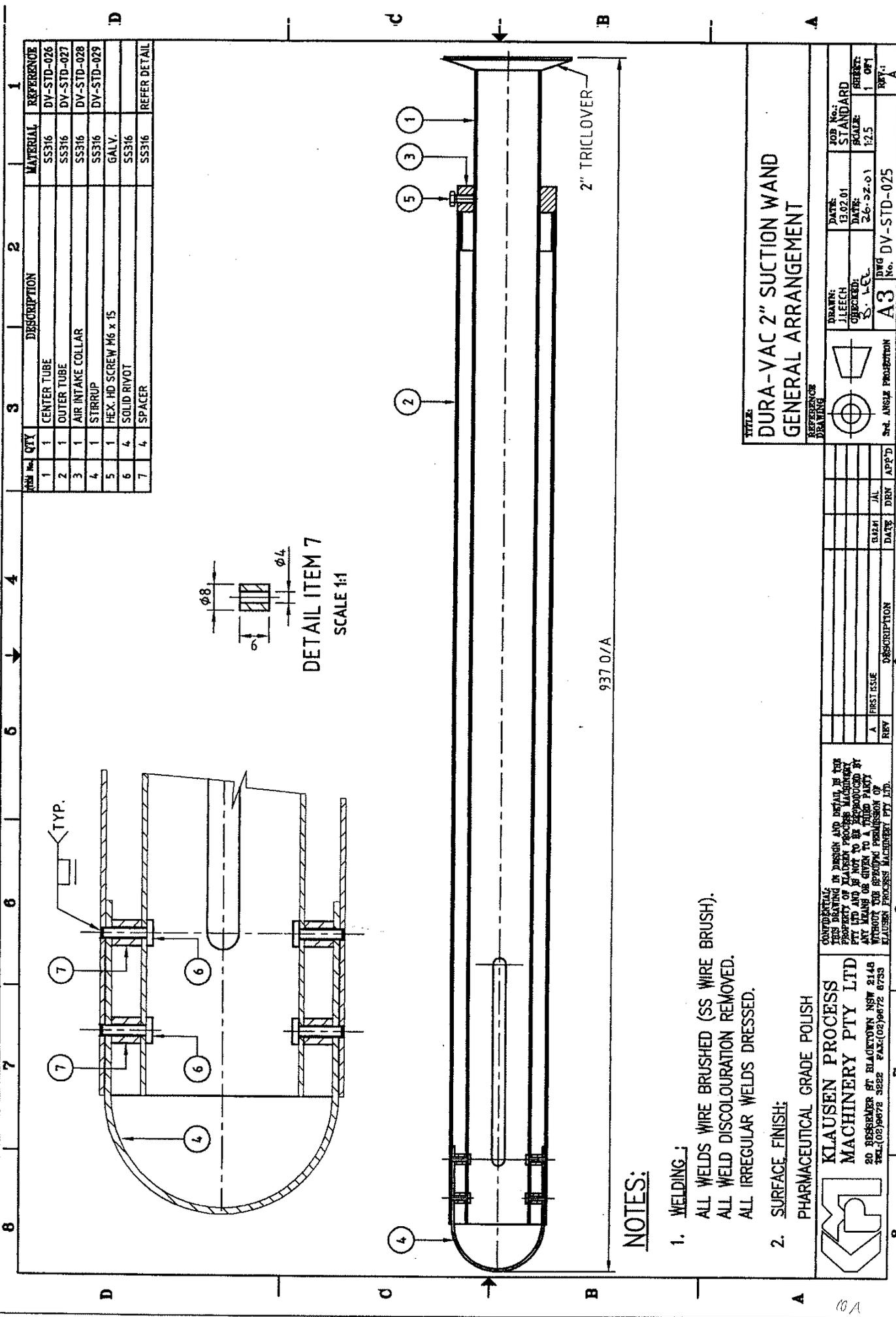
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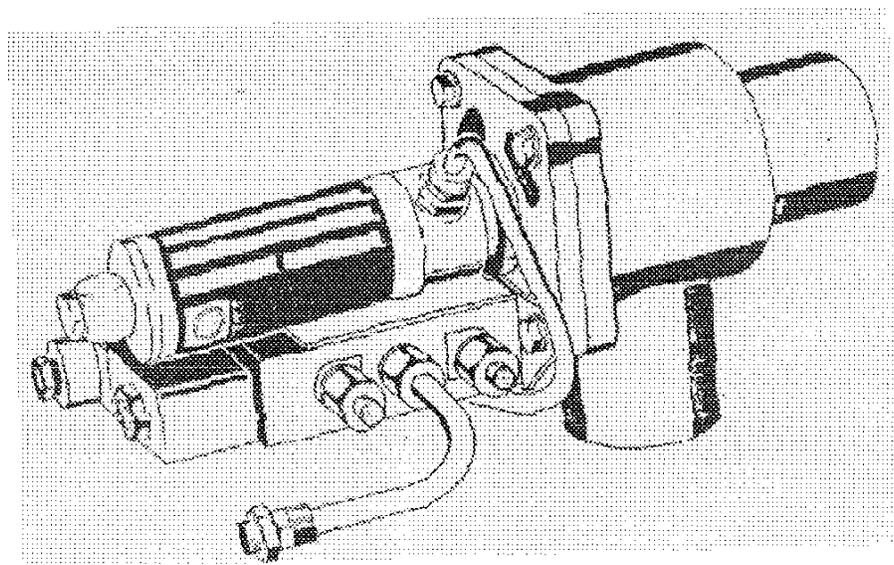
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TITLE:
DURA-VAC 2" SUCTION WAND
GENERAL ARRANGEMENT



3.0 Angle Valves

Angle valves in clean air lines
Angle valves in conveying air lines



Application

Angle valves are used for shutting off clean air respect. conveying air lines.

General Description

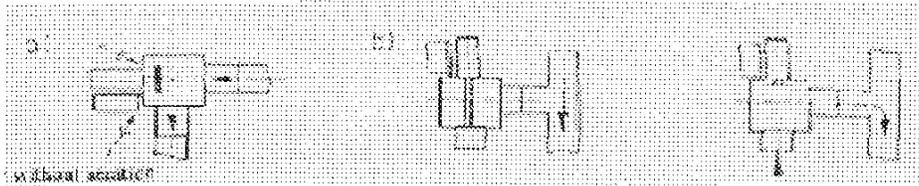
The angle valves may be delivered with 24 V or 220 V solenoid valves. Mounting in the pipe line is done with pipe clamps or with the welded, oval flanges.

Functional Description

- By moving the compressed air cylinder with disc out and in, the pipe line is opened and closed.
- With angle valves with aeration openings in the cover, one part of the pipe line is aerated when shutting off the other part. This is used for example in clean air lines coming from a separator. By closing the part of the pipe line to the underpressure generator, the holes in the cover are opened. The fresh air coming in aerates the separator. The pressure is balanced quicker.

Assembly instructions

The assembly depends on the use:



with or without aeration

- The version with oval flange is fastened to the corresponding counter flange. Do not forget the gasket.
- The version without oval flange is fastened in the pipe line with clamps. Pay attention to the fact, that the gasket lies in the slot provided for this in the halves of the pipe clamp.
- Connect the compressed air hose to the compressed air supply. Mount a shut-off cock into the line. This allows shutting off the for inspection and maintenance purposes.
- Compressed air free from water and oil, pressure approx. 6 bar absolute.
- Connect solenoid valve.
- With version for conveying air lines, the proximity switches for supervising the end positions must be connected (if available).
- Check, if compressed air connection from the solenoid valve to the compressed air cylinder is connected according to the function.

Technical Data

Nominal widths	:	38, 50 and 65 mm
Connection	:	220V/24V according to type specification plate, 50/60 Hz
Compressed air	:	free from water and oil
Comp. Air pressure	:	approx. 6 bar absolute
Comp. Air consumption	:	EV 38... and EV 50... 1 Ltr / switching impulse EV 65... and EVG.... 2 Ltr / switching impulse

Maintenance Instructions

- Check gaskets
 - every three months
 - with reduced conveying capacity (by - padded air is sucked in).
- Renew if necessary
 - Check the function of the solenoid valve and, if applicable, the proximity switches for supervising the end positions.

Instructions for remedying faults

Fault	Cause	Remedying
Conveying capacity reduces	Wear of gasket: by padded air is sucked in	Check gasket, renew if necessary
Compressed air cylinder is not activated	Electrical connection from solenoid valve to compressed air cylinder interrupted	Connect
	Compressed air pressure too low	Increase to approximately 6 bar absolute
	Compressed air supply interrupted	Connect
	Compressed air hose from solenoid valve to compressed air hose interrupted	Renew compressed air hose

Die weitere Pumpenbezeichnung gibt das Nennsaugvermögen und den Konstruktionsstand an:
Beispiel:

RA 0100 E
RA = Enddruck 0,5 mbar
0100 = Nennsaugvermögen = 100 m³/h
E = Konstruktionsstand

Further pump descriptions state the nominal displacement and the construction level:
Example:

RA 0100 E
RA = Ultimate pressure 0,5 mbar
0100 = Nominal displacement = 100 m³/h
E = Construction level

Les indications suivantes définissent le débit de pompage et la génération de la pompe:
Exemple:

RA 0100 E
RA = Pression finale 0,5 mbar
0100 = Débit nominal = 100 m³/h
E = Génération

Bei Dauerbetrieb der RA- Ausführung ist eine Ölrücksaugung in den B-Deckel vorzusehen. Dabei muß der Betriebsdruck unter 300 mbar liegen. Zur Absaugung von feuchten Gasen ist ein Gasballastventil vorzusehen. Beide Ausführungen sind luftgekühlt.

Bei Fragen zur Anwendung und Ausführung, wenden Sie sich bitte an das Herstellerwerk.

The RA version, if used constantly, requires an oil-return suction to be installed into the B-endplate. Operating pressure must be below 300 mbar. When removing condensable vapours, a gas ballast valve must be installed. Both versions are air-cooled.

In case of questions about the application and versions, please contact the manufacturer.

Si une pompe du type RA est utilisée, il faut prévoir un retour d'huile. Ce retour d'huile est monté sur le flasque B. La pression de travail doit être inférieure à 300 mbar absolu. Dans le cas de pompage des gaz humides, il faut prévoir un lest d'air. Les deux versions sont refroidies par air. En cas de doute, concernant l'application ou la version, contactez le constructeur.

Transport und Verpackung

Die R 5 Vakuumpumpen werden im Werk auf Funktion überprüft und fachgerecht verpackt. Der Saugflansch und geg. der Auspuff ist mit einem Stopfen verschlossen, damit während des Transportes kein Schmutz in die Pumpe gelangen kann. Diese Stopfen sind vor der Inbetriebnahme zu entfernen. Achten Sie bei der Annahme der Pumpe auf Transportschäden. Die Pumpe kann mittels der Transportöse und einer geeigneten Hebevorrichtung aus der Verpackung entnommen werden. (Fig. 7.1)

Pumpe nicht an den beiden Lüfterhauben (Fig. 2; 8, 9) hochheben!

Das Verpackungsmaterial ist nach den geltenden Bestimmungen zu entsorgen, bzw. wiederzuverwenden.

Diese Betriebsanleitung ist Bestandteil der Lieferung.

Transport and Packing

R 5 vacuum pumps pass a rigorous operating test in the factory and are packed carefully to avoid transit damage.

The inlet flange and as the case may be, the exhaust are sealed with a plug, so that no dirt can enter the pump during transport. Before start-up these plugs have to be removed. Please check packing on delivery for transport damage. The pump can be lifted from the packing with a suitable lifting device using the lifting bracket on the pump. (Fig. 7.1)

Do not lift the pump via the fan covers (fig. 2; 8, 9)!

Packing materials should be disposed of according to environmental laws or re-used.

These operating instructions are part of the consignment.

Transport et emballage

Les pompes à vide rotatives à palettes R 5 sont testées et contrôlées dans notre usine avant d'être soigneusement emballées.

La bride d'aspiration, éventuellement aussi le refoulement, est fermée par un protecteur qui évite la pénétration de saletés pendant le transport. Veuillez vérifier lors de la réception que l'emballage n'a pas subi de dommage pendant le transport. La pompe peut être sortie de son emballage en utilisant les moyens de levage appropriés ainsi que l'anneau de levage prévu à cet effet. (Fig. 7.1)

Ne pas soulever la pompe par les capots de ventilateur (fig. 2; 8, 9)!

Les matériaux d'emballage doivent être éliminés selon les lois en vigueur ou doivent être réutilisés.

Ce manuel fait partie de notre envoi.

**Der Versand der Pumpe erfolgt grundsätzlich ohne Ölfüllung.
Der Betrieb der Vakuumpumpe ohne Öl zerstört die Pumpe!**

**Pumps are generally shipped without oil.
Operating the vacuum pump without oil will damage the pump!**

**Les pompes sont généralement expédiées sans huile.
Le fonctionnement sans huile détruit la pompe!**

Inbetriebnahme

Die Einhaltung der Reihenfolge der hier beschriebenen Arbeitsschritte ist für eine sicherheitsgerechte und funktionssichere Inbetriebnahme unbedingt erforderlich.

Die Inbetriebnahme darf nur von geschultem Fachpersonal durchgeführt werden.

1. Aufstellung

Die Pumpe muß waagrecht auf ebener Fläche aufgestellt bzw. montiert werden. Eine spezielle Befestigung ist nicht notwendig. Durch die Innengewinde an den Schwingmetallpuffern kann die Pumpe angeschraubt werden. Folgende Umgebungsbedingungen müssen gegeben sein:

Umgebungstemperatur: 12 - 30° C
Umgebungsdruck = Atmosphäre

Um ein Überhitzen der Pumpe zu vermeiden, ist stets auf genügend Frischluftzufuhr zu achten.

Start-up

It is essential to observe the following instructions step by step to ensure a safe start-up.

Start-up may only be conducted by trained specialists.

1. Setting-up

The pump must be set up or mounted horizontally on a flat surface. Special mounting is not required, as the pump can be mounted with screws via the threads of the rubber feet of the pump. The following ambient operating environment must be observed:

Ambient temperature: 12 to 30° C
Ambient pressure = Atmosphere

In order to avoid over-heating of the pump, an undisturbed fresh-air-flow to the pump is necessary.

Démarrage

Il est impératif de suivre pas à pas les recommandations suivantes pour assurer un démarrage correct de la pompe.

Le démarrage doit être réalisé uniquement par un personnel qualifié.

1. Préparation

La pompe doit être placée ou fixée sur une surface plane horizontale. Un montage spécial n'est pas nécessaire. Un taraudage est prévu sous chaque support élastique pour une fixation éventuelle. La pompe doit fonctionner dans l'environnement suivant:

Température ambiante: 12 à 30° C
Pression ambiante = pression atmosphérique

Pour éviter un échauffement anormal de la pompe, il faut prévoir une ventilation suffisante.

2. Sauganschluß

Der Anschluß an den Saugflansch kann über einen vakuumdichten, flexiblen Schlauch oder durch Rohrleitungen erfolgen.

Dabei ist darauf zu achten, daß durch die Befestigung der Rohrleitung keine Spannungen auf die Pumpe übertragen werden. Gegebenenfalls müssen Kompensatoren verwendet werden.

Verengungen in den Anschlußleitungen sind zu vermeiden, da sonst die Saugleistung vermindert wird. Die Nennweite der Anschlußleitungen muß mindestens dem Querschnitt des Saugflansches der Pumpe entsprechen.

Achten Sie darauf, daß sich keine Fremdkörper (z.B. Schweißzunder) oder Flüssigkeiten in der Ansaugleitung befinden. Diese können die Vakuumpumpe zerstören.

In der Abgasrohrleitung dürfen keine Absperrorgane eingebaut sein. Die Abgasleitung immer so anbauen, daß kein Kondensat in die Pumpe gelangen kann (Gefälle, Syphon).

3. Öleinfüllung (Fig. 9.1)

Der Versand der Vakuumpumpe erfolgt grundsätzlich ohne Ölfüllung. Der Betrieb der Vakuumpumpe ohne Öl zerstört die Pumpe! Deshalb muß vor Inbetriebnahme unbedingt Öl eingefüllt werden!

Dazu das Öl an der Öleinfüllschraube an der Serviceeinheit einfüllen, bis der Ölstand am Ölschauglas die MAX-Markierung erreicht hat.

Ölorte und Ölmenge siehe unter "Wartung" und auf Seite 9.

2. Inlet connection

The inlet flange can be connected with a vacuum-tight flexible hose or pipe.

The mounted pipes should cause no tension on the pump's flanges. If necessary, compensators must be installed.

Restriction of the pipes must be avoided in order not to decrease the displacement of the pump. The nominal diameter of the pipes has to be at least the same as the diameter of pump's inlet flange.

No foreign particles (e.g. solder soot) or liquids may enter the inlet line, as they could destroy the vacuum pump.

Restricting devices should not be installed in the exhaust line. Always connect the exhaust pipe in a manner, so that no condensate can enter the pump (slope, siphon).

3. Oil filling (Fig. 9.1)

The vacuum pump always leaves the factory without oil. Operation without oil destroys the pump! Therefore the pump must be charged with oil before start-up.

This is accomplished by charging the oil through the oil fill plug of the service unit, until the oil level reaches the MAX-mark on the oil sight glass.

Type and quantity of oil see "Maintenance" and page 9.

2. Raccordement

La bride d'aspiration doit être raccordée par une tuyauterie souple ou rigide étanche au vide.

Cette tuyauterie ne doit exercer aucune contrainte sur la bride d'aspiration; si nécessaire, il faut installer des compensateurs.

Il faut éviter les restrictions de tuyauteries qui diminuent les performances de la pompe. Le diamètre nominal doit être au moins égal au diamètre de la chambre d'aspiration de la pompe à vide.

Aucune particule solide (par exemple: soudure) ou liquide ne doit pénétrer dans la pompe, ce qui pourrait la détruire.

