

ジョルダン王国電力訓練センター協力事業アフターケア調査団報告書

ジョルダン王国 電力訓練センター協力事業 アフターケア調査団報告書

1993年 7月

国際協力事業団

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国際協力事業団

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ジョルダン王国
電力訓練センター協力事業
アフターケア調査団報告書

1993年7月

国際協力事業団

序 文

ジョルダン王国政府は、電力需要の増大に伴い大きな伸びが予想される電力事業に携わる技術者の不足に対処するために、エネルギー資源省ジョルダン電力庁の傘下に「ジョルダン電力訓練センター」を設立することを計画し、我が国にプロジェクト方式技術協力を要請してきた。

この要請を受けて我が国政府は、国際協力事業団（JICA）を通じて1985年9月に実施協議調査団を派遣して討議議事録(Record of Discussions)の署名を行い、同討議議事録に基づき、1986年3月1日から5年間にわたり技術協力を実施した。

さらに、供与機材の据え付け・操作の指導の必要性が生じたため、1992年1月～2月にフォローアップ協力を行った。

これまで、日本側は長期専門家10名、短期専門家20名（長期調査員を含めた述べ人数）を派遣し、研修員17名を受け入れ、5億7900万円相当の機材供与を行った。

本アフターケア調査団は、プロジェクト引き渡し後のジョルダン側運営状況について調査するとともに、移転技術のより円滑な普及のための支援方策について協議を行うことを目的に1993年5月18日から5月28日まで派遣された。

本報告書は同調査団の調査結果をとりまとめたものである。

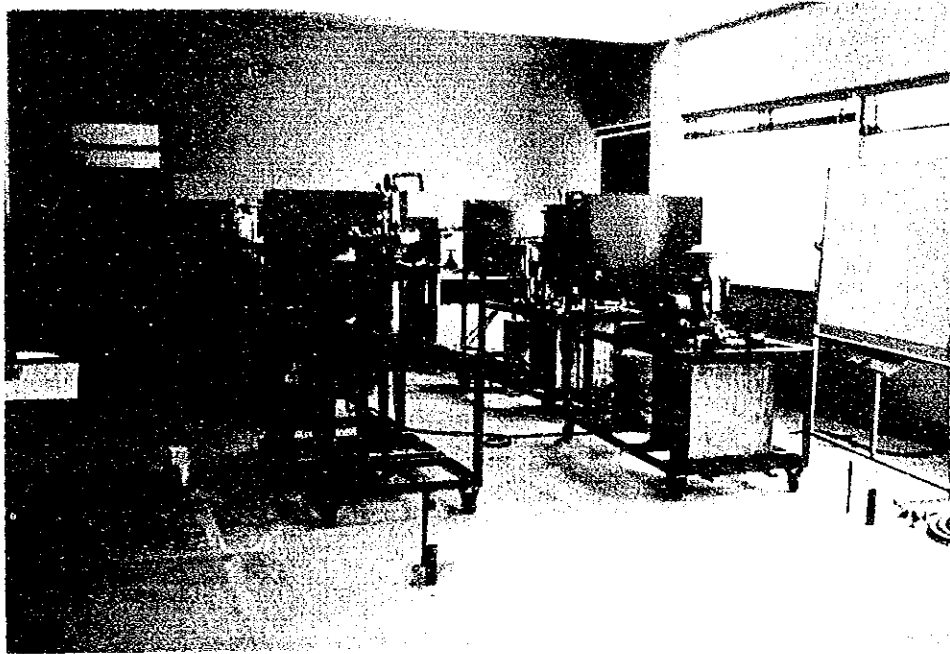
ここに本調査団の派遣に関し、ご協力をいただいた日本・ジョルダン両国の関係各位に対し深甚の謝意を表すとともに、あわせて今後のご支援をお願いする次第である。

