	Operating Instructions	Date: 23-02-2017
	UGE	Revision 00

Type Code:

UGE 7,2 C1	UGE 12 C1	UGE 17,5 C1	
UGE 7,2 C18	UGE 12 C18	UGE 17,5 C18	
UGE 7,2 D2	UGE 12 D2	UGE 17,5 D2	UGE 24 D2
UGE 7,2 D28	UGE 12 D28	UGE 17,5 D28	UGE 24 D28

E.g. UGE 24 D2

UGE	24	D2
Cast resin indoor voltage transformer	insulation level	installation size

Manufacturer: ELEQ GmbH
 Karl-Ferdinand-Braun-Straße 1
 50170 Kerpen
 Germany



Contents

1	Safety Guidelines	3
2	Applications	3
3	Failures and critical loading	3
4	Set-ups, Mounting and De-mounting	3
5	Electrical connections.....	4
6	Mechanical mounting.....	4
7	Maintenance.....	4
8	Repair.....	5
9	Schematic diagram	5
10	General conditions of supply.....	6
11	Appendix.....	6

1 Safety Guidelines

- This operating manual contains information and precaution rules for a safe installation and usage with respect to the mentioned requirements.
- Please read this instruction manual thoroughly!

2 Applications

The voltage transformers of the type UGE:

- are suitable for indoor usage for ambient air temperature -5°C to $+40^{\circ}\text{C}$, other temperatures on request. Specific ambient air temperature is indicated on the rating plate.
- are suitable for storage and transport temperature -25°C to $+50^{\circ}\text{C}$.
- The voltage transformers are suitable in medium-voltage systems.
- The mounting instructions must be followed carefully.

3 Failures and critical loading

- If the equipment safety is not guaranteed, the equipment must be switched off and further usage is prohibited.

The equipment safety may be endangered by:

- o visible damage of housing or terminal lines.
- o improper storage of the transformer. **Attention! Do not store or transport transformer below above mentioned temperature.**
- o transport damage of the transformer.
- o improper mechanical loadings of the voltage transformer e.g. high pressure loadings and impact stresses by loading with weights (stacking) or by fall from the storage place during transport and installation.
- o external heat influence, e.g. by lacking of heat flow in the system.
- o improper electrical loadings of the voltage transformer e.g. overload (burden is higher than the given thermal limiting output or voltages exceeding the rated voltage multiplied by the rated voltage factor and time rating).
- o **Attention!** If the open delta winding for the earth-fault detection (residual winding da-dn) is grounded several times (**Danger of explosion**): Following the schematic diagram of the voltage transformer the open delta winding must be grounded only once, see section 9.
- o **operation of the voltage transformer with short-circuit secondary windings. Danger of explosion.**

4 Set-ups, Mounting and De-mounting

- Any kind of work is only allowed in a voltage-free state of the transformer.
- Only qualified persons are allowed to carry out any kind of work.
- **Attention!** The voltage transformers are heavy. For mounting and transport you have to use the appropriate lifting tools. For the transport the primary connection threaded bushing can be use. The voltage transformers must be secured in the lifting tools. Pendulousness must be avoided. Do not stand below the floating loading.
- Wear personal protective equipment to avoid bruise and cuts.
- The statutory and occupational safety guidelines must be observed.

5 Electrical connections

- The general statutory installation standards for electrical installation are to be followed carefully.
- Generally, it needs to be guaranteed that no required clearances and creepage distances are shortened by mounting of the voltage transformer see Fig. 1.
- The tightening torque of the nuts connection (M10) is 20 Nm. Therefore you must pay attention that the nuts must be screwed smoothly.
- The secondary terminal leads must be adequately stripped. In application of flexible wires it is to be noted that when stripping, the wires need to be ensured by end ferrules or cable shoes (M5). The secondary terminals can be earthed with the delivered screws. The tightening torque for the secondary screws is 2.5 Nm.
- Recommendation: the secondary terminal lead cross-section should be 2,5 mm² in case the lead length is < 25 m.
- The ground plate is connected internal with the ground bar. The ground plate can be earthed via M8 earthing screw.
- The operator has to ensure the grounding with a sufficient cross section and a suitable method.