Ne jamais installer des organes de restriction dans la conduite d'échappement. Il faut installer la conduite de façon à ce qu'aucun condensat ne puisse entrer dans la pompe (pente, siphon).

3. Remplissage d'huile (Fig. 9.1)

L'expédition de la pompe à vide s'effectue toujours sans le plein d'huile. Le fonctionnement sans huile détruit la pompe! Il convient donc de faire le plein d'huile avant le démarrage.

Pour cela dévisser le bouchon de remplissage de l'unité d'entretien et remplir d'huile jusqu'au niveau MAX indiqué sur le voyant de niveau d'huile.

Pour le type et la quantité d'huile, veuillez lire le paragraphe "Entretien" et la page 9.

Elektroanschluß

Die Elektroinstallation darf nur von einem Fachmann durchgeführt werden. Bestimmungen nach EMV-Richtlinie 89/336/ EWG und Niederspannungsrichtlinie 73/ 23/ EWG, sowie die entsprechenden EN-Normen sind ebenso einzuhalten wie VDE/ EVU-Richtlinien bzw. örtliche oder nationale Vorschriften. Der Betreiber der Vakuumpumpe hat dem Hersteller mitzuteilen, wenn elektrische oder elektromagnetische Störungen aus seinem Netz zu erwarten sind.

1. Die Spannungs- und Frequenzangaben auf dem Typenschild müssen mit der Netzspannung übereinstimmen.

2. Der Antriebsmotor ist nach VDE 0113 gegen Überlastung abzusichern. Bei ortsbeweglicher Aufstellung der Pumpe muß der elektrische Anschluß mit Kabeldurchführungen ausgerüstet werden, welche die Funktion der Zugentlastung übernehmen.

3. Zur Prüfung der Drehrichtung Pumpe kurz ein- und ausschalten. Bei falscher Drehrichtung zwei Phasen umpolen.

Von der Motoreseite aus gesehen ist die Drehrichtung nach links, entgegen dem Uhrzeigersinn (Fig. 6.1).

Electrical connection



Electrical installation may only be conducted by a specialist. Regulations following EMV Directive 89/ 336 EWG, low Voltage Directive 73/ 23 EWG, and the

appropriate EN Standards have to be applied as well as VDE/ EVU regulations and local or national regulations. The operator of the vacuum pump has to inform the manufacturer, if electric or electromagnetic interference from his mains is to be expected.

1. Voltage and frequency on the nameplate must agree with the supply voltage.

2. The drive motor must be protected against overloads according to VDE 0113. In the case of portable installation of the vacuum pump, the electrical connection must be equipped with cable guides that have the function of traction relief.

3. To check the direction of rotation of the pump, flick the ON/OFF switch. In case of incorrect direction reverse the polarity of any two of the electrical phases.

Looking at the motor fan cover, the direction of rotation is counter-clockwise (fig. 6.1).

Raccordement électrique



L'installation électrique ne doit être effectuée que par un spécialiste. Les directives 89/ 336/ CEE sur la compatibilité électromagnétique, 73/ 23/ CEE sur la basse tension, ainsi que

les directives VDE/ EVU et les réglementations locales et doivent être respectées. L'utilisateur de la pompe à vide doit informer le constructeur, si le réseau est susceptible de provoquer des interférences électriques ou électromagnétiques.

1. La tension et la fréquence sur la plaquette signalétique doivent correspondre aux caractéristiques du réseau.

2. Le moteur électrique doit être protégé contre des surcharges conformément à VDE 0113. En cas d'une installation mobile, il faut prévoir un dispositif pour limiter toutes tractions sur le câble d'alimentation électrique.

3. Pour vérifier la direction de rotation de la pompe, actionner le bouton Marche/ Arrêt pendant un court instant. Si le sens de rotation est mauvais, inverser deux des trois câbles d'alimentation.

Vu du côté moteur, le sens de rotation est à gauche (sens anti-horaire) (fig. 6.1).

Dreieckschaltung
Triangle connection
Connexion en triangle

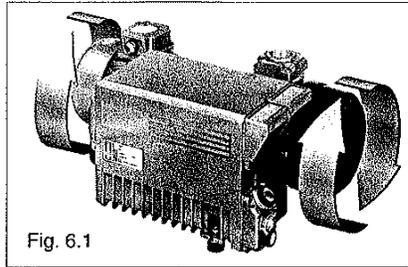
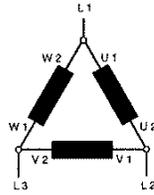
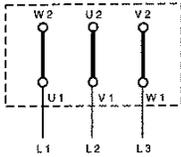
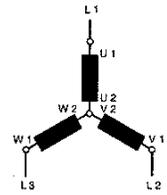
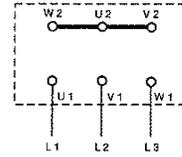


Fig. 6.1

Sternschaltung
Star connection
Connexion en étoile



Betriebshinweise

1. Diese Vakuumpumpe ist für das Absaugen bzw. Fördern von Luft und Gasen bestimmt, die weder aggressiv, giftig noch explosiv sind. Andere Medien dürfen nicht gefördert werden. Wenden Sie sich im Zweifelsfall an das Herstellerwerk.

Operation advice

1. These vacuum pumps can be used to evacuate air or dry gases, which are not aggressive, poisonous or explosive. Other agents may not be transported. In case of doubt, please contact the manufacturer.

Conseils d'utilisation

1. Ces pompes à vide peuvent être utilisées pour aspirer de l'air ou des gaz secs qui ne sont, ni agressifs, ni dangereux, ni explosifs. Certains produits ne doivent pas être aspirés par les pompes. En cas de doute, consultez le constructeur.

Vorsicht! Nicht geeignet für aggressive und explosive Gase, Gasgemische und Flüssigkeiten.

Attention! Not to be used with aggressive and explosive gases or gas mixtures and fluids.

Attention! Ne pas utiliser avec des gaz ou mélanges de gaz agressifs et/ou explosifs ni avec des liquides.

2. Zum Fördern von kondensierbaren Dämpfen ist ein Gasballastventil notwendig. Dabei muß die Vakuumpumpe 30 Minuten bei geschlossenem Sauganschluß betrieben werden, damit sie die Betriebstemperatur von 75°C erreicht. Erst mit Erreichen der Betriebstemperatur ist ein Fördern von kondensierbaren Dämpfen möglich. Pumpe nach dem Prozeß 30 Minuten nachlaufen lassen, damit sich das Öl vom Kondensat reinigt.

2. To pump condensable vapours, a gas ballast valve should be installed. The vacuum pump should run for 30 minutes prior to operation with the inlet connection closed, in order to reach the operating temperature of 75°C. Only at this operating temperature can condensable vapours be transported. After use, the pump should be left running for an additional 30 minutes to clear the oil of condensate.

2. En cas de pompage de vapeurs condensables, un lest d'air doit être installé. La pompe à vide doit fonctionner pendant les premières 30 minutes avec la bride d'aspiration fermée pour atteindre la température de fonctionnement de l'ordre de 75°C. Seulement à partir de cette température il est possible de pomper des vapeurs condensables. Après l'utilisation il convient de laisser fonctionner la pompe 30 minutes de plus afin de séparer l'huile des condensats.

Wartung

Zu allen Wartungsarbeiten muß die Vakuumpumpe ausgeschaltet werden und gegen versehentliches Anschalten gesichert sein.

Maintenance

The vacuum pump must be switched off and secured against accidental switch-on for all maintenance.

Entretien

Avant tout travail d'entretien, il faut s'assurer que la pompe a bien été arrêtée et que tout démarrage accidentel est impossible.

1. Der Ölstand muß mindestens einmal täglich überprüft werden.

1. The oil level should be checked at least once a day.

1. Le niveau d'huile doit être vérifié au moins une fois par jour.

2. Fällt der Ölstand unter die am Ölschauglas (3) angegebene Markierung, so muß Öl nachgefüllt werden.

2. If the oil level is below the MAX-mark on the oil sight glass (3), more oil should be added.

2. Si le niveau de l'huile est sous la marque MAX du voyant de niveau d'huile (3), il faut le compléter.

Öl so lange einfüllen (5) bis am Ölschauglas der Ölstand die MAX-Markierung erreicht hat.

Fill with oil (5) until the level reaches the MAX-mark on the oil sight glass.

Versez l'huile (5) jusqu'à la marque MAX du voyant de niveau d'huile.

3. Ölwechsel und Ölfilterwechsel
 Ein erster Ölwechsel muß nach 100 Betriebsstunden durchgeführt werden.

3. Oil changing and oil filter changing
 Oil must be changed after the first 100 hours of operation.

3. Changement de l'huile et du filtre à huile
 L'huile doit être changée après les premières 100 h de fonctionnement.

Die weiteren Ölwechselintervalle sind von den Betriebsverhältnissen abhängig. Nach 500 bis 2000 Betriebsstunden muß ein Ölwechsel erfolgen, mindestens jedoch halbjährlich.

Further oil changes depend on operating conditions. The oil must be changed after 500 - 2000 hours of operation, but at least semi-annually.

Les vidanges ultérieures dépendront de l'application. L'huile doit être changée après 500 à 2000 h de fonctionnement mais au moins tous les six mois.

Bei starker Verschmutzung kann es notwendig sein, daß das Öl bereits früher gewechselt werden muß.

If there is considerable pollution it could be necessary to change the oil more frequently.

Si la pollution est importante il peut être nécessaire de changer l'huile plus tôt.

Zum Ölwechsel muß die noch betriebswarme Pumpe ausgeschaltet und auf Atmosphärendruck belüftet sein. Durch die Verschlußschraube (4)

To change the oil, the warm pump must be switched off and ventilated to reach atmospheric pressure. Drain the oil through the oil plug (4).

Pour vidanger l'huile, arrêtez la pompe chaude et mettez-la à la pression atmosphérique. Vidangez la pompe par l'orifice de vidange (4). Quand

Teilenummern/ Ersatzteile Part numbers/ spare parts Numéro de pièce					
Pos.	Teil	Part	Pièce	R 5 0063 E	R 5 0100 E
155	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 020	0410 000 020
156	Streckmetall	Expanded metal	Métal déployé	0534 000 926	0534 000 926
159	Abluftventil	Exhaust valve	Soupape d'échappement	0916 000 696	0916 000 696
185	Abscheiderdichtung	Separator gasket	Joint plat	0480 000 150	0480 000 150
186	Stiftschraube	Stud	Goujon	0412 104 730	0412 104 730
187	Federring	Lock washer	Rondelle ressort	0432 000 013	0432 000 013
191	Sechskantmutter	Hexagon nut	Ecrou hexagonal	0420 000 007	0420 000 007
219	Gerade Einschraubverschraubung	Straight stud fitting	Union mâle	-	0441 000 005
220	Gerade Einschraubverschraubung	Straight stud fitting	Union mâle	-	0441 000 005
221	Schwenkverschraubung	Hydraulic fitting	Raccord	0441 000 123	0441 000 123
222	Gerade Einschraubverschraubung	Straight stud fitting	Union mâle	0441 000 004	0441 000 004
223	Schwenkverschraubung	Hydraulic fitting	Raccord	0441 000 199	0441 000 199
227	Hohlschraube	Hollow-core screw	Vis creuse	0415 000 105	0415 000 105
230	Leitungsrohr	Tube	Tube	-	0327 108 887
231	B-Leitungsrohr	B-tube	B-tube	0327 109 090	0327 109 091
232	A-Leitungsrohr	A-tube	B-tube	-	0327 108 888
233	Schwenkverschraubung	Hydraulic fitting	Raccord	0441 000 199	0441 000 199
236	A-Leitungsrohr	A-tube	A-tube	0327 108 724	-
240	Kühlschlange	Cooling spiral	Serpentin	-	0522 000 014
250	Saugflanschunterteil	Inlet flange, lower housing	Flasque d'aspiration, partie inf.	0246 101 999	0246 101 999
251	Ventilteller	Valve plate	Clapet d'aspiration	0711 101 429	0711 101 429
252	Ventilführung	Guide for valve plate	Guide de clapet d'aspiration	0711 101 428	0711 101 428
253	O-Ring	O-ring	Joint torique	0486 000 559	0486 000 559
254	Druckfeder	Compression spring	Ressort de pression	0435 103 976	0435 103 976
255	O-Ring	O-ring	Joint torique	0486 000 526	0486 000 526
260	Saugflansch	Inlet flange	Flasque d'aspiration	0246 000 541	0246 000 541
261	Sieb	Screen	Tamis	0534 000 018	0534 000 018
265	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 060	0410 000 060
266	Federring	Lock washer	Rondelle ressort	0432 000 009	0432 000 009
270	Verschlusschraube	Plug	Bouchon	0415 000 002	0415 000 002
271	Dichtring	Sealing ring	Joint	0484 000 029	0484 000 029
275	Ölrücklaufventil	Oil return valve	Clapet de retour d'huile	0916 000 048	0916 000 048
276	Dichtring	Sealing ring	Joint	0484 000 034	0484 000 034
284	Schwenkverschraubung	Hydraulic fitting	Raccord	0441 000 152	0441 000 152
285	Hohlschraube	Hollow-core screw	Vis creuse	0416 000 117	0416 000 117
286	Ringanschlußstück	Connecting piece	Pièce de connexion	0947 000 707	0947 000 707
288	Dichtring	Sealing ring	Joint	0484 000 017	0484 000 017
290	Leitungsrohr	Tube	Tube	0327 000 199	0327 000 198
291	Gerade Einschraubverschraubung	Straight stud fitting	Union mâle	0947 114 738	0441 000 003
293	Leitungsrohr	Tube	Tube	0327 101 828	0327 101 828
300	Motorflansch	Motor flange	Flasque de moteur	0247 107 490	0247 107 490
301	Zylinderschraube	Cylinder cover screw	Vis de flasque	0413 000 425	0413 000 425
302	Federring	Lock washer	Rondelle ressort	0432 000 013	0432 000 013
310	Kupplung	Coupling	Accouplement	0510 000 014	0510 000 015
313.1	Kupplungsnahe, motorseitig	Coupler hub, motor sided	Moyeu d'accouplement, côté moteur	0512 000 182	0512 000 184
312.2	Kupplungshülse	Coupling sleeve	Douille d'accouplement	0512 000 004	0512 000 004
311.3	Kupplungsnahe, rotorseitig	Coupler hub, rotor sided	Moyeu d'accouplement, côté rotor	0512 000 180	0512 000 180
321	Axiallüfter	Axial fan	Ventilateur axial	0524 108 653	0524 108 653
326	Zacken-Ring	Sprocket ring	Rondelle dent	0432 000 380	0432 000 380
340	Lüfterhaube	Fan hood	Capot de ventilateur	0713 000 108	0713 000 108
341	Blechschraube	Tin screw	Vis	0418 101 688	0418 101 688
342	Dübel	Dowel	Douille	0710 000 200	0710 000 200
345	Schutzgitter	Protection grid	Garde-corps	0713 108 129	0713 108 129
391	Ringschraube	Lifting eye bolt	Anneau de levage	0416 000 007	0416 000 007
400	Elektromotor (50 Hz)	Motor (50 Hz)	Moteur électrique (50 Hz)	0616 109 939	0620 101 754
400 ^{*)}	Elektromotor (60 Hz)	Motor (60 Hz)	Moteur électrique (60 Hz)	0620 000 321	0621 000 121
400.1	Klembrett (50 Hz)	Terminal Board (50 Hz)	Bornier (50 Hz)	0648 103 778	0684 103 778
400.1 ^{*)}	Klembrett (60 Hz)	Terminal Board (60 Hz)	Bornier (50 Hz)	0648 103 778	0648 103 778
400.2	Klemmkasten (50 Hz)	Terminalbox (50 Hz)	Boîte à bornes (60 Hz)	0648 000 461	0648 000 461
400.2 ^{*)}	Klemmkasten (60 Hz)	Terminalbox (60 Hz)	Boîte à bornes (50 Hz)	0648 000 461	0648 000 461
400.3	Lüfterflügel (50 Hz)	Fan blade (50 Hz)	Palette de ventilateur (50 Hz)	0648 000 302	0648 000 333
400.3 ^{*)}	Lüfterflügel (60 Hz)	Fan blade (60 Hz)	Palette de ventilateur (60 Hz)	0648 000 333	0648 000 333
400.4	Elektromotorhaube (50 Hz)	Motor fan cover (50 Hz)	Capot ventilateur moteur (50 Hz)	0648 000 017	0648 103 875
400.4 ^{*)}	Elektromotorhaube (60 Hz)	Motor fan cover (60 Hz)	Capot ventilateur moteur (60 Hz)	0648 000 018	0648 000 018
401	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 120	0410 000 120
402	Federring	Lock washer	Rondelle ressort	0432 000 013	0432 000 013
411	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 125	0410 000 125
412	Fuß	Foot	Pied	0391 107 504	0391 107 504
415	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 120	0410 000 120
421	Schwingmetallpuffer	Rubber foot	Support élastique	0561 000 030	0561 000 030
422	Schwingmetallpuffer	Rubber foot	Support élastique	0561 000 001	0561 000 001
423	Federring	Lock washer	Rondelle ressort	0432 000 013	0432 000 013
425	Scheibe	Washer	Rondelle	0431 000 131	0431 000 131
430	Typenschild	Nameplate	Plaque signalétique	0565 102 562	0565 102 562
431	Drehrichtungspfeil	Arrow label	Flèche sens de rotation	0565 000 003	0565 000 003
470	Schwenkverschraubung	Hydraulic fitting	Raccord d'angle	0441 000 123	0441 000 123
471	Leitungsrohr	Tube	Tube	0327 000 200	0327 000 200
472	Rückschlagsventil	Nonreturn valve	Clapet de non-retour	0541 000 050	0541 000 050
473	Muffe	Bushing	Raccord à vis	0456 000 250	0456 000 250
474	Schalldämpfer	Silencer	Silencieux	0562 000 004	0562 000 004
475	Hohlschraube	Hollow-core screw	Vis creuse	0415 000 105	0415 000 105

