

***Turbo-V 70
PCB 24 Vdc
Controller***

Model 969-9518

MANUALE ISTRUZIONI

BEDIENUNGSHANDBUCH

NOTICE DE MODE D'EMPLOI

MANUAL DE INSTRUCCIONES

MANUAL DE INSTRUÇÕES

BEDRIJFSHANDLEIDING

ISTRUKSTIONSBOG

BRUKSANVISNING

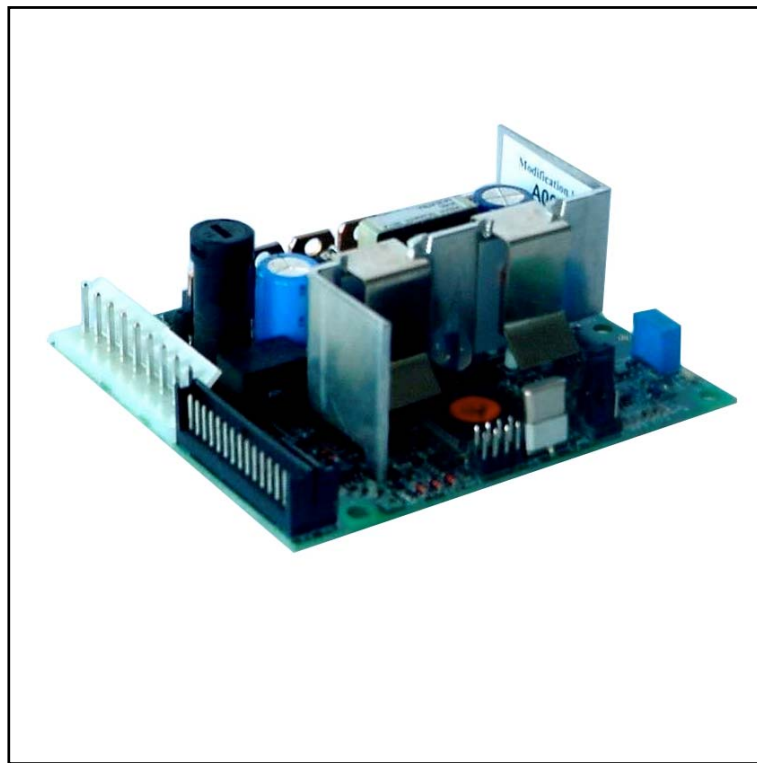
INSTRUKSJON MANUAL

OHJEKÄSIKIRJA

ΟΔΗΓΙΕΣ ΧΡΗΣΕΩΣ

INSTRUCTION MANUAL

Turbo-V 70 PCB 24 Vdc Controller



VARIAN



vacuum technologies

Dear Customer,

Thank you for purchasing a VARIAN vacuum product. At VARIAN Vacuum Technologies we make every effort to ensure that you will be satisfied with the product and/or service you have purchased.

As part of our Continuous Improvement effort, we ask that you report to us any problem you may have had with the purchase or operation of our product. On the back side you find a Corrective Action Request form that you may fill out in the first part and return to us.

This form is intended to supplement normal lines of communications and to resolve problems that existing systems are not addressing in an adequate or timely manner.

Upon receipt of your Corrective Action Request we will determine the Root Cause of the problem and take the necessary actions to eliminate it. You will be contacted by one of our employees who will review the problem with you and update you, with the second part of the same form, on our actions.

Your business is very important to us. Please, take the time and let us know how we can improve.

Sincerely,

Sergio PIRAS

*Vice President and General Manager
VARIAN Vacuum Technologies*

Note: Fax or mail the Customer Request for Action (see backside page) to VARIAN Vacuum Technologies (Torino) - Quality Assurance or to your nearest VARIAN representative for onward transmission to the same address.

CUSTOMER REQUEST FOR CORRECTIVE / PREVENTIVE / IMPROVEMENT ACTION

TO : VARIAN VACUUM TECHNOLOGIES TORINO - QUALITY ASSURANCE

FAX N° : XXXX - 011 - 9979350

ADDRESS: VARIAN S.p.A. - Via F.lli Varian, 54 - 10040 Leinì (Torino) - Italy

E-MAIL : marco.marzio@varianinc.com

NAME _____	COMPANY _____	FUNCTION _____
<p>ADDRESS : _____</p> <p>TEL. N° : _____ FAX N° : _____</p> <p>E-MAIL : _____</p>		
<p>PROBLEM / SUGGESTION :</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.) :</p> <p>_____</p> <p>_____</p> <p>_____</p> <p style="text-align: right;">DATE _____</p>		

<p>CORRECTIVE ACTION PLAN / ACTUATION (by VARIAN VTT)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>LOG N° _____</p>
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XXXX = Code for dialing Italy from your country (es. 01139 from USA; 00139 from Japan, etc.)



ISTRUZIONI PER L'USO	1
GEBRAUCHSANLEITUNG	3
MODE D'EMPLOI.....	5
INSTRUCCIONES DE USO	7
ISTRUÇÕES PARA O USO	9
GEBRUIKSAANWIJZINGEN.....	11
BRUGSANVISNING.....	13
BRUKSANVISNING	15
BRUKERVEILEDNING.....	17
KÄYTTÖOHJEET	19
ΟΔΗΓΙΕΣ ΧΡΗΣΕΩΣ	21
INSTRUCTIONS FOR USE	23
TECHNICAL INFORMATION	25
GENERAL DESCRIPTION	25
TURBO-V 70 PCB 24 VDC CONTROLLER DESCRIPTION	25
CONTROLLER SPECIFICATIONS	25
Controller Connector and Jumper	26
Jumper Configurations	26
Run-up Time Adjustment.....	26
CONTROLLER OUTLINE.....	27
INSTALLATION	28
J3 Connector	28
J2 Connector	28
J4 Connector	28
J5 RS-232 Interface Connector	29
DATA EXCHANGE PROTOCOLS	29
RS-232 Protocol 1 Communication Description	29
Communication Protocol	29
Error Code Table	31
RS 232 Protocol 2 Communication Descriptions.....	31
Transmission Channel Characteristics	31
Message Structure.....	31
Examples	32
Serial Communication Windows.....	33

OPERATION5.....	34
Switching On/Off the Pump	34
Low Speed Activation/Deactivation.....	34
Error Reset	34
MAINTENANCE.....	34
Error Messages	34
Error Code Table	34
ACCESSORIES AND SPARE PARTS	34

INFORMAZIONI GENERALI

Questa apparecchiatura è destinata ad uso professionale. L'utilizzatore deve leggere attentamente il presente manuale di istruzioni ed ogni altra informazione addizionale fornita dalla Varian prima dell'utilizzo dell'apparecchiatura. La Varian si ritiene sollevata da eventuali responsabilità dovute all'inosservanza totale o parziale delle istruzioni, ad uso improprio da parte di personale non addestrato, ad interventi non autorizzati o ad uso contrario alle normative nazionali specifiche. Il controller Turbo-V 70 PCB è un convertitore di frequenza, controllato da un microprocessore, realizzato con componenti a stato solido e con capacità di autodiagnostica e autoprotezione. Esso incorpora tutta la circuiteria necessaria per il funzionamento automatico delle pompe della serie Turbo-V 70.

Il controller pilota le pompe della serie Turbo-V 70 (con un processo suddiviso in dieci passi) durante la fase di avvio controllando la tensione e la corrente in rapporto alla velocità raggiunta dalla pompa. Tramite connettori ausiliari sono disponibili i comandi per l'avvio e l'arresto della pompa da remoto, i segnali che indicano lo stato operativo della pompa, segnali di bloccaggio (per interruttori a pressione, interruttori di controllo del flusso dell'acqua, ecc.). Il controller deve essere alimentato con una tensione continua di 24 Vdc.

Nei paragrafi seguenti sono riportate tutte le informazioni necessarie a garantire la sicurezza dell'operatore durante l'utilizzo dell'apparecchiatura. Informazioni dettagliate sono fornite nell'appendice "Technical Information".

Questo manuale utilizza le seguenti convenzioni:



PERICOLO!

I messaggi di pericolo attirano l'attenzione dell'operatore su una procedura o una pratica specifica che, se non eseguita in modo corretto, potrebbe provocare gravi lesioni personali.



ATTENZIONE!

I messaggi di attenzione sono visualizzati prima di procedure che, se non osservate, potrebbero causare danni all'apparecchiatura.

NOTA

Le note contengono informazioni importanti estrapolate dal testo.

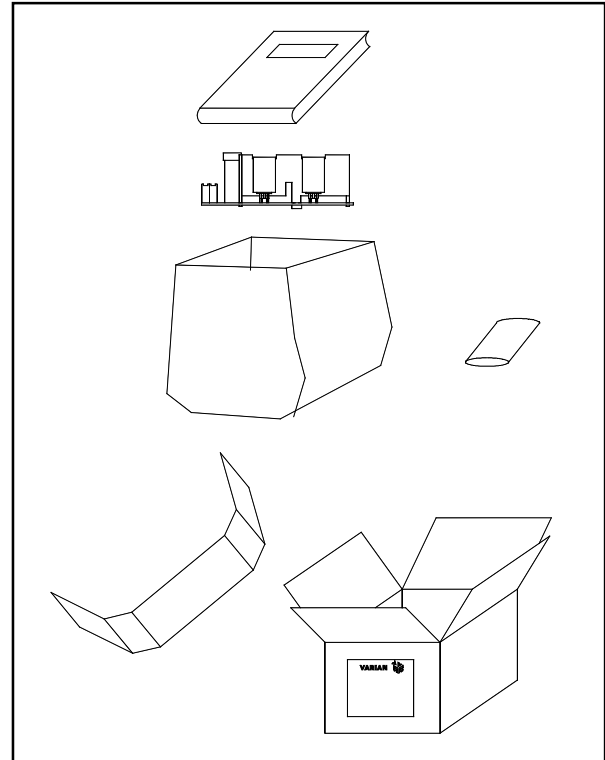
IMMAGAZZINAMENTO

Durante il trasporto e l'immagazzinamento del controller devono essere soddisfatte le seguenti condizioni ambientali:

- temperatura: da -20 °C a +70 °C
- umidità relativa 0 - 95% (non condensante)

PREPARAZIONE PER L'INSTALLAZIONE

Il controller viene fornito in un imballo protettivo speciale; se si presentano segni di danni, che potrebbero essersi verificati durante il trasporto, contattare l'ufficio vendite locale.



Imballo dei controller

Durante l'operazione di disimballaggio, prestare particolare attenzione a non lasciar cadere il controller e a non sottoporlo ad urti. Non disperdere l'imballo nell'ambiente. Il materiale è completamente riciclabile e risponde alla direttiva CEE 85/399 per la tutela dell'ambiente. Prima di installare il controller occorre preparare alcuni cavi di interconnessione, quali ad esempio i cavi per le interconnessioni con l'alimentazione, quelli per le interconnessioni logiche e quello per il collegamento con la pompa. Nelle figure seguenti sono schematizzati i collegamenti da effettuare tra il controller e la pompa e tra il controller e l'alimentatore. Per ulteriori dettagli sulle suddette interconnessioni e le caratteristiche tecniche del trasformatore (disponibile come opzione) vedere l'appendice "Technical Information".

INSTALLAZIONE



PERICOLO!

All'interno del controller si sviluppano tensioni che possono recare gravi danni. Prima di eseguire qualsiasi operazione di installazione o manutenzione del controller scollegarlo dalla alimentazione. All'interno del controller si sviluppano elevate temperature che possono recare gravi danni. Proteggere adeguatamente il controller nella sua installazione definitiva da contatti accidentali.

NOTA

Il controller installato nel sistema definitivo deve essere posizionato in modo tale che l'aria di raffreddamento possa circolare liberamente intorno all'apparato. Non installare e/o utilizzare il controller in ambienti esposti ad agenti atmosferici (pioggia, gelo, neve), polveri, gas aggressivi, in ambienti esplosivi o con elevato rischio di incendio.

Durante il funzionamento è necessario che siano rispettate le seguenti condizioni ambientali:

- temperatura: da 0 °C a +40 °C
- umidità relativa: 0 - 95% (non condensante).

USO

In questo paragrafo sono riportate le principali procedure operative. Per ulteriori dettagli e per procedure che coinvolgono collegamenti o particolari opzionali, fare riferimento al paragrafo "USE" dell'appendice "Technical Information".

Prima di usare il controller effettuare tutti i collegamenti elettrici e pneumatici e fare riferimento al manuale della pompa collegata.

**PERICOLO!**

Per evitare danni alle persone ed all'apparato, nel caso in cui la pompa sia appoggiata su di un tavolo assicurarsi che sia stabile. Non far funzionare mai la pompa se la flangia di ingresso non è collegata al sistema o non è chiusa con la flangia di chiusura.

PROCEDURE DI USO**Accensione del Controller**

Per accendere il controller è sufficiente fornire la tensione di alimentazione al controller stesso.

Avvio della Pompa

Per avviare la pompa lasciare aperto il pin 12 del connettore J4, in modo tale che quando viene fornita la tensione di 24 Vdc al controller si ha l'avviamento della pompa.

Arresto della Pompa

Per arrestare la pompa occorre cortocircuitare i pin 12 e 15 del connettore J4.

MANUTENZIONE

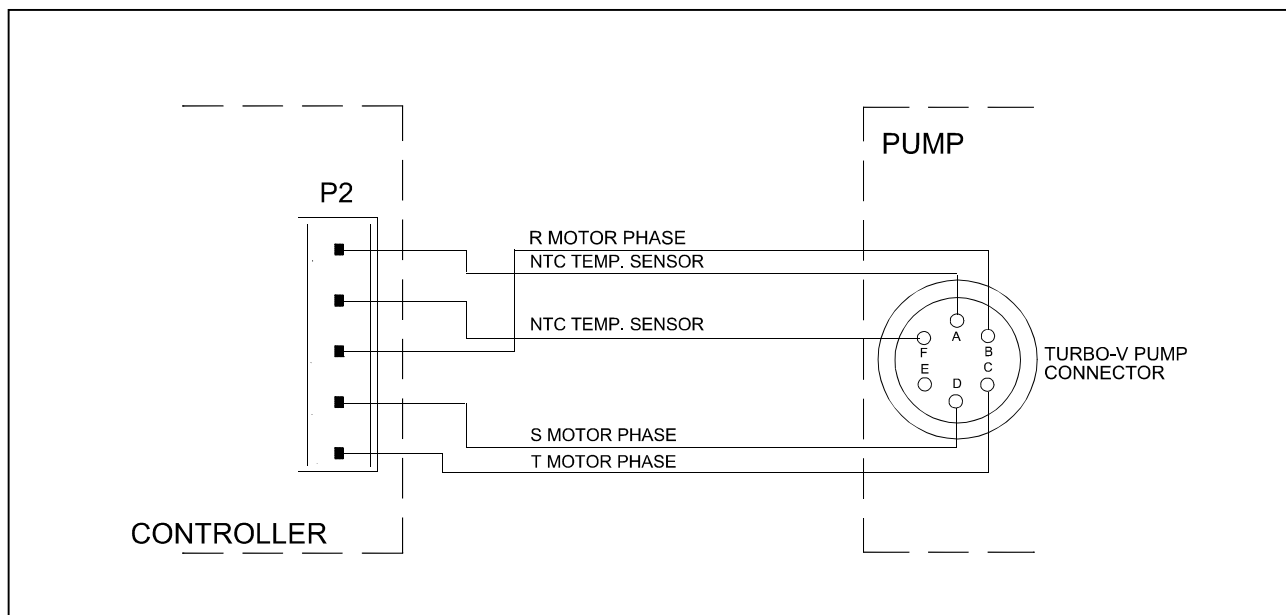
I controller della serie Turbo-V 70 non richiedono alcuna manutenzione. Qualsiasi intervento deve essere eseguito da personale autorizzato.

In caso di guasto è possibile usufruire del servizio di riparazione Varian o del "Varian advance exchange service", che permette di ottenere un controller ricondizionato in sostituzione di quello guasto.

**PERICOLO!**

Prima di effettuare qualsiasi intervento sul controller scollegare il cavo di alimentazione.

Qualora un controller dovesse essere rottamato, procedere alla sua eliminazione nel rispetto delle normative nazionali specifiche.



Cavo interconnessione tra Controller e pompa

ALLGEMEINES

Dieser Apparat ist für Fachbetriebe bestimmt. Vor Gebrauch sollte der Benutzer dieses Handbuch sowie alle weiteren mitgelieferten Zusatzdokumentationen genau lesen. Bei Nichtbeachtung - auch teilweise - der enthaltenen Hinweise, unsachgemäßem Gebrauch durch ungeschultes Personal, nicht autorisierten Eingriffen und Missachtung der einheimischen, hier zur Geltung kommenden Bestimmungen übernimmt die Firma Varian keinerlei Haftung. Der Controller der Serie Turbo-V 70 PCB ist ein mikroprozessorgesteuerter Frequenzwandler. Er ist aus Festkörperbauteilen gefertigt und verfügt über ein Selbstdiagnose- und ein Selbstschutzsystem. Er enthält alle für den automatischen Betrieb der Pumpenserie Turbo-V 70 erforderlichen Schaltungen. Der Controller steuert die Pumpen der Serie Turbo-V 70 (durch einen 10-Schritte-Prozess) in der Startphase, indem er die Spannung und die Stromstärke im Verhältnis zur Pumpengeschwindigkeit kontrolliert. Mittels Hilfsverbinder sind die Fernsteuerungen für Pumpenstart und -stopp, die Signale für die Betriebsanzeige der Pumpe und Sperrsignale (für Druckschalter, Wasserstrom-Kontrollschalter usw.) verfügbar. Der Controller soll mit einer Gleichstromspannung von 24 V versorgt werden. Für die Funktionskontrolle und die Visualisierung des Controllerzustandes ist ein entsprechendes Gerät (Hand Held Terminal) erhältlich; es besteht aus einer Steuertastatur und einem Display für die Visualisierung. In den folgenden Abschnitten sind alle erforderlichen Informationen für die Sicherheit des Bedieners bei der Anwendung des Geräts aufgeführt. Detaillierte technische Informationen sind im Anhang "Technical Information" enthalten.

In dieser Gebrauchsanleitung werden Sicherheitshinweise folgendermaßen hervorgehoben:



GEFAHR!

Die Gefahrenhinweise lenken die Aufmerksamkeit des Bedieners auf eine bestimmte Prozedur oder Praktik, die bei unkorrekter Ausführung schwere Verletzungen hervorrufen können.



ACHTUNG!

Die Warnhinweise werden vor Prozeduren visualisiert, die bei Nichtbeachtung Schäden an der Anlage verursachen könnten.

ANMERKUNG

Die Anmerkungen enthalten wichtige Informationen, die aus dem Text hervorgehoben werden.

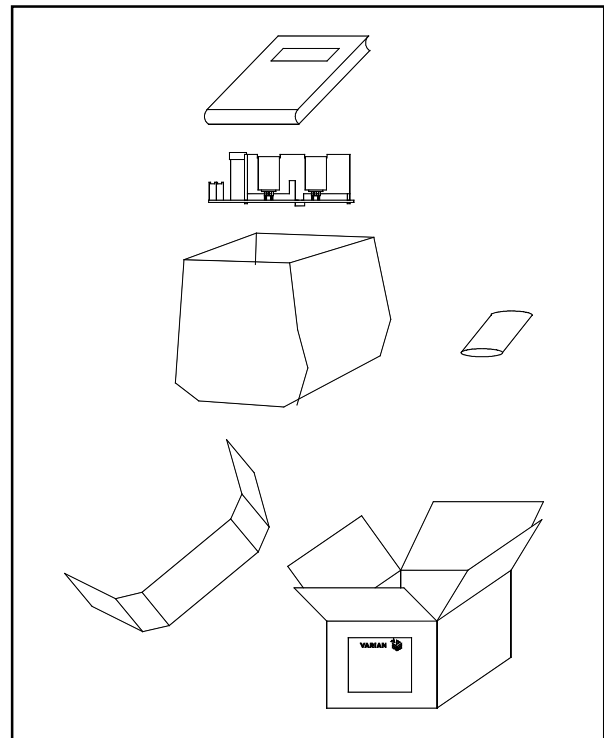
LAGERUNG

Beim Transport und bei der Lagerung des Controllers müssen folgende klimatische Verhältnisse eingehalten werden:

- Temperatur: von -20 °C bis +70 °C
- Relative Luftfeuchtigkeit: 0-95 % (nicht kondensierend)

VOR DER INSTALLATION

Der Controller wird mit einer speziellen Schutzverpackung geliefert. Eventuelle Transportschäden müssen der zuständigen örtlichen Verkaufsstelle gemeldet werden.