Figure. 1:

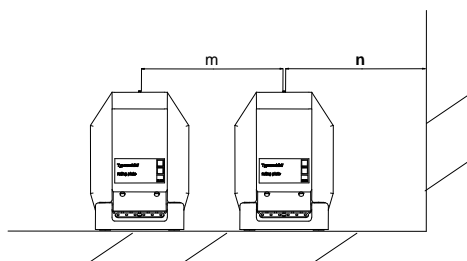


Table 1: Clearance

Um	m	n
7,2 kV	90	90
12 kV	120	120
17,5 kV	160	160
24 kV	220	220

6 Mechanical mounting

- **ATTENTION:** No damage to the cast resin may occur during mounting procedure.
- The voltage transformers can be mounted in any position.
- The unit must be connected tightly to the fixture to exclude self-reinforcing tendencies.
- The fixation of the transformer is to be performed with M10 screws for C1-C18 size and M12 screws for D2-D28 size (minimum strength class 8,8). The screws (with sufficient length) are to be installed by the operator with washers ISO 7089-10-200 HV and fastened with a tightening torque accordance table 2. It is recommended to tighten the screws cross-wise. These need to be secured according to the regular standards, e.g. glue.

Table 2:

Tightening torque	
M10	40 Nm
M12	65 Nm

7 Maintenance

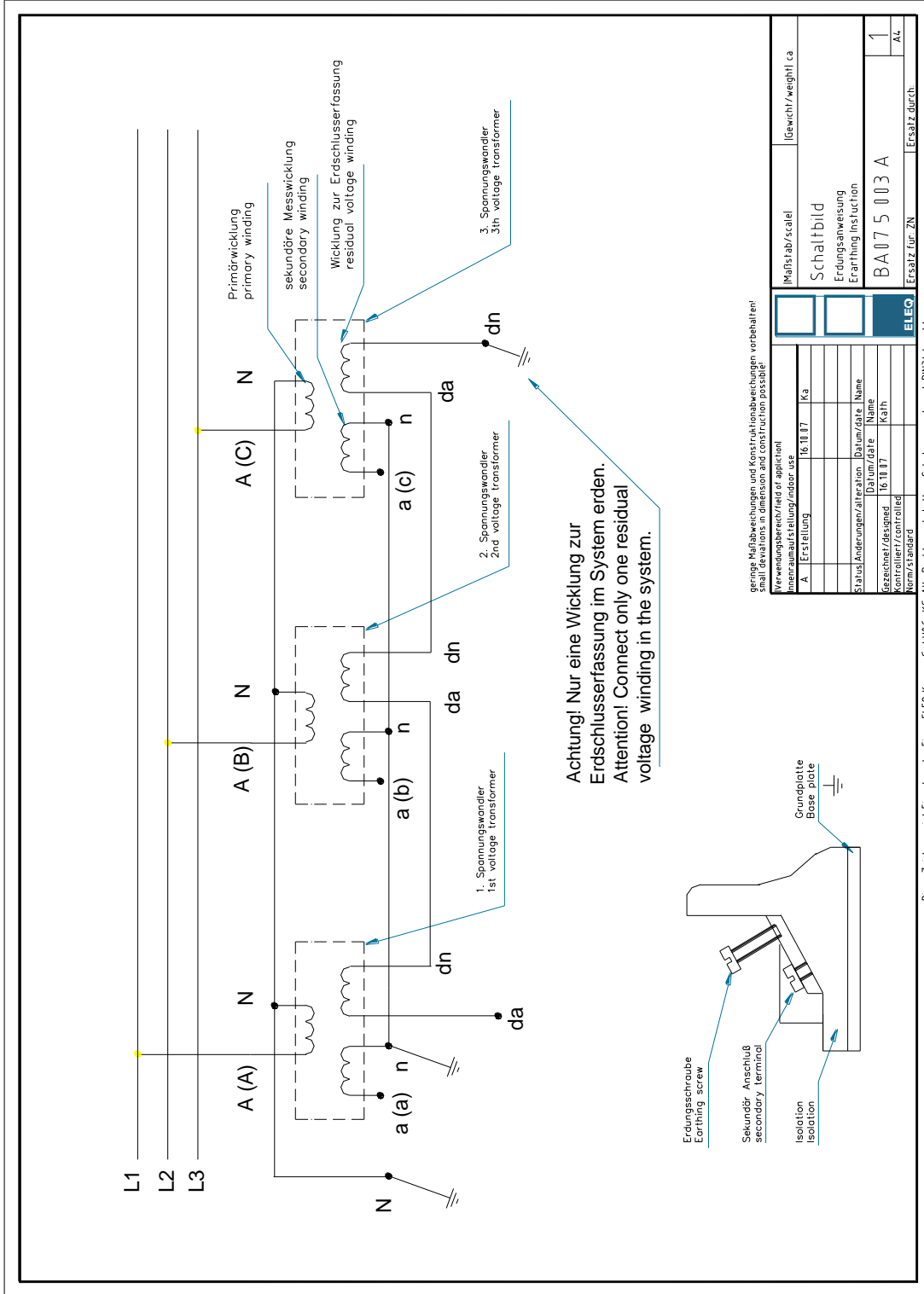
The transformer is maintenance free but it is recommended:

- A visible check is to be performed at regular intervals with reference to damage of the housing and electrical connections.
- All electrical contacts including the earth-connections are to be checked in regular intervals with reference to tightness and corrosion-free state.
- Visibility checks must be performed on all mechanical fixtures with reference to deformation, damage or firmness.
- All maintenance procedures are to be performed in a voltage-free state.

8 Repair

- General it is forbidden for the end-user to perform any repair of the transformer. In any case the transformer must be sent to the manufacturer.

9 Schematic diagram



Diese Zeichnung ist Eigentum der Firma ELEC Kerpen GmbH&Co KG. Alle Rechte vorbehalten. Schutzvermerk nach DIN 34 beachten.

10 General conditions of supply

ELEQ delivers exclusive according to ORGALIME S 2012. Should customers have purchase conditions which are beyond or in contradiction with the general conditions according to ORGALIME S 2012, the general conditions according to the ORGALIME S 2012 are in force, unless there is a written declaration of consent of ELEQ for recognition of these conditions.

11 Appendix

ORGALIME S 2012



GENERAL CONDITIONS for the SUPPLY OF MECHANICAL, ELECTRICAL AND ELECTRONIC PRODUCTS

Brussels, March 2012

PREAMBLE

1. These General Conditions shall apply when the parties agree In Writing or otherwise thereto. Any modifications of or deviations from them must be agreed In Writing.

DEFINITIONS

2. In these General Conditions the following terms shall have the meanings hereunder assigned to them:

- **“Contract”**: the agreement In Writing between the parties concerning supply of the Product and all appendices, including agreed amendments and additions In Writing to the said documents;

- **“Gross Negligence”**: an act or omission implying either a failure to pay due regard to serious consequences, which a conscientious contracting party would normally foresee as likely to ensue, or a deliberate disregard of the consequences of such an act or omission;

- **“In Writing”**: communication by document signed by both parties or by letter, fax, electronic mail and by such other means as are agreed by the parties;

- **“the Product”**: the object(s) to be supplied under the Contract, including software and documentation.

PRODUCT INFORMATION

3. All information and data contained in general product documentation and price lists shall be binding only to the extent that they are by reference In Writing expressly included in the Contract.

DRAWINGS AND TECHNICAL INFORMATION

4. All drawings and technical documents relating to the Product or its manufacture submitted by one party to the other, prior or subsequent to the formation of the Contract, shall remain the property of the submitting party.

Drawings, technical documents or other technical information received by one party shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party.

5. The Supplier shall, not later than at the date of delivery, provide free of charge information and drawings which are necessary to permit the Purchaser to install, commission, operate and maintain the Product. Such information and drawings shall be supplied in the number of copies agreed upon or at least one copy of each. The Supplier shall not be obliged to provide manufacturing drawings for the Product or for spare parts.