* = bei 220/ 380 V
 *) = at 220/ 380 V
 **) = à 220/ 380 V

Installations- und Betriebsanleitung R 5 0063/ 0100 E
Installation and Operating Instructions R 5 0063/ 0100 E
Manuel d'installation et de maintenance R 5 0063/ 0100 E

Zubehör Accessories Accessoires	Beschreibung Description Description	R 5 0063 E	R 5 0100 E
Dichtungssatz Set of seals Pochette de joints	bestehend aus allen notwendigen Dichtungen consisting of all necessary seals comporte tous les joints nécessaires	0990 106 211	0990 106 211
Verschleißteilsatz Overhaul kit Kit complet	bestehend aus dem Dichtungssatz und sämtlichen Verschleißteilen consisting of seal set and all wearing parts comporte tous les joints et pièces d'usure	0993 106 212	0993 106 213
Wartungssatz Service kit Kit de service	bestehend aus Ölfilter, Luftentölelement, Schalldämpfermembran, Dichtungen consisting of oil filter, exhaust filter, muffler diaphragm, seals comporte filtre à huile, filtres de sortie d'air, membrane d'échappement et joints	0992 106 214	0992 106 214

Zubehör Accessories Accessoires	Beschreibung Description Description	R 5 0063 E	R 5 0100 E
Luftfilter Inlet filter Filtre d'aspiration	saugseitig, mit Papierpatrone, zum Abscheiden von Feststoffen inlet-side, with paper cartridge to separate solids filtre d'entrée d'air à cartouche papier pour séparer les solides	0945 000 132	0945 000 134
Ersatz-Papierpatrone Replacement paper cartridge Cartouche de remplacement		0530 000 002	0530 000 003
Manometer, Filterwiderstand Filter pressure gauge Manomètre de colmatage des filtres	zum einfachen Überprüfen des Sättigungsgrades des Luftentölelementes for easy checking of the degree of saturation of the exhaust filter pour contrôler facilement le degré de colmatage des filtres de sortie d'air	0946 000 100	0946 000 100
Schalldämpferabluftdeckel Muffler exhaust cover Couvercle d'échappement	druckseitig, zur Optimierung der Schalldämpfung pressure side, to optimize silencing Placé à l'échappement pour réduire le niveau sonore	0947 000 088	0947 000 088
Vakuumreguliereinheit Vacuum regulating unit Soupape de réglage de vide	zum Einstellen des gewünschten Arbeitsdruckes, Anschluß: Saugnippel R 1 1/4" to adjust the required working pressure; connection: inlet nipple R 1 1/4" permet d'ajuster la pression de travail; raccordement: R 1 1/4"	0947 000 449	0947 000 449
	zum Einstellen des gewünschten Arbeitsdruckes, Anschluß: Saugnippel R 1" to adjust the required working pressure; connection: inlet nipple R 1" permet d'ajuster la pression de travail; raccordement: R 1"	0947 000 461	0947 000 461
Abluftfilter, Aktivkohle Exhaust filter, active carbon Filtre d'échappement à charbon actif	zum Absorbieren von Geruchstoffen in der Abluft to absorb the smell in the exhaust air pour absorber l'odeur à l'échappement	0945 000 252	0945 000 252
Ersatz-Aktivkohlepatrone Active carbon cartridge Cartouche pour filtre à charbon actif		0530 000 150	0530 000 150
Motorschutzschalter Motor safety switch Disjoncteur-Protection moteur	Einstellbereich: Adjustment range: 2,4-4,0 A, 3-Ph. Plage de réglage:	0985 104 495	-
	Einstellbereich: Adjustment range: 4,0-6,0 A, 3-Ph. Plage de réglage:	0985 104 496	0985 104 496
	Einstellbereich: Adjustment range: 6,0-10,0 A, 3-Ph. Plage de réglage:	0985 104 497	0985 104 497
	Einstellbereich: Adjustment range: 10,0-16,0 A, 3-Ph. Plage de réglage:	-	0985 104 498
	Einstellbereich: Adjustment range: 10,0-16,0 A, 1-Ph. Plage de réglage:	0985 104 499	-

Falls Sie Fragen zu unserem Zubehörprogramm haben wenden Sie sich an uns, wir beraten Sie gerne.
 In case of questions about our accessory program feel free to contact us, we look forward being of assistance to you.
 Nous sommes à votre disposition pour vous documenter sur notre programme d'accessoires.

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Sicherheitshinweise

In dieser Betriebsanleitung werden jeweils vor den betreffenden Handlungsschritten Sicherheitshinweise genannt. Diese Hinweise sind unbedingt zu beachten.

Safety advice

In this operating instruction safety measures are advised before each step. It is imperative that these safety precautions are observed.

Conseils de sécurité

Dans cette notice de mise en service sont relevés différentes manipulations de sécurité. Ces indications doivent être respectées à la lettre.

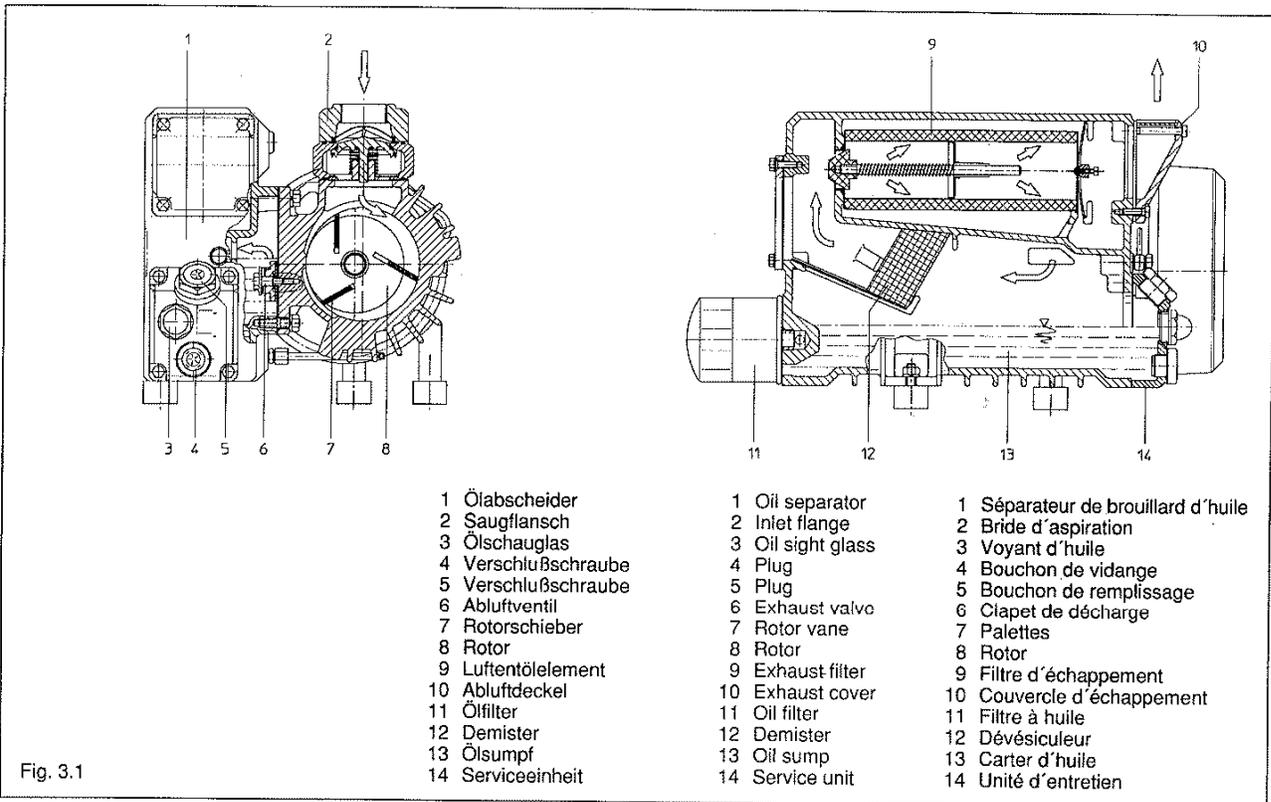


Fig. 3.1

Funktionsprinzip und Arbeitsweise

Die Pumpen arbeiten nach dem Drehschieberprinzip. Ein exzentrisch gelagerter Rotor (8) dreht sich im Zylinder. Durch die Zentrifugalkraft der Drehbewegung werden die Schieber (7), die in Schlitzen im Rotor gleiten, an die Zylinderwand gedrückt. Die Schieber teilen den sichelförmigen Raum zwischen Zylinder und Rotor in Kammern ein. Bei Verbindung der Kammern mit dem Saugkanal wird das Gas angesaugt, bei weiterer Drehung verdichtet und anschließend in den Ölabscheider (1) ausgestoßen. Durch den Differenzdruck wird ständig Öl in die Verdichtungsräume eingespritzt. Dieses Öl wird zusammen mit dem Medium in den Ölabscheider ausgestoßen und dort durch die Schwerkraft, einem Demisterpaket (12) und durch das Luftentölelement (9) von der Abluft getrennt. Das Öl sammelt sich unten im Abscheider und wird wieder in den Verdichtungsraum eingespritzt (Umlaufschmierung). Die ölbefreite Abluft wird über den Abluftdeckel (10) an die Atmosphäre abgegeben.

Principle of operation

These pumps work according to the rotary vane principle. An eccentrically installed rotor (8) rotates in the cylinder. The centrifugal force of the rotation pushes the vanes (7), which glide in slots in the rotor, towards the wall of the cylinder. The vanes separate the sickle-shaped space between rotor and cylinder into chambers. When the chambers are connected with the inlet channel, gas is sucked in, compressed by the next rotation and pushed into the oil separator (1). The differential pressure constantly causes oil to be passed into the compression chambers. The oil and the medium are then discharged into the oil separator and there separated from the exhaust air by gravity, a demister (12) and the exhaust filter (9). The oil collects on the bottom of the oil separator and is then pushed into the compression chamber again (oil circulation). The oil-free medium is discharged through the exhaust cover plate (10) into atmosphere.

Principe de fonctionnement

Ces pompes fonctionnent selon le principe des pompes à palettes rotatives. Un rotor excentré (8) tourne dans un cylindre. La force centrifuge pousse les palettes (7), qui coulisent librement dans leur logement, contre la paroi du cylindre. Les palettes divisent l'espace libre en forme de croissant en plusieurs chambres. Lorsqu'une chambre est en face de la bride d'aspiration, le gaz est aspiré, puis comprimé par la rotation suivante et ensuite rejeté dans le séparateur de brouillard d'huile (1). Le mélange gaz et huile est rejeté dans le séparateur de brouillard d'huile où il est séparé par gravité puis par un dévésiculeur (12) et par un filtre d'échappement (9) de l'air sortant. L'huile s'accumule dans le bas du réservoir d'huile. Ensuite elle est injectée dans la chambre de compression (principe de recirculation). Le gaz aspiré exempt d'huile est rejeté à l'atmosphère au travers du couvercle d'échappement (10).

Ausführungen

Die beiden Ausführungen RA und RC unterscheiden sich durch die erreichbaren Enddrücke:

- RA entspricht 0,5 mbar Enddruck
- RC entspricht 20 mbar Enddruck

Versions

The difference between the versions RA and RC is the ultimate pressure that can be reached:

- RA reaches an ultimate pressure of 0,5 mbar
- RC reaches an ultimate pressure of 20 mbar

Versions

Les versions RA et RC diffèrent par le vide limite atteint:

- RA vide limite: 0,5 mbar pression finale
- RC vide limite: 20 mbar pression finale

das alte Öl ablassen. Bei nachlassendem Ölfluß die Schraube verschließen und die Pumpe nochmals einige Sekunden kurz laufen lassen. Verschlussschraube erneut öffnen und das Restöl ablassen. Verschlussschraube wieder fest einschrauben, Ölfilter entfernen und durch einen neuen Filter ersetzen. Durch die Öleinfüllschraube (5) neues Öl einfüllen.
 Ölmenge siehe Typenschild.
 Altöl und Ölfilter müssen nach den geltenden Bestimmungen entsorgt werden.

4. Ölsorten

Es müssen Öle nach DIN 51506, Schmierölgruppe VC, verwendet werden.
 Wir empfehlen Ihnen original Busch Öle der Reihe VM, die dieser DIN entsprechen. Für weitere Informationen können Sie unseren Prospekt "Spezialöle für Vakuumpumpen" anfordern.

5. Kontrolle und Wechsel des Luftentölelements
 Das Luftentölelement läßt sich am zweckmäßigsten mit einem Filterwiderstandsmanometer (siehe Zubehör auf der Rückseite) kontrollieren. Dieser wird in die Bohrung der Öleinfüllschraube (5) eingeschraubt. Beim Anzeigen eines Filterwiderstandes von > 0,6 bar (Ü) muß das Luftentölelement (9) ausgewechselt werden.

Erhöhte Stromaufnahme durch den Antriebsmotor kann ebenfalls auf verschmutzte Luftentölelemente zurückzuführen sein.

Wenn beim Betrieb der Vakuumpumpe Ölnebel aus dem Abscheider austritt, ist ein Wechsel des Luftentölelements notwendig. Mit dem Einbau des neuen Luftentölements muß zur Abdichtung des Abluftdeckels auch eine neue Dichtung verwendet werden.

Bei der RA- Version kann bei Dauerbetrieb Öl austreten (siehe "Ausführungen", Seite 3 und 4).

6. Reinigung des Gasballastventiles

Bei sichtbarer Verschmutzung des Gasballastventiles ist der Sinterkörper auszuschrauben und zu reinigen. Danach mit Druckluft ausblasen.

7. Reinigung des Saugflansches

Zum Reinigen des Siebes im Saugflansch (2) sind die vier Befestigungsschrauben zu lösen und der Saugflansch zu entfernen. Das entnommene Sieb mit Druckluft ausblasen.

8. Reinigung der Lüfterhauben

Die beiden Lüfterhauben sind regelmäßig auf Verschmutzungen zu überprüfen. Eine Verschmutzung der Hauben verhindert die Kühlluftzufuhr und kann zum Überhitzen der Vakuumpumpe führen.

When oil stops running, close the plug and start up the pump again for a few seconds. Reopen the oil drain plug and discharge the remaining oil. Refasten the oil drain plug, remove the oil filter and replace it. Fill with fresh oil through the oil fill plug (5).

For oil quantity see nameplate.
 Used oil and used oil filters are to be disposed of according to environmental laws.

4. Types of oil

Oils according to DIN 51506, lubricating oil group VC must be used.
 We recommend original Busch oils of VM series, which comply with this DIN. If you need further information, request our leaflet "Special Oils for Vacuum Pumps".

5. Monitoring and change of exhaust filter
 The exhaust filter is best monitored using a filter pressure gauge (see "Accessories" on reverse side). This filter pressure gauge can be screwed into the thread of the oil fill plug. When the measured pressure reaches > 0,6 bar (Overpressure), the exhaust filter (9) has to be changed.

Increased energy intake by the motor could also be the result of soiled exhaust filters.

If oil mist escapes from the exhaust during the operation of the vacuum pump the exhaust filter must be changed. When installing a new exhaust filter, a new seal for the exhaust cover plate must also be installed.

The RA version may discharge oil in case of continuous operation (see "Versions", page 3 and 4).

6. Cleaning of the gas ballast valve

In case of visible dirt in the gas ballast valve, the sinter must be unscrewed and cleaned. Clean with blast air.

7. Cleaning of inlet flange

To clean the inlet flange screen (2), disconnect the four screws and remove the inlet flange. Take out the screen and clean with blast air.

8. Cleaning of fan covers

Both fan covers should be inspected regularly for dirt. Soiling of the fan covers prevents cool air intake and may lead to overheating of the vacuum pump.

l'huile ne s'écoule plus, refermez le bouchon de vidange et faites fonctionner la pompe quelques secondes. Ouvrez à nouveau le bouchon de vidange et laissez s'écouler le reste d'huile. Refermez le bouchon de vidange, remplacez le filtre à huile par un filtre neuf. Remplissez avec de l'huile neuve par l'orifice de remplissage (5).

Quantité d'huile voir plaque signalétique.
 L'huile usagée et les filtres à huile usagés doivent être éliminés en respectant la réglementation en vigueur, relative à l'environnement.

4. Types d'huile

Il faut utiliser les huiles lubrifiantes du groupe VC de la norme DIN 51506.
 Nous recommandons l'utilisation des huiles Busch de la série VM. Pour plus d'information, demandez notre brochure "Huiles spéciales pour pompes à vide".

5. Contrôle/changement du filtre d'échappement
 L'état du filtre est mieux contrôlé en utilisant le manomètre de colmatage (voir "Accessoires" au dos). Ce manomètre peut être vissé sur l'orifice de remplissage d'huile. En cas d'une surpression > 0,6 bar, le filtre (9) doit être changé.

Une surcharge du moteur peut également résulter d'un encrassement du filtre.

Si des vapeurs d'huile s'échappent du séparateur pendant le fonctionnement de la pompe, il faut changer le filtre de sortie d'air. Lors de l'installation du nouveau filtre, il faut également remplacer le joint du couvercle d'échappement.

La version RA peut rejeter de l'huile en cas d'un fonctionnement continu (voir page 3 et 4).

6. Nettoyage du lest d'air

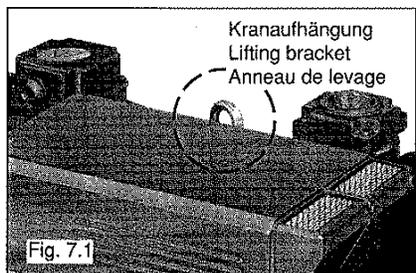
Si des saletés sont visibles sur le lest d'air, il faut démonter le filtre et le souffler à l'air comprimé.