Verpackung des Controllers

Der Controller sollte vorsichtig ausgepackt werden, damit er nicht fällt oder Stößen ausgesetzt wird. Das Verpackungsmaterial muss korrekt entsorgt werden. Es ist vollständig recyclebar und entspricht der EG-Richtlinie 85/399 für Umweltschutz. Vor der Installation des Controllers müssen einige Verbindungskabel vorbereitet werden; wie zum Beispiel die Kabel für die Verbindung mit der Versorgung, die Kabel für die logischen Verbindungen und das Kabel für den Anschluss mit der Pumpe. Die nachstehenden Abbildungen schematisieren die Verbindungen, die zwischen dem Controller und der Pumpe sowie zwischen dem Controller und dem Netzgerät auszuführen sind. Weitere Einzelheiten zu den oben genannten Verbindungen und zu den Merkmalen des Versorgungstransformators (erhältlich als Optional), sind im Anhang "Technical Information" aufgeführt.

INSTALLATION



GEFAHR!

Im Innern des Controllers bilden sich Spannungen, die zu schweren Schäden führen können. Vor jedem Installations- oder Wartungseingriff den Controller von der Stromversorgung trennen. Im Innern des Controllers bilden sich erhöhte Temperaturen, die schwere Schäden verursachen können. Schützen Sie den Controller bei seiner definitiven Installation vor zufälligen Berührungen.

ANMERKUNG

Der im definitiven System installierte Controller muss so positioniert sein, dass die K hlungsluft frei um das Ger t zirkulieren kann. Der Controller darf nicht in Umgebungen installiert u/o benutzt werden, die Witterungseinfl ssen (Regen, Frost, Schnee), Staub und aggressiven Gasen ausgesetzt sind und in denen Explosions- und erh hte Brandgefahr besteht.

Beim Betrieb m ssen folgende Umgebungsbedingungen eingehalten werden:

- Temperatur: von 0  C bis +40  C;
- Relative Luftfeuchtigkeit: 0 - 95 % (nicht kondensierend).

GEBRAUCH

In diesem Kapitel sind die wichtigsten Betriebsvorg nge aufgef hrt. F r weitere Hinweise bez glich Anschl sse und Montage des bestellbaren Zubeh rs siehe Kapitel "USE" im Anhang zu "Technical Information".

Vor Benutzung des Controllers s mtliche elektrischen und pneumatischen Anschl sse ausf hren und die Betriebsanleitung der angeschlossenen Pumpe durchlesen.



GEFAHR!

Steht die Pumpe auf einem Tisch, muss auf den stabilen Stand geachtet werden, da sonst Gefahr f r Personen- und Ger tesch den bestehen k nnte. Die Pumpe nie einschalten, wenn der Eingangsflansch nicht an das System angeschlossen bzw. nicht mit dem Schlieflansch verschlossen ist.

BEDIENUNG

Einschalten des Controllers

Zum Einschalten des Controllers gen gt es, das Netzkabel an die Steckdose anzuschlieen.

Pumpenstart

Zum Starten der Pumpe ist PIN 12 des Verbinders J4 offen zu lassen, so dass bei Zuschaltung der 24V-Gleichspannung am Controller der Pumpenstart erfolgt.

Pumpenstopp

Zum Stoppen der Pumpe sind die PIN 12 und 15 des Verbinders J4 kurzzuschlieen.

WARTUNG

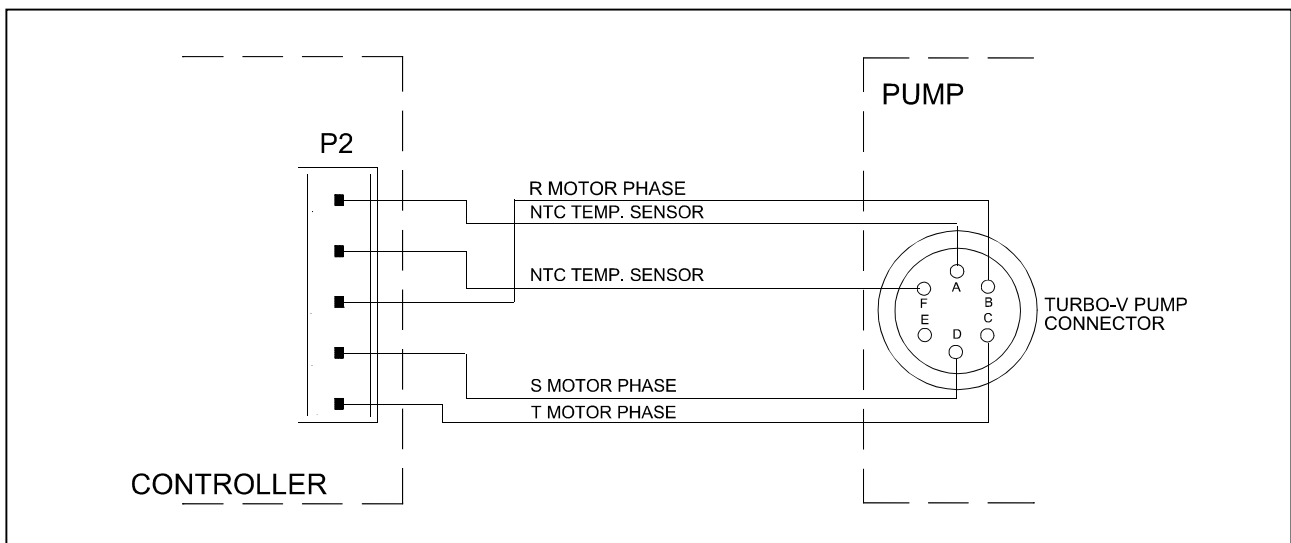
Die Controller der Serie Turbo-V 70 sind wartungsfrei. Eventuell erforderliche Eingriffe m ssen von dazu befugtem Fachpersonal ausgef hrt werden. Bei einem Defekt kann der Varian Reparaturdienst bzw. der "Varian advanced exchange service" in Anspruch genommen werden, der f r die Erneuerung des defekten Controllers sorgt.



GEFAHR!

Vor jedem Eingriff am Controller muss der Netzstecker gezogen werden.

Eine eventuelle Verschrottung hat unter Einhaltung der einschl gigen landesublichen Vorschriften zu erfolgen.



Verbindungskabel zwischen Controller und Pumpe

INDICATIONS GENERALES

Cet appareillage a été conçu en vue d'une utilisation professionnelle. Il est conseillé à l'utilisateur de lire attentivement cette notice d'instructions ainsi que toute autre indication supplémentaire fournie par Varian, avant l'utilisation de l'appareil. Varian décline par conséquent toute responsabilité en cas d'observation totale ou partielle des instructions données, d'utilisation incorrecte de la part d'un personnel non formé, d'opérations non autorisées ou d'un emploi contraire aux réglementations nationales spécifiques. Le contrôleur Turbo-V 70 PCB est un convertisseur de fréquence, contrôlé par un microprocesseur, réalisé avec des éléments à l'état solide et ayant des capacités d'autodiagnostic et d'autoprotection. Il incorpore l'ensemble de circuits nécessaire au fonctionnement automatique des pompes de la série Turbo-V 70. Le contrôleur pilote les pompes de la série Turbo-V 70 (selon un processus subdivisé en dix pas) pendant la phase de mise en marche, en contrôlant la tension et le courant par rapport à la vitesse atteinte par la pompe. Des connecteurs auxiliaires permettent de disposer des commandes de mise en marche et d'arrêt de la pompe à distance, des signaux indiquant l'état opérationnel de la pompe, des signaux de blocage (pour interrupteurs à pression, interrupteurs de contrôle du flux de l'eau etc.) Le contrôleur doit être alimenté avec une tension continue de 24 Vcc.

Les paragraphes suivants donnent toutes les indications nécessaires à garantir la sécurité de l'opérateur pendant l'utilisation de l'appareillage.

Des renseignements plus détaillés se trouvent dans "Technical Information".

Cette notice utilise les signes conventionnels suivants:



DANGER!

Les messages de danger attirent l'attention de l'opérateur sur une procédure ou une manoeuvre spéciale qui, si elle n'est pas effectuée correctement, risque de provoquer de graves lésions.



ATTENTION!

Le message d'attention apparaît avant certaines procédures qui, si elles ne sont pas observées, pourraient endommager sérieusement l'appareillage.

NOTE

Les notes contiennent des renseignements importants, isolés du texte.

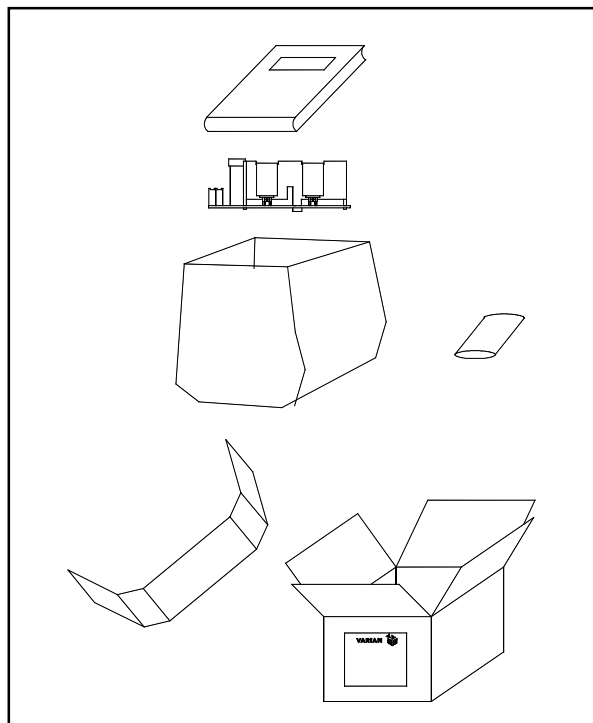
EMMAGASINAGE

Pendant le transport et l'emmagasinement des contrôleurs, il faudra veiller à respecter les conditions environnementales suivantes:

- température: de -20 °C à + 70 °C
- humidité relative: 0 - 95% (non condensante).

PREPARATION POUR L'INSTALLATION

Le contrôleur est fourni dans un emballage de protection spécial; si l'on constate des marques de dommages pouvant s'être produits pendant le transport, contacter aussitôt le bureau de vente local.



Emballage des contrôleurs

Pendant l'opération d'ouverture de l'emballage, veiller tout particulièrement à ne pas laisser tomber le contrôleur et à ne lui faire subir aucun choc. Ne pas jeter l'emballage dans la nature. Le matériel est entièrement recyclable et il est conforme aux directives CEE 85/399 en matière de protection de l'environnement. Avant d'installer le contrôleur, il est nécessaire de préparer quelques câbles d'interconnexion, par exemple les câbles pour les interconnexions avec l'alimentation, ceux pour les interconnexions logiques et celui pour le branchement avec la pompe. Les schémas qui suivent indiquent les connexions à effectuer entre le contrôleur et la pompe et entre le contrôleur et l'alimentateur. Pour tous autres détails concernant les interconnexions susdites et les caractéristiques du transformateur d'alimentation (disponible en option), se reporter à l'appendice "Technical Information".

INSTALLATION



DANGER!

A l'intérieur du contrôleur se développent des tensions qui peuvent causer de graves dommages. Avant d'effectuer toute opération d'installation ou d'entretien du contrôleur, le débrancher de la prise d'alimentation. A l'intérieur du contrôleur se développent des températures élevées qui peuvent causer de graves dommages. Protéger de façon appropriée le contrôleur, dans son installation définitive, contre tous contacts accidentels.

NOTE

Le contrôleur installé dans le système définitif doit être positionné de façon à ce que l'air de refroidissement puisse circuler librement autour de l'appareil. Ne pas installer et/ou utiliser le contrôleur dans des milieux exposés à des agents atmosphériques (pluie, gel, neige), à des poussières, à des gaz de combat ainsi que dans des milieux explosifs ou à risque élevé d'incendie.

Pendant le fonctionnement, il est nécessaire de respecter les conditions environnementales suivantes:

- température: de 0 °C à + 40 °C
- humidité relative: de 0% à 95% (non condensante).

UTILISATION

Ce paragraphe indique les principales procédures opérationnelles. Pour tous autres détails et pour les procédures concernant des connexions ou des éléments en option, se reporter au paragraphe "USE" de l'appendice "Technical Information".

Avant d'utiliser le contrôleur, effectuer toutes les connexions électriques et pneumatiques et se référer à la notice de la pompe connectée.



DANGER!

Pour éviter tous dommages aux personnes et à l'appareil, si la pompe est placée sur un plateau d'appui s'assurer que ce dernier est stable. Ne jamais faire fonctionner la pompe si la bride d'entrée n'est pas connectée au système ou n'est pas fermée à l'aide de la bride de fermeture.

PROCÉDURES D'UTILISATION

Allumage du contrôleur

Pour allumer le contrôleur, il suffit d'introduire le câble d'alimentation dans la prise du réseau.

Mise en marche de la Pompe

Pour mettre la pompe en marche il faut laisser ouvert le contact sur le pin 12 du connecteur J4 de façon que lorsque le contrôleur reçoit la tension de 24 Vcc, la pompe se met en marche .

Arrêt de la Pompe

Pour arrêter la pompe, il est nécessaire de court-circuiter les pins 12 et 15 du connecteur J4.

ENTRETIEN

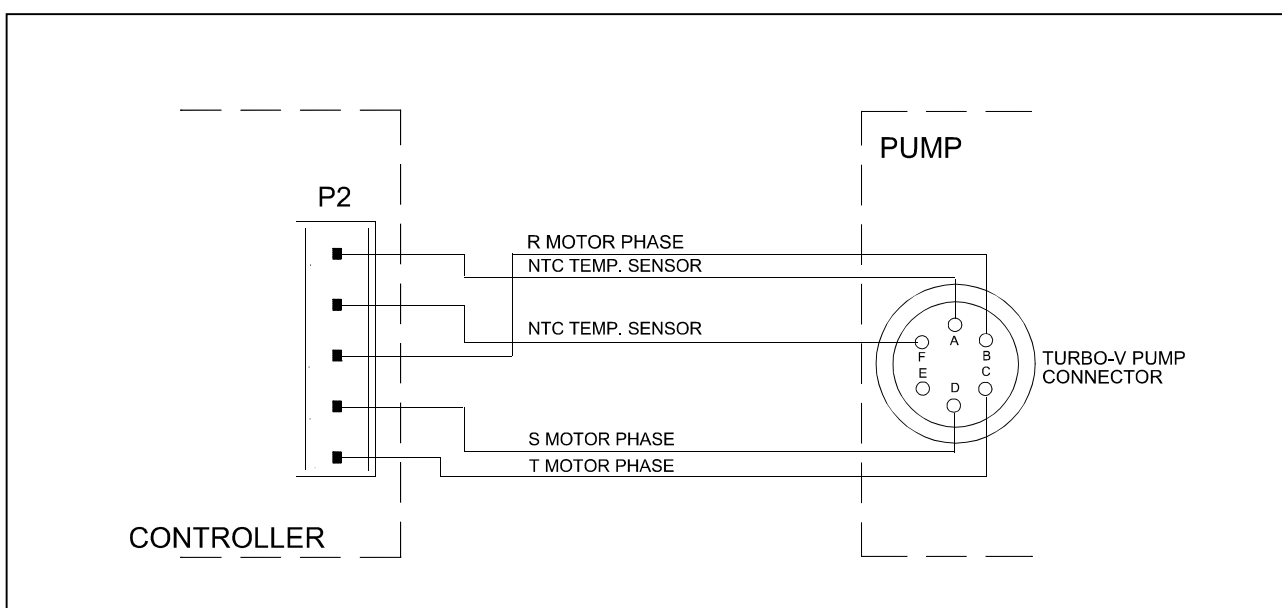
Les contrôleurs de la série Turbo-V 70 n'exigent aucun entretien. Toute opération doit être effectuée par un personnel agréé. En cas de panne, il est possible de s'adresser au Service de réparation Varian ou bien au "Varian advance exchange service" qui permet d'obtenir un contrôleur régénéré à la place du contrôleur détraqué.



DANGER!

Avant d'effectuer toute opération sur le contrôleur, débrancher le câble d'alimentation.

Si un contrôleur doit être mis au rebut, procéder à son élimination dans le respect des normes nationales en vigueur.



Câble d'interconnexion entre le contrôleur et la pompe

INFORMACIONES DE CARÁCTER GENERAL

Este equipo se ha concebido para un uso profesional. El usuario deberá leer atentamente el presente manual de instrucciones y cualquier otra información suplementaria facilitada por Varian antes de utilizar el equipo. Varian se considera libre de cualquier responsabilidad debida al incumplimiento total o parcial de las instrucciones, al uso poco apropiado por parte de personal sin formación, a las operaciones no autorizadas o al uso que no cumpla con las normas nacionales específicas. El controlador Turbo-V 70 PCB es un convertidor de frecuencia, controlado por un microprocesador, realizado con componentes en estado sólido y con capacidad de autodiagnos y autoprotección. Éste incorpora todos los circuitos necesarios para el funcionamiento automático de las bombas de la serie Turbo-V 70.

El controlador pilotea las bombas de la serie Turbo-V 70 (con un proceso dividido en diez pasos) durante la fase de puesta en marcha, controlando la tensión y la corriente en relación a la velocidad alcanzada por la bomba. Mediante conectores auxiliares están disponibles los mandos para la puesta en marcha y la parada de la bomba desde remoto, las señales que indican el estado operativo de la bomba y las señales de bloqueo (para interruptores a presión, interruptores de control del flujo del agua, etc.). El controlador debe ser alimentado con una tensión continua de 24 VCC.

En los apartados siguientes se facilita toda la información necesaria para garantizar la seguridad del operador durante el uso del equipo. Una información más detallada se facilita en el Suplemento "Technical Information".

Este manual utiliza los siguientes símbolos convencionales:



¡PELIGRO!

Los mensajes de peligro atraen la atención del operador sobre un procedimiento o una operación específica que, al no realizarse correctamente, podría provocar graves lesiones personales.



¡ATENCIÓN!

Los mensajes de atención se visualizan antes de procedimientos que, al no respetarse, podrían provocar daños al equipo.

NOTA

Las notas contienen informaciones importantes extrapoladas del texto.

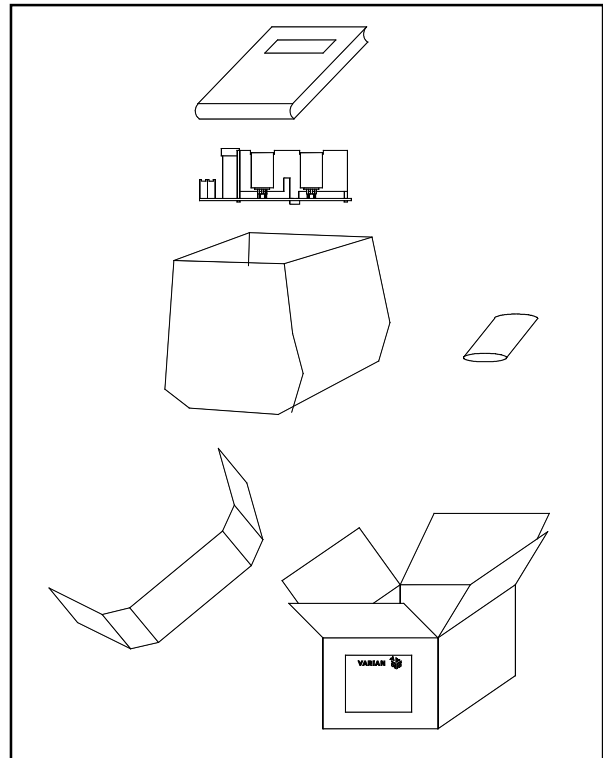
ALMACENAMIENTO

Durante el transporte y el almacenamiento del controlador se deberá cumplir con las condiciones ambientales siguientes:

- temperatura: de -20 °C a +70 °C
- humedad relativa: 0 – 95 % (no condensadora)

PREPARACIÓN PARA LA INSTALACIÓN

El controlador se suministra en un embalaje de protección especial; si se observan señales de daños, que podrían haberse producido durante el transporte, ponerse en contacto con la oficina de venta más cercana.



Embalaje del controlador

Durante la operación de desembalaje, prestar una atención especial a no dejar caer el controlador y evitarle golpes. No dispersar el embalaje en el medio ambiente. El material es totalmente reciclable y cumple con la directiva CEE 85/399 para la preservación del medio ambiente. Antes de instalar el controlador habrá que preparar algunos cables de interconexión, como por ejemplo los cables para las interconexiones con la alimentación, los de las interconexiones lógicas y el de acoplamiento con la bomba. En las figuras siguientes están esquematizados los acoplamientos que hay que realizar entre el controlador y la bomba y entre el controlador y el alimentador. Para más detalles sobre las interconexiones indicadas anteriormente y sobre las características técnicas del transformador (disponible como opción) véase el suplemento "Technical Information".

INSTALACIÓN



¡PELIGRO!

Dentro del controlador se desarrollan tensiones que pueden causar graves daños. Antes de efectuar cualquier operación de instalación o mantenimiento del controlador, desconectarlo de la alimentación. Dentro del controlador se desarrollan altas temperaturas que pueden causar graves daños. Proteger el controlador adecuadamente en su instalación definitiva contra contactos accidentales.