ACCEPTANCE TESTS

6. Acceptance tests provided for in the Contract shall, unless otherwise agreed, be carried out at the place of manufacture during normal working hours.

If the Contract does not specify the technical requirements, the tests shall be carried out in accordance with general practice in the appropriate branch of industry concerned in the country of manufacture.

7. The Supplier shall notify the Purchaser In Writing of the acceptance tests in sufficient time to permit the Purchaser to be represented at the tests. If the Purchaser is not represented, the test report shall be sent to the Purchaser and shall be accepted as accurate.

8. If the acceptance tests show the Product not to be in accordance with the Contract, the Supplier shall without delay remedy any deficiencies in order to ensure that the Product complies with the Contract. New tests shall then be carried out at the Purchaser's request, unless the deficiency was insignificant.

9. The Supplier shall bear all costs for acceptance tests carried out at the place of manufacture. The Purchaser shall however bear all travelling and living expenses for his representatives in connection with such tests.

DELIVERY. PASSING OF RISK

10. Any agreed trade term shall be construed in accordance with the INCOTERMS® in force at the formation of the Contract.

If no trade term has been specifically agreed, the delivery shall be Free Carrier (FCA) at the place named by the Supplier.

If, in the case of delivery Free Carrier, the Supplier, at the request of the Purchaser, undertakes to send the Product to its destination, the risk will pass not later than when the Product is handed over to the first carrier.

Partial delivery shall not be permitted, unless otherwise agreed.

TIME FOR DELIVERY. DELAY

11. If the parties, instead of specifying the date for delivery, have specified a period of time within which delivery shall take place, such period shall start to run as soon as the Contract is entered into and all agreed preconditions to be fulfilled by the Purchaser have been satisfied, such as official formalities, payments due at the formation of the Contract and securities.

12. If the Supplier anticipates that he will not be able to deliver the Product at the time for delivery, he shall forthwith notify the

Purchaser thereof In Writing, stating the reason and, if possible, the time when delivery can be expected.

If the Supplier fails to give such notice, the Purchaser shall be entitled to compensation for any additional costs which he incurs and which he could have avoided had he received such notice.

13. If delay in delivery is caused by any of the circumstances mentioned in Clause 41, by an act or omission on the part of the Purchaser, including suspension under Clauses 21 and 44, or any other circumstances attributable to the Purchaser, the Supplier shall be entitled to extend the time for delivery by a period which is necessary having regard to all the circumstances of the case. This provision shall apply regardless of whether the reason for the delay occurs before or after the agreed time for delivery.

14. If the Product is not delivered at the time for delivery, the Purchaser shall be entitled to liquidated damages from the date on which delivery should have taken place.

The liquidated damages shall be payable at a rate of 0.5 per cent of the purchase price for each commenced week of delay. The liquidated damages shall not exceed 7.5 per cent of the purchase price.

If only part of the Product is delayed, the liquidated damages shall be calculated on that part of the purchase price which is attributable to such part of the Product as cannot in consequence of the delay be used as intended by the parties.

The liquidated damages shall become due at the Purchaser's demand In Writing but not before delivery has been completed or the Contract is terminated under Clause 15.

The Purchaser shall forfeit his right to liquidated damages if he has not lodged a claim In Writing for such damages within six months after the time when delivery should have taken place.

15. If the delay in delivery is such that the Purchaser is entitled to maximum liquidated damages under Clause 14 and if the Product is still not delivered, the Purchaser may In Writing demand delivery within a final reasonable period which shall not be less than one week.

If the Supplier does not deliver within such final period and this is not due to any circumstances which are attributable to the Purchaser, then the Purchaser may by notice In Writing to the Supplier terminate the Contract in respect of such part of the Product as cannot in consequence of the Supplier's failure to deliver be used as intended by the parties.