7. Nettoyage de la bride d'aspiration

Pour nettoyer le tamis d'aspiration (2), dévissez les quatre vis et ôtez la bride d'aspiration. Entendez le filtre et nettoyez le à l'air comprimé.

8. Nettoyage des capots de ventilateur

Il faut contrôler régulièrement l'encrassement des capots de ventilateur. Une pollution empêche une bonne ventilation et peut provoquer un échauffement anormal de la pompe à vide.



Empfohlene Ölsorte Recommended type of oil Type d'huile recommandée	Umgebungstemperatur Ambience temperature Température ambiante	Teilenummer 1l- Dose Part number 1l- tin Numéro de pièce bidon 1l
VM 032	< 0°C	0831 000 086
VM 068	0 - 12°C	0831 000 072
VM 100	12 - 30°C	0831 000 060
VS 100	> 30°C	0831 000 108
VE 101	> 30°C	0831 000 099

Informationen

Weitere Informationen senden wir Ihnen auf Anfrage gerne zu.
 Verfügbar sind:

- Typenblatt R 5 0063/ 0100 E
- Typenblatt "Spezialöle"
- R 5 Störungshinweise
- R 5 Konservierungsanleitung

Information

We would be pleased to supply further information if required.
 Available are:

- Type sheet R 5 0063/ 0100 E
- Leaflet "Special Oils for Vacuum Pumps"
- R 5 Trouble shooting
- R 5 Storage Instructions

Informations

Sur demande nous vous ferons parvenir avec plaisir les documents suivants:
 Sont disponibles:

- Pompes à vide R 5 0063/ 0100 E
- Huiles spéciales pour pompes à vide
- Pannes et remèdes des pompes à vide R 5
- Instructions de stockage des pompes R 5

Ersatzteile/ Zubehör

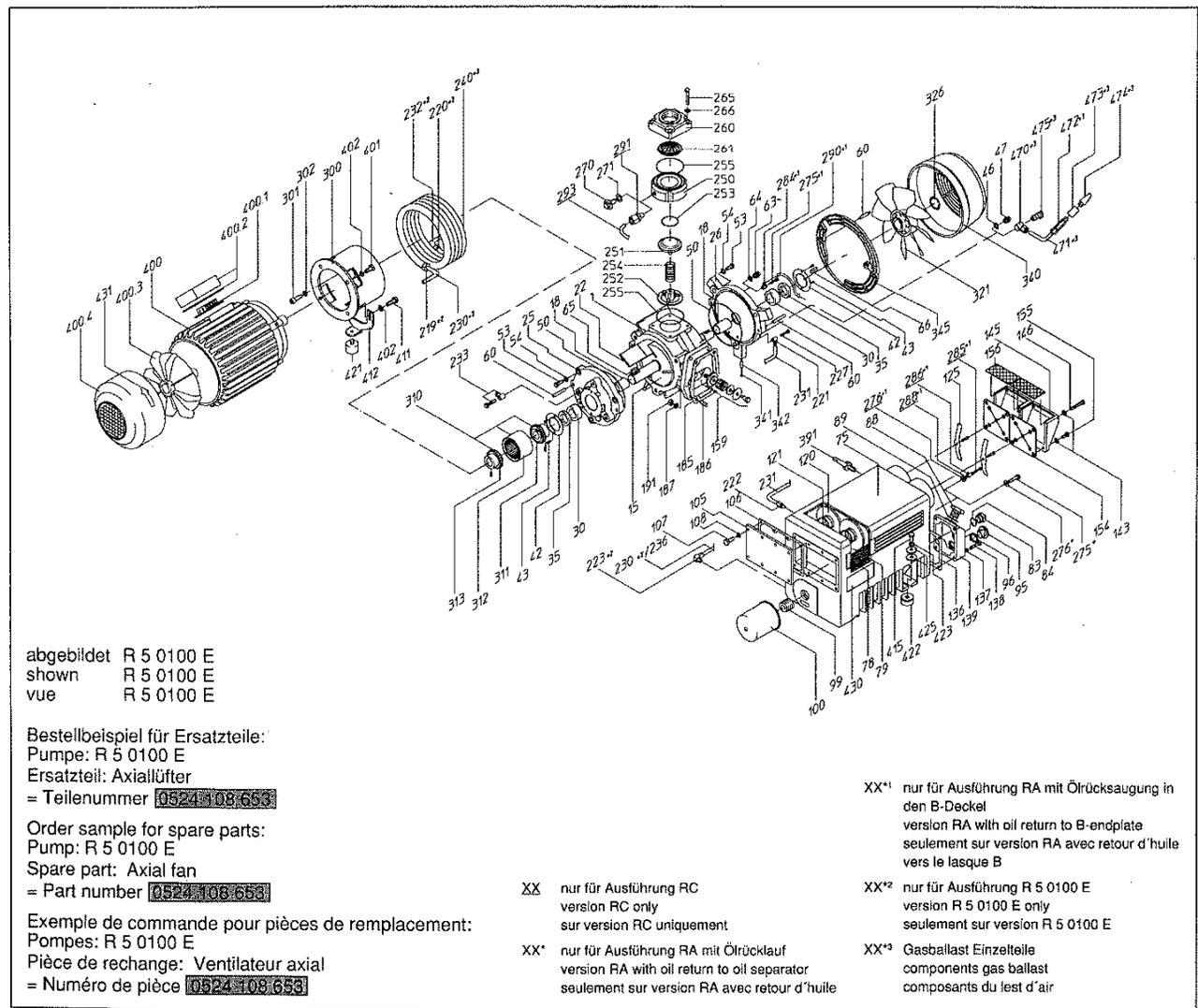
Um einen sicheren Betrieb der Vakuumpumpe zu gewährleisten, dürfen nur Original-Ersatzteile und -zubehör verwendet werden. Bei Bestellung von Ersatzteilen und Zubehör stets Pumpenzeichnung und die Maschinenummer angeben.
 Die Teilenummern können Sie aus den Ersatzteil- und Zubehörtabellen entnehmen.

Spare parts and accessories

To guarantee safe operation of the vacuum pump, only original spare parts and accessories should be used. When ordering spare parts and accessories, always state pump specification and serial number.
 Please find the part number in the spare parts list.

Pièces détachées

Pour garantir le meilleur fonctionnement des pompes à vide R 5, seules des pièces et des accessoires d'origine doivent être utilisés. En cas de commande de pièces détachées et d'accessoires il faut toujours indiquer le type et le numéro de série de la pompe.
 La référence de chaque pièce se trouve sur la liste des pièces détachées.



abgebildet R 5 0100 E
 shown R 5 0100 E
 vue R 5 0100 E

Bestellbeispiel für Ersatzteile:
 Pumpe: R 5 0100 E
 Ersatzteil: Axiallüfter
 = Teilenummer **0524108653**

Order sample for spare parts:
 Pump: R 5 0100 E
 Spare part: Axial fan
 = Part number **0524108653**

Exemple de commande pour pièces de remplacement:
 Pompes: R 5 0100 E
 Pièce de rechange: Ventilateur axial
 = Numéro de pièce **0524108653**

XX nur für Ausführung RC
 version RC only
 sur version RC uniquement

XX* nur für Ausführung RA mit Ölrücklauf
 version RA with oil return to oil separator
 seulement sur version RA avec retour d'huile

XX* nur für Ausführung RA mit Ölrücksaugung in den B-Deckel
 version RA with oil return to B-endplate
 seulement sur version RA avec retour d'huile vers le lasque B

XX** nur für Ausführung R 5 0100 E
 version R 5 0100 E only
 seulement sur version R 5 0100 E

XX* Gasballast Einzelteile
 components gas ballast
 composants du fest d'air

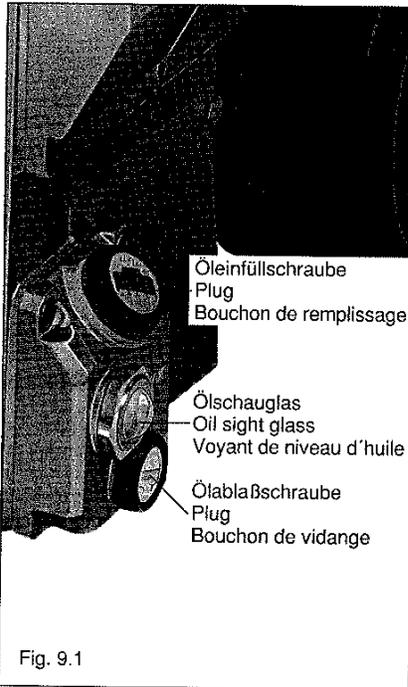
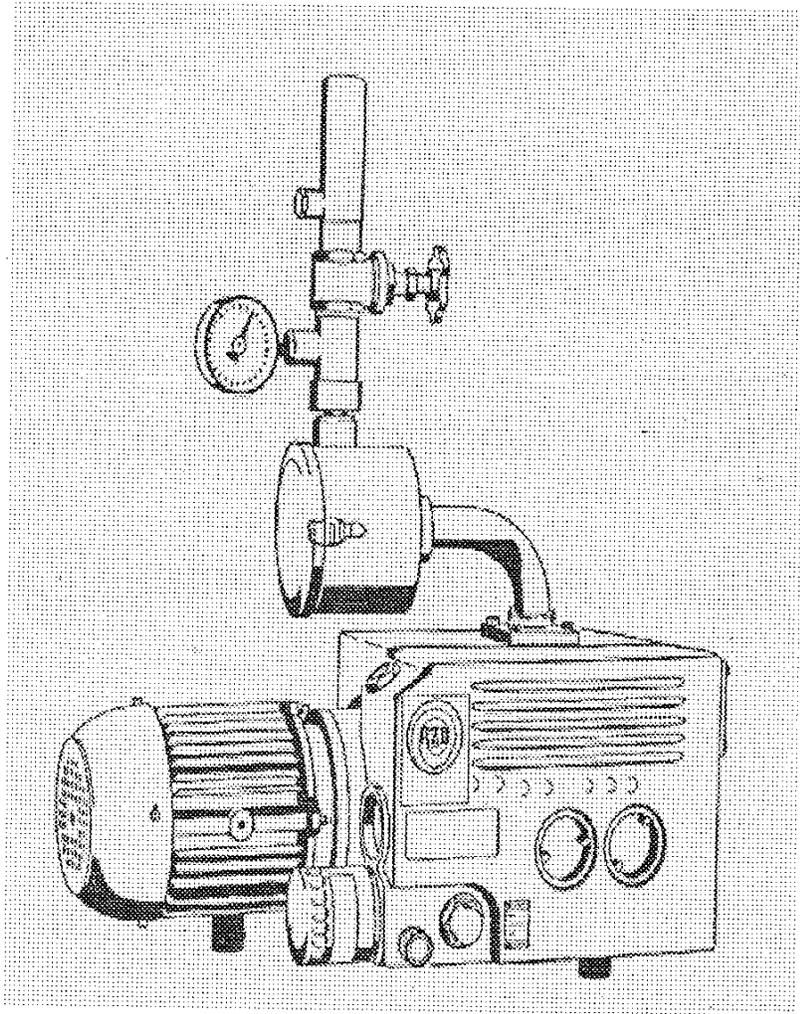


Fig. 9.1

Technische Daten Technical Data Spécification Techniques			R 5 0063 E	R 5 00100 E
Nennsaugvermögen Nominal displacement Débit nominal	50 Hz	m ³ /h	63	100
Enddruck Ultimate pressure Pression finale	60 Hz	m ³ /h	76	120
	RA		0,5	0,5
Motormennleistung Nominal motor rating Puissance nominale du moteur	RC	mbar	20	20
	50 Hz	kW	1,5	2,2
Motorrendrehzahl Nominal motor speed Vitesse de nominale rotation	60 Hz	kW	2,2	3,0
	50 Hz	min ⁻¹	1500	1500
Schalldruckpegel (DIN 45635) Sound level (DIN 45635)	60 Hz	min ⁻¹	1800	1800
Niveau sonore (DIN 45635)	50 Hz	dB (A)	65	67
Wasserdampfverträglichkeit max. Water vapour tolerance max. Pression max. de vapeur d'eau admissible	60 Hz	dB (A)	69	71
		mbar	40	40
Wasserdampfkapazität Water vapour capacity Quantité de vapeur d'eau admissible	50 Hz		1,8	2,8
	60 Hz	l/h		
Betriebstemperatur Operating temperature Température de fonctionnement	50 Hz	°C	76	84
	60 Hz	°C	87	93
Ölfüllung Oil filling Quantité d'huile		l	2	2
Gewicht ca. Weight approx. Poids approx.	50Hz	kg	52	70
	60 Hz			

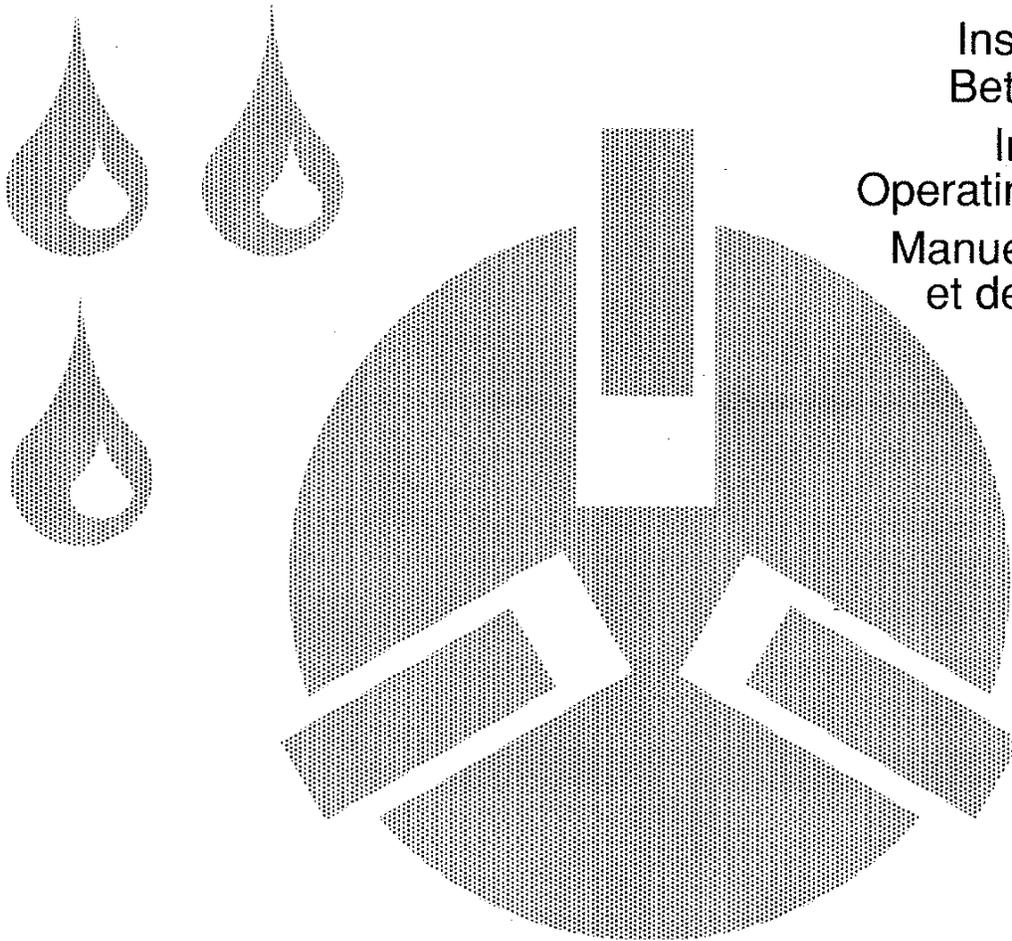
Teilenummern Ersatzteile Part numbers spare parts Numéro de pièce					
Pos.	Teil	Part	Pièce	R 5 0063 E	R 5 0100 E
1	Zylinder	Cylinder	Cylindre	0223 000 088	0223 000 089
15	Rotor	Rotor	Rotor	0210 108 662	0210 108 663
18	Innenring	Sleeve	Portée axe rotor	0472 105 822	0472 105 822
22	Schieber	Vane	Palette	0722 000 330	0722 000 360
25	Zylinderdeckel A-Seite	A-endplate	A-couvercle de cylindre	0233 107 520	0233 107 520
26	Zylinderdeckel B-Seite	B-endplate	B-couvercle de cylindre	0233 000 155	0233 000 155
30	Nadellager	Needle bearing	Roulement à aiguilles, cage PA	0473 103 123	0473 103 123
35	Wellendichtring	Shaft seal	Joint d'arbre	0487 000 008	0487 000 008
42	Stützscheibe	Supporting ring	Rondelle pour bague de frein	0391 000 601	0391 000 601
43	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 023	0410 000 023
46	Dichtring	Sealing ring	Joint	0484 000 029	0484 000 029
47	Verschlusschraube	Plug	Bouchon	0415 000 002	0415 000 002
50	O-Ring	O-ring	Joint torique	0486 000 539	0486 000 539
53	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 130	0410 000 130
54	Federring	Lock washer	Rondelle ressort	0432 000 013	0432 000 013
60	Kegelstift	Taper pin	Goupille conique	0437 104 545	0437 000 074
63	Verschlusschraube	Plug	Bouchon	0415 000 002	0415 000 002
64	Dichtring	Sealing ring	Joint	0484 000 029	0484 000 029
65	Paßfeder	Shaft key	Clavette	0434 000 044	0434 000 044
66	Paßfeder	Shaft key	Clavette	0434 000 044	0434 000 044
75	Ölabscheider	Oil separator	Séparateur de brouillard d'huile	0266 000 156	0266 000 156
78	Streckmetall	Expanded metal	Métal déployé	0534 101 306	0534 101 306
79	Demister	Demister	Déviscuteur	0534 101 308	0534 101 308
83	Ölschauglas, gewölbt	Oil sight glass, convex	Voyant d'huile, convexe	0583 108 695	0583 108 695
84	Ölschauglasdichtung	Oil sight glass seal	Joint du voyant d'huile	0480 109 793	0480 109 793
88	Verschlusschraube	Plug	Bouchon	0710 000 009	0710 000 009
89	Dichtring	Sealing ring	Joint	0482 000 020	0482 000 020
95	Verschlusschraube	Plug	Bouchon	0710 000 010	0710 000 010
96	O-Ring	O-ring	Joint torique	0486 000 505	0486 000 505
99	Nippel	Threaded fitting	Mamelon	0461 000 061	0461 000 061
100	Ölfilter	Oil filter	Filter à huile	0531 000 002	0531 000 002
105	Deckel	Cover	Couvercle	0360 108 294	0360 108 294
106	Dichtung	Seal	Joint	0480 108 718	0480 108 718
107	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 020	0410 000 020
108	Federring	Lock washer	Rondelle ressort	0432 000 009	0432 000 009
120	Luftentölelement	Exhaust filter	Filter d'échappement	0532 000 509	0532 000 509
121	O-Ring	O-ring	Joint torique	0486 000 512	0486 000 512
125	Filterfeder	Filter spring	Ressort de filtre	0947 000 720	0947 000 720
136	Dichtung	Seal	Joint	0480 000 153	0480 000 153
137	Federring	Lock washer	Rondelle ressort	0432 000 009	0432 000 009
138	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 030	0410 000 030
139	Servicedeckel	Service cover	Couvercle de service	0247 000 301	0247 000 301
143	Federring	Lock washer	Rondelle ressort	0432 000 009	0432 000 009
145	Abluftdeckel	Exhaust cover plate	Couvercle d'échappement	0246 000 008	0246 000 008
146	Sechskantschraube	Hexagon head screw	Vis à tête hexagonale	0410 000 055	0410 000 055
154	Schalldämpfermembran	Silencer membrane	Membrane silencieuse	0734 000 003	0734 000 003