NOTA

El controlador instalado en el sistema definitivo ha de colocarse de manera que el aire de refrigeración pueda circular libremente alrededor del aparato. No instalar ni utilizar el controlador en ambientes expuestos a agentes atmosféricos (lluvia, hielo y nieve), polvos, gases agresivos, en ambientes explosivos o con alto riesgo de incendio.

Durante el funcionamiento es necesario que se respeten las siguientes condiciones ambientales:

- temperatura: de 0 °C a + 40 °C
- humedad relativa: 0 - 95% (no condensadora).

USO

En este apartado se indican los procedimientos operativos principales. Para más detalles y para procedimientos que impliquen conexiones o elementos opcionales, les remitimos al apartado "USE" del anexo "Technical Information".

Antes de usar el controlador efectuar todas las conexiones eléctricas y neumáticas y consultar el manual de la bomba conectada.



¡PELIGRO!

Para evitar lesiones a las personas y al aparato, si la bomba está apoyada sobre una mesa cerciorarse de que se encuentre en posición estable. No poner en marcha nunca la bomba si la brida de entrada no está conectada al sistema o no está cerrada con la brida de cierre.

PROCEDIMIENTOS DE USO

Encendido del controlador

Para encender el controlador es suficiente aprovisionar el controlador mismo con tensión de alimentación.

Puesta en marcha de la Bomba

Para poner en marcha la bomba dejar abierto el pin 12 del conector J4, de manera que al conectarse al controlador la tensión de 24 VCC se verifique el arranque de la bomba.

Parada de la Bomba

Para detener la bomba es necesario cortocircuitar los pines 12 y 15 del conector J4.

MANTENIMIENTO

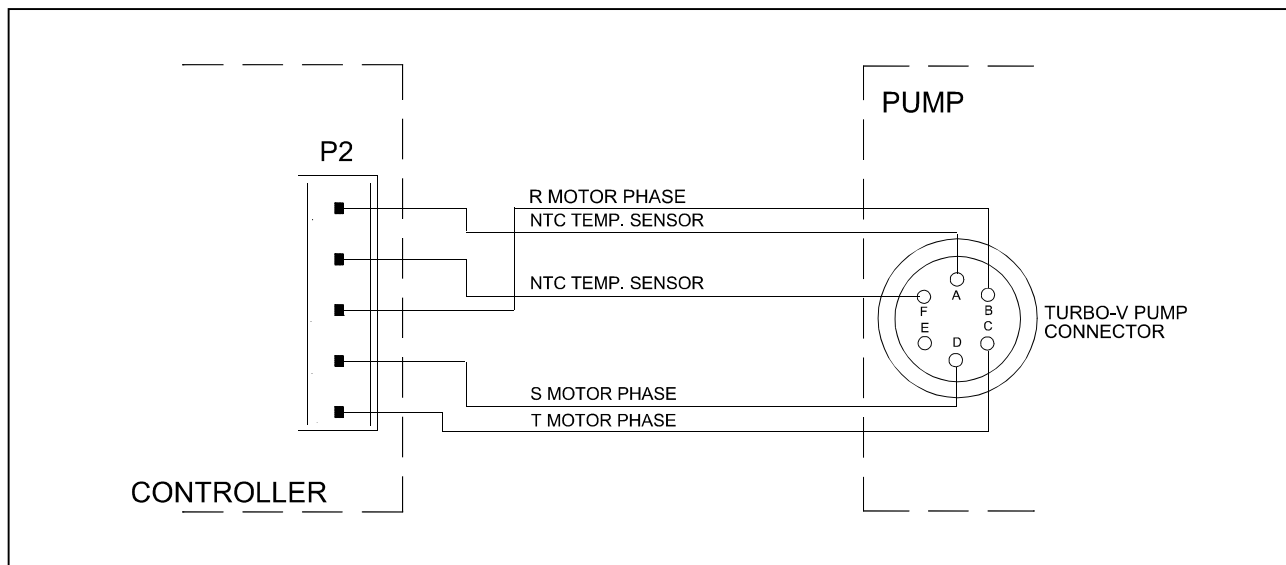
Los controladores de la serie Turbo-V 70 no necesitan ningún mantenimiento. Toda operación ha de ser efectuada por personal autorizado. En caso de avería es posible utilizar el servicio de reparación Varian o el "Varian advance exchange service", que permite obtener un controlador regenerado en vez del averiado.



¡PELIGRO!

Antes de efectuar cualquier operación en el controlador se debe desenchufar el cable de alimentación.

En caso de que un controlador se tenga que desguazar, efectuar su eliminación respetando las normas nacionales específicas.



Cable de interconexión entre controlador y bomba

INFORMAÇÕES GERAIS

Esta aparelhagem destina-se ao uso profissional. O utilizador deve ler atentamente o presente manual de instruções e todas as informações adicionais fornecidas pela Varian antes de utilizar a aparelhagem. A Varian não se responsabiliza pela inobservância total ou parcial das instruções, pelo uso indevido por parte de pessoas não treinadas, por operações não autorizadas ou pelo uso contrário às normas nacionais específicas. O controller Turbo-V 70 PCB é um conversor de frequência, controlado por um microprocessador, realizado com componentes em estado sólido e com capacidade de autodiagnóstico e autoprotecção. Incorpora todos os circuitos necessários para o funcionamento automático das bombas da série Turbo-V 70. O controller comanda as bombas da série Turbo-V 70 (com um processo subdividido em dez passos) durante a fase de activação, controlando a tensão e a corrente em relação à velocidade atingida pela bomba. Através de conectores auxiliares, estão disponíveis os comandos para a activação e a paragem da bomba por controlo remoto, os sinais que indicam o estado operativo da bomba, os sinais de bloqueio (para interruptores de pressão, interruptores de controlo do fluxo de água, etc.). O controller deve ser alimentado por tensão contínua de 24 V CC.

Nos parágrafos seguintes estão descritas todas as informações necessárias para garantir a segurança do operador durante o uso da aparelhagem. Informações pormenorizadas são fornecidas no apêndice "Technical Information".

Este manual utiliza as seguintes convenções:



PERIGO!

As mensagens de perigo chamam a atenção do operador para um procedimento ou uma prática específica que, se não efectuada correctamente, pode provocar graves lesões pessoais.



ATENÇÃO!

As mensagens de atenção são visualizadas antes de procedimentos que, se não observados, podem causar danos à aparelhagem.

NOTA

As notas contêm informações importantes destacadas do texto.

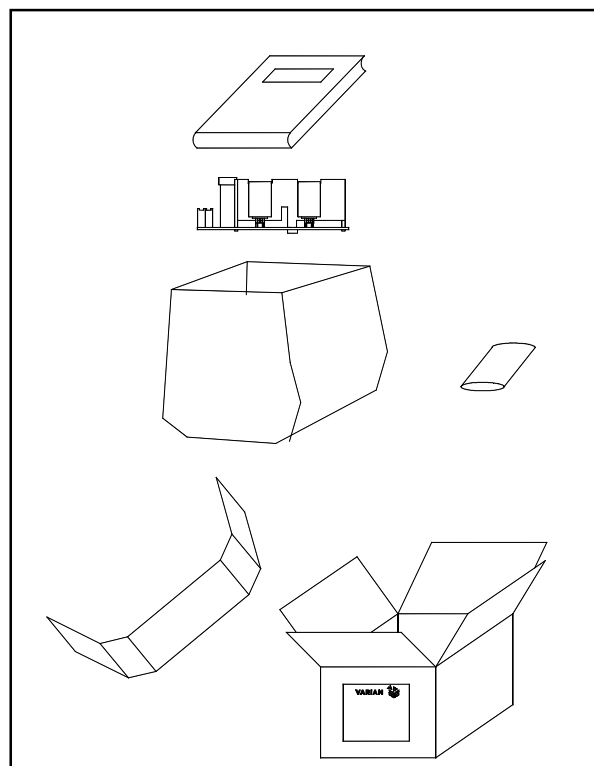
ARMAZENAGEM

Durante o transporte e a armazenagem do controller, devem ser satisfeitas as seguintes condições ambientais:

- temperatura: de -20 °C a + 70 °C
- humidade relativa: 0 - 95% (não condensadora)

PREPARAÇÃO PARA A INSTALAÇÃO

O controller é fornecido numa embalagem protectora especial; se se apresentarem sinais de danos, que poderiam verificar-se durante o transporte, entrar em contacto com o escritório de vendas local.



Embalagem do controller

Durante a remoção da embalagem, tomar muito cuidado para não deixar cair o controller e para não submetê-lo a choques. Não depositar a embalagem no meio ambiente. O material é completamente reciclável e responde à norma CEE 85/399 para a protecção do meio ambiente. Antes de instalar o controller, é necessário preparar alguns cabos de interconexão, como por exemplo os cabos para as interconexões com a alimentação, para as interconexões lógicas e para a ligação com a bomba. Nas figuras a seguir estão esquematizadas as ligações a efectuar entre o controller e a bomba, e entre o controller e o alimentador. Para maiores detalhes sobre as interconexões citadas acima ver o apêndice "Technical Information".

INSTALAÇÃO



PERIGO!

No interior do controller desenvolvem-se altas tensões que podem provocar graves danos ou a morte. Antes de efectuar qualquer operação de instalação ou manutenção do controller, desligar a tomada de alimentação. No interior do controller desenvolvem-se temperaturas elevadas que podem provocar graves danos. Proteger adequadamente o controller contra contactos acidentais durante a sua instalação definitiva.

NOTA

O controller instalado no sistema definitivo deve ser posicionado de modo que o ar de refrigeração possa circular livremente ao redor da aparelhagem. Não instalar e/ou utilizar o controller em ambientes expostos a agentes atmosféricos (chuva, gelo, neve), poeiras, gases agressivos ou em ambientes explosivos ou com elevado risco de incêndio.

Durante o funcionamento é necessário que sejam respeitadas as seguintes condições ambientais:

- temperatura: de 0 °C a + 40 °C
- humidade relativa: 0 - 95% (não condensadora)

UTILIZAÇÃO

Neste parágrafo são descritos os principais procedimentos operativos. Para maiores detalhes e para procedimentos que envolvam ligações ou peças opcionais, consultar o parágrafo "USE" do apêndice "Technical Information".

Antes de usar o controller, efectuar todas as ligações eléctricas e pneumáticas e consultar o manual da bomba ligada.



PERIGO!

Para evitar danos às pessoas e à aparelhagem, caso a bomba esteja apoiada numa mesa, certificar-se da sua estabilidade. Nunca activar a bomba se o flange de entrada não estiver ligado ao sistema ou não estiver fechado com o flange de fecho.

PROCEDIMENTOS DE USO

Acendimento do Controller

Para ligar o controller é suficiente fornecer a tensão de alimentação ao controller.

Activação da bomba

Para activar a bomba é necessário deixar o pin 12 do conector J4 aberto. Deste modo, quando o controller for alimentado com uma tensão de 24 V CC, a bomba activa-se.

Paragem da bomba

Para parar a bomba é necessário pôr os pins 12 e 15 do conector J4 em curto-circuito.

MANUTENÇÃO

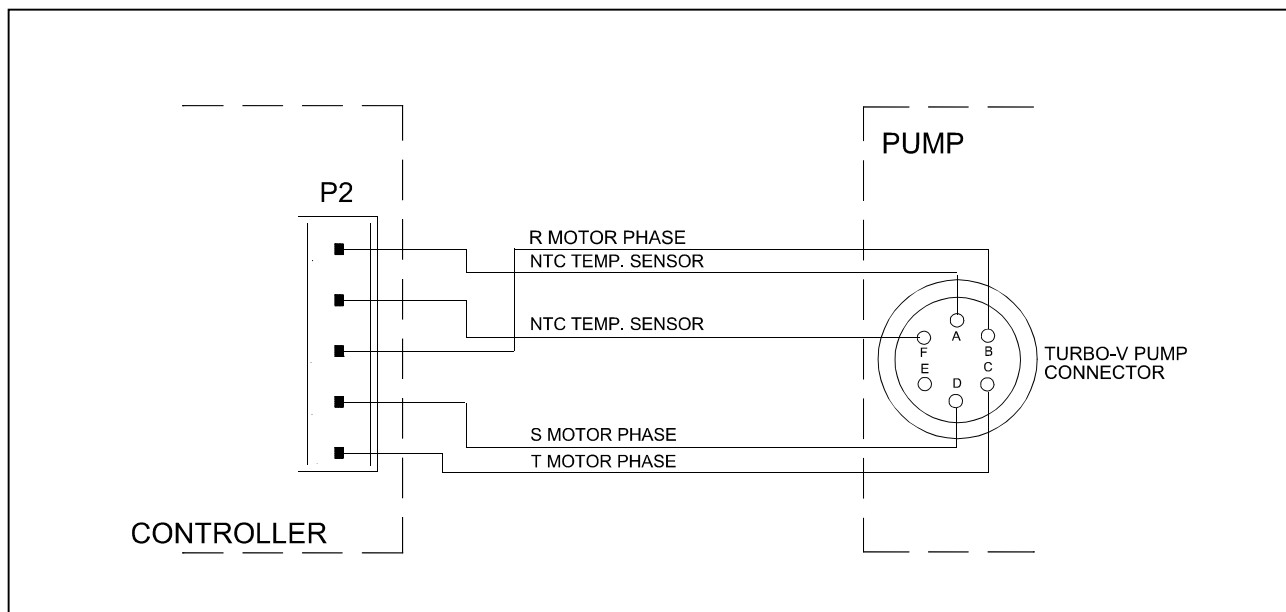
O controller da série Turbo-V 70 não requer qualquer manutenção. Todas as operações devem ser efectuadas por pessoal autorizado. Em caso de defeito é possível utilizar o serviço de reparação Varian ou o "Varian advance exchange service", que permite obter um controller regenerado que substitua o controller com defeito.



PERIGO!

Antes de efectuar qualquer operação no controller, desligar o cabo de alimentação.

Caso um controller deva ser destruído, proceder à sua eliminação respeitando as normas nacionais específicas.



Cabo de Interconexão entre o Controller e a Bomba

ALGEMENE INFORMATIE

Deze apparatuur is bestemd voor beroepsmatig gebruik. De gebruiker wordt verzocht aandachtig deze handleiding en alle overige door Varian verstrekte informatie door te lezen alvorens het apparaat in gebruik te nemen. Varian acht zich niet aansprakelijk voor de gevolgen van het niet of gedeeltelijk in acht nemen van de aanwijzingen, onoordeelkundig gebruik door niet hiervoor opgeleid personeel, reparaties waarvoor geen toestemming is verkregen of gebruik in strijd met de specifieke nationale wetgeving. De controller Turbo-V 70 PCB is een frequentieomzetter die gestuurd wordt door een microprocessor, is gemaakt van halfgeleider-elementen en is in staat om zelfdiagnose en zelfbescherming uit te voeren. De controller is van circuits voorzien die noodzakelijk zijn voor de automatische werking van de pompen van de serie Turbo-V 70. De controller stuurt de pompen van de serie Turbo-V 70 (met een proces bestaande uit tien stappen) tijdens de startfase, en controleert hierbij de spanning en de stroom in verhouding tot de door de pomp bereikte snelheid. Via hulpconnectors zijn de sturingen voor het op afstand starten en stoppen van de pomp beschikbaar, de signalen die de bedrijfstoestand van de pomp aangeven, blokkeersignalen (voor drukschakelaars, regelschakelaars van de waterstroom, enz.). De controller moet met een gelijkspanning van 24 Vdc worden gevoed.

In de volgende paragrafen is alle informatie vermeld om de veiligheid van de operator tijdens het gebruik van de apparatuur te verzekeren. Gedetailleerde informatie is te vinden in de bijlage "Technical information".

Deze handleiding hanteert de volgende symbolen:



GEVAAR!

Bij dit symbool staat tekst die de aandacht van de operator vestigt op een speciale procedure of methode die, indien niet correct uitgevoerd, ernstig lichamelijk letsel kan veroorzaken.



ATTENTIE

Bij dit symbool staat tekst met procedures die, indien niet opgevolgd, schade aan apparatuur kunnen veroorzaken.

OPMERKING

De opmerkingen bevatten belangrijke informatie die uit de tekst is gelicht.

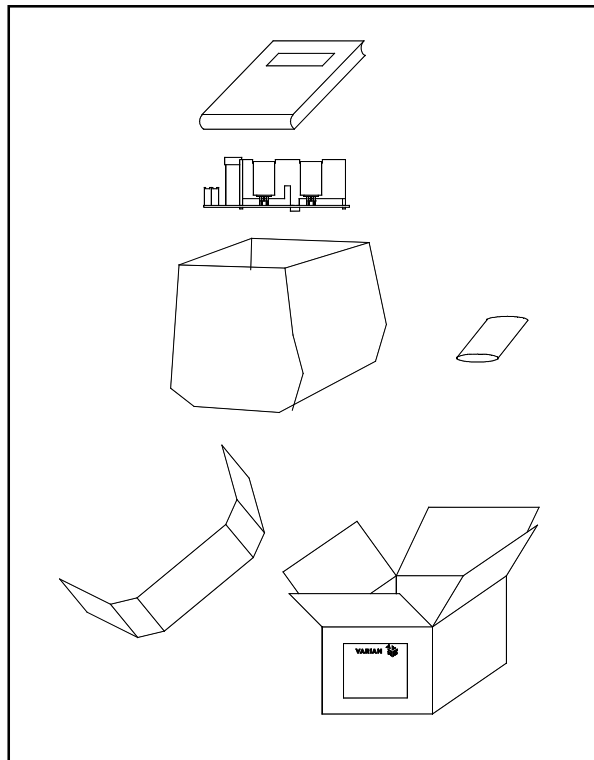
OPSLAG

Tijdens het transport en de opslag van de controllers moeten de volgende omgevingscondities aanwezig zijn:

- temperatuur: van -20 °C tot +70 °C
- relatieve vochtigheid: 0 - 95% (niet condensierend)

VOORBEREIDING VOOR INSTALLATIE

De controller wordt in een speciale beschermende verpakking geleverd; als er schade wordt geconstateerd die tijdens het transport veroorzaakt zou kunnen zijn, meteen contact opnemen met het plaatselijke verkoopkantoor.



Verpakking van de controller

Zorg er bij het uitpakken voor dat de controller niet kan vallen of stoten te verduren krijgt. Laat de verpakking niet ergens buiten achter. Het verpakkingsmateriaal is volledig recyclebaar en voldoet aan de EEG milieurechtlijn 85/399.

Alvorens de controller te installeren, moeten enkele verbindingkabels worden voorbereid, zoals bijvoorbeeld kabels voor verbinding met de voeding, kabels voor de logicaverbindingen en de kabel voor aansluiting op de pomp. Op de volgende afbeeldingen zijn de verbindingen tussen controller en pomp en tussen controller en voedingsinrichting schematisch weergegeven.

Voor meer informatie over deze verbindingen en over de kenmerken van de voedingstransformator (leverbaar als extra) wordt verwezen naar de bijlage "Technical Information".

INSTALLATIE



GEVAAR!

In de controller ontwikkelen zich hoge spanningen die ernstige schade kunnen veroorzaken. Alvorens installatie- of onderhoudswerkzaamheden uit te voeren, de controller van de voeding afkoppelen. In de controller ontwikkelen zich hoge temperaturen die zware schade kunnen veroorzaken. Bij de definitieve installatie van de controller, deze op passende wijze tegen eventueel contact beschermen.

OPMERKING

De controller die definitief in het systeem geïnstalleerd wordt moet zodanig geplaatst worden dat de koellucht vrij rondom het apparaat kan circuleren. De controller mag niet geïnstalleerd en/of gebruikt worden in ruimten die blootgesteld zijn aan de weersomstandigheden (regen, vorst, sneeuw), stof, agressieve gassen, of in ruimten met explosiegevaar of zeer hoog brandgevaar.

Tijdens de werking moeten de volgende omgevingscondities aanwezig zijn:

- temperatuur: van 0 °C tot +40 °C
- relatieve vochtigheid: 0 - 95% (niet condenserend).

GEBRUIK

In deze paragraaf worden de voornaamste bedieningswijzen uitgelegd. Voor meer informatie of procedures die aansluitingen of speciale opties betreffen wordt verwezen naar de paragraaf "USE" van de bijlage "Technical Information".

Breng, alvorens de controller in gebruik te nemen, alle elektrische en pneumatische aansluitingen tot stand en raadpleeg hiervoor de handleiding van de aan te sluiten pomp.



GEVAAR!

Indien de pomp op een tafel is geplaatst, controleren of deze stabiel staat om letsel aan personen en schade aan het apparaat te voorkomen. Laat de pomp nooit werken zonder dat de ingangsfens aan het systeem is gekoppeld of de afsluitflens is gesloten.

GEBRUIKSPROCEDURES

Inschakelen van de controller

Om de controller in te schakelen, de voedingskabel in de netcontactdoos inbrengen.