If the Purchaser terminates the Contract he shall be entitled to compensation for the loss he suffers as a result of the Supplier's delay, including any consequential and indirect loss. The total compensation, including the liquidated damages which are payable under Clause 14, shall not exceed 15 per cent of that part of the purchase price which is attributable to the part of the Product in respect of which the Contract is terminated.

The Purchaser shall also have the right to terminate the Contract by notice In Writing to the Supplier, if it is clear from the circumstances that there will occur a delay in delivery which, under Clause 14, would entitle the Purchaser to maximum liquidated damages. In case of termination for this reason, the Purchaser shall be entitled to maximum liquidated damages and compensation under the third paragraph of this Clause 15.

16. Liquidated damages under Clause 14 and termination of the Contract with limited compensation under Clause 15 shall

be the only remedies available to the Purchaser in case of delay on the part of the Supplier. All other claims against the Supplier based on such delay shall be excluded, except where the Supplier has been guilty of Gross Negligence.

17. If the Purchaser anticipates that he will be unable to accept delivery of the Product at the time for delivery, he shall forthwith notify the Supplier In Writing thereof, stating the reason and, if possible, the time when he will be able to accept delivery.

If the Purchaser fails to accept delivery at the time for delivery, he shall nevertheless pay any part of the purchase price which becomes due at the time for delivery, as if delivery had taken place at the time for delivery. The Supplier shall arrange for storage of the Product at the risk and expense of the Purchaser. The Supplier shall also, if the Purchaser so requires, insure the Product at the Purchaser's expense.

18. Unless the Purchaser's failure to accept delivery is due to any such circumstance as mentioned in Clause 41, the Supplier may by notice In Writing require the Purchaser to accept delivery within a final reasonable period.

If, for any reason which is not attributable to the Supplier, the Purchaser fails to accept delivery within such period, the Supplier may by notice In Writing terminate the Contract in whole or in part. The Supplier shall then be entitled to compensation for the loss he suffers by reason of the Purchaser's default, including any consequential and indirect loss. The compensation shall not exceed that part of the purchase price which is attributable to that part of the Product in respect of which the Contract is terminated.

PAYMENT

19. Payment shall be made within 30 days after the date of invoice.

Unless otherwise agreed, the purchase price shall be paid with one third at the formation of the Contract and one third when the Supplier notifies the Purchaser that the Product, or the essential part of it, is ready for delivery. The remaining part of the purchase price shall be paid when the entire Product is delivered.

20. Whatever the means of payment used, payment shall not be deemed to have been effected before the Supplier's account has been irrevocably credited for the amount due.

21. If the Purchaser fails to pay by the stipulated date, the Supplier shall be entitled to interest from the day on which payment was due and to compensation for recovery costs. The rate of interest shall be as agreed between the parties or otherwise 8 percentage points above the rate of the main refinancing facility of the European Central Bank. The compensation for recovery costs shall be 1 per cent of the amount for which interest for late payment becomes due.

In case of late payment and in case the Purchaser fails to give an agreed security by the stipulated date the Supplier may, after having notified the Purchaser In Writing, suspend his performance of the Contract until he receives payment or, where appropriate, until the Purchaser gives the agreed security.

If the Purchaser has not paid the amount due within three months the Supplier shall be entitled to terminate the Contract by notice In Writing to the Purchaser and, in addition to the interest and compensation for recovery costs according to this Clause, to claim compensation for the loss he incurs. Such compensation shall not exceed the agreed purchase price.

RETENTION OF TITLE

22. The Product shall remain the property of the Supplier until paid for in full to the extent that such retention of title is valid under the relevant law.

The Purchaser shall at the request of the Supplier assist him in taking any measures necessary to protect the Supplier's title to the Product.

The retention of title shall not affect the passing of risk under Clause 10.

LIABILITY FOR DEFECTS

23. Pursuant to the provisions of Clauses 24-39, the Supplier shall remedy any defect or nonconformity (hereinafter termed defect(s)) resulting from faulty design, materials or workmanship.

24. The Supplier shall not be liable for defects arising out of materials provided or a design stipulated or specified by the Purchaser.