1993年7月

国際協力事業団

鉱工業開発協力部長

柿 沼 宇 佐



自動制御装置（4台）

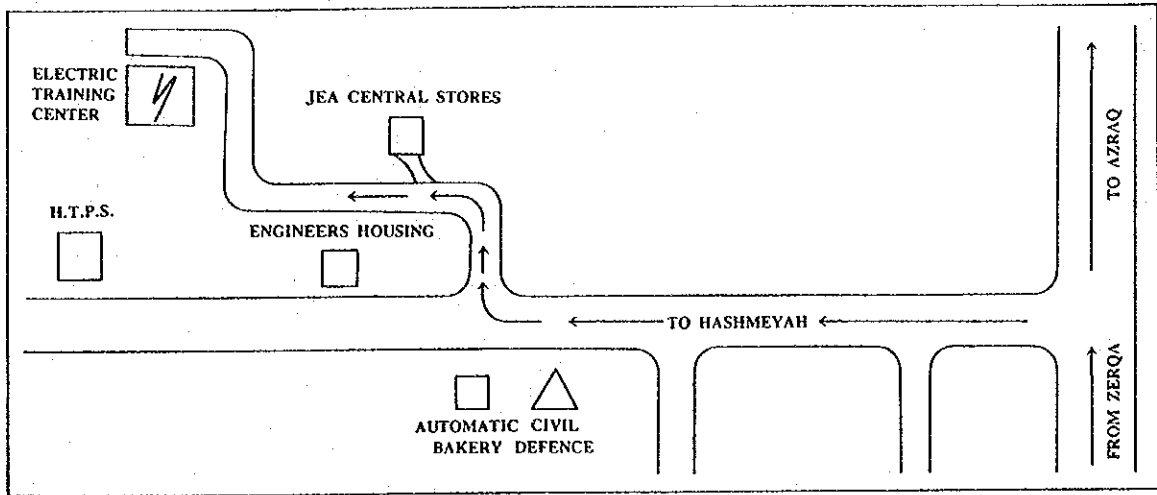


ミニッツ署名交換

前列右 成瀬団長

左 Jaouni ジョルダン電力庁副総裁

プロジェクト位置図



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1. 調査結果の要約

1991年2月のプロジェクト協力終了後、現在までの2年3ヶ月間に、プロジェクト協力中と変わらない訓練コースが実施されており、訓練終了者の多くはエネルギー資源省ジョルダン電力庁及び関連の官・民企業に採用されている。

また、1992年6月から開始された第3国研修も順調に推移している。

現在、当センターは、ジョルダン国内のみならず、周辺アラブ諸国の電力訓練センターとしても機能しているが、今後も、日本側から更なる協力を得て発展していきたい旨の希望があった。

一方、ジョルダン国側の本プロジェクト終了後に対する予算額及び本プロジェクトの配置職員数に関しても適切に対応されていることが確認された。

以上の結果から当該プロジェクトに関するアフターケア協力の妥当性は高いと判断された。

2. アフターケア調査団派遣

2-1 調査団派遣の経緯と目的

「ジョルダン電力訓練センター」に対するプロジェクト方式技術協力要請は、1982年6月にジョルダン王国政府から日本国政府に対して正式要請された。

この要請を受けて我が国政府は、国際協力事業団（JICA）を通じて1985年9月に実施協議調査団を派遣して討議議事録(Record of Discussions)の署名を行った。

本件プロジェクトは、同討議議事録に基づき、1986年3月1日から5年間にわたる技術協力が開始された。そして、1991年2月のプロジェクト終了に先立ち、1990年10月に評価調査を行い、協力実績及び成果をレビューし、技術協力目的の達成度を評価し、その後の協力方針を討議した。評価の結果、本プロジェクトは当初の目的を達成したものと判断され、当初の予定通り5年間の協力期間を終了することとなった。

さらに、残余協力期間中に現地に到着した供与機材の据付け・操作の指導の必要性が生じたため1992年1月～2月にフォローアップ協力を行った。

現在、右センターの自主運営は順調に行われているが、スペアパーツ不足や機材運転の支障などの報告があり、今般、ジョルダン側より、アフターケア協力の要請があった。

プロジェクト終了後、約2年3ヶ月を経過した現時点において、JICAはプロジェクトの運営状況の確認及び今後のプロジェクトの発展性についてジョルダン側関係者と協議を行い、協力内容の一層の定着を目的として、アフターケア協力計画(Aftercare Program)を策定することを主な目的として、1993年5月18日から5月28日までアフターケア調査団を派遣した。

2-2 調査団の構成

担当分野	氏名	所 属
団 長	成 瀬 猛	国際協力事業団 鉦工業開発協力部 鉦工業開発協力課 課長代理
技術協力計画	荒 川 晋 也	通商産業省 資源エネルギー庁 公益事業部 技術課 海外調査係長
機 械 工 学	阿 部 勉	電源開発株式会社 労務部 安全対策室 主査
自動制御装置	山 口 昭 広	株式会社 昭和電業社 取締役
プロジェクト 運 営 管 理	高 橋 三 成	国際協力事業団 鉦工業開発協力部 鉦工業開発協力課

2-3 調査日程

派遣期間 1993年5月18日～5月28日(11日間)