Starten van de pomp

Voor het starten van de pomp moet pin 12 van connector J4 open gelaten worden, zodat de pomp start wanneer 24 Vdc spanning aan de controller wordt geleverd.

Stoppen van de pomp

Voor het stoppen van de pomp moeten de pins 12 en 15 van connector J4 kortgesloten worden.

ONDERHOUD

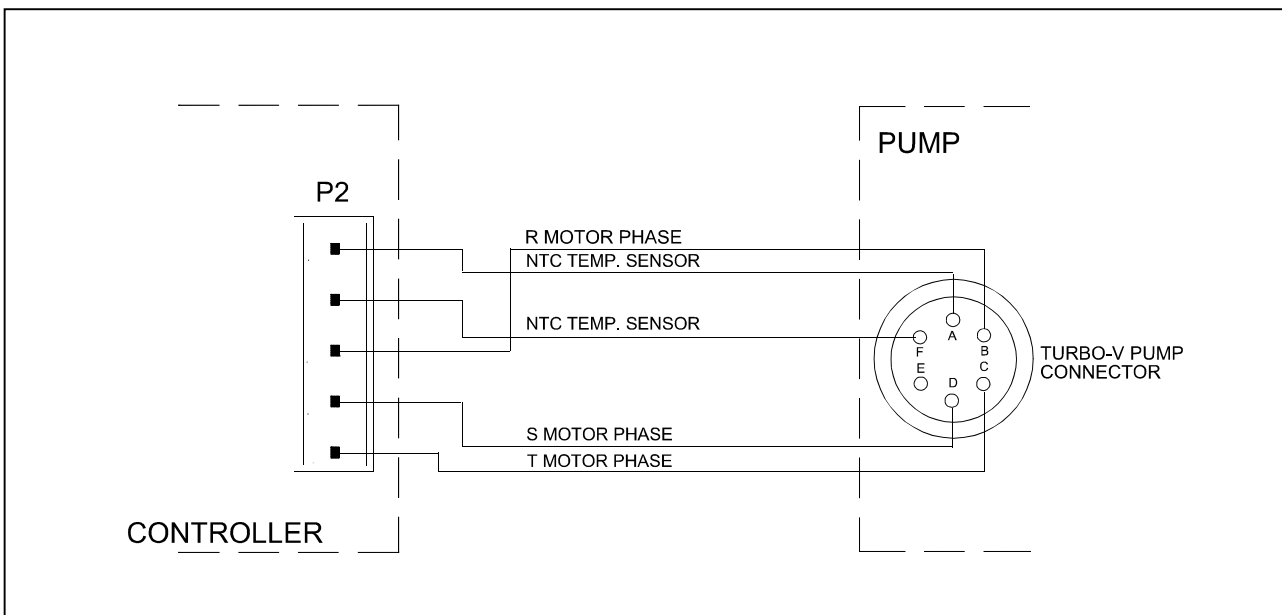
De controllers van de serie Turbo-V 70 zijn onderhoudsvrij. Eventuele werkzaamheden moeten door bevoegd personeel worden uitgevoerd. In geval van storing is het mogelijk om de reparatiedienst van Varian of de "Varian advanced exchange service" in te schakelen: zo krijgt men een ruilcontroller ter vervanging van de defecte controller.



GEVAAR!

Alvorens werkzaamheden aan de controller uit te voeren, de voedingskabel afkoppelen.

Mocht de controller gesloopt worden, ga dan overeenkomstig de specifieke nationale wetgeving te werk.



Verbindingskabel tussen controller en pomp

GENEREL INFORMATION

Dette materiel er beregnet til professionel anvendelse. Brugeren bør læse denne brugsanvisning og anden yderligere information fra Varian, før udstyret anvendes. Varian tager ikke ansvar for skader helt eller delvis som følge af tilsidesættelse af disse instruktioner, fejlagtig brug af personer uden tilstrækkelig kendskab, ukorrekt anvendelse af udstyret eller håndtering, der strider imod gældende lokale regler. Styreenheden i Turbo-V 70 PCB-serien er en mikroprocessorstyret frekvens-omformer, der består af komponenter med fast tilstand. Styreenheden er udstyret med selvdiagnose og selvbeskyttelsesfunktioner. Styreenheden omfatter alle midler, der kræves for automatisk drift af pumperne i Turbo-V 70 serien. Styreenheden kontrollerer pumperne i Turbo-V 70 serien (med en ti-trins-proces) i forbindelse med start. Spænding og strøm reguleres i forhold til pumpens opnåede hastighed. Hjælpekontakter forsyner kontrol til fjernstart og -stop af pumpen, signaler om pumpens tilstand, blokerings signaler (til tryk- og vandføringsafbrydere, osv.). Styreenheden skal forsynes med jævnspænding på 24 V dc.

De følgende afsnit indeholder al information der behøves, for at garantere operatørens sikkerhed under anvendelsen. Detaljeret information findes i bilaget "Technical Information".

I brugsanvisningen anvendes følgende standard-rubrikker:



ADVARSEL !

Advarselsmeddelelserne informerer operatøren om, at en speciel procedure eller en vis type arbejde skal udføres præcist efter anvisningerne. I modsat fald er der risiko for svære personskader.



VIGTIGT!

Denne advarselsmeddelelse vises før procedurer, der skal følges nøje for ikke at risikere maskinskader.

BEMÆRK

Dette gør opmærksom på vigtig information i teksten.

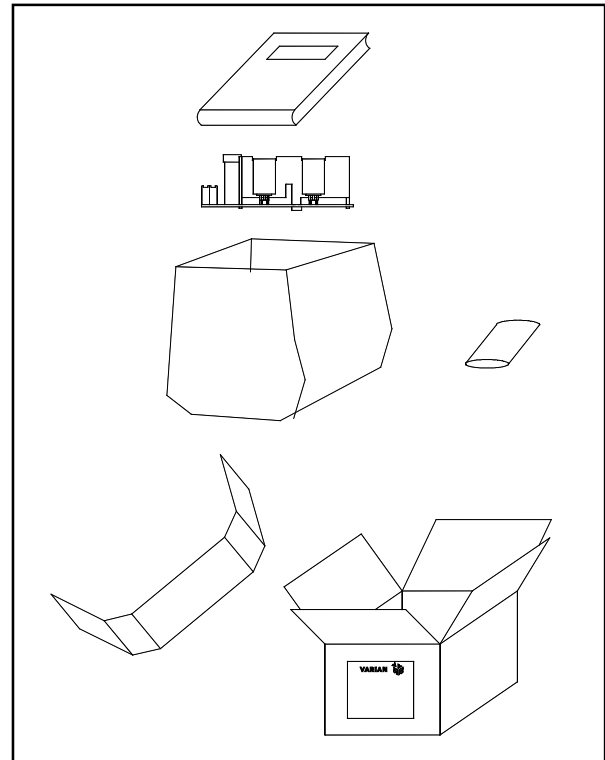
OPBEVARING

Følgende krav til omgivelsesforholdene gælder ved transport og opbevaring af styreenheden:

- temperatur: fra -20 °C til +70 °C
- relativ luftfugtighed: 0 - 95% (ikke kondenserende)

FORBEREDELSE FØR INSTALLATION

Styreenheden leveres i en speciel beskyttende emballage. Kontakt den lokale forhandler, hvis emballagen viser tegn på skader, der kan være opstået under transporten.



Styreenhedens emballage

Sørg for at styreenheden ikke tabes eller udsættes for stød ved udpakningen.

Smid ikke emballagen ud. Materialet kan genbruges 100% og opfylder EU-direktiv 85/399 om miljøbeskyttelse.

Inden styreenheden installeres, skal man klargøre de nødvendige forbindelseskabler, d v s forbindelseskabler til strømforsyning og pumpe samt kabler til logiske signaler. Følgende billeder viser de nødvendige forbindelser mellem styreenhed og pumpe samt mellem styreenhed og strømkilde.

For yderligere information om forbindelser og strømkilde (ekstra tilbehør) henvises til bilag "Technical Information".

INSTALLATION



ADVARSEL !

Spændinger frembragt i styreenheden kan nå høje værdier og forårsage stor skade. Frakobl altid strømkablet, inden der udføres installations- eller vedligeholdelsesarbejde på styreenheden. Temperaturen frembragt i styreenheden kan nå høje værdier og forårsage stor skade. I forbindelse med permanent installation skal styreenheden og transformatoren på egnet måde beskyttes mod utilsigtet tilslutning.

BEMÆRK

Styreenheden skal anbringes på en sådan måde, at luft kan cirkulere frit omkring apparatet. Installér og anvend ikke styreenheden i miljøer, der udsættes for påvirkninger fra atmosfæren (regn, sne, is), damp, aggressive gasser, og ligeledes ikke i eksplosivt eller brandfarligt miljø.

Følgende krav til omgivelserforholdene gælder ved drift:

- temperatur: fra 0 °C til +40 °C
- relativ luftfugtighed: 0 - 95% (ikke kondenserende)

ANVENDELSE

Dette afsnit beskriver de vigtigste driftsprocedurer. For en detaljeret beskrivelse samt procedurer, der involverer tilslutninger eller tilbehør, henvises til afsnittet "USE" i bilag "Technical Information".

Inden styreenheden anvendes, bør samtlige elektriske og pneumatiske tilslutninger udføres. Læs brugsanvisningen før pumpen tilsluttes.

**ADVARSEL!**

Sørg for, at pumpen står fast, hvis den er installeret på et bord. Dette er for at forebygge skader på apparatet og personer. Start aldrig pumpen, hvis pumpetiløbet ikke er tilsluttet systemet eller er blokeret.

INSTRUKTION**Start af styreenheden**

Styreenheden startes ved at sætte strømkablet i vægudtaget.

Start af pumpen

Pumpen startes ved at lade stiften 12 på konnektoren J4 være åben, således at pumpen startes, når kontrolenheden forsynes med spænding på 24 V dc.

Stop af pumpen

Pumpen stopper ved at kortslutte stift 12 og stift 15 på konnektoren J4.

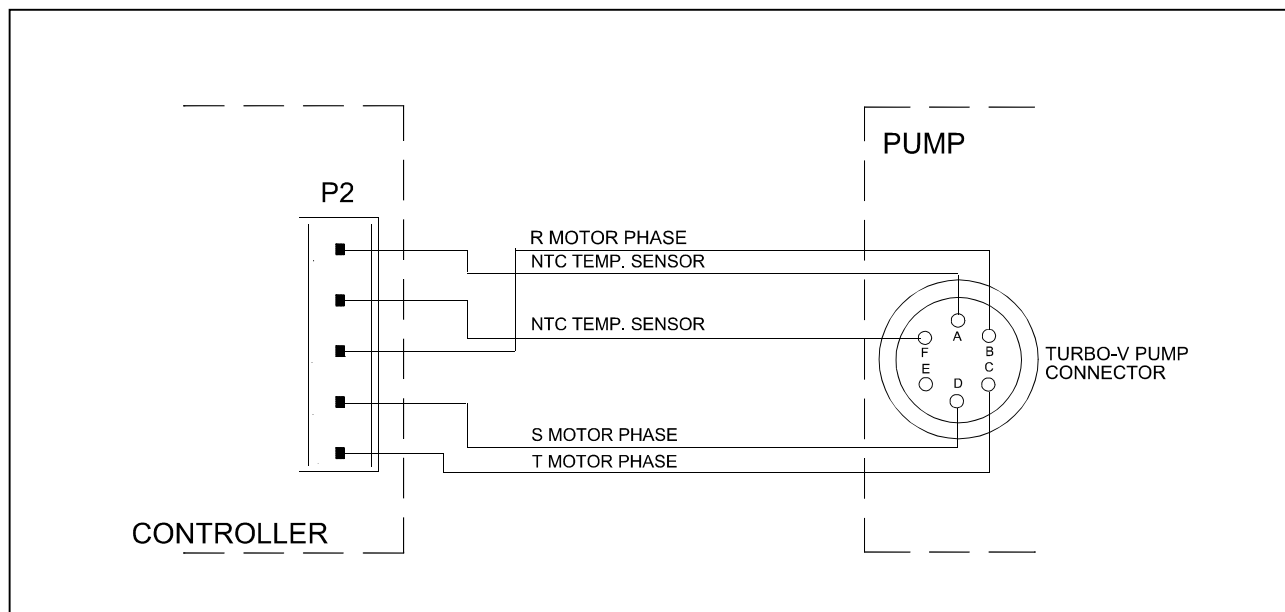
VEDLIGEHOLDELSE

Styreenhederne i Turbo-V 70-serien behøver ikke nogen vedligeholdelse. Ethvert indgreb på pumpen skal foretages af autoriseret personale. Hvis pumpen går i stykker, kan man benytte sig af Varians reparations-service eller Varian udvekslingsservice, hvor man kan få en repareret pumpe i bytte for den, der er gået i stykker.

**ADVARSEL!**

Inden der foretages noget som helst indgreb på styreenheden, skal strømmen først afbrydes.

Skrotning af pumpen skal foregå i overensstemmelse med det pågældende lands særlige love.



Forbindelseskabel mellem styreenheden og pumpen

ALLMÄN INFORMATION

Utrustningen är avsedd för yrkesmässig användning. Användaren bör läsa denna bruksanvisning, samt övrig dokumentation från Varian före användning av utrustningen. Varian tar inget ansvar för skador som helt eller delvis orsakats av åsidosättande av instruktionerna, olämplig användning av person utan tillräcklig kunskap, obehörigt bruk av utrustningen eller hantering som strider mot gällande lokala föreskrifter. Styrenheten i Turbo-V 70 PCB-serien är en mikroprocessorstyrd frekvensomvandlare som består av komponenter med fast tillstånd. Styrenheten är försedd med självdiagnos- och självskyddsfunktion. Styrenheten omfattar alla kretsar som behövs för automatisk drift av pumparna i Turbo-V 70 serien. Styrenheten kontrollerar pumparna i Turbo-V 70-serien (med en tiostegs-process) i samband med start. Spänning och ström regleras i förhållande till pumpens uppnådda hastighet. Hjälpkontakter erbjuder kontroll för fjärrstart och fjärrstopp av pumpen, signaler för pumpens tillstånd, blockerings signaler (för tryckvakter, kontrollbrytare för vattenflöde osv). Styrenheten ska förses med likspänning på 24 Vdc.

De följande avsnitten innehåller all information som behövs för att garantera operatörens säkerhet under driften. Detaljerade uppgifter finns i bilagan "Technical information".

I bruksanvisningen används följande standard-rubriker:



VARNING!

Varningsmeddelandena informerar operatören om att en speciell procedur eller en viss typ av arbete måste utföras exakt enligt anvisningarna. I annat fall finns risk för svåra personskador.



VIKTIGT

Detta varningsmeddelande visas framför procedurer som måste följas exakt för att undvika skador på maskinen.

OBSERVERA

Detta visar på viktig information i texten.

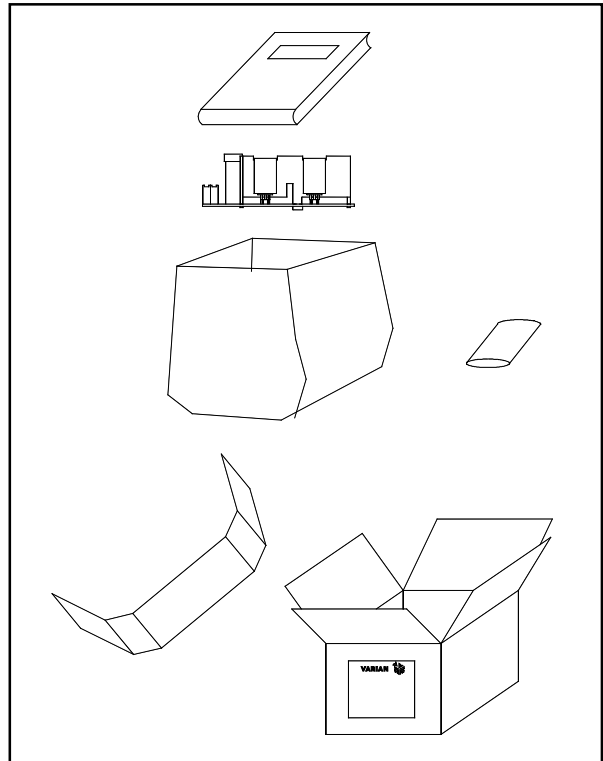
FÖRVARING

Följande krav på omgivningsförhållanden gäller vid transport och förvaring av styrenheten:

- temperatur: från -20 °C till +70 °C
- relativ luftfuktighet: 0 - 95% (utan kondens)

FÖRBEREDELSE FÖR INSTALLATION

Styrenheten levereras i ett särskilt skyddande emballage. Kontakta det lokala försäljningskontoret om emballaget visar tecken på skador som kan ha uppstått under transporten. Se till att styrenheten inte tappas eller utsätts för stötar vid uppackningen.



Styrenhetens förpackning

Kasta inte packmaterialet i soporna. Materialet är återvinningsbart till 100% och uppfyller EU-direktiv 85/399 om miljöskydd. Innan styrenheten installeras ska du förbereda de nödvändiga anslutningskablarna, det vill säga anslutningskablar till matarspänning och pump samt kablar för logiska signaler. Följande bilder visar de nödvändiga anslutningarna mellan styrenhet och pump samt mellan styrenhet och strömkälla. För ytterligare information om anslutningar och strömkälla (tillval) hänvisas till bilaga "Technical Information".

INSTALLATION



VARNING!

Spänningen inuti styrenheten kan nå höga värden och förorsaka allvarliga skador. Frånkoppla alltid strömkabeln innan något installations- eller underhålls-moment utförs på styrenheten.

Temperaturen inuti styrenheten kan nå höga värden och förorsaka allvarliga skador. I samband med permanent installation ska styrenhet och transformator lämpligen skyddas mot oavsiktlig kontakt.

OBSERVERA

Styrenheten ska installeras permanent på ett sådant ställe, att kylluften kan cirkulera fritt kring apparaten. Installera och använd inte styrenheten i miljöer som utsätts för påverkan från atmosfären (regn, snö, is), damm, aggressiva gaser, och inte heller i explosiv eller brandfarlig miljö.

Följande krav på omgivningsförhållanden gäller vid drift:

- temperatur: från 0 °C till +40 °C
- relativ luftfuktighet: 0 - 95% (utan kondens)

ANVÄNDNING

Detta avsnitt beskriver de viktigaste driftmomenten. För en detaljerad beskrivning samt beträffande moment som involverar anslutningar eller tillbehör hänvisas till avsnittet "USE" i bilaga "Technical Information".

Innan styrenheten används bör samtliga elektriska och pneumatiska anslutningar utföras.

Läs bruksanvisningen för den anslutna pumpen.

**VARNING!**

Försäkra dig att pumpen står stadigt, om den är installerad på ett bord, detta för att förebygga skador på apparaten och personer. Sätt aldrig igång pumpen, om intagsflänsen varken är kopplad till systemet eller är blockerad på plats med låsflänsen.

INSTRUKTIONER FÖR BRUK**Start av styrenheten**

Styrenheten startas enkelt genom att strömkabeln sätts i vägguttaget.

Start av pumpen

Pumpen startas genom att stift 12 öppnas på kontakt J4 så att pumpen startar när spänningen 24 Vdc når styrenheten.

Stopp av pumpen

Pumpen stoppas genom att stift 12 och 15 kortsluts på kontakt J4.

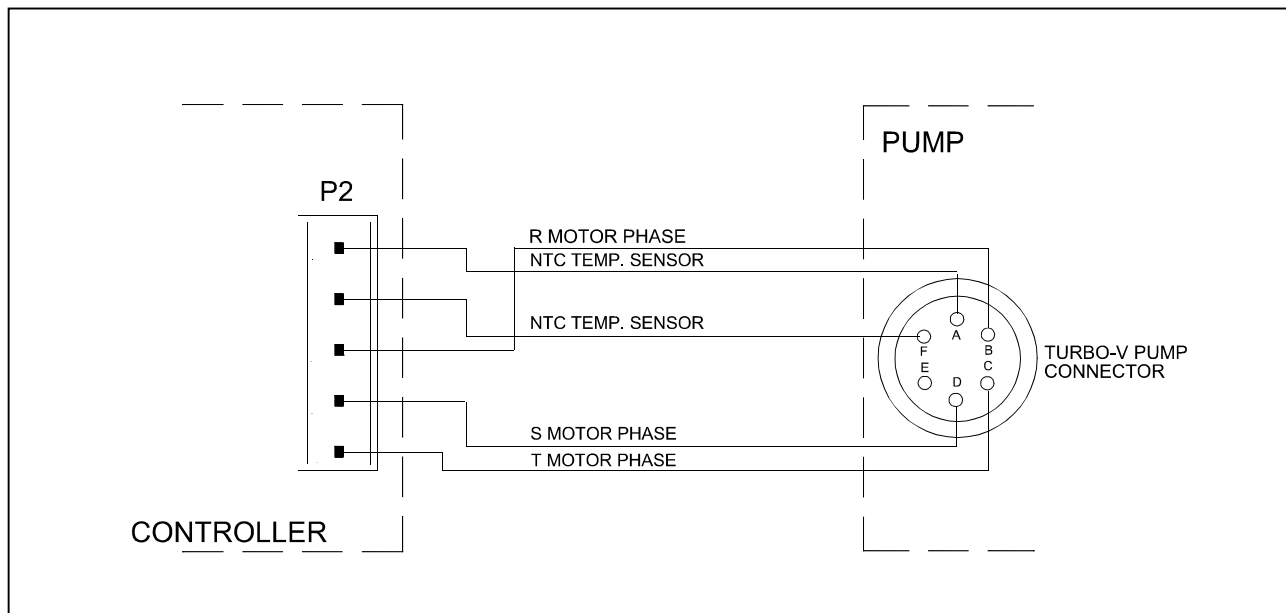
UNDERHÅLL

Styrenheterna i Turbo-V 70-serien är underhållsfria. Allt servicearbete måste utföras av auktoriserad personal. Om styrenheten havererar, kontakta Varian reparationsverkstad eller Varian utbytesservice, som kan ersätta styrenheten med en renoverad styrenhet.