4.0 Vacuum Pump





Installations- und
Betriebsanleitung
Installation and
Operating Instructions
Manuel d'installation
et de maintenance



Drehschieber-Vakuumpumpen R 5 0063/ 0100 E
Rotary Vane Vacuum Pumps R 5 0063/ 0100 E
Pompes à Vide Rotatives à Palettes R 5 0063/ 0100 E

Installations- und Betriebsanleitung R 5 0063/ 0100 E
Installation and Operating Instructions R 5 0063/ 0100 E
Manuel d'installation et de maintenance R 5 0063/ 0100 E

1

Diese Betriebsanleitung hat Gültigkeit für folgenden Pumpen:

- RA 0063 E
- RC 0063 E
- RA 0100 E
- RC 0100 E

These Installation and Operating Instructions are valid for the following pumps:

- RA 0063 E
- RC 0063 E
- RA 0100 E
- RC 0100 E

Ces instructions d'installation sont valables pour les pompes suivantes:

- RA 0063 E
- RC 0063 E
- RA 0100 E
- RC 0100 E

Diese Betriebsanleitung ist vor der Installation und Inbetriebnahme der Vakuumpumpe unbedingt zu lesen und zu befolgen.

It is mandatory that these operating instructions be read and understood prior to the vacuum pump installation and start-up.

Il est impératif que ce manuel d'instruction soit lu et compris avant de mettre en marche la pompe à vide.

Hersteller:

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 Fax: 07622/ 5484

Manufacturer:

Dr.- Ing. K. Busch GmbH
 Schauinslandstraße 1
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 Germany
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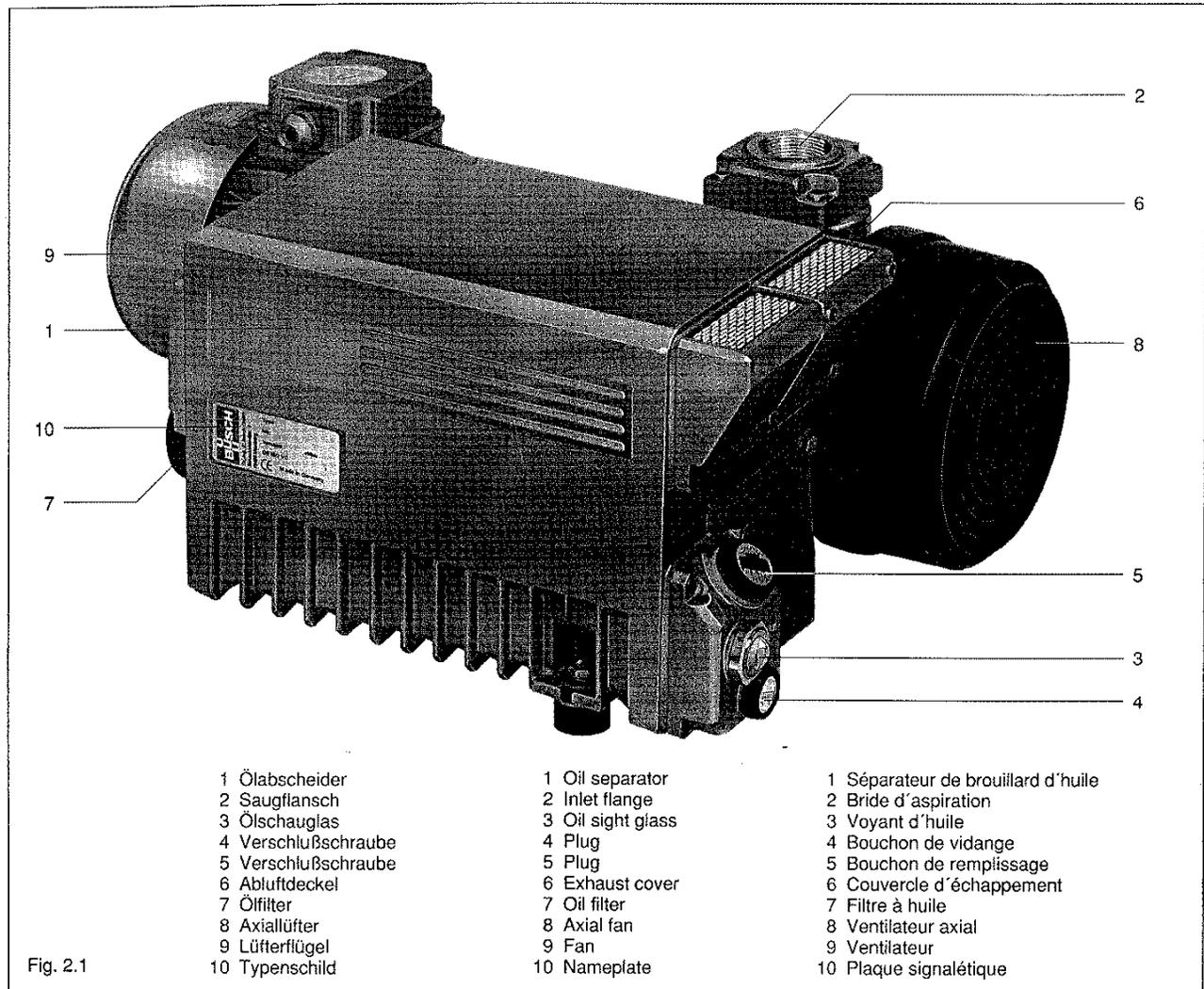
Constructeur:

Dr.- Ing. K. Busch GmbH
 Schauinslandstraße 1
 D 79689 Maulburg
 Allemagne
 Téléphone: 07622/ 681 - 0
 Fax: 07622/ 5484

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Sicherheit

Diese Vakuumpumpe ist nach dem neuesten Stand der Technik und den anerkannten sicherheitstechnischen Regeln gebaut. Dennoch können bei unsachgemäßer Installation oder nicht bestimmungsmäßigem Betrieb Gefahren und Schäden entstehen.

Anwendung

Diese Vakuumpumpe ist für den Einsatz im Grobvakuumbereich konzipiert. Sie kann für das Absaugen von Luft und trockenen Gasen verwendet werden, die weder aggressiv, giftig noch explosiv sind.

Andere Medien dürfen nicht gefördert werden. Wenden Sie sich im Zweifelsfall an ihre Busch Vertretung.

**Flüssigkeiten und Feststoffe dürfen nicht in die Pumpe gelangen.
 Im Zweifelsfall unbedingt Rücksprache mit dem Herstellerwerk halten.**

Safety

This vacuum pump has been manufactured according to the latest technical standards and safety regulations. If not installed properly or not used as directed, dangerous situations or damage might occur.

Application

This vacuum pump is designed for use in the fields of coarse vacuum and can be used to suck off air or dry gases, which are not aggressive, poisonous or explosive.

Other agents must not be transported. In case of doubt, please contact your local Busch Agency.

**Liquid and solid particles must not enter the pump.
 In case of doubt consult the manufacturer.**

Sécurité

Cette pompe à vide est fabriquée selon les plus récents standards techniques et règlements de sécurité connus. Une mauvaise installation ou une utilisation non conforme aux recommandations peut être dangereuse ou entraîner des dommages.

Application

Cette pompe à vide est conçue pour une utilisation dans le domaine du vide grossier. Elle peut être utilisée pour aspirer de l'air ou des gaz secs qui ne sont, ni agressifs, ni dangereux, ni explosifs.

D'autres éléments ne doivent pas être aspirés par ces pompes. En cas de doute, consultez votre Agence Busch locale.

**Des liquides et des particules solides ne doivent pas entrer dans la pompe.
 En cas de doute, veuillez consulter le constructeur.**

5.0 Trolley / Lifting Column

The vacuum transfer receiver is mounted onto a lifting column. The lifting column is electrically powered and has a lifting range of approximately 1 meter. The upper and lower limit of the column movement is protected by limit switches.

The lifting column, vacuum pump, control and ancillary items are mounted onto a trolley. The trolley can be wheeled into position so that the vacuum receiver discharge is positioned above the receiving hopper. The wheels on the trolley can then be locked.

Yearly Column Maintenance

- ♦ Turn on mains power and lower column to automatic stop
- ♦ Isolate transfer system from all power
- ♦ Remove limit switch cover on the lower end of the outer column tube
- ♦ Lift limit switches (rollers) so no roller will be able to touch the plastic lining
- ♦ Unscrew three screws in column below the motor plate
- ♦ Remove motor by lifting up motor mounting plate
- ♦ Unscrew and remove three M12 screws on the outer column tube and let the tube slide down
- ♦ Undo grub screw on motor couple sleeve. Remove sleeve and bearing block
- ♦ Secure ACME screw (crane, hoist etc) from falling into inner tube
- ♦ Use 19 mm socket and 19 mm open-end spanner to loosen nut in inner tube
- ♦ Use pliers to hold nut (to prevent nut from falling into tube) while removing screw
- ♦ Lift ACME screw with screw nut and screw nut mounting block out of inner tube
- ♦ Clean all parts with kerosene
- ♦ Inspect all parts for wear and proper functioning
- ♦ Grease ACME screw and assemble all parts in reversed order

6.0 Control System

Standard Control Panel Operation

The control system is designed for operating one vacuum transfer receiver with a single 1.5 kW vacuum pump. The control panel/control box contains the main switch, start/stop buttons and indication lamps as well as the switch for the lifting column. The box houses all the required contactors, the PLC and the selector switches for selection between timer or proximity switch mode.

In timer mode conveying continues until the set time has expired before discharging. In proximity switch mode, conveying stops when the proximity switch is triggered. Switching is via the selector switches located in the control box however, it is expected that once the preferred mode is determined and selected, you will need to change the mode again.

After turning on the main switch on the main panel, the system is active.

- 1 Angle valve for the selected receiver will open to the vacuum line
- 2 The pump will start
- 3 Conveying will continue until the proximity switch is triggered or the timer times out
- 4 The pump will stop
- 5 The discharge butterfly valve will open for the set time
- 6 Filter cleaning will occur
- 7 After the butterfly valve closes, the system will be ready for the next cycle
- 8 The system will operate until the stop button on the main panel is pushed, at which time, step 4 - 7 will occur.

Whilst transferring, a indicator light will display on the panel indicating transfer is being made to the selected receiver.

- ♦ The safety timer is to ensure that unit does not continue to operate if there is no product and it is unattended. If conveying stops because of the safety timer, conveying will start again on a new cycle however, if there are three consecutive stops because of the safety timer, a fault will appear and the unit must be reset before starting again.
- ♦ In timer modes the system switches off automatically after it reaches the set cycle count. To continue transferring press reset and then start again.

Column Operation

The lifting column is raised/lowered using the two way switch on the side of the control panel. The switch must be held in position to raise or lower the column.

External Operation

The transfer system can be started and stopped with an external switch e.g. lever sensor.

- ♦ External switch has to be connected to the socket on the bottom of the control panel
- ♦ Turn on main power/switch

The system will show start and stop according to the opening and closing of the external switch. The emergency button on the first panel will stop and reset the system with external operation or control panel operation. The start button on the panel will override the external switch.

Operator Interface Menu

The operator interface menu allows the operator easy access to the control settings of the vacuum transfer system to give optimal operating conditions.

On switching on the system:

VACUUM TRANSFER SYSTEM

is displayed

To change parameters press the ↓ key to give the suction/conveying time screen.

SUCTION TIME -- SEC
SET -- SEC

↓ key again to give the empty/discharge time screen.

DISCHARGE -- SEC
SET -- SEC

↓ key to give the filter clean screen.

FILTER CLEAN PLS -- SEC
-- SEC

↓ to give the cycle count screen.

CYCLE COUNT -- SEC
SET -- SEC

mode selection screen.

↓ key to give sensor/conveying time

LEVEL SENSOR ON
TURN OFF PRESS F2

Setting Suction / Conveying Time

The vacuum transfer can operate in sensor or conveying time mode. If the sensor is set to off, the system will operate in conveying time mode. In this mode the suction and therefore the conveying will be applied for the time set as the suction time. The optimal suction time will depend on the product and should be set to a value so that the receiver is filled to a level just below the filters before conveying stops.

To set the suction time, bring up the suction time screen. The currently set suction time (in seconds) is shown. Press 'ENTER' and then enter the new time using the up and down arrow keys and press 'ENTER' to confirm the setting.

Settings between 5 and 60 seconds are valid.

Setting Empty / Discharge Time

The empty or discharge time is the time the valve on the receiver is opened during each vacuum transfer cycle. With granular or free flowing products the time can be reduced to speed up the cycle time. With powdery products, the valve would need to be opened longer to enable the product to completely discharge from the vacuum receiver.

To set the empty time, bring up the empty time screen. The currently set empty time (in seconds) is shown. Press 'ENTER' and then enter the new time using the up and down arrow keys and press 'ENTER' to confirm the setting. Settings between 3 and 35 seconds are valid.

Setting Filter Cleaning Blasts

At the completion of each transfer cycle, there is a filter cleaning blast of compressed air. This cleans the filters and can also help dislodge product in the vacuum receiver. With granular products only one filter clean blast is necessary. With powdery products, more filter blasts may be required. Up to five blasts per transfer cycle can be set.

To set the number of filter cleaning air blasts, bring up the filter cleaning screen. The currently set number of cleaning air blasts is shown. Press 'ENTER' and then enter the required number using the up and down arrow keys and press 'ENTER' to confirm the setting.

Setting Maximum Cycle Count

The vacuum transfer system can be set so that it will stop after a set number of cycles. To set the maximum number of cycles, bring up the cycle count screen. Press 'ENTER' and then enter the new cycle count using the up and down arrow keys and press 'ENTER' again to confirm the setting.

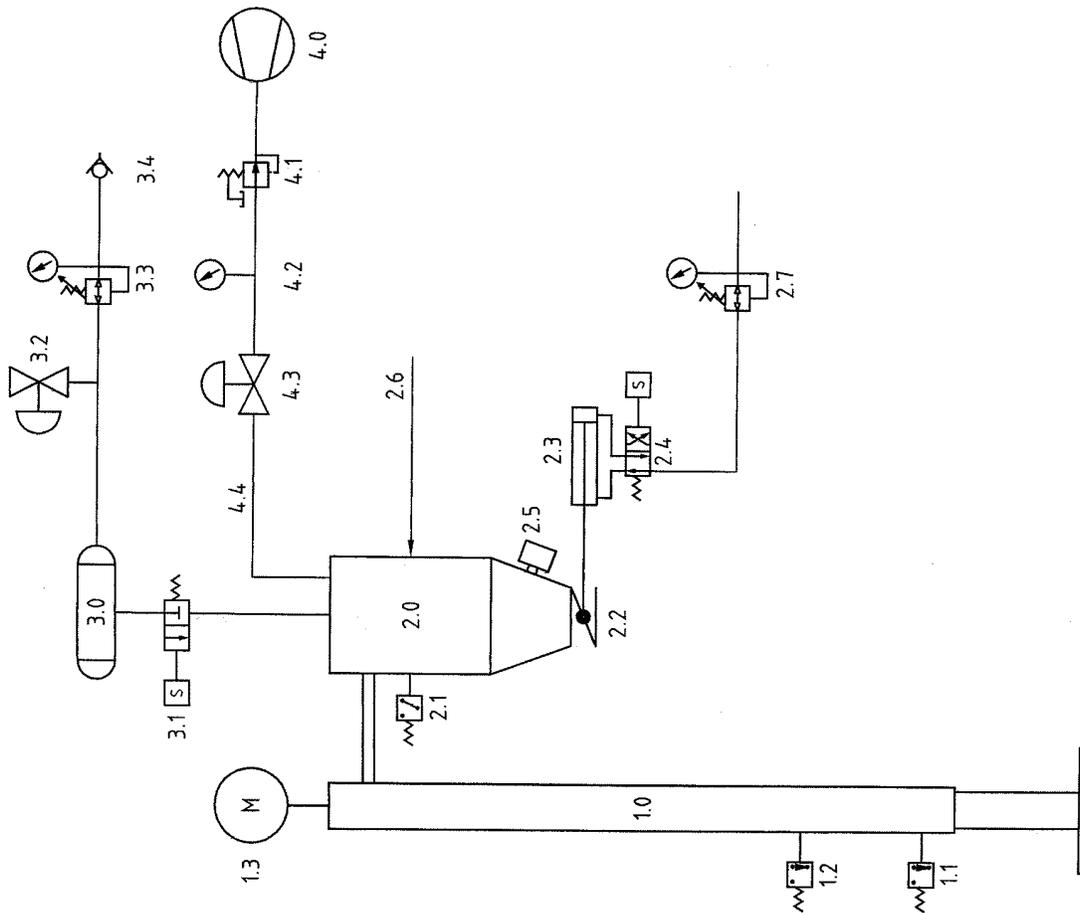
Settings between 1 and 1000 are valid. If you do not typically want the system to stop after a set number of cycles, then set the maximum cycle count to 1000.