25. The Supplier shall only be liable for defects which appear under the conditions of operation provided for in the Contract and under proper use of the Product.

26. The Supplier shall not be liable for defects caused by circumstances, which arise after the risk has passed to the Purchaser, e.g. defects due to faulty maintenance, incorrect installation or faulty repair by the Purchaser or to alterations carried out without the Supplier's consent In Writing. The Supplier shall neither be liable for normal wear and tear nor for deterioration.

27. The Supplier's liability shall be limited to defects which appear within a period of one year from delivery. If the use of the Product exceeds that which is agreed, this period shall be reduced proportionately.

28. When a defect in a part of the Product has been remedied, the Supplier shall be liable for defects in the repaired or replaced part under the same terms and conditions as those applicable to the original Product for a period of one year. For the remaining parts of the Product the period mentioned in Clause 27 shall be extended only by a period equal to the period during which and to the extent that the Product could not be used as a result of the defect.

29. The Purchaser shall without undue delay notify the Supplier In Writing of any defect which appears. Such notice shall under no circumstances be given later than two weeks after the expiry of the period given in Clause 27 or the extended period(s) under Clause 28, where applicable.

The notice shall contain a description of the defect.

If the Purchaser fails to notify the Supplier In Writing of a defect within the time limits set forth in the first paragraph of this Clause, he shall lose his right to have the defect remedied.

Where the defect is such that it may cause damage, the Purchaser shall immediately inform the Supplier In Writing. The Purchaser shall bear the risk of damage to the Product resulting from his failure so to notify. The Purchaser shall take reasonable measures to minimise damage and shall in that respect comply with instructions of the Supplier.

30. On receipt of the notice under Clause 29 the Supplier shall at his own cost remedy the defect without undue delay, as

stipulated in Clauses 23-39. The time for remedial work shall be chosen in order not to interfere unnecessarily with the Purchaser's activities.

Repair shall be carried out at the place where the Product is located unless the Supplier deems it more appropriate that the Product is sent to him or a destination specified by him.

If the defect can be remedied by replacement or repair of a defective part and if dismantling and re-installation of the part do not require special knowledge, the Supplier may demand that the defective part is sent to him or a destination specified by him. In such case the Supplier shall have fulfilled his obligations in respect of the defect when he delivers a duly repaired part or a part in replacement to the Purchaser.

31. The Purchaser shall at his own expense provide access to the Product and arrange for any intervention in equipment other than the Product, to the extent that this is necessary to remedy the defect.

32. Unless otherwise agreed, necessary transport of the Product or parts thereof to and from the Supplier in connection with the remedying of defects for which the Supplier is liable shall be at the risk and expense of the Supplier. The Purchaser shall follow the Supplier's instructions regarding such transport.

33. Unless otherwise agreed, the Purchaser shall bear any additional costs which the Supplier incurs for remedying the defect caused by the Product being located in a place other than the destination stated at the formation of the Contract for the Supplier's delivery to the Purchaser or – if no destination has been stated – the place of delivery.

34. Defective parts which have been replaced shall be made available to the Supplier and shall be his property.

35. If the Purchaser has given such notice as mentioned in Clause 29 and no defect is found for which the Supplier is liable, the Supplier shall be entitled to compensation for the costs he incurs as a result of the notice.

36. If the Supplier does not fulfil his obligations under Clause 30, the Purchaser may by notice In Writing fix a final reasonable period for completion of the Supplier's obligations, which shall not be less than one week.

If the Supplier fails to fulfil his obligations within such final period, the Purchaser may himself undertake or employ a third party to undertake necessary repair work at the risk and expense of the Supplier.

Where successful repair work has been undertaken by the Purchaser or a third party, reimbursement by the Supplier of reasonable costs incurred by the Purchaser shall be in full settlement of the Supplier's liabilities for the said defect.