**VARNING!**

Innan något arbete utförs på styrenheten måste dess strömförsörjning brytas.

Skrotning av pumpen skall ske enligt gällande lagstiftning.



Anslutningskabel mellan styrenhet och pump

GENERELL INFORMASJON

Dette utstyret er beregnet til bruk av profesjonelle brukere. Brukeren bør lese denne brukerveiledningen og all annen informasjon fra Varian før utstyret tas i bruk.

Varian kan ikke holdes ansvarlig for hendelser som skjer på grunn av manglende oppfølging, selv delvis, av disse instruksjonene, feilaktig bruk av utrenet personell, ikke godkjente endringer av utstyret eller handlinger som på noen måte er i strid med nasjonale bestemmelser.

Styreenheten i Turbo-V 70 PCB serien er en mikroprosessorstyrt frekvensomvender, som består av komponenter med fast tilstand. Styreenheten har funksjoner for selvdiagnose og selvbeskyttelse.

Styreenheten omfatter alle kretser som er nødvendige for automatisk drift av pumpene i Turbo-V 70 serien.

Styreenheten kontrollerer pumpene i Turbo-V 70 serien (med en titringsprosess) ved oppstart. Spenning og strømstyrke justeres i forhold til pumpens oppnådde hastighet. Hjelpetakter gir muligheter for fjernstyrt start og stopp av pumpen, signaler for pumpens tilstand, blokkeringssignaler (for trykksensorer, kontrollbrytere for vannstrøm osv). Styreenheten skal forsynes med jevnspenning på 24 VDC.

De følgende avsnittene inneholder all informasjon som er nødvendig for å sikre brukeren når utstyret er i bruk. For mer detaljert bruk vises det til tillegget "Technical Information".

Denne veiledningen bruker følgende standard-protokoll:



ADVARSEL

Disse meldingene skal tiltrekke seg brukerens oppmerksomhet til en spesiell fremgangsmåte eller praksis som, hvis den ikke følges, kan medføre alvorlige skader.



FORSIKTIG

Denne advarselen vises foran fremgangsmåter som, dersom de ikke følges, kan føre til at utstyret skades.

MERK

Merknadene inneholder viktig informasjon som er hentet fra teksten.

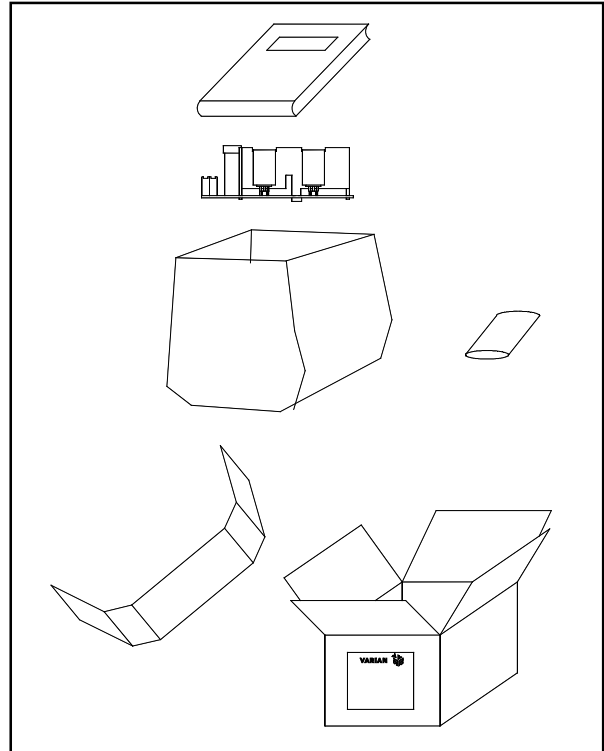
LAGRING

Når styreenhetene transporteres eller lagres, må følgende forhold være oppfylt:

- temperatur: fra 20 °C til +70 °C
- relativ fuktighet: 0 - 95% (uten kondens)

FORBEREDE INSTALLASJONEN

Styreenheten leveres i en spesiell beskyttelsesemballasje. Viser denne tegn på skader som kan ha oppstått under transporten, må du ta kontakt med det lokale salgskontoret.



Styreenhetens emballasje

Når styreenheten pakkes ut, må du passe på at den ikke slippes ned eller utsettes for noen form for støt. Emballasjen må ikke kastes på en ulovlig måte. Alle materialer er 100% resirkulerbare og er i samsvar med EU-direktiv 85/399 om miljøbeskyttelse.

Før styreenheten installeres skal du klargjøre de nødvendige forbindelseskablene, det vil si forbindelseskabler til matespenning og pumpe samt kabler for logiske signaler. Følgende bilder viser de nødvendige forbindelsene mellom styreenhet og pumpe samt mellom styreenhet og strømkilde. For ytterligere informasjon om forbindelser og strømkilde (ekstrautstyr) vises det til vedlegget "Technical Information".

INSTALLASJON



ADVARSEL

Spenningen inne i styreenheten kan nå høye verdier og kan føre til alvorlige skader. Kople alltid strømkabelen fra strømmettet før alle installasjons- eller vedlikeholdsarbeider som utføres på styreenheten.

Temperaturen inne i styreenheten kan nå høye verdier og kan føre til alvorlige skader. I forbindelse med permanent installasjon skal styreenhet og transformator beskyttes mot utilsiktet kontakt på en passende måte.

MERK

Styreenheten skal installeres på slik måte, at kjøleluften kan sirkulere fritt rundt apparatet. Ikke installer eller bruk styreenheten i miljøer som utsettes for regn, snø eller is, støv, aggressive gasser, eksplosjonsfarlige miljøer eller i miljøer med stor brannfare.

Under bruk må følgende forhold respekteres:

- temperatur: fra 0 °C til + 40 °C
- relativ fuktighet: 0 - 95% (uten kondens)

BRUK

Dette avsnittet beskriver de viktigste driftsmomentene. For en detaljert beskrivelse samt moment som omfatter tilkoplinger eller ekstrautstyr vises det til avsnittet "Use" i vedlegget "Technical Information".

Før styreenheten tas i bruk bør samtlige elektriske og pneumatiske tilkoplinger gjøres.

Les brukerveiledningen for pumpen som er tilkopleet.

**ADVARSEL**

Dersom pumpen er installert på et bord må du kontrollere at pumpen står støtt. Dette er viktig for å forhindre skader på apparatet og på personer. Dersom inngangslensene hverken er tilkopleet systemet eller dersom den er blokkert av låseflensen må pumpen aldri startes opp.

INSTRUKSJONER FOR BRUK**Starte styreenheten**

Styreenheten startes ved å sette strømkabelen i veggkontakten.

Starte pumpen

Pumpen startes ved å la stift 12 på konnektoren J4 være åpen, slik at pumpen starter når styreenheten får spenningen på 24 VDC.

Stoppe pumpen

Pumpen stopper når stiftene 12 og 14 på konnektoren J4 kortsluttes.

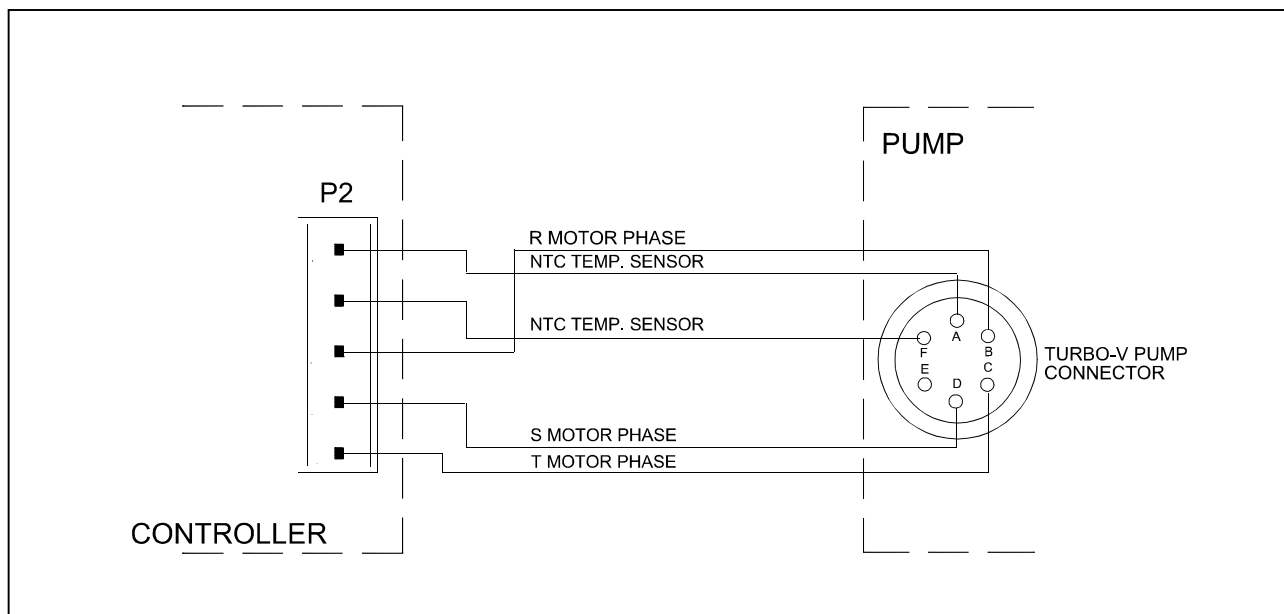
VEDLIKEHOLD

Turbo-V 70 seriens styreenheter er vedlikeholdsfrie. Alt arbeid på styreenheten må kun utføres av autorisert personell. Dersom styreenheten stanser, må du ta kontakt med Varians reparasjonsservice eller med Varians avanserte bytteservice, som kan tilby overholte styreenheter til erstatning for den ødelagte styreenheten.

**ADVARSEL**

Før noe arbeid utføres på styreenheten, må den frakoples strømmettet.

Dersom en styreenhet skal kasseres, må dette skje i henhold til nasjonale bestemmelser.



Forbindelseskabel mellom styreenheten og pumpen

YLEISIÄ TIETOJA

Tämä laite on tarkoitettu ammattimaiseen käyttöön. Ennen laitteen käyttöönottoa käyttäjän tulee lukea huolellisesti mukana seuraava käyttöohje sekä kaikki muut Varianin toimittamat lisätiedot. Varian ei vastaa seurauksista, jotka johtuvat laitteen käyttöohjeiden täydellisestä tai osittaisesta laiminlyömisestä, ammattitaidottomien henkilöiden suorittamasta laitteen virheellisestä käytöstä, valtuuttamattomista toimenpiteistä tai maakohtaisten säädösten ja normien vastaisesta käytöstä. Sarjan Turbo-V 70 PCB valvoja on mikroprosessorin valvoma kiinteistä materiaaleista tehtyjä taajuudenmuuntimia, jotka kykenevät itsemäärätelyyn ja itsesuojaukseen. Ne yhdistävät kaikki sähköpiirit, jotka ovat välttämättömiä Turbo-V 70-sarjan pumpun automaattiselle toiminnalle. Valvoja ajaa Turbo-V 70-sarjan pumppuja (kymmenportaisessa järjestelmässä) käynnistysvaiheessa valvoen jännitettä ja sähkövirtaa suhteessa pumpun saavuttamaan nopeuteen.

Apuliittimiä käyttäen on mahdollista käyttää kauko-ohjattua pumpun käynnistystä ja pysähdystä, signaaleja, jotka ilmaisevat pumpun toimintatilan, pysäytyssignaaleja (painokatkaisimille, veden virtauksen säätelykatkaisijalle jne.). Valvojan syöttöjännitteen tulee olla 24 Vdc.

Seuraavilla sivuilla on luettavissa tarpeelliset tiedot laitteen käyttäjän turvallisuuden takaamiseksi laitteen käytön aikana. Yksityiskohtaiset tiedot löytyvät liitteestä "Technical Information".

Tämä käsikirja käyttää seuraavia merkintöjä:



VAARA!

Vaara-merkinnät saavat käyttäjän huomion kiinnittymään erityisiin toimintotapoihin, joiden seuraamatta jättäminen voi aiheuttaa vakavia henkilövaurioita.



HUOMIO!

Huomio-merkinnät varoittavat toiminnoista, joiden laiminlyönti voi johtaa laitteen vaurioitumiseen.

HUOM

Huomiot sisältävät tärkeätä tekstistä otettua tietoa.

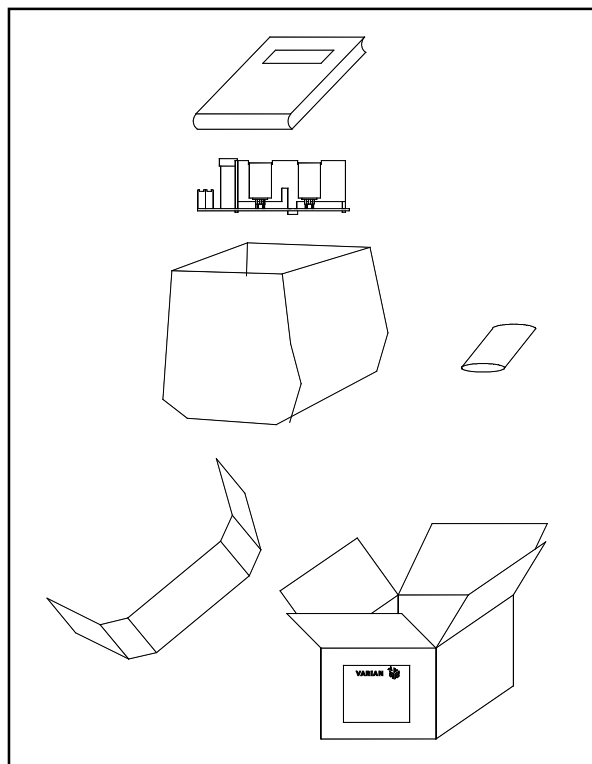
VARASTOINTI

Valvojan kuljetuksen ja varastoinnin aikana tulevat seuraavat ympäristövaatimukset olla täytettyinä:

- lämpötila: -20 °C ja +70 °C asteen välillä
- suhteellinen kosteus: 0 - 95% (ilman lauhdetta)

VALMISTELUT ASENNUSTA VARTEN

Valvoja toimitetaan erityisessä suojaavassa pakkauksessa. Mikäli havaitsette mahdollisesti kuljetuksen aikana sattuneita vaurioita, ottakaa yhteys paikalliseen myyntitoimistoon.



Valvojan pakkaus

Pakkauksen purkamisen yhteydessä huolehtikaa, että valvoja ei pääse putoamaan ja välttää sen joutumista iskujen kohteeksi. Älkää jättäkö pakkausta ympäristöön. Materiaali voidaan kokonaisuudessaan kierrättää ja se vastaa EY:n 85/399 direktiiviä ympäristön suojelusta.

Ennen kuin asennatte valvojan, pitää valmistaa liitoskaapeleita, esimerkiksi sähkövirtakaapeleita, loogisten signaleiden kaapeleita ja pumpun liitoskaapeli. Seuraavissa piirroksissa näkyvät valvojan ja pumpun välillä ja valvojan ja sähkön syötön välillä suoritettavat liitännät. Liitännän ja (lisä-) muuntajan lähimmät tiedot löytyvät liitteestä "Technical Information".

ASENNUS



VAARA!

Valvojan sisällä syntyy korkeajännitettä, joka voi aiheuttaa vakavia vammoja. Ennen minkätahansa valvojan huolto- tai asennustoimenpiteen suorittamista, irroittakaa valvoja sähköverkosta. Valvojan sisällä syntyy ylikuumentumista, joka voi aiheuttaa vakavia vammoja. Suojatkaa valvoja ja muuntaja tahattomalta kosketukselta, kun ne ovat jo asennetut.

HUOM

Lopulliseen järjestelmään asennettu valvoja on asetettava siten, että jäähdytysilma pystyy kiertämään vapaasti laitteen sisällä. Älä asenna ja/tai käytä valvojaa ilmaston tekijöille (sade, jää, lumi), pölylle, syövyttävälle kaasuille, räjähdyksille tai tulelle alttiissa paikoissa.

Toiminnan aikana tulee noudattaa seuraavia ympäristönoloja koskevia sääntöjä:

- lämpötila: 0 °C ja +40 °C välillä
- suhteellinen kosteus: 0 - 95% välillä (ilman lauhdetta)

KÄYTTÖ

Tähän kappaleeseen on kirjattu tärkeimmät käyttötoimenpiteet. Tarkempia lisätietoja sekä kytkentöjä, että valinnaisia lisälaitteita koskevien toimenpiteiden suorittamista käsittäviä tietoja löydätte kappaleesta "Käyttö", joka on "Technical Information" -kappaleen liitteenä.

Ennen valvojan käyttöä suorittaakaa kaikki sähkökytkennät seuraten kytkettävän pumpun käyttöohjeita.

**VAARA!**

Mikäli pumppu on asetettu pöydälle, varmistakaa että se on vakaassa asennossa. Näin vältetään vammoilta ihmisille sekä itse koneelle. Älkää myöskään käyttäkö pumppua, mikäli sisääntulon laippaa ei ole kytketty järjestelmään tai mikäli sitä ei ole suljettu laippasulkijalla.

KÄYTTÖTOIMENPITEET**Valvojan päälle pano**

Valvoja käynnistyy asettamalla virtakaapeli pistorasiaan.

Pumpun käynnistys

Jättäkää pumpun käynnistämiseksi liittimen J4 pistike 12 auki siten, että pumppu käynnistyy valvojan 24 Vdc jännitteen päälle panon yhteydessä.

Pumpun pysäyttäminen

Pumppu pysähtyy, kun liittimen J4 pistikkeet 12 ja 15 asetetaan oikosulkuun.

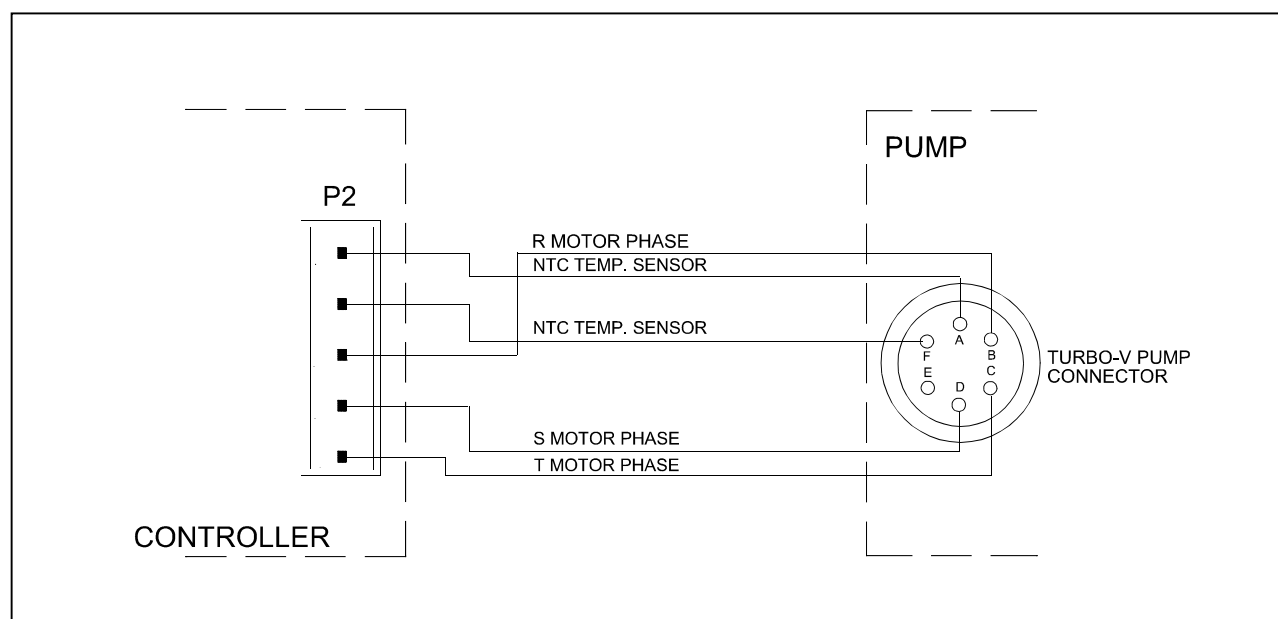
HUOLTO

Turbo-V 70 sarjan valvojat eivät kaipaakaan minkäänlaista huoltoa. Mahdolliset valvojan tehtävät toimenpiteet tulee jättää aina valtuutetun henkilön tehtäväksi. Toimintahäiriön sattuessa on mahdollista käyttää Varianin korjauspalvelua tai "Varian advance exchange service" -palvelua, jolloin on mahdollista vaihtaa rikkoontunut valvoja ladattuun valvojaan.