日 程	調 査 内 容	
5月18日(火)	・東京発(AF275) パリ着	
5月19日(水)	・パリ発(AF8172) アンマン着	
5月20日(木)	<ul style="list-style-type: none"> ・JICA(表敬、打合せ) ・国家計画庁(表敬) ・電力庁(表敬) ・大使館(表敬) 	
5月21日(金)	・資料整理	
5月22日(土)	・電力訓練センター(表敬、打合せ、機材調査)	
5月23日(日)	成瀬、荒川、高橋 <ul style="list-style-type: none"> ・電力庁 (協議、ミニッツ案協議) ・コンピューター訓練センター (視察) 	阿部、山口 <ul style="list-style-type: none"> ・電力訓練センター (機材調査)
5月24日(月)	<ul style="list-style-type: none"> ・ミニッツ署名交換 ・JICA事務所(報告) ・大使館(報告) 	
5月25日(火)	成瀬、荒川、高橋 <ul style="list-style-type: none"> ・アンマン発(AZ730) ドバイ着 ・ドバイ発(BI534) 	阿部、山口 <ul style="list-style-type: none"> ・アンマン発(RJ123) ・フランクフルト着
5月26日(水)	成瀬、荒川 <ul style="list-style-type: none"> ・バンコク着 ・JICA事務所(打合せ) 	高橋 <ul style="list-style-type: none"> ・バンコク着 ・バンコク発 (TG640) ・東京着
5月27日(木)	<ul style="list-style-type: none"> ・PEA(表敬) ・タイ地方配電(視察) 	・東京着
5月28日(金)	<ul style="list-style-type: none"> ・バンコク発(TG640) ・東京着 	

2-4 主要面談者リスト

ジョルダン王国側

(1) J E A (JORDAN ELECTRICITY AUTHORITY)

アラファ (M. S. ARAFAH) 総裁

ジャウニ (W. JAOUNI) 副総裁

ハイリー (I. EL-KHAIRY) E T C (電力訓練センター : Electric Power Training Centre) 所長

タミーミ (E. TAMIMI) 研修部主任

ナブルシ (A. NABULSI) E T C 副所長

アワダット (M. AWADAT) E T C 送変電チーフエンジニア

サイディーン (M. SAIDIN) E T C 企画・シミュレータチーフエンジニア

ナイームバイア (N. BAIAH) E T C メンテナンスエンジニア

ハワリー (I. HAWARY) E T C 送変電エンジニア

ハティーブ (M. KHATIB) E T C 電気エンジニア

タハ (T. HASSAN) 電気保守テクニシャン

(2) 計画省

アルハジャージ (NAEL ALHAJAJ)

日本側

(1) 在ジョルダン日本大使館

池田 右二 特命全権大使

天野 哲郎 一等書記官

篠原 俊博 二等書記官

(2) J I C A ジョルダン事務所

平川 潔 事務所長

藤岡 由紀 青年海外協力隊調整員

3. 調査結果

3-1 プロジェクト終了後の現状

1991年2月28日に当プロジェクト方式技術協力事業が終了してから本アフターケア調査団派遣までにはほぼ2年3ヶ月が経過し、この間に実施された活動及び供与された機材の使用状況については以下の通りである。

① 組織・人員配置・予算状況

本プロジェクトの実施機関は電力庁であり、電力訓練センターは電力庁副総裁の直轄の機関であったが、現時点でもその位置付けに変更はなかった。

また、人数及び人員構成については、所長1名、エンジニア11名、テクニシャン18名、教務・秘書23名の計53名であった。ちなみに、プロジェクト終了時は28名、1992年9月時点では44名であったので、ジョルダン側の人員確保に対する努力が伺える。

そして、本センターの1993年度の運営予算は確保されていると共に、本件アフターケア協力を実施するための必要経費は支出可能とのことであった。

② 訓練及び第3国研修

プロジェクト協力期間終了後も、湾岸危機による一時的な停滞はあったものの、極めて順調に運営されている。現在、研修センター独自で、新規の研修事業を計画中であり、また、1992年度の第1回の第3国研修は非常に好評だった。第3国研修は、今年度以降の実施も大いに期待されている。

③ 供与機材の使用状況

自動制御装置のオペレーションが困難な他は、修理・交換が必要な供与機材はなく、極めて良好に使用されていた。

3-2 将来計画及び今後の発展性

① ジョルダン国内の電力供給率は既に98%のレベルまで達しているが、電力需要の伸びに対応するために、新規の発電所の建設を計画しており、アンマン近郊の2ヶ所のガスタービン発電所の入札が本年6月に予定されている他、アカバの新規の火力発電所建設の計画が進められている。

これら新規の発電所の建設に合わせて、運転・保守・管理要員の育成も同時に平行的に行わなければならない、本訓練センターの役割はますます重要になっていくものと思われる。