Selecting Sensor / Conveying Time Mode

To change between the sensor and conveying time mode, bring up the sensor/conveying time selection mode screen. The currently set position of the timer is displayed. Sensor on indicates sensor mode and sensor off indicates timer mode. Turn to sensor on and sensor off by pressing 'F1' or 'F2' keys as indicated. On selecting, the main starting screen 'Vacuum Transfer System' is shown.

7.0 Wiring Diagrams

1.0	LIFTING COLUMN
1.1	COLUMN LOW LEVEL LIMIT SWITCH
1.2	COLUMN HIGH LEVEL LIMIT SWITCH
1.3	COLUMN LIFTER MOTOR 0.18kW
2.0	VACUUM TRANSFER RECEIVER
2.1	RECEIVER HIGH LEVEL PROBE
2.2	DISCHARGE BUTTERFLY VALVE
2.3	BUTTERFLY VALVE ACTUATOR
2.4	BUTTERFLY VALVE SOLENOID
2.5	DISCHARGE VIBRATOR
2.6	PRODUCT LINE
2.7	AIR REGULATOR / GAUGE
3.0	FILTER CLEANING AIR TANK
3.1	FILTER CLEANING SOLENOID VALVE
3.2	COMPRESSED AIR DISCHARGE VALVE
3.3	AIR REGULATOR / GAUGE
3.4	NON RETURN VALVE
4.0	VACUUM PUMP 15kW
4.1	VACUUM RELIEF VALVE
4.2	VACUUM GAUGE
4.3	VACUUM REGULATING GATE VALVE
4.4	VACUUM LINE

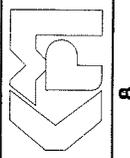


TITLE:
DURA-VAC MOBILE VTS - ROCHE
CONTROL P&I DIAGRAM

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DRAWN:	J. LEECH
CHECKED:	J. LEECH
DATE:	24.02.01
JOB No.:	MON016
SCALE:	NTS
DATE:	24.02.01
DWG No.:	MON016-005
3rd. ANGLE PROJECTION	A3
REV.	A

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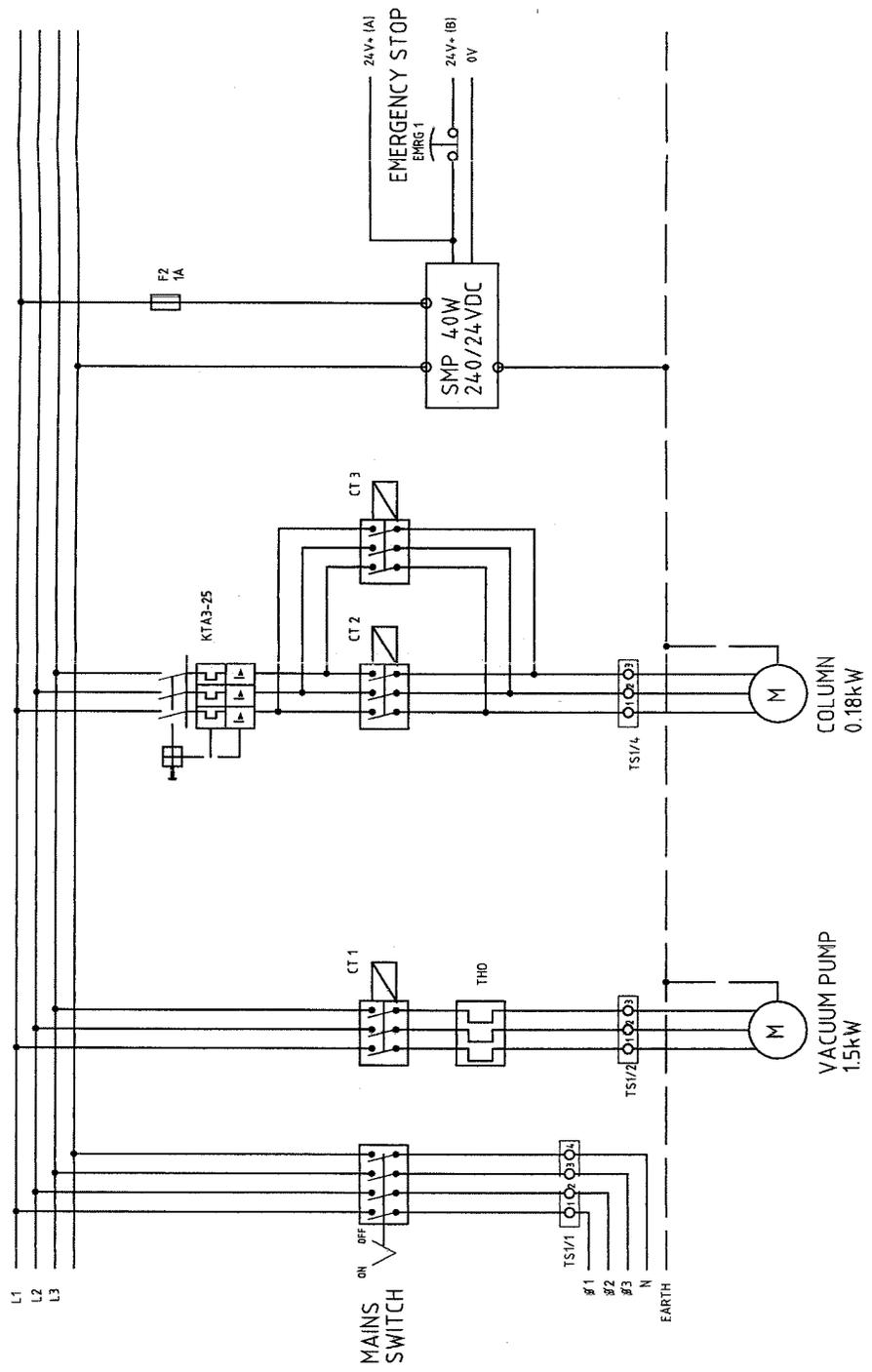
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A B C D

8 7 6 5 4 3 2 1

D C B A

D C B A



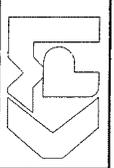
TITLE: ROCHE - DURA-VAC DV -310-38 VTS
CIRCUIT DIAGRAM

REFERENCE DRAWING: VTSEST.DWG

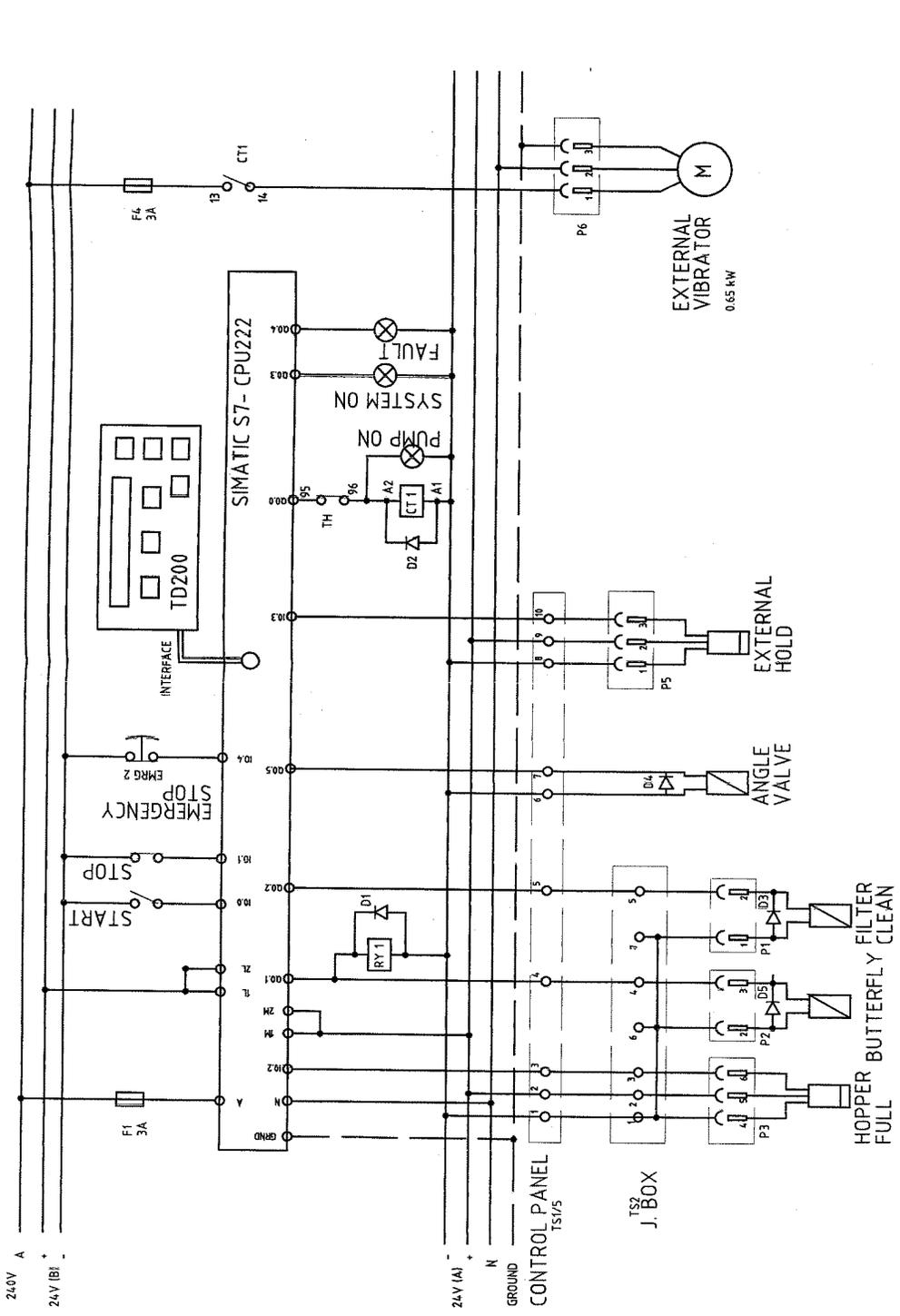
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CHECKED: Lee	DATE: 26.02.98	SCALE: NONE
3rd. ANGLE PROJECTION	DWG No. MON016-006	SHEET: 1 OF 4
		REV.: B

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8 7 6 5 4 3 2 1



TITLE: ROCHE - DURA-VAC DV-310-38 VTS
 CIRCUIT DIAGRAM

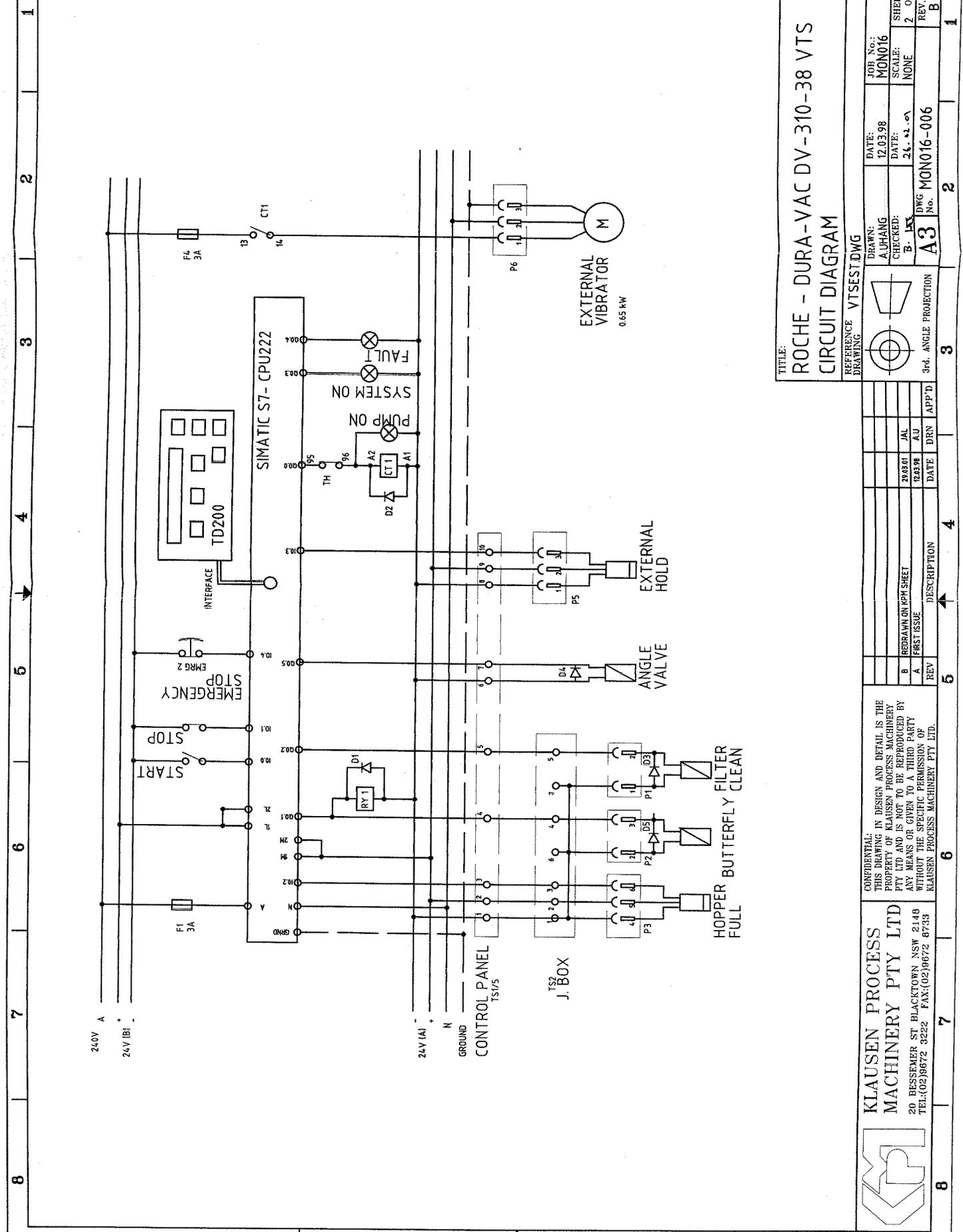
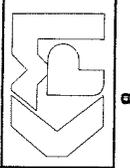
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DATE:	12/03/98	JOB No.:	MON016
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DWG No.:	MON016-006	REV.:	B

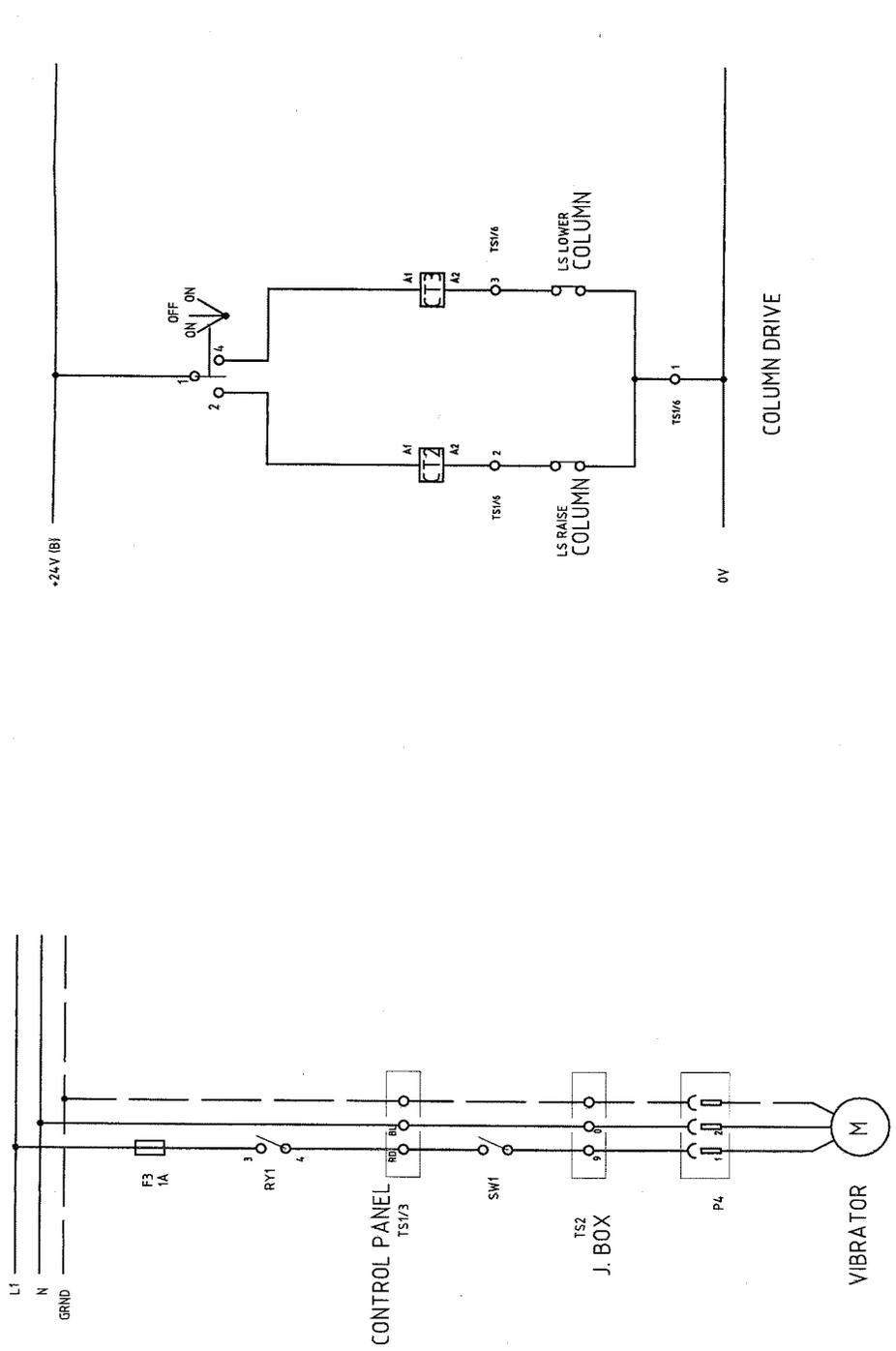
3rd. ANGLE PROJECTION

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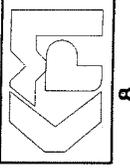
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CIRCUIT DIAGRAM