**VAARA!**

Ennen minkätähansa valvojaan tehtävän toimenpiteen suorittamista irroitakaa sähkökaapeli pistorasiasta.

Mikäli valvoja täytyy romuttaa, toimikaa sen hävittämisessä kansallisten säädösten ja normien määräävällä tavalla.



Valvojan ja pumpun välinen liitoskaapeli

ΓΕΝΙΚΕΣ ΠΛΗΡΟΦΟΡΙΕΣ

Αυτή η συσκευή προορίζεται για επαγγελματική χρήση. Ο χρήστης θα πρέπει να διαβάσει προσεκτικά τις οδηγίες του παρόντος εγχειριδίου και οποιαδήποτε άλλη πρόσθετη πληροφορία που παρέχεται από τη Άριαν, πριν από τη χρησιμοποίηση της συσκευής. Η Άριαν δεν φέρει καμία ευθύνη όσον αφορά την ολική ή μερική αβέτηση των οδηγίων, την ακατάλληλη χρήση εκ μέρους ανεκπαίδευτου προσωπικού, αυθαίρετέ επεμβασεί η χρήση που δεν συμφωνεί με τί ειδικές εθνικές διαταχεί.

Ο ρυθμιστής Turbo-V 70 PCB είναι ένα μετατροπέα σύζινητά, ελεγχόμενó από έναν μικροεπεξεργαστή. Είναι κατασκευασμένοι με εχαρτήματα σε στερεά κατάσταση και ξέουν αυτοδιαγνωστική και αυτοπροστατευτική ικανότητα.

Ο controllerj εισωματίζει όλα τα ανσγκαία κυκλώματα για την αυτοματη λειτουργία των αντλιών τή σειρά Turbo-V 70.

Ο ρυθμιστή οδηγεί τί αντλιέ τή σειρά Turbo-V 70 με μια διαδικασία που διαιρείται σε δεκα στάδια) κατά τη διάρκεια εκκίνησή ελεγχοντά την τάση και το ηλεκτρικό ρεμμα σε σξέση με την ταξυτητα στην οποια θα φτάσει η αντλία.

Με τη βοθηεια βοηθητικων συνδετηρων είναι διαθέσιμοι ολοι οι ξειρισμοι για την εκκίνηση και το σταματημα τή αντλιά εχ αποστασεώ, τα σήματα που υποδεικνύουν την κατάσταση λειτουργίας της αντλίας, σήματα ασφάλισης (για διακόπτες πίεσης, διακόπτες ελέγχου της ροής του νερού, κλπ.). Ο ρυθμιστής πρέπει να τροφοδοτείται με μια συνεχή τάση 24 Vdc.

Για να ελεγχθουν οι λειτουργιέ και να παρουσιασει στην οθονη η κατάσταση λειτουργιά του ρυθμιστη διατιθεται μια ειδικη συσκευη (Hand Held Terminal) η οποια αποτελείται από ένα πληκτρολογιο διοικησή και μια οθονη. Στί επομενέ παραγραφού αναφειρονται ολέ οι απαραίτητέ πληροφοριέ που εγγυουνται την ασφαλεια του ξειριστη κατά τη διάρκεια τή χρησιμοποίησή τή συσκευή. Λεπτομερεί πληροφοριέ παρεξονται στο παραρτημα "Technical Information".

Αυτό τό εγχειρίδιο χρησιμοποιεί τις ακόλουθες συμβάσεις:



ΚΙΝΔΥΝΟΣ!

Οι ενδειχεί κινδύνου προσελκνουν την προσοξη του ξειριστη σε μια διαδικασία η σε μια ειδικη εργασία η οποια εαν δεν εκτελεσται σωστα, θα μπορούσε να προκαλσει σοβαρέ προσωπικέ βλαβέ.



ΠΡΟΣΟΧΗ

Οι ενδειχεί προσοξη εμφανιζονται πριν από τί διαδικασιέ οι οποιέ εαν δεν εκτελεστον με προσοξη, θα μπορούσαν να προκαλσουν ζημιέ στη συσκευη.

ΣΗΜΕΙΩΣΗ

Οι σημειωσει περιεξουν σημαντικέ πληροφοριέ που ξέουν αποσπαστέ από το κειμενο.

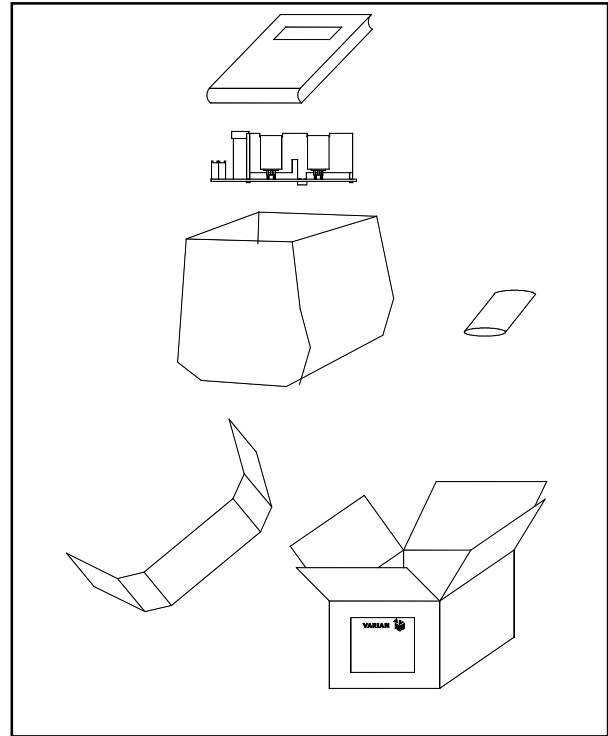
ΑΠΟΘΗΚΕΥΣΗ

Κατά τη διάρκεια τή μεταφορά και τή αποθηκωση των ρυθμιστων πρέπει να τηρονται οι ακρολουτέ περιβαλλοντικέ συνθηκέ:

- θερμοκρασία: -20 °C έως +70 °C
- σξετικη υγρασια: 0 - 95% (ασυμπκνικωτη)

ΠΡΟΕΤΟΙΜΑΣΙΑ ΓΙΑ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ

Ο ρυθμιστή είναι εχοπλισμενó με μια ευρυξωρη προστατευτικη συσκευασια. Αν υπαρξουν ενδειχεί βλαβή που θα μπορούσαν να ξέουν προκληθεί κατά τη διάρκεια τή μεταφορά, συμβουλευτετε το τοπικο τμημα πωλησεων.



Συσκευασία του ρυθμιστη

Κατά τη διάρκεια του ανοιγματό τή συσκευασιά, δωστε ιδιαιτερη προσοξη έτσι ώστε να μην πεσει και να μην ξτυπηθει ο ρυθμιστή.

Μην εγκαταλειπετε τη συσκευασια στο περιβαλλον. Το υλικο ανακυκλωνεται πληρώ και ανταποκριμεται στην Οδηγια τή Ε.Ε. 85/399 για την διαφυλαχη του περιβαλλοντό. Πριν από την εγκατασταση του ρυθμιστη είναι αναγκαίο να προετοιμασετε μερικα καλωδια διασυνδεσή, ρώ για παραδειγμα τα καλωδια για τη συνιδεση με την τροφοδοσια, τα καλωδια για τί συνδεσει λογική και τή αντλιά. Στις επόμενες εικόνες παρουσιάζονται σχηματικά οι συνδέσεις που πρέπει να πραγματοποιηθούν μεταξύ του ρυθμιστή και της αντλίας και του τροφοδοτικού. Περισσοτερέ πληροφοριέ όσον αφορά τί παραπανω συνδεσει και τα τα χαρακτηριστικα του μετασχηματιστη τροφοδοσιά ((διαθεσιμό ώ εχτρα)) παρεξονται στο παραρτημα "Technical Information".

ΕΓΚΑΤΑΣΤΑΣΗ



ΚΙΝΔΥΝΟΣ!

Στο εσωτερικό του ρυθμιστή αναπτύσσονται τάσεις που μπορούν να προξενήσουν σοβαρές βλάβες. Πριν εκτελεσετε οποιαδήποτε εργασία εγκαταστασή η συντηρησή του ρυθμιστη αποσυνιδεστε τον από την πριζα τροφοδοσιά. Στο εσωτερικο του ρυθμιστη αναπτύσσονται υψηλέ θερμοκρασιέ που μπορεί να προκαλσουν σοβαρέ βλαβέ η τραυματισμού. Προστατευεται καταλληλα τον ρυθμιστη τροφοδοσιά στην τελικη του θεση από τί τυξαμέ επαφέ.

ΣΗΜΕΙΩΣΗ

Ο ρυθμιστή που εξεί εγκατασταθεί στο τελικό σύστημα θα πρέπει να τοποθετηθεί με τρόπο ώστε ο αερά ψυξή να μπορεί να κυκλοφορεί ελεύθερα γύρω από τη συσκευή. Μην τοποθετείτε και μη χρησιμοποιείτε τον ρυθμιστή σε ξηρού εκτεθειμένου στί καιρική συνθήκη (βροχή, παγο, ξιόνι, σκόνι, αερία, σε ξηρού όπου υπάρχει κινδύνος εκρηχτή ή πυρκαγιά).

Κατά τη διάρκεια τη λειτουργία πρέπει να τηρούνται οι ακόλουθες περιβαλλοντικές συνθήκες:

- θερμοκρασία: 0 °C έως +40 °C
- σχετική υγρασία: 0 - 95% (ασυμπυκνωτή).

ΧΡΗΣΗ

Σ αυτήν την παραγραφο αναφέρονται οι κυριότερες διαδικασίες λειτουργία. Για περισσότερες λεπτομερείς και για διαδικασίες που απαιτούν ιδιαίτερες συνδεσεί η αχουσαρ, αναφερθήτε στην παραγραφο "Ξρηση" του Παραρτηματό "Technical Information".

Πριν χρησιμοποιήσετε τον ρυθμιστή κάντε ρλέ τί ηλεκτρική και πνευματική συνδεσεί με βάση το εγχειριδίο τη αντλιά συνδεσεί.



ΚΙΝΔΥΝΟΣ

Για να αποφύγετε βλαβή σε άτομα ή στη συσκευή, όταν η αντλιά είναι τοποθετημένη σε ένα τραπέζι σιγουρευτείτε ότι είναι καλά σταθεροποιημένη. Μην θέσετε σε λειτουργία την αντλιά αν η φλαντζά εισόδου δεν είναι συνδεδεμένη στο σύστημα ή αν δεν είναι κλειστή με την φλαντζά κλεισιματό.

ΔΙΑΔΙΚΑΣΙΕΣ ΣΧΕΤΙΚΑ ΜΕ ΤΗ ΧΡΗΣΗ

Άναμμα του Ρυθμιστή

Για να αναψει ο ρυθμιστή είναι αρκετό να βάλετε το καλώδιο τροφοδοσία στην πρίζα του δικτύου.

Εκκίνηση της Αντλίας

Για την εκκίνηση της αντλίας αφήστε ανοιχτό το

pin 12 του βύσματος J4, έτσι ώστε όταν παρέχεται η τάση των 24 Vdc στο ρυθμιστή να έχουμε την εκκίνηση της αντλίας.

Σταμάτημα της αντλίας

Για την κράτηση της αντλίας πρέπει να βραχυκυκλωθούν τα pin 12 και 15 του βύσματος J4.

ΣΥΝΤΗΡΗΣΗ

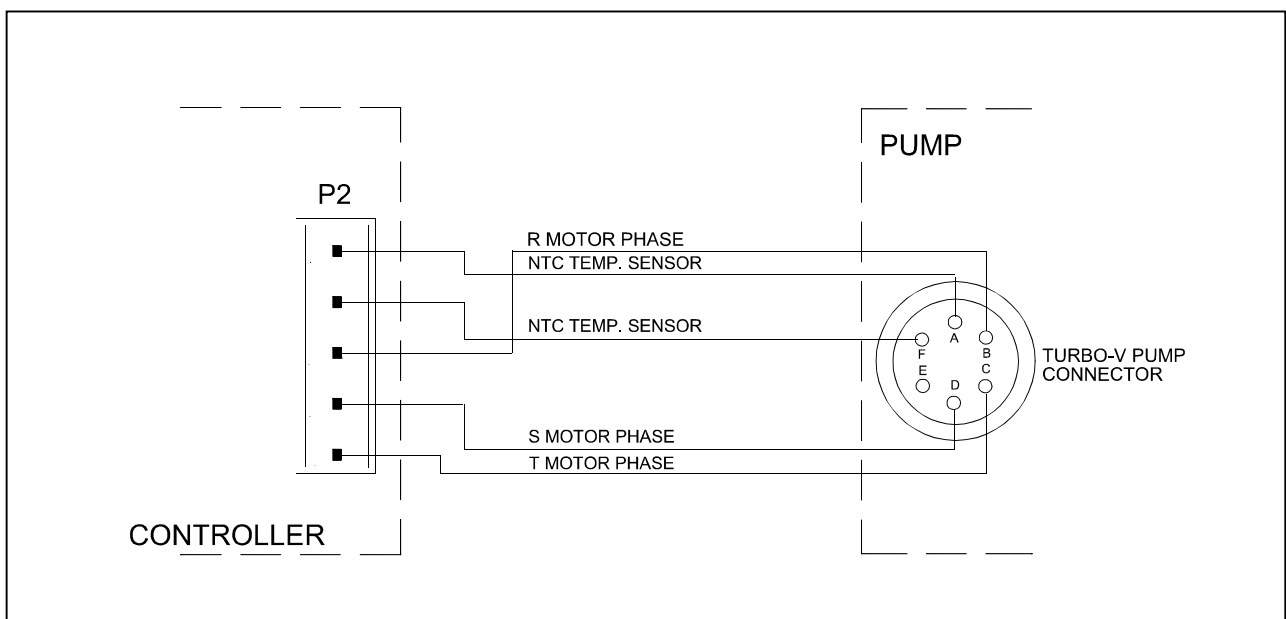
Οι ρυθμιστές τη σειρά Turbo-V 70 δεν απαιτούν καμία συντήρηση. Οποιαδήποτε επέμβαση θα πρέπει να πραγματοποιηθεί από εγκεκριμένο προσωπικό. Σε περίπτωση βλαβή μπορείτε να χρησιμοποιήσετε την υπηρεσία επισκευών τη `αριαν ή τη `αριαν αδανχε εχχανγε σέριχε", που σά δίνει τη δυνατότητα να ξέετε έναν καθαρισμένο ρυθμιστή σε αντικατάσταση του ξαλασμένου.



ΚΙΝΔΥΝΟΣ

Πριν από οποιαδήποτε επέμβαση στον ρυθμιστή αποσυνδέστε το καλώδιο τροφοδοσία.

Αν πρέπει να καταστραφεί ο ρυθμιστή ακολουθήστε τη διαδικασία που προβλέπεται από του ειδικού εθνικού κανονισμού.



Εμπροσθίο πινακά του Hand Held Terminal

GENERAL INFORMATION

This equipment is intended for professional use. Prior to using the equipment, the operator must carefully read this instruction manual and any other additional information provided by Varian. Varian declines all responsibility which may become as the result of the total or partial misinterpretation of the information provided in the documentation, by the improper use of the equipment by untrained personnel or by the use of the equipment by unauthorized personnel or not in compliance with specific national norms. The Turbo-V 70 PCB controller is a microprocessor-controlled frequency converter made up of solid state components and capable of autodiagnostic and auto-protection functionality. It incorporates the circuitry needed for the automatic operation of Turbo-V 70 series pumps.

The Turbo-V 70 series pumps are driven by the controller (in a 10-step procedure) during the start-up phase that also checks the voltage and current according to the speed reached by the pump. Auxiliary connectors render the commands needed to start and stop the pump from remote, the signals that indicate the operating state of the pump and the locking commands (for pressure switches, water flow control switches, etc.) available. The controller must be provided with 24 Vdc.

In the next sections you will find all the information needed to guarantee operator safety during the use of the equipment. Detailed information is provided in the Appendix entitled "Technical Information".

The following conventions are adopted in this manual:



DANGER!

Danger messages call the operator's attention to a specific procedure or operation that could cause serious personal injury if not executed in the correct way.



WARNING!

Warning messages are provided before a procedure that could damage the equipment is not executed in the correct way.

NOTE

Notes provide important information extracted from the text.

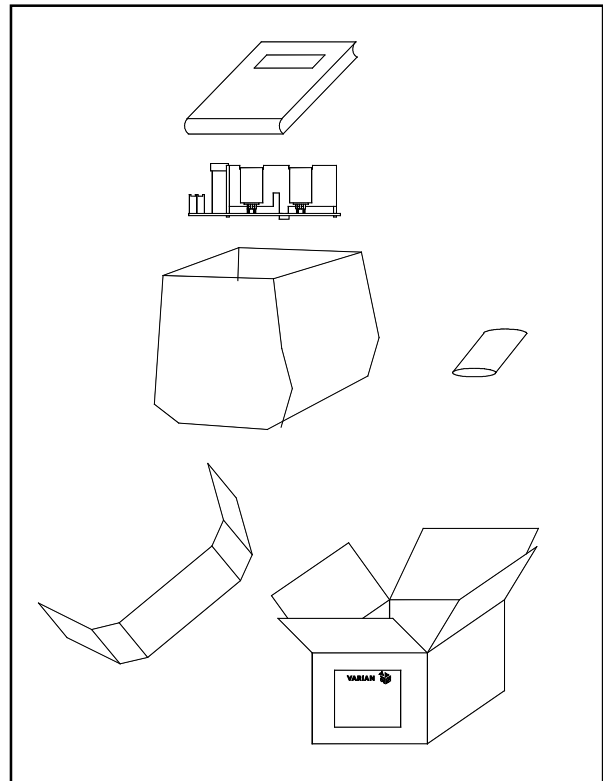
STORAGE

The controller must be transported or stored within the following environmental conditions:

- Temperature: -20 °C to +70 °C
- Relative humidity 0 to 95% (non-condensing)

PREPARATION PRIOR TO INSTALLATION

The controller comes in a special protective packaging; if you notice any sign of damage that could have been caused during transportation, notify our local sales office immediately.



Controller Packaging

During the unpacking procedure, be careful to avoid dropping the controller or hitting it against anything. Do not discard the packaging material in the environment. The packaging material is completely recyclable and complies with the EEC environmental protection directive 85/399. Before installing the controller you need to prepare certain interconnection cables such as, for example, the power supply interconnection cables, the logic interconnection cables and the pump interconnection cable. The following figures provide the connection diagrams between the controller and pump and between the controller and power supply. For further information on these interconnections and for the technical characteristics of the transformer (available as option), refer to the Appendix entitled "Technical Information".

INSTALLATION



DANGER!

The controller develops internal voltages that could cause serious injury. Unplug the controller from the electrical wall outlet before beginning with any type of installation or maintenance procedure. In addition, the controller develops internal temperatures that could also cause serious injury. Adequately protect the controller in its final point of installation so as to avoid accidental contacts.

NOTE

When definitively installed in the system, the controller must be positioned so that the cooling air can circulate freely around the equipment. Do not install and/or use the controller in environments exposed to the atmosphere (rain, ice, and snow), to dust, to aggressive gases and in explosive areas where there is a high risk of fire.

The controller must be used within the following environmental conditions:

- Temperature: 0 °C to +40 °C
- Relative humidity: 0 to 95% (non-condensing).

USE

This section provides all the major operating procedures. For further details and for the procedures that involve connections or specific options, refer to the section entitled "USE" in the Appendix "Technical Information".

Perform all electrical and pneumatic connections before using the controller, with reference to the manual of the connected pump.



DANGER!

If the pump is placed on a table, make sure that it is stable so as to avoid injury to persons and damage to the equipment. Never operate the pump unless the input flange is connected to the system or closed using the closure flange.

OPERATING PROCEDURES

Powering on the Controller

To power on the controller, simply provide electrical power to it.

Starting the Pump

To start the pump, leave pin 12 of connector J4 open so that the pump starts-up when 24 Vdc is provided to the controller.

Stopping the Pump

To stop the pump, short-circuit pins 12 and 15 of connector J4.

MAINTENANCE

The Turbo-V 70 series controllers do not require any form of maintenance. Any intervention must be performed by authorized personnel.

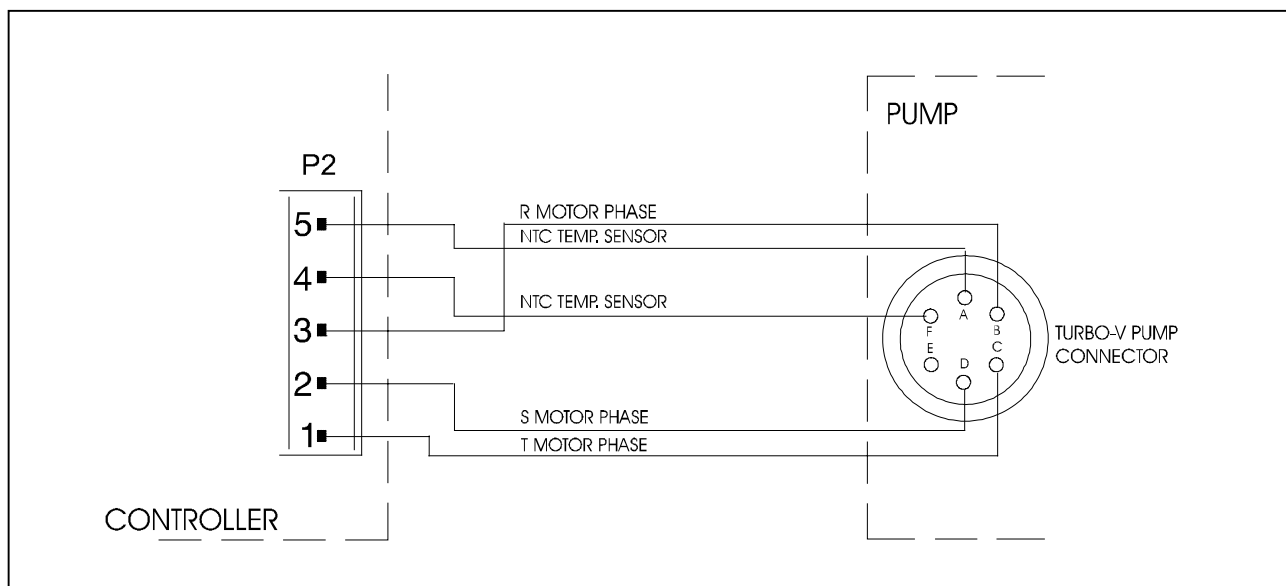
In case of failure you can use the Varian customer support service or the "Varian advance exchange service", the latter consisting of replacing a faulty controller with a refurbished one.



DANGER!

Unplug the power cord from the electrical socket before performing any type of intervention on the controller.

If a controller needs to be scrapped, proceed to do so in compliance with the specific national laws.



Controller - Pump Interconnection Cable

GENERAL DESCRIPTION

The Turbo-V 70 PCB controller is a microprocessor-controlled, solid-state, frequency converter with self-diagnosis and protection features.

The controller drives the Turbo V-70 pump series by controlling the voltage and current respect to the speed reached by pump.

It incorporates all the facilities required for the operation of the Turbo-V 70 pump series: pump start/stop, digital current and speed control, analog signals for external indicators.

The power is externally supplied.

All the input/output connections are performed on three connectors (J2, J3 and J4).

The controller is also designed to be controlled by a host computer via an RS-232 connection (connector J5, RS 485 available on request).

TURBO-V 70 PCB 24 VDC CONTROLLER DESCRIPTION

The controller is a solid-state frequency converter that is driven by a single chip microcomputer and is composed of a PCB that includes all the circuitry necessary for its operation.

The microcomputer generates the variable output voltage according to the software and the gas load condition of the pump.

Moreover, it manages signals from sensors, input/output connection information, and gives output for a fully automatic operation.

The controller can be operated via remote signals through an RS-232 connection.

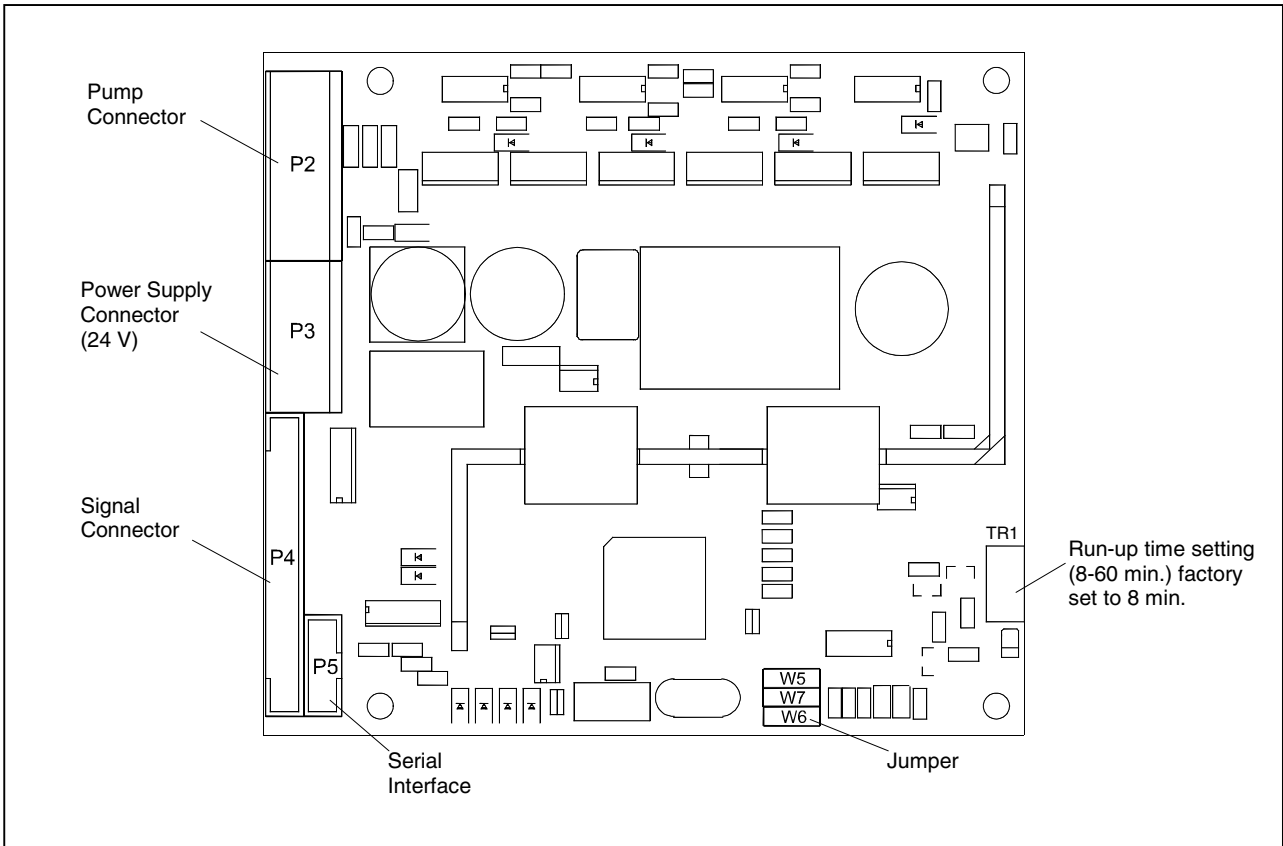
The controller can be operated in local mode through suitable switches connected between the input pins of J4 connector and ground (see section *J4 connector* for a detailed description of the input signal present on J4 connector).

CONTROLLER SPECIFICATIONS

Input: - Voltage	20.4 to 32.2 Vdc
- Power	with 2 Vpp max ripple 70 W min.
Output: - Voltage	42 Vac nominal $\pm 10\%$, 3-phase
- Frequency	1250 Hz, $\pm 2\%$
- Power	54 W maximum
Fuse	T 4A
Operating temperature	0°C to + 40 °C
Storage temperature	-20°C to + 70°C
Weight	0.5 Kg (1.1 lbs)

Controller Connector and Jumper

The following figure shows the controller and indicates its connectors and jumpers.

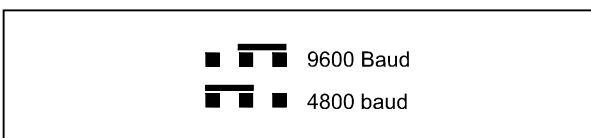


Connector and Jumper

Jumper Configurations

The following figures show the configuration and meaning of the individual jumpers on the board.

Jumper W7 is used to select the data exchange rate, as shown in the figure.



W7 Jumper

Jumper W6 is used to set the Soft Start, as shown in the figure.



W7 Jumper

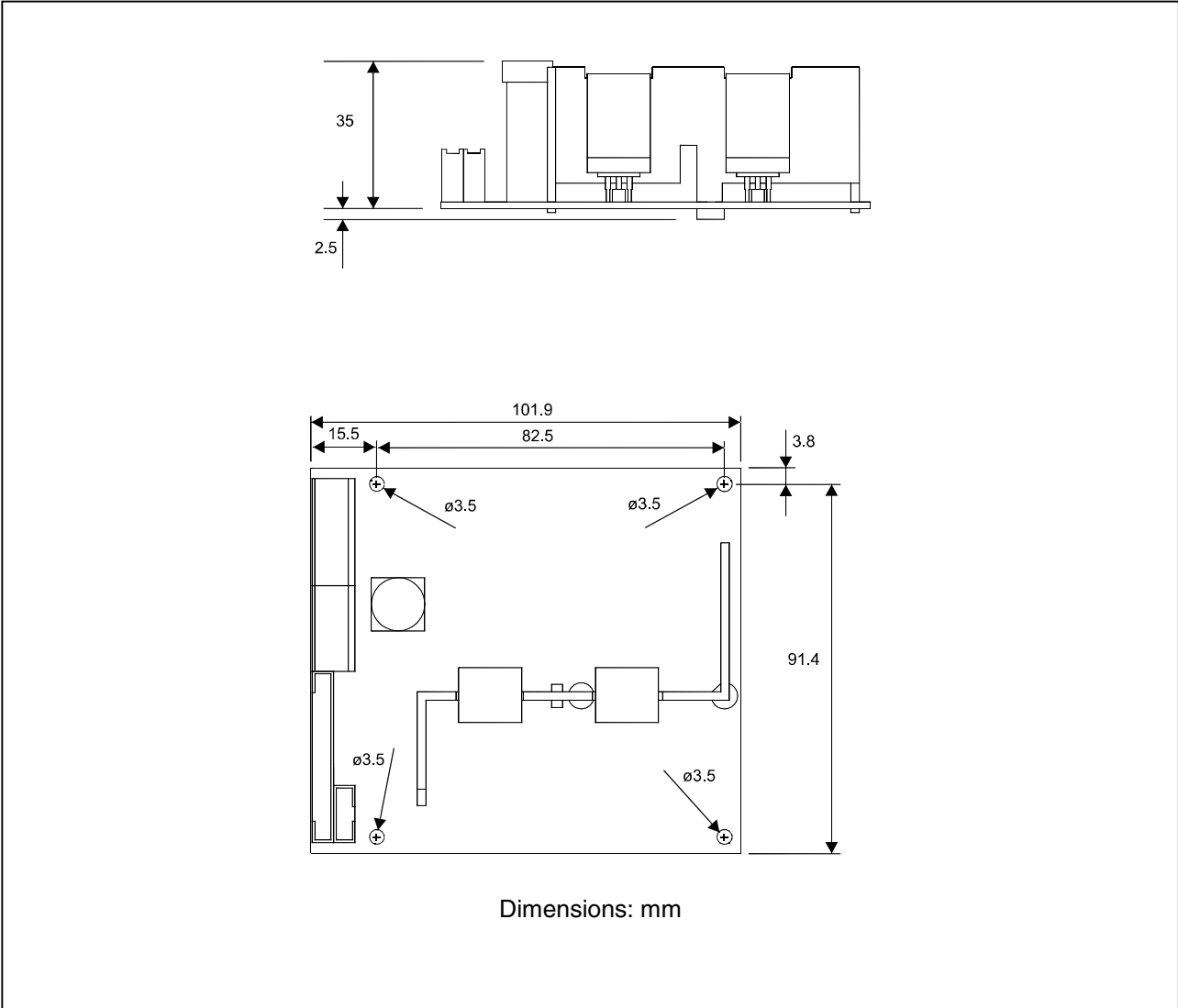
The W5 jumper is just for factory setting and must not be moved.

Run-up Time Adjustment

TR1 can be used to change the run-up time between 8 and 60 min. The controller is factory set to 8 min. If the gas load is large and the pump cannot reach the nominal speed in the set time, the pump is stopped and the controller gives Error 6 (Normal not reached at run-up time). In this case, the run-up time setting can be increased up to 60 min. by rotating TR1. The run-up time can be read through the serial communication at parameter 00700 (if protocol 1 is used) or at window 127 (if protocol 2 is used).

CONTROLLER OUTLINE

The outline dimension for the controller is shown in the following figure.



Controller Outline

INSTALLATION

Inspect the controller for any shipping damage. The controller is designed to be installed into a rack.

All the connections are fitted to J2, J3, J4 and J5 connectors.

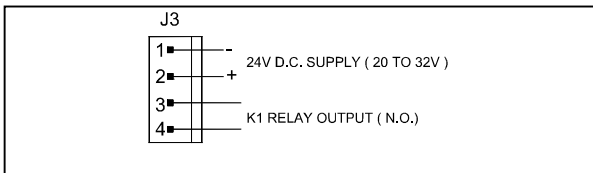
Should the controller be connected to a host computer via the-RS-232 interface, a suitable cable must be prepared.

In the following paragraphs are detailed the input/output signals.

NOTE

The PCB installed into the customer system must be positioned so that cold air (forced or natural convection) can flow through the PCB components.

J3 Connector

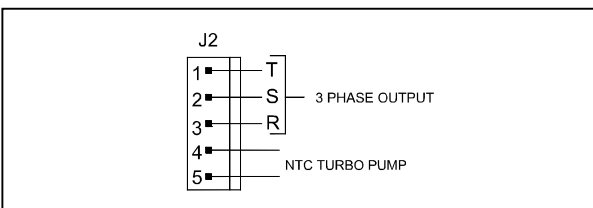


J3 – Power Connector

The signals of J3 connector are the following:

- **Pins 1/2** Power supply 24. Vdc (20 to 32 Vdc) (pin 2 positive).
- **Pins 4/3** K1 relay contacts. The relay switches when the output frequency overrides the set threshold (1117 Hz). The threshold overriding is indicated also on pin 6 of J4 connector.

J2 Connector



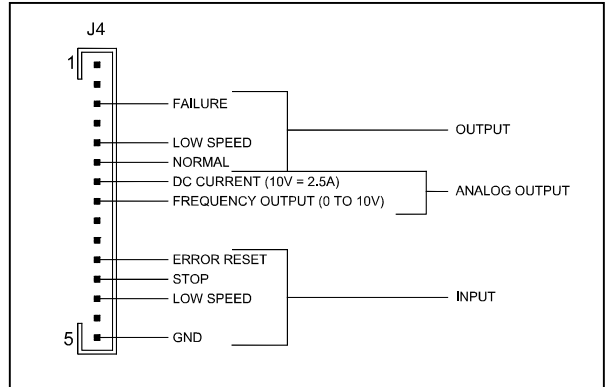
J2 – Connector to pump

The signals of J2 connector are the following:

- **Pin 1** 42 Vac 3-phase output to pump motor stator (phase T).
- **Pin 2** 42 Vac 3-phase output to. pump motor stator (phase S).

- **Pin 3** 42 Vac 3-phase output to pump motor stator (phase R).
- **Pins 5/4** Pump temperature sensor.

J4 Connector

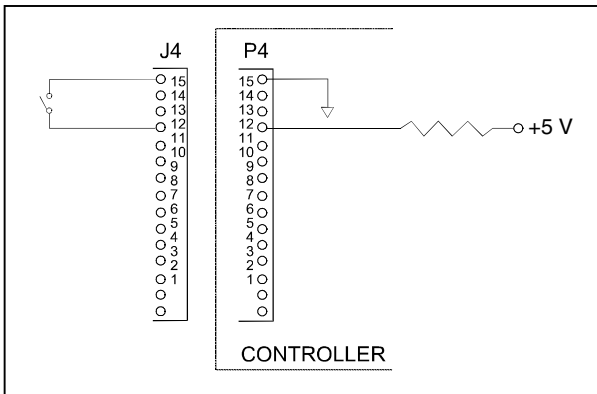


J4 – Signal Connector

The signals of J4 connector are the following:

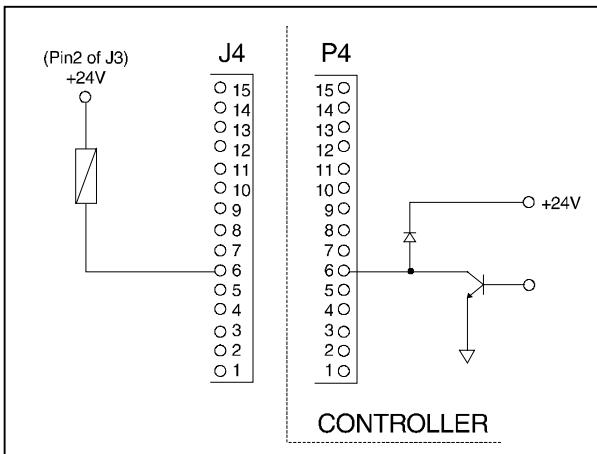
- **Pin 3** 24V 60mA open collector Output failure. When a fault condition is detected, the pump is stopped and this output is ON.
- **Pin 5** 24V 60mA open collector Output Low Speed mode activated. When the Low Speed mode is activated this output is ON.
- **Pin 6** 24V 60mA open collector Output When the output frequency is less than 1117 Hz, this output is ON.
- **Pin 7** Analog output. A voltage from 0 to 10 Vdc proportional to the supply current (from 0 to 2.5 A).
- **Pin 8** Analog output. A voltage from 0 to 10 Vdc proportional to the output pump motor driving frequency (from 0 to 1250 Hz).
- **Pin 11** Error reset command. Should an operation fault be detected (Pin 3 of J4 is ON), the pump is stopped. To reset the fault you must connect pin 11 to ground (pin 15 of J4) for at least 1 sec.
- **Pin 12** ON/OFF pump. To stop the pump you must connect pin 12 to ground (pin 15 of J4); to start the pump you must remove the contact between pin 12 and ground.
- **Pin 13** Low Speed mode activation. When the contact between pin 13 and ground (pin 15 of J4) closes, the turbo pump runs at low speed and when the contact opens, the turbo pump reverts to high speed mode. When the Low Speed mode is activated pin 5 of J4 is ON. The Low Speed frequency is 833 Hz.
- **Pin 15** Common

The following figure shows a typical contact logic input connection and the related simplified circuit of the controller.



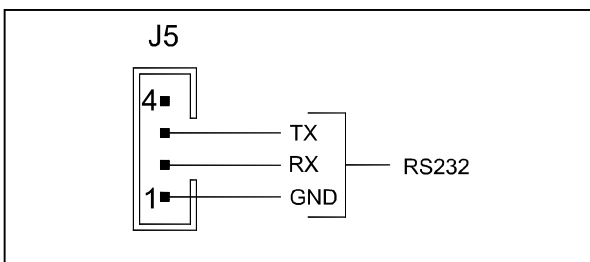
Typical Logic Input

The following figure shows a typical logic output connection, but any other device may be connected, and the related simplified circuit of the controller.



Typical Logic Output

J5 RS-232 Interface Connector



J2 – Interface Connector

The signal of J5, the RS-232 interface connector, are the following:

- **Pin 1** Ground.
- **Pin 2** RXD. Received data.
- **Pin 3** TXD. Transmitted data.
- **Pin 4** 24 Vdc Output (power supply to HHT, if necessary)

DATA EXCHANGE PROTOCOLS

This controller can use protocol 1 or 2 on its RS 232 port. During power on, the controller's logic automatically recognizes the type of protocol used by the peripheral to which it will interface and consequently adapts itself.

NOTE

The identified protocol is kept active until the controller is powered off.

RS-232 Protocol 1 Communication Description

Communication format:

- 8 data bit
- no parity
- stop bit
- The baud rate is programmable via a set of jumper W7 between 4800 and 9600 baud. The controller is factory-set for 9600 baud operation.

Communication Protocol

The communication protocol is of the master/slave type, where:

- Host = Master
- Controller = slave

NOTE

To send a command by the serial interface, the controller must be set to "REMOTE OFF" of operation, otherwise it is only possible to read the data.

The master send to the slave a word according to the following format:

slave address	parameter number	data field length	data	check-sum	CR															

where:

- **Slave Address:** controller number requested by the master. In RS-232 version the address is set equal to "001";

- **Parameter Number:** it points out to the controller about which parameter the master wants to operate, and about the kind of operation (read/write). It consists of:

1	2	3	4	5
0= parameter reading 1 = parameter writing	always 0	000 to 299 = commands 300 to 699 = status 700 to 999 = parameter		

- **Data Field Length:** it points out the next field length in characters. In this protocol the possible combinations are:
02 = parameter reading request
06 = parameter, writing
- **Data:** in this controller it can be:
"=?": in the case of parameter reading request
"000000" or "111111": in the case of YES/NO command or parameter writing
a six numeric character string 0 to 9 pointing out the value of a configuration parameter or an analog measure
a six character string pointing out an error
- **Checksum:** it is the sum of the string ASCII values up to the first character of the checksum with a 8 bit cutting-off and a conversion to a decimal number.
- **CR:** < 0xD >

All the fields are set on the right with the "0" character used as filling character.

When a string with an address number equal to the card one (001 in this case) is received, the controller answers as detailed in the following:

- in the case of a parameter request with a string having the same size described before, but the first character of the "Parameter Number" field set to 1.

Example for a low speed status request:

Master to Controller:
0010000202= ?097< 0xD >

Controller to Master:
0011000206111111016< 0xD >
where " 111111" is for low speed status ON

- in the case of a parameter writing, with a string including the parameter value that has been set out. Example for a low speed status ON writing:

Master to Controller:
0011000206111111016< 0xD >

Controller to Master:
0011000206111111016< 0xD >

- in the case of a string with a length greater than 40 characters, with:

			N	A	K	CR
Controller address						

- in the case of a wrong checksum, with:

			N	A	K	CR
Controller address						

- in the case of a parameter number not present, with:

		1	0				0	6	N	O	-	D	E	F					
control. address				param. address												check-sum	CR		

- in the case of an out-limit value, with:

		1	0				0	6	-	R	A	N	G	E					
control. address				param. address												check-sum	CR		

- in the case of an attempt of writing a logic parameter with a value not equal to " 000000" or " 111111", or when the parameter is a read only one, with:

		1	0				0	6	-	L	O	G	I	C					
control. address				param. address												check-sum	CR		

- in the case of a time between two characters greater than 1 second, with:

			N	A	K	CR
Controller address						

Information obtained by the serial interface are listed in the following table where the column "TYPE" points out a logic variable with "D" (allowed values "000000" or "111111") and a numeric variable with "N".

Variables with the first character of "Parameter Number" equal to X can be either written or read. Variables with that character equal to "0" can be only read, equal to "1" can be only written.

RS 232 Protocol 2 Communication Descriptions

Transmission Channel Characteristics

levels: RS 232
 baud rate: 9600/4800
 programmable by a jumper on the board
 character length: 8 bits
 parity: none
 stop bit: 1 bit
 protocol: master (PC) / slave (converter)

In this case the value to be assigned to the ADDRESS field must be 80 hex .

Message Structure

(request and answer have the same format)

The master system (PC) starts every session sending the following message to the slave units connected:

<STX> / <ADDR> + <WINDOW> + <COMMAND> + <DATA> + <ETX> + <CRC>

where:

<STX>= 0x02

<ADDR> = 0x80 (for RS 232 and RS 422 only)

<ADDR> = 0x80 + device number (0...31)

0xFF: broadcasting command (recognized by all the devices, it doesn't implicate any answer) (for RS 485 only)

<WINDOWS>= '000'...'999' window number the meaning of the window depends to the device type

<COMMAND>= 0x30 :window value reading
 0x31 :window writing

<DATA> = alphanumeric ASCII string containing, in the case of writing operation, the parameter to input into the window addressed by the field <WINDOW> This field may have variable length according to the data type contained in the window where you are working in. In the case of reading request of a window, the data field doesn't exist.

<ETX>= 0x03

<CRC>= XOR among all the characters following <STX>=(with exception of <STX>), including the end character <ETX> hexadecimally encoded by two ASCII characters.

PARAMETER NUMBER	TYPE	DESCRIPTION
X0002	D	Low speed ON/OFF
X0003	D	Pump ON/OFF
X0008	D	Remote ON/OFF
10009	D	Error acknowledgment: error status clearing
00302	D	K1 status
00303	N	Error code: error code displaying (see the following table)
00306	D	Normal YES/NO
00307	D	Starting YES/NO
00309	N	Output frequency (Hz)
00310	N	Pump current * 100 (A)
00311	N	Temperature (°C)
00312	N	Software version The controller sends "QExxxx" where "xxxx" is the CRC16 of EPROM
00313	N	Power (W)
00314	N	Pump life (hours)
00315	N	Number of cycles
00316	N	Last cycle time (minutes)
00317	N	Software version. The controller sends "Paxxx" where "xxxx" is the CRC16 of EEPROM
00700	N	Run up time (minutes)
X0701	N	Threshold (Hz)
X0702	D	Soft-start YES/NO
X0703	D	Reduced output power (YES) Full output power (NO)

Error Code Table

CODE	DESCRIPTION
00E000	No error
00E001	Output current > 15 A
00E002	Not connected pump
00E003	Output current > 1.5 A for 15 sec.
00E004	Bearing temperature > 60 °C
00E005	Heat exchanger temperature > 60 °C
00E006	Normal not reached at run up time
00E009	Vp voltage 8V lower than no~ for 5 sec.
00E010	Soft start ramp not ended within the expected time

When the master addresses a slave device:

- 1) In case of reading request of the value contained in a window, the slave answers a string equal to the one sent by the master but in addition there is the field <DATA> containing the value of the window. The format of the field <DATA> depends to the window type.

The different types are:

	Length	Characters Permitted
Logic (L)	1	'0'=OFF '1'=ON
Numeric (N)	6	'0'...'9' (Justified to the right with '0')
Alphanumeric (A)	max 10	'...'_

Examples

Command : START
Source : PC
Destination : Inverter

02	80	30	30	30	31	31	03	42	33
STX	ADDR	WINDOW	WR	ON	ETX	CRC			

Source : Inverter
Destination : PC

02	80	06	03	38	35
STX	ADDR	ACK	ETX	CRC	

Command : STOP
Source : PC
Destination : Inverter

02	80	30	30	30	31	30	03	42	32
STX	ADDR	WINDOW	WR	OF	F	ETX	CRC		

Source : Inverter
Destination : PC

02	80	06	03	38	35
STX	ADDR	ACK	ETX	CRC	

Command : SOFT-START (ON)
Source : PC
Destination : Inverter

02	80	31	30	30	31	31	03	42	32
STX	ADDR	WINDOW	WR	ON	ETX	CRC			

Source : Inverter
Destination : PC

02	80	06	03	38	35
STX	ADDR	ACK	ETX	CRC	

Command : SOFT-START (OFF)
Source : PC
Destination : Inverter

02	80	31	30	30	31	30	03	42	33
STX	ADDR	WINDOW	WR	OF	F	ETX	CRC		

Source : Inverter
Destination : PC

02	80	06	03	38	35
STX	ADDR	ACK	ETX	CRC	

Command : CURRENT
Source : PC
Destination : Inverter

02	80	32	30	30	30	03	38	31
STX	ADDR	WINDOW	RD	ETX	CRC			

Source : Inverter
Destination : PC

02	80	32	30	30	30	30	30	2E	30	30	03	39	44	
STX	ADD	WINDOW	RD	000.00				ETX	CRC					

Command : FREQUENCY
Source : PC
Destination : Inverter

02	80	32	30	33	30	03	38	32
STX	ADDR	WINDOW	RD	ETX	CRC			

Source : Inverter
Destination : PC

02	80	32	30	33	30	30	30	30	34	32	03	38	34	
STX	ADD	WINDOW	RD	000042				ETX	CRC					

Command : ERR-CODE
Source : PC
Destination : Inverter

02	80	32	30	36	30	03	38	37
STX	ADDR	WINDOW	RD	ETX	CRC			

Source : Inverter
Destination : PC

02	80	32	30	36	30	30	30	30	30	30	03	38	37	
STX	ADD	WINDOW	RD	000000				ETX	CRC					

Serial Communication Windows

WIN	TYPE	R	W	Description																																																															
000	L	X	X	START/STOP (1= START ; 0= STOP)																																																															
001	L	X	X	SPEED SELECTION ACTIVE [0=HS / 1=LS]																																																															
008	L	X	X	REMOTE/SERIAL Configuration (1= Remote ; 0= Serial)																																																															
100	L	X	X	SOFT START YES/NO (1= YES ; 0= NO) Default = 0																																																															
101	N	X	X	SET POINT TYPE (0 =Frequency; 1=Current; 2=Time) Default = 0																																																															
102	N	X	X	SET POINT VALUE [Hz, Ma, SEC] Default = 1000 Hz																																																															
103	N	X	X	SET POINT MASK TIME [s] Default = 0																																																															
104	L	X	X	OUTPUT STATE (0= OFF if Val > threshold; 1 = ON if Val > threshold Default = 0																																																															
105	N	X	X	HYSTERESIS IN THRESHOLD % [0-100] Default = 2																																																															
107	L	X	X	ACTIVE STOP (0=NO; 1=YES) Default = 1																																																															
108	N	X	X	BAUD RATE (3-4) [4800-9600] Default = 4																																																															
109	L		X	PUMP LIFE RESET [Write "1" to Reset]																																																															
111	N	X	X	SET ANALOG OUTPUT TYPE [0=Power; 1=Current] Default = 0																																																															
120	N	X	X	SET ROTATIONAL FREQUENCY [Hz] 150 Hz <= F_imp <= FMAX																																																															
121	N	X	X	MAX SETTABLE ROTATIONAL FREQUENCY [Hz] F<=F_MAX_ABS																																																															
127	N	X		RUN UP TIME (8 – 60 minute)																																																															
130	N	X		RAMP CURRENT [mA]																																																															
200	N	X		CURRENT [mA]																																																															
201	N	X		VOLTAGE[V]																																																															
202	N	X		POWER [W]																																																															
203	N	X		DRIVING FREQUENCY [Hz]																																																															
204	N	X		PUMP TEMPERATURE [°C]																																																															
205	N	X		STATUS [0=stop; 1=interlock; 2=ramp; 3=regulation; 4=brake; 5=normal; 6=failure]																																																															
206	N	X		ERROR CODE: <table style="margin-left: 100px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; width: 15px; height: 15px; text-align: center;">7</td> <td style="border: 1px solid black; width: 15px; height: 15px;"></td> <td style="border: 1px solid black; width: 15px; height: 15px;"></td> <td style="border: 1px solid black; width: 15px; height: 15px;"></td> <td style="border: 1px solid black; width: 15px; height: 15px;"></td> <td style="border: 1px solid black; width: 15px; height: 15px;"></td> <td style="border: 1px solid black; width: 15px; height: 15px; text-align: center;">0</td> </tr> <tr> <td style="padding-left: 20px;">Too high load</td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; 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height: 10px;"></td> </tr> <tr> <td style="padding-left: 20px;">No connection</td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> </tr> <tr> <td style="padding-left: 20px;">Pump overtemp</td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; border-right: 1px solid black; height: 10px;"></td> <td style="border-left: 1px solid black; 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211	N	X		CONTROLLER SENSOR TEMPERATURE READING [208= 25°C - 128= 60°C]																																																															
216	N	X		AMBIENT SENSOR TEMPERATURE READING																																																															
300	N	X		CYCLE TIME [min]																																																															
301	N	X		CYCLE NUMBER																																																															
302	N	X		PUMP LIFE [h]																																																															
319	A	X		Controller Model																																																															
320	A	X		Base Pump Model Number (8 characters)																																																															
321	A	X		Modified Standard Model Number (4 characters)																																																															
323	A	X		Controller Serial Number (5 characters)																																																															
325	A	X		Electrical Modification Level (10 characters)																																																															
400	A	X		CRC PROGRAM LISTING [QE7xxxx]																																																															
401	A	X		CRC BOOTLOADER [BL1xxxx]																																																															
402	A	X		CRC PARAMETER LISTING [PA7xxxx]																																																															
404	A	X		CRC FILE PARAMETER STRUCTURE																																																															
406	A	X		PROGRAM LISTING CODE & REVISION																																																															
407	A	X		PARAMETER LISTING CODE & REVISION																																																															
500	L		X	MONITOR MODE																																																															

WIN = Window
 R = Read
 W = Write

L = Logical
 N = Numeric
 A = Alphanumeric

OPERATION

Make all vacuum manifold and electrical connections and refer to Turbo-V pump instruction manual prior to operating the Turbo-V controller.

WARNING

To avoid injury to personnel and damage to the equipment, if the pump is laying on a table make sure it is steady.
Never operate the Turbo-V pump unless the pump inlet is connected to the system or blanked off.

The controller operates completely automatically after the remote start command is given.

Switching On/Off the Pump

To switch on the pump is necessary to remove the connection between pin 12 of J4 connector and pin 15 (ground) of the same connector.

To switch off the pump is necessary to connect pin 12 of J4 connector to pin 15 (ground) of the same connector.

Low Speed Activation/Deactivation

To activate the Low Speed status it is necessary to connect pin 13 of J4 connector to pin 15 (ground) of the same connector.

To deactivate the Low Speed status it is necessary to disconnect pin 13 of J4 connector from pin 15 (ground) of the same connector.

The low speed status is available on pin 5 of the same connector.

The low speed frequency is equal to 833 Hz.

Error reset

If the controller identifies an error, the pump is switched off. After the error cause has been removed, the pump does not automatically run up. It is necessary to reset the error status: this is performed connecting pin 11 of J4 connector to pin 15 (ground) of the same connector for at least 1 second.

MAINTENANCE

Replacement controllers are available on an advance exchange basis through Varian. If necessary, information is provided to aid the operator in determining malfunctions and corrective steps to be taken.

WARNING

Voltages developed in the unit are dangerous and may be fatal. Service must be performed by authorized personnel only.

Error Messages

For a certain type of failure, the controller will self-diagnose the error and the following messages will be displayed.

The controller signals the error occurred by means of a diagnostic LED located on the board, and on the RS 232 port.

The LED blinks in a coded mode: it flashes a number of time equal to the error code (see the following table) and then stays off, and so on.

Error Code Table

LED BLINKING NUMBER	DESCRIPTION
0	No error
1	Output current > 15 A
2	Not connected pump
3	Output current > 1.5 A for 15 sec.
4	Bearing temperature > 60 °C
5	Heat exchanger temperature > 60 °C
6	Normal not reached at run up time
9	Vp voltage 8V lower than nominal for 5 sec.
10	Soft start ramp not ended within the expected time

ACCESSORIES AND SPARE PARTS

DESCRIPTION	PART NUMBER
Pump Cable 60 cm long with connector	969-9869



Request for Return



1. A Return Authorization Number (RA#) **WILL NOT** be issued until this Request for Return is completely filled out, signed and returned to Varian Customer Service.
2. Return shipments shall be made in compliance with local and international **Shipping Regulations** (IATA, DOT, UN).
3. The customer is expected to take the following actions to ensure the **Safety** of workers at Varian: (a) Drain any oils or other liquids, (b) Purge or flush all gasses, (c) Wipe off any excess residues in or on the equipment, (d) Package the equipment to prevent shipping damage, (for Advance Exchanges please use packing material from replacement unit).
4. Make sure the shipping documents clearly show the RA# and then return the package to the Varian location nearest you.

North and South America
 Varian Vacuum Technologies
 121 Hartwell Ave
 Lexington, MA 02421
 Phone : +1 781 8617200
 Fax: +1 781 8609252

Europe and Middle East
 Varian SpA
 Via Flli Varian 54
 10040 Leini (TO) – ITALY
 Phone: +39 011 9979111
 Fax: +39 011 9979330

Asia and ROW
 Varian Vacuum Technologies
 Local Office

CUSTOMER INFORMATION

Company name:	
Contact person: Name:	Tel:
Fax:	E-Mail:
Ship Method:	Shipping Collect #: P.O.#:
<u>Europe only:</u> VAT reg. Number:	<u>USA only:</u> <input type="checkbox"/> Taxable <input type="checkbox"/> Non-taxable
Customer Ship To:	Customer Bill To:
.....
.....

PRODUCT IDENTIFICATION

Product Description	Varian P/N	Varian S/N	Purchase Reference

TYPE OF RETURN (check appropriate box)

<input type="checkbox"/> Paid Exchange	<input type="checkbox"/> Paid Repair	<input type="checkbox"/> Warranty Exchange	<input type="checkbox"/> Warranty Repair	<input type="checkbox"/> Loaner Return
<input type="checkbox"/> Credit	<input type="checkbox"/> Shipping Error	<input type="checkbox"/> Evaluation Return	<input type="checkbox"/> Calibration	<input type="checkbox"/> Other

HEALTH and SAFETY CERTIFICATION

Varian Vacuum Technologies **CAN NOT ACCEPT** any equipment which contains **BIOLOGICAL HAZARDS** or **RADIOACTIVITY**. Call Varian Customer Service to discuss alternatives if this requirement presents a problem.

The equipment listed above (check one):

HAS NOT been exposed to any toxic or hazardous materials

OR

HAS been exposed to any toxic or hazardous materials. In case of this selection, check boxes for any materials that equipment was exposed to, check all categories that apply:

Toxic Corrosive Reactive Flammable Explosive Biological Radioactive

List all toxic or hazardous materials. Include product name, chemical name and chemical symbol or formula.

.....

Print Name: Customer Authorized Signature:

Print Title: Date:/...../.....

NOTE: If a product is received at Varian which is contaminated with a toxic or hazardous material that was not disclosed, **the customer will be held responsible** for all costs incurred to ensure the safe handling of the product, and **is liable** for any harm or injury to Varian employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

Do not write below this line

Notification (RA)#: Customer ID#: Equipment #:

FAILURE REPORT

TURBO PUMPS and TURBOCONTROLLERS

<input type="checkbox"/> Does not start <input type="checkbox"/> Does not spin freely <input type="checkbox"/> Does not reach full speed <input type="checkbox"/> Mechanical Contact <input type="checkbox"/> Cooling defective	<input type="checkbox"/> Noise <input type="checkbox"/> Vibrations <input type="checkbox"/> Leak <input type="checkbox"/> Overtemperature	POSITION <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal <input type="checkbox"/> Upside-down <input type="checkbox"/> Other:	PARAMETERS Power: Rotational Speed: Current: Inlet Pressure: Temp 1: Foreline Pressure: Temp 2: Purge flow:
TURBOCONTROLLER ERROR MESSAGE:			OPERATION TIME:

ION PUMPS/CONTROLLERS

<input type="checkbox"/> Bad feedthrough <input type="checkbox"/> Vacuum leak <input type="checkbox"/> Error code on display	<input type="checkbox"/> Poor vacuum <input type="checkbox"/> High voltage problem <input type="checkbox"/> Other
Customer application:	

VALVES/COMPONENTS

<input type="checkbox"/> Main seal leak <input type="checkbox"/> Solenoid failure <input type="checkbox"/> Damaged sealing area	<input type="checkbox"/> Bellows leak <input type="checkbox"/> Damaged flange <input type="checkbox"/> Other
Customer application:	

LEAK DETECTORS

<input type="checkbox"/> Cannot calibrate <input type="checkbox"/> Vacuum system unstable <input type="checkbox"/> Failed to start	<input type="checkbox"/> No zero/high background <input type="checkbox"/> Cannot reach test mode <input type="checkbox"/> Other
Customer application:	

INSTRUMENTS

<input type="checkbox"/> Gauge tube not working <input type="checkbox"/> Communication failure <input type="checkbox"/> Error code on display	<input type="checkbox"/> Display problem <input type="checkbox"/> Degas not working <input type="checkbox"/> Other
Customer application:	

PRIMARY PUMPS

<input type="checkbox"/> Pump doesn't start <input type="checkbox"/> Doesn't reach vacuum <input type="checkbox"/> Pump seized	<input type="checkbox"/> Noisy pump (describe) <input type="checkbox"/> Over temperature <input type="checkbox"/> Other
Customer application:	

DIFFUSION PUMPS

<input type="checkbox"/> Heater failure <input type="checkbox"/> Doesn't reach vacuum <input type="checkbox"/> Vacuum leak	<input type="checkbox"/> Electrical problem <input type="checkbox"/> Cooling coil damage <input type="checkbox"/> Other
Customer application:	

FAILURE DESCRIPTION

(Please describe in detail the nature of the malfunction to assist us in performing failure analysis):

NOTA: Su richiesta questo documento è disponibile anche in Tedesco, Italiano e Francese.
REMARQUE : Sur demande ce document est également disponible en allemand, italien et français.
HINWEIS: Auf Aufrage ist diese Unterlage auch auf Deutsch, Italienisch und Französisch erhältlich.

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Internet Users:

Customer Service & Technical Support:

vtt.customer.service@varianinc.com

Worldwide Web Site:

www.varianinc.com/vacuum

Order On-line:

www.evarian.com

Representatives in most countries



VARIAN