② 当センターにおける第3国研修は、第1回が昨年終了し、今年は第2回目が予定されているが、定員12名に対し、応募が28名あったと聞いている。

このことは、アラブ近隣諸国における電力セクターの人材養成のニーズの高さと、本センターで行われた訓練内容に対する評価の高さを裏付けるものであると判断される。

従って、当センターの役割は周辺諸国の電力事情の向上化と平行して、自国内のみならず近隣国を含めたアラブ地域全体に対する電力セクターの人材育成に貢献出来ると期待される。

3-3 その他特記事項

現在、ヨルダンを中心として周辺5ヶ国を結ぶ送電線の連携計画が進められている。5ヶ国とは、シリア、トルコ、イラク、サウジアラビア、エジプトであり、既にシリアとは結ばれており、この6月にはエジプトとも結ばれる予定と聞いている。

このことは、ヨルダンの余剰電力を周辺国に供給し、売電収入を得られると同時に周辺諸国の電化促進にも大きく貢献するものである。

従って、そのような状況下において電力セクターの人材の育成をも当センターで実施できることは、電力の供給体制の強化と相まって非常に大きな効果を上げると同時に、ヨルダン国のアラブ諸国内での地位を向上させ、ひいては中東和平そのものにも少なからず貢献するものと期待できる。

4. アフターケア協力計画の策定

調査結果の要約にも記載した通り、本プロジェクトは日本側協力終了後も順調に推移しており、必要なアフターケア協力を実施すれば、さらに効果を上げることが期待できると判断された。

アフターケア協力計画を列記すれば以下の通りである。

4-1 協力分野と協力期間

協力分野は、アフターケアのスキームで対応できる①溶接、②自動制御装置、③機材保守・点検の3分野で双方が合意した。また、協力期間は、協議議事録に署名交換した1993年5月24日から1995年3月31日までとした。

4-2 専門家派遣計画

ジョルダン側より、上記の①溶接、②自動制御装置、③機材保守・点検の分野の専門家の派遣の要請があった。調査団から、特に溶接分野では専門家のリクルートが困難なことが予想され、ジョルダン側の希望に添えない可能性があることを説明した。さらに、供与機材がジョルダン側へ到着する時期を鑑み、短期専門家の派遣時期は、1994年10月頃からとした。

また、右専門家に係るA1フォームは、1994年1月までに提出することとした。

4-3 研修員受け入れ計画

アフターケアの要請書には、①発電所・機械保守整備、②溶接技術の分野での要望があった。そのため、調査団より、個別の研修員受け入れの要望調査表を提出すれば、受け入れの可能性があることを説明した。しかしながら、ジョルダン側からは、研修員受け入れに対する要望はなかった。

4-4 機材供与計画

ジョルダン側の最優先機材は、コンピュータによる発電プラントの運転状況管理を模擬する制御装置（供与済み）のソフトプログラムの開発であり、今回の調査でその中身についての先方意向を確認し、調整を行った。

その他については、訓練用機材のスペアパーツと将来のジョルダン側で新規に設置を予定している送電線保守コースなどに必要な資機材の要請があり、スペアパーツを優先として日本側予算内で対応できる範囲としたうえで、優先順位を付けさせた。

また、A4フォームは1994年1月までに提出することで、双方は合意した。

4-5 ジョルダン側投入計画

本件はアフターケアであり、特に新規の協力のための機材などを投入するわけではないので、ジョルダン側が新たに準備しなければならない予算、C/Pの配置はない。

但し、短期専門家を派遣した際には当然技術移転の対象となるC/Pの配置が必要であり、これら要員は既に配置されてはいるものの、専門家派遣時には間違いなく専任C/Pとして指名されることを確認した。

その他、専門家、機材に対する一般的なジョルダン側義務事項はR/D及び、日本-ジョルダン間の技術協力協定にのっとりて履行されることを確認した。

5. 調査団所見

ジョルダン電力庁（JEA）は政府機関でありながら、100%独立採算制として運営されている。民営化されていないのは、採算性の低い地方電化をJEAが実施しているためであるが、経営状況は極めて良好のようであり、政府からの補助金も新規の発電施設建設などのため以外は受けていないとの説明であった。

このような中、電力訓練センターも良好に維持されているが、これはセンターの保守、維持、管理を電力訓練センター独自で行っており、部品などの供給も極力、センター内のワークショップなどで自己製作しているのが大きな理由であろう。

つまり、途上国で常に問題になるところの維持管理体制が、技術レベル、意識レベルの両面から既にかなり高いレベルのところまで整備されている。

従って、完全自立するために必要な技術移転及びそのための適切な機材供与を行えば、効果は十分に上がるものと期待