REFERENCE DRAWING: VISEST/DWG

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CHECKED: J. JEC	DATE: 26.02.01	SCALE: NONE
DRAWN: A3		REV: 3 OF 4
CHECKED: A3		REV: B
3rd ANGLE PROJECTION		

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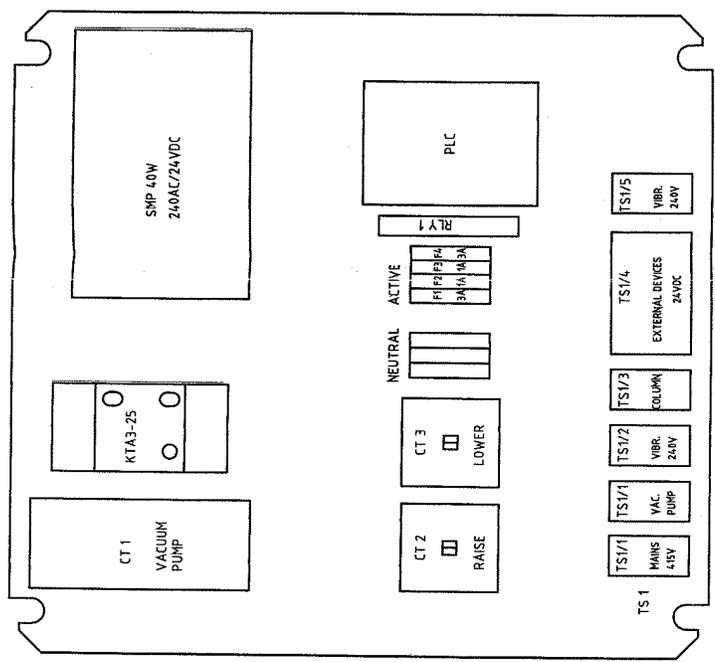
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1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

D C B A



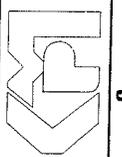
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ROCHE - DURA-VAC DV-310-38 VTS
PANEL LAYOUT

REFERENCE DRAWING: VTSEST.DWG

DATE:	12.03.98	JOB No.:	MON016
DRAWN:	A.UHANG	CHECKED:	3. LSC
DATE:	24.02.01	SCALE:	NONE
3rd. ANGLE PROJECTION		DWG No.	MON016-006
		APP'D	

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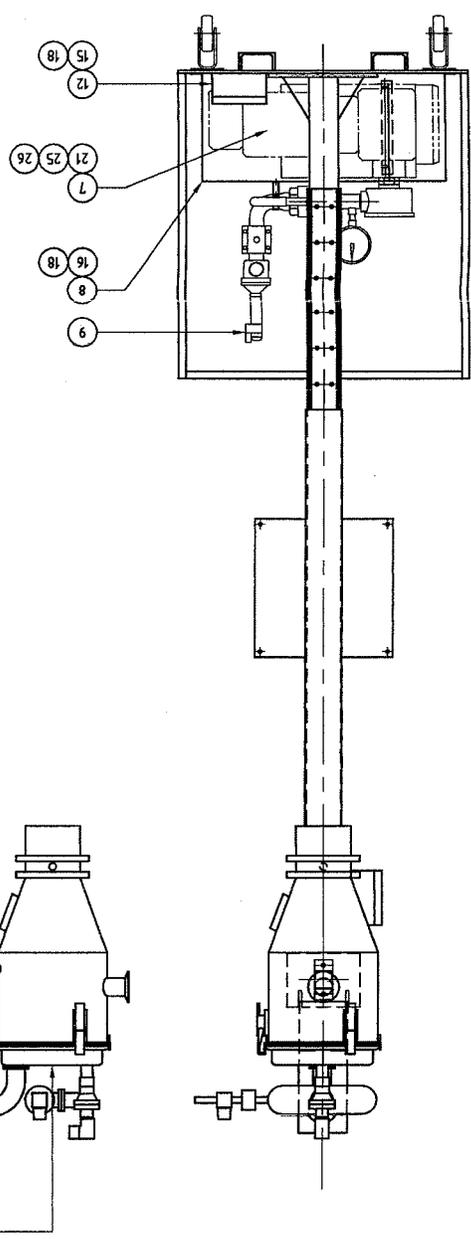
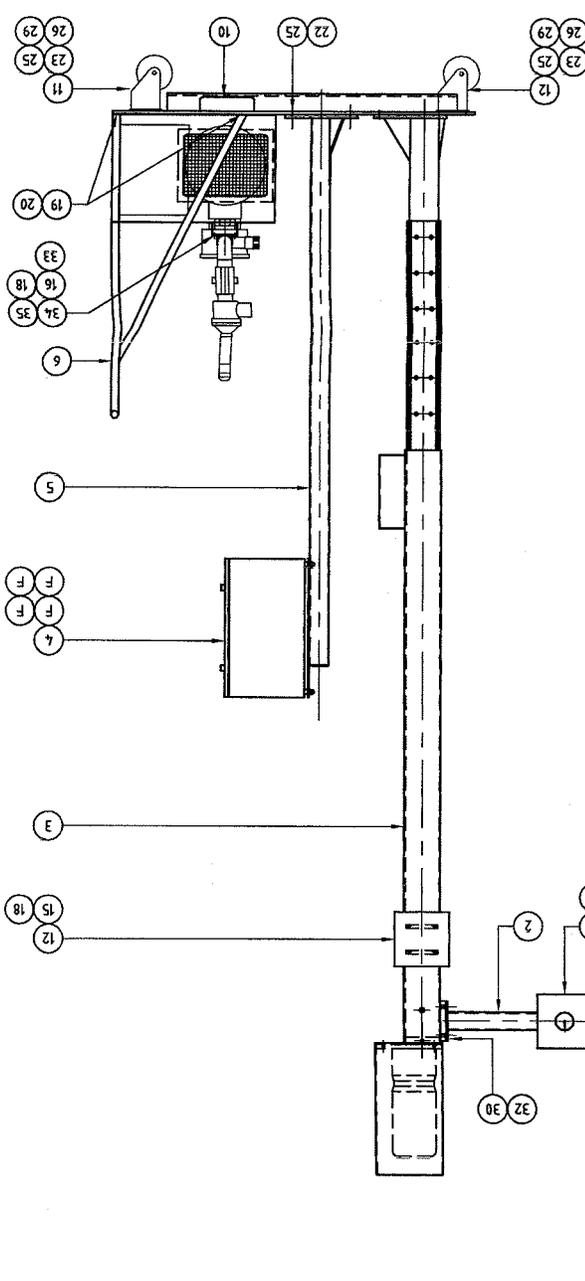
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8.0 Parts List

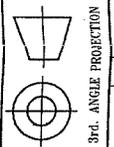
ROCHE-VISMANUAL

ITEM NO.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	VACUUM RECEIVER ASSEMBLY		DV-310-38-41
2	1	RECEIVER SUPPORT BRACKET		DV-STD-07
3	1	LIFTING COLUMN ASSEMBLY		DV-STD-054
4	1	CONTROL PANEL		
5	1	CONTROL PANEL SUPPORT COLUMN		
6	1	PUSH BAR		DV-STD-06
7	1	VACUUM PUMP		BUSCH 0063
8	1	VACUUM PUMP GUARD		DV-STD-013
9	1	VACUUM LINE ASSEMBLY		DV-STD-041
10	1	BASE PLATE		DV-STD-005
11	2	LOCKABLE SWIVEL CASTORS		
12	2	FIXED CASTORS		
13	2	JUNCTION BOX		
14	1	DISCHARGE VALVE REGULATOR BOX	SS 304	
15	6	HEX HEAD SCREW M5 x 10	SS 304	
16	17	BUTTON HEAD SOCKET SCREW M5 x 10	SS 304	
17	2	HEX HEAD SCREW M5 x 20	SS 304	
18	25	FLAT WASHER M5	SS 304	
19	4	HEX HEAD SCREW M6 x 10	SS 304	
20	4	FLAT WASHER M6	SS 304	
21	7	HEX HEAD SCREW M8 x 20	SS 304	
22	4	HEX HEAD SCREW M8 x 25	SS 304	
23	16	C/SUNK SOCKET HEAD SCREW M8 x 25	SS 304	
24	3	PLASTIC HANDLE, THREAD M8 x 20	SS 304	
25	31	FLAT WASHER M8	SS 304	
26	19	SPRING WASHER M8	SS 304	
27	4	LODGE NUT M8	SS 304	
28	6	SPACER M8	SS 304	
29	16	HEX NUT M8	SS 304	
30	2	HEX HEAD SCREW M10 x 20	SS 304	
31	4	HEX HEAD SCREW M10 x 25	SS 304	
32	6	FLAT WASHER M10	SS 304	
33	2	DOME NUT M5	SS 304	
34	1	15" PIPE REST		DV-STD-056
35	1	15" PIPE SADDLE		DV-STD-057



TITLE:
**DURA-VAC MOBILE VTS
 GENERAL ARRANGEMENT
 DV-310-38 RECEIVER - SERIAL No. M0102755**

REFERENCE DRAWING

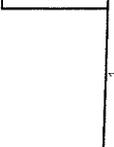


DATE:	16.02.01
CHECKED:	B. V.S.
DATE:	26.02.01
SCALE:	1:1
DWG No.	MON016-003
3rd. ANGLE PROJECTION	

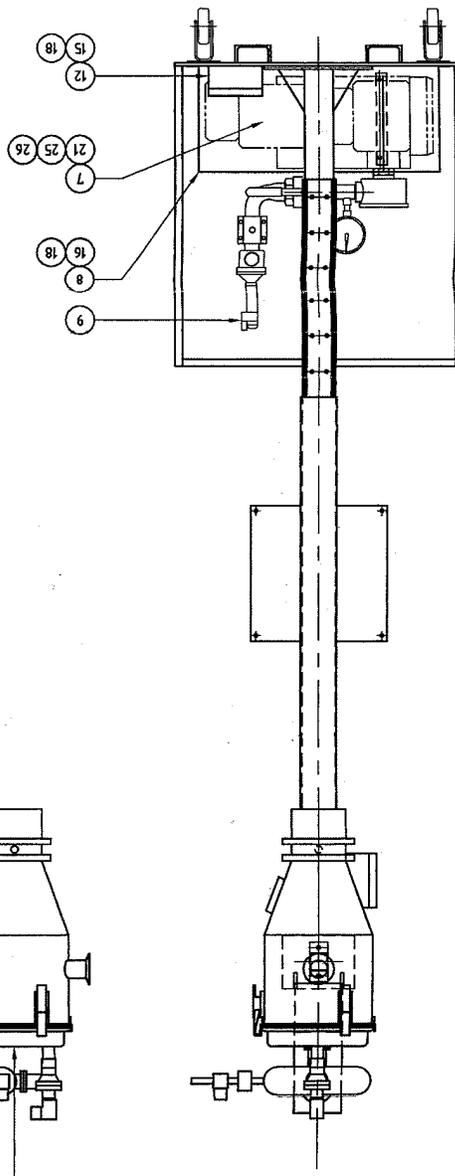
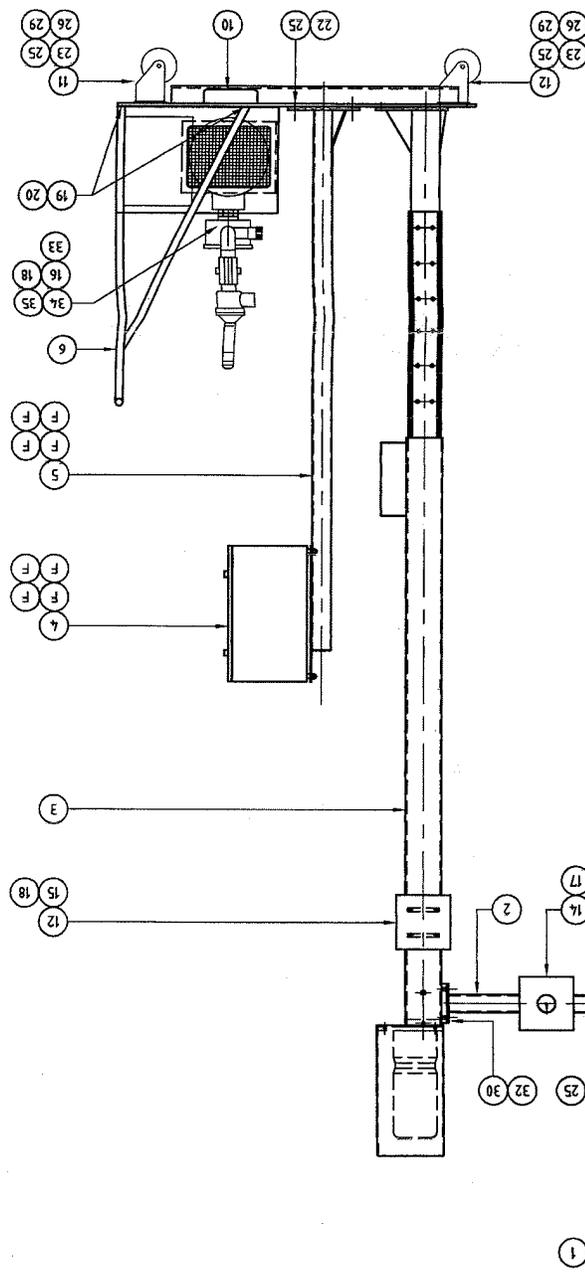
REV	DESCRIPTION	DATE	DRN	APP'D
A	FIRST ISSUE	5.02.01	JAL	

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ITEM No.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	VACUUM RECEIVER ASSEMBLY		DV-310-38-01
2	1	RECEIVER SUPPORT BRACKET		DV-STD-007
3	1	LIFTING COLUMN ASSEMBLY		DV-STD-004
4	1	CONTROL PANEL		
5	1	CONTROL PANEL SUPPORT COLUMN		
6	1	PUSH BAR		DV-STD-018
7	1	VACUUM PUMP		DV-STD-042
8	1	VACUUM PUMP GUARD		BUSCH 0063
9	1	VACUUM LINE ASSEMBLY		DV-STD-013
10	1	BASE PLATE		DV-STD-041
11	2	LOCKABLE SWIVEL CASTORS		DV-STD-005
12	2	FIXED CASTORS		
13	2	JUNCTION BOX		
14	1	DISCHARGE VALVE REGULATOR BOX		DV-STD-005
15	6	HEX. HEAD SCREW M5 x 10	SS 304	
16	18	BUTTON HEAD SOCKET SCREW M5 x 10	SS 304	
17	2	HEX. HEAD SCREW M5 x 20	SS 304	
18	25	FLAT WASHER M5	SS 304	
19	4	HEX. HEAD SCREW M6 x 10	SS 304	
20	4	FLAT WASHER M6	SS 304	
21	7	HEX. HEAD SCREW M8 x 20	SS 304	
22	4	HEX. HEAD SCREW M8 x 25	SS 304	
23	16	L/SUNK SOCKET HEAD SCREW M8 x 25	SS 304	
24	3	PLASTIC HANDLE THREAD M8 x 20		
25	31	FLAT WASHER M8	SS 304	
26	19	SPRING WASHER M8	SS 304	
27	4	DOVE NUT M8	SS 304	
28	6	SPACER M8	SS 304	
29	16	HEX. NUT M8	SS 304	
30	2	HEX. HEAD SCREW M10 x 20	SS 304	
31	4	HEX. HEAD SCREW M10 x 25	SS 304	
32	6	FLAT WASHER M10	SS 304	
33	2	DOVE NUT M5	SS 304	
34	1	15° PIPE REST		DV-STD-066
35	1	15° PIPE SADDLE		DV-STD-067

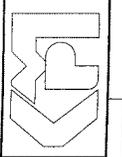


TITLE:
**DURA-VAC MOBILE VTS
 GENERAL ARRANGEMENT
 DV-310-38 RECEIVER - SERIAL No. M0102285S**

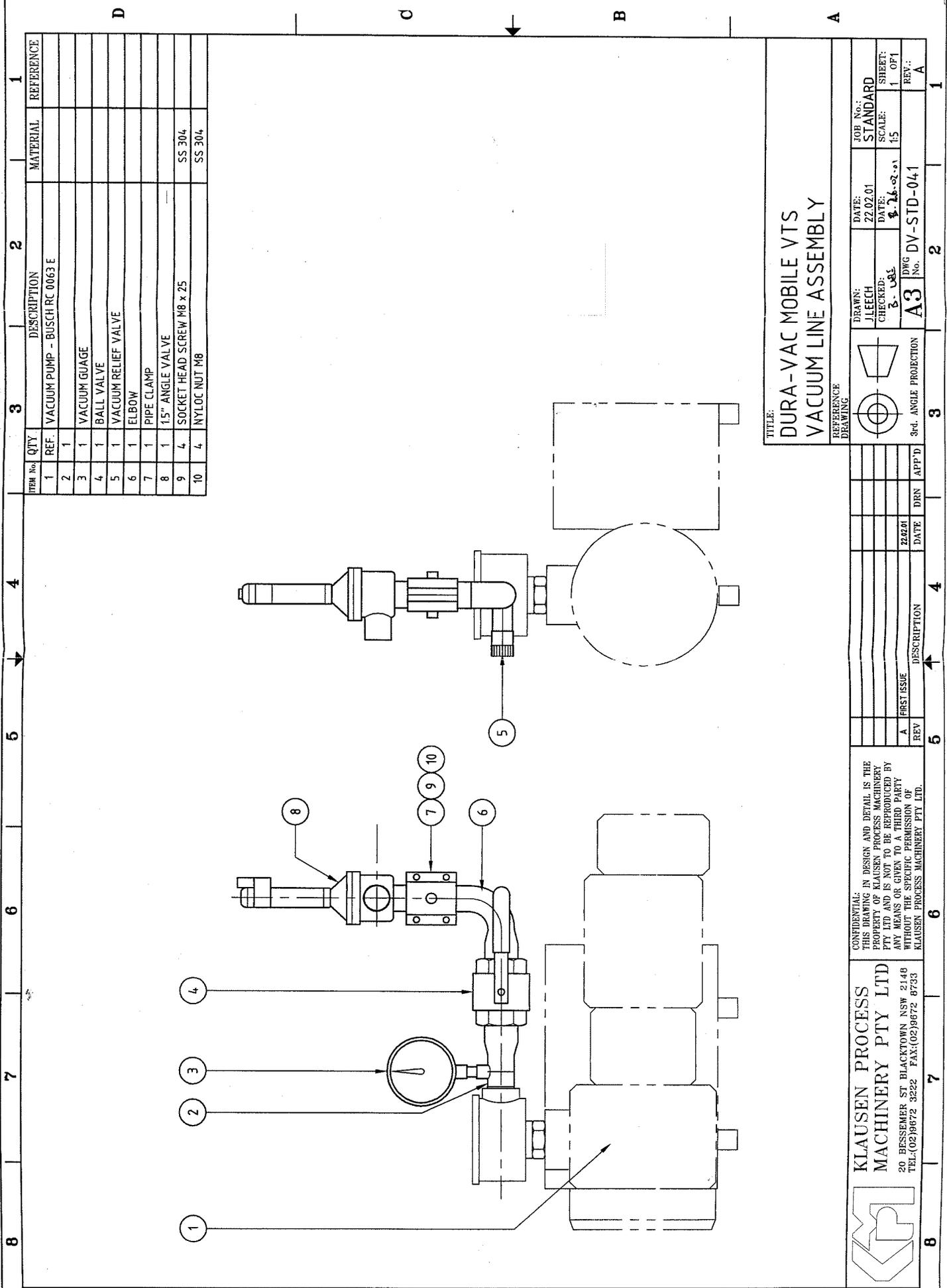
DATE: 16.02.01	JOB No. MON016	SHEET: 1 OF 1
DATE: 26.02.01	SCALE: 1:10	REV: A
DRAWN: JLEECH	CHECKED: B. IRE	DWG No. MON016-004
3rd. ANGLE PROJECTION		

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REV	DATE	DRN	APP'D	DESCRIPTION
A	02/01	JAL		FIRST ISSUE



ITEM No.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	VACUUM PUMP - BUSCH RC 0063 E		
2	1	VACUUM GUAGE		
3	1	BALL VALVE		
4	1	VACUUM RELIEF VALVE		
5	1	ELBOW		
6	1	PIPE CLAMP		
7	1	1.5" ANGLE VALVE		
8	1	SOCKET HEAD SCREW M8 x 25	SS 304	
9	4	NYLOC NUT M8	SS 304	
10	4			

TITLE: DURA-VAC MOBILE VTS
VACUUM LINE ASSEMBLY

REFERENCE DRAWING:

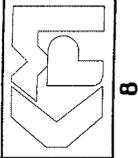
DRAWN: JLEECH
CHECKED: G. UEL
DATE: 22.02.01
DATE: 8.11.02.01

DWG No. DV-STD-041

JOB No. STANDARD
SCALE: 1:5
SHEET: 1 OF 1
REV: A

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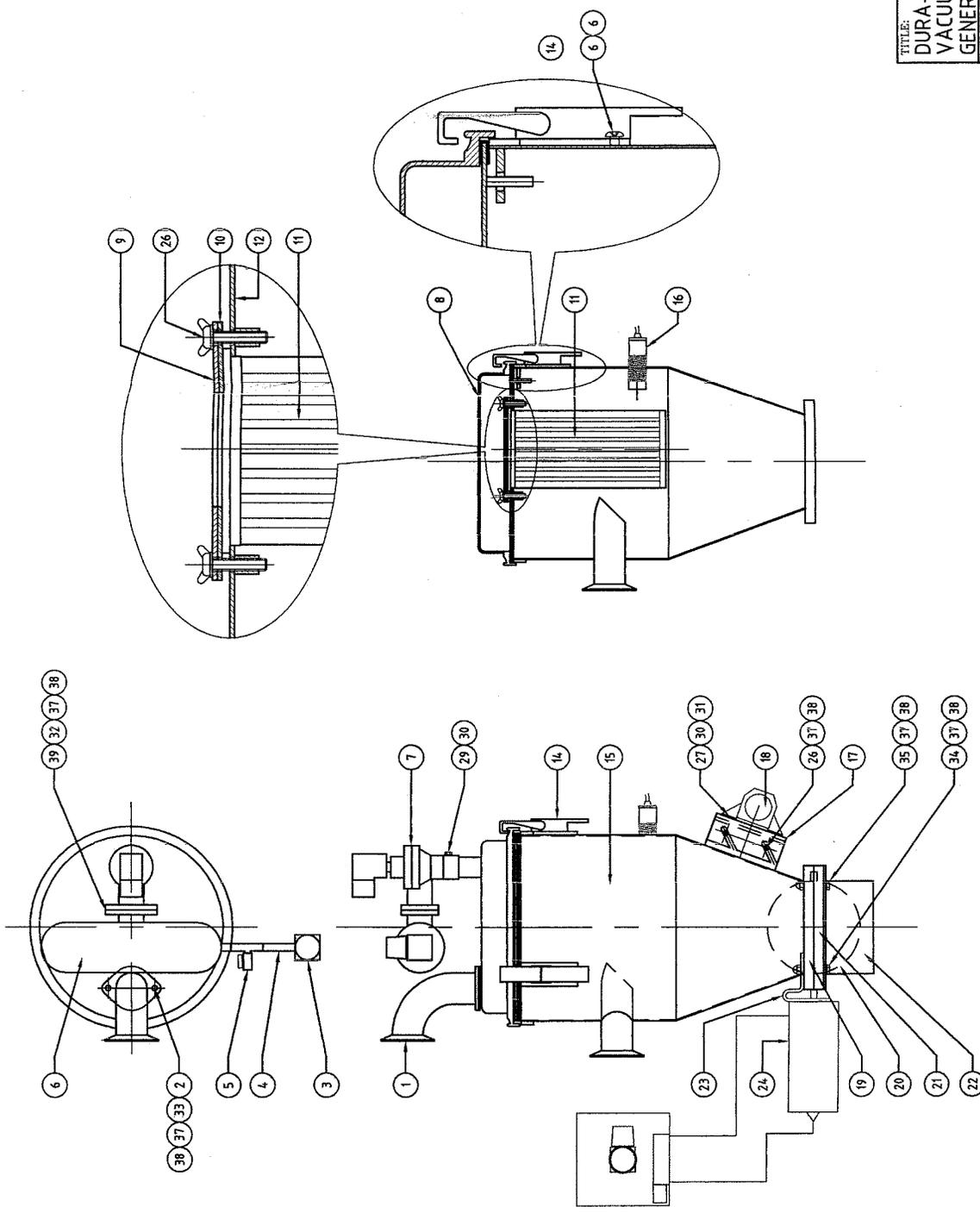
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REV	DESCRIPTION	DATE	DRN	APP'D
A	FIRST ISSUE	22/2/01		

1 2 3 4 5 6 7 8

ITEM NO.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	VACUUM CONNECTION ELBOW	RUBBER	DV-310-38-012
2	1	OVAL GASKET		
3	1	REGULATOR / GAUGE		
4	1	NON-RETURN VALVE		
5	A	AIR BLEED DIAPHRAGM VALVE		
6	1	COMPRESSED AIR TANK		
7	1	FILTER CLEANING SOLINOID VALVE		DV-310-38-013
8	1	VACUUM RECEIVER LID		DV-310-38-014
9	1	FILTER CLAMP PLATE		DV-310-38-017
10	1	FILTER SEAL		DV-310-38-018
11	1	FILTER CARTRIDGE		
12	1	FILTER PLATE		
13	1	FILTER PLATE SEAL		
14	3	RECEIVER LID CLAMP		
15	1	RECEIVER BODY		
16	1	LEVEL SENSOR		
17	1	VIBRATOR MOUNTING PLATE		DV-310-38-016
18	1	VIBRATOR		
19	1	BUTTERFLY VALVE TOP FLANGE		
20	1	BUTTERFLY VALVE SEAL		
21	1	BUTTERFLY VALVE BLADE		
22	1	BUTTERFLY VALVE BOTTOM FLANGE		
23	1	DISCHARGE SPIGOT		DV-310-38-005
24	1	BUTTERFLY VALVE ACTUATOR MOUNTING PLATE		
25	1	BUTTERFLY VALVE ACTUATOR		
26	8	WANG STUD M8 x 40	SS 304	
27	4	CSK SCREW M8 x 20	SS 304	
28	8	BUTTON HD SOCKET SCREW M6 x 6	SS 304	
29	1	HEX. HD. SCREW M6 x 6	SS 304	
30	5	FLAT WASHER M6	SS 304	
31	4	DOME NUT M6	SS 304	
32	2	HEX. HD. SCREW M8 x 25	SS 304	
33	2	HEX. HD. SCREW M8 x 20	SS 304	
34	2	HEX. HD. SCREW M8 x 40	SS 304	
35	2	HEX. HD. SCREW M8 x 45	SS 304	
36	4	HEX. HD. SCREW M8 x 16	SS 304	
37	2	FLAT WASHER M8	SS 304	
38	1	DOME NUT M8	SS 304	
39	1	OVAL GASKET	RUBBER	



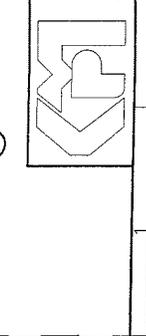
TITLE: DURA-VAC DV-310-38
VACUUM RECEIVER
GENERAL ARRANGEMENT

DRAWN: JLEECH	DATE: 26.02.01	JOB No.: STANDARD
CHECKED: S. LEE	DATE: 26.02.01	SCALE: 1/5
DWG No. DV-310-38-011		SHEET: 1 OF 1
REV: A		REV.: A

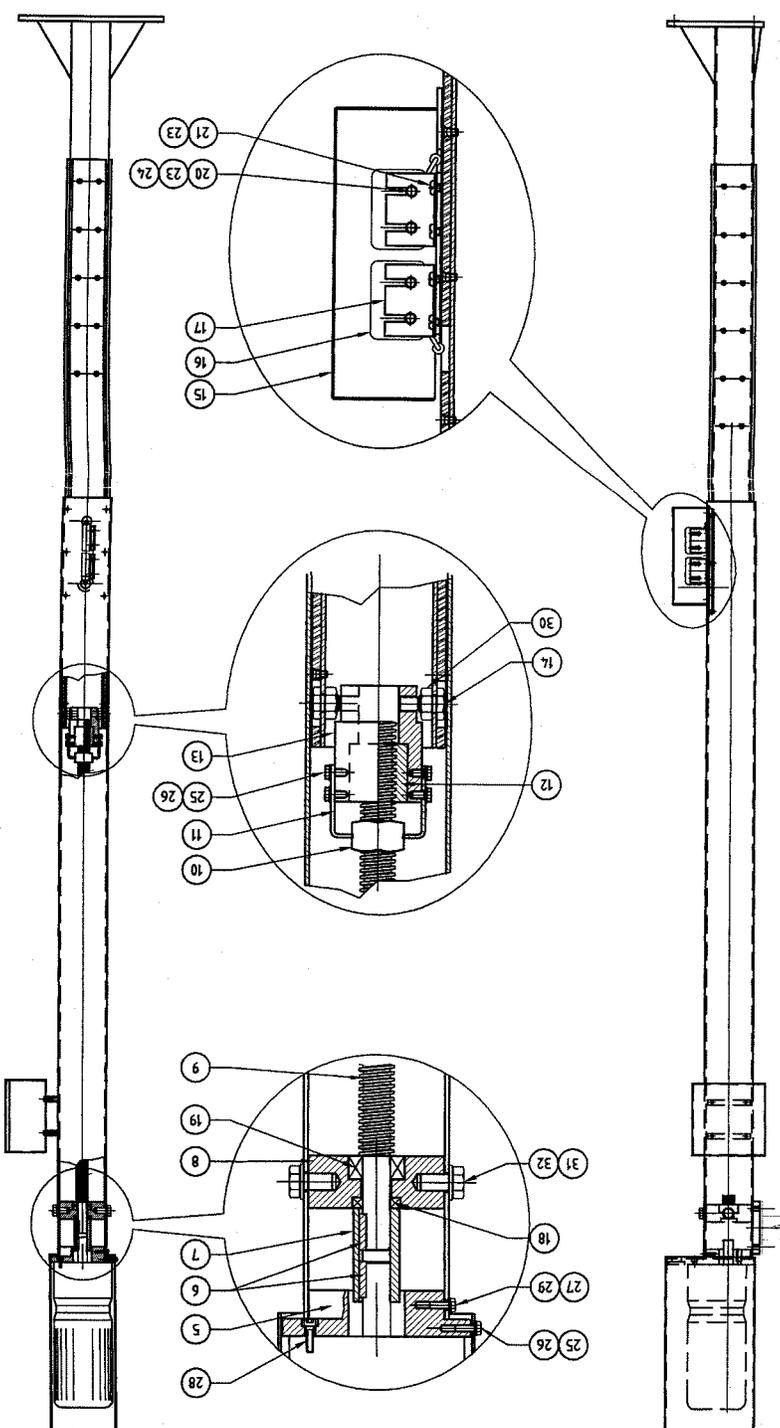
REV	DESCRIPTION	DATE	APP'D
A	FIRST ISSUE	26.02.01	JAL

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**KLAUSEN PROCESS
MACHINERY PTY LTD**
20 BESSEMER ST BLACKTOWN NSW 2148
TEL:(02)9672 3222 FAX:(02)9672 8733



ITEM No.	QTY	DESCRIPTION	MATERIAL	REFERENCE
1	1	MOTOR COVER		DV-STD-002
2	1	MOTOR XXOXY		
3	1	LIFT COLUMN OUTER TUBE		DV-STD-003
4	1	LIFT COLUMN INNER TUBE		DV-STD-004
5	1	MOTOR MOUNTING PLATE		DV-STD-001
6	2	DRIVE KEY - 4.8 (3/16") SQR x 25	KEY STEEL	
7	1	DRIVE COUPLING		DV-STD-049
8	1	LIFT COLUMN BEARING BLOCK		DV-STD-047
9	1	LIFT COLUMN DRIVE SCREW M6 x 1066		DV-STD-050
10	1	SAFETY NUT - HEX. T ACME THREAD	M.S	
11	2	SAFETY NUT RETAINING CLIPS		
12	1	LIFT COLUMN DRIVE NUT	BRONZE	DV-STD-051
13	1	LIFT COLUMN DRIVE NUT RETAINING BLOCK	M.S	DV-STD-048
14	2	LIFT COLUMN DRIVE NUT LOCATING PIN		DV-STD-053
15	1	LIFT COLUMN LIMIT SWITCH COVER		DV-STD-066
16	2	LIMIT SWITCH		
17	2	LIFT COLUMN LIMIT SWITCH BRACKET		DV-STD-046
18	1	BEARING		
19	1	HEX. HEAD SCREW M4 x 35	SS 304	
20	4	PAN PHILLIPS HEAD SCREW M4 x 4	SS 304	
21	4	PAN PHILLIPS HEAD SCREW M4 x 6	SS 304	
22	6	PAN PHILLIPS HEAD SCREW M4 x 6	SS 304	
23	18	FLAT WASHER M4	SS 304	
24	4	HEX. NUT M4	SS 304	
25	8	HEX. HEAD SCREW M5 x 10	SS 304	
26	8	FLAT WASHER	SS 304	
27	3	HEX. HEAD SCREW M6 x 10	SS 304	
28	4	SOCKET HEAD SCREW M6 x 20	SS 304	
29	3	FLAT WASHER M6	SS 304	
30	2	HEX. NUT M2	SS 304	
31	3	HEX. HEAD SCREW M2 x 25	SS 304	
32	3	FLAT WASHER M2	SS 304	



TITLE:
**DURA-VAC MOBILE VTS
 LIFT COLUMN WITH 760mm TRAVEL
 GENERAL ARRANGEMENT**

DATE:	22.02.01	JOB No.:	STANDARD
CHECKED:	B. LEECH	SCALE:	1:1
DATE:	22.02.01	REV.:	A
3rd. ANGLE PROJECTION			

REV	DESCRIPTION	DATE	APP'D
A	FIRST ISSUE	22.02.01	JAL

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