37. Where the Product has not been successfully repaired, as stipulated under Clause 36,

a) the Purchaser shall be entitled to a reduction of the purchase price in proportion to the reduced value of the Product, provided that under no circumstances shall such reduction exceed 15 per cent of the purchase price, or

b) where the defect is so substantial as to significantly deprive the Purchaser of the benefit of the Contract as regards the Product or a substantial part of it, the Purchaser may terminate

the Contract by notice In Writing to the Supplier in respect of such part of the Product as cannot in consequence of the defect be used as intended by the parties. The Purchaser shall then be entitled to compensation for his loss, costs and damages up to a maximum of 15 per cent of that part of the purchase price which is attributable to the part of the Product in respect of which the Contract is terminated.

38. Notwithstanding the provisions of Clauses 23-37 the Supplier shall not be liable for defects in any part of the Product for more than one year from the end of the liability period referred to in Clause 27 or from the end of any other liability period agreed upon by the parties.

39. Save as stipulated in Clauses 23-38, the Supplier shall not be liable for defects. This applies to any loss the defect may cause including loss of production, loss of profit and other indirect loss. This limitation of the Supplier's liability shall not apply if he has been guilty of Gross Negligence.

ALLOCATION OF LIABILITY FOR DAMAGE CAUSED BY THE PRODUCT

40. The Supplier shall not be liable for any damage to property caused by the Product after it has been delivered and whilst it is in the possession of the Purchaser. Nor shall the Supplier be liable for any damage to products manufactured by the Purchaser or to products of which the Purchaser's products form a part.

If the Supplier incurs liability towards any third party for such damage to property as described in the preceding paragraph, the Purchaser shall indemnify, defend and hold the Supplier harmless.

If a claim for damage as described in this Clause is lodged by a third party against one of the parties, the latter party shall forthwith inform the other party thereof In Writing.

The Supplier and the Purchaser shall be mutually obliged to let themselves be summoned to the court or arbitral tribunal examining claims for damages lodged against one of them on the basis of damage allegedly caused by the Product. The liability between the Supplier and the Purchaser shall however be settled in accordance with Clause 46.

The limitation of the Supplier's liability in the first paragraph of this Clause shall not apply where the Supplier has been guilty of Gross Negligence.

FORCE MAJEURE

41. Either party shall be entitled to suspend performance of his obligations under the Contract to the extent that such performance is impeded or made unreasonably onerous by Force Majeure, meaning any of the following circumstances: industrial disputes and any other circumstance beyond the control of the parties

such as fire, war, extensive military mobilization, insurrection, requisition, seizure, embargo, restrictions in the use of power, currency and export restrictions, epidemics, natural disasters, extreme natural events, terrorist acts and defects or delays in deliveries by sub-contractors caused by any such circumstance referred to in this Clause.

A circumstance referred to in this Clause whether occurring prior to or after the formation of the Contract shall give a right to suspension only if its effect on the performance of the Contract could not be foreseen at the time of the formation of the Contract.

42. The party claiming to be affected by Force Majeure shall notify the other party In Writing without delay on the intervention and on the cessation of such circumstance. If a party fails to give such notice, the other party shall be entitled to compensation for any additional costs which he incurs and which he could have avoided had he received such notice.

If Force Majeure prevents the Purchaser from fulfilling his obligations, he shall compensate the Supplier for expenses incurred in securing and protecting the Product.

43. Regardless of what might otherwise follow from these General Conditions, either party shall be entitled to terminate the Contract by notice In Writing to the other party if performance of the Contract is suspended under Clause 41 for more than six months.

ANTICIPATED NON-PERFORMANCE

44. Notwithstanding other provisions in these General Conditions regarding suspension, each party shall be entitled to suspend the performance of his obligations under the Contract, where it is clear from the circumstances that the other party is not going to perform his obligations. A party suspending his performance of the Contract shall forthwith notify the other party thereof In Writing.

CONSEQUENTIAL LOSSES

45. Save as otherwise stated in these General Conditions there shall be no liability for either party towards the other party for loss of production, loss of profit, loss of use, loss of contracts or for any other consequential or indirect loss whatsoever.

DISPUTES AND APPLICABLE LAW

46. All disputes arising out of or in connection with the Contract shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules.

47. The Contract shall be governed by the substantive law of the Supplier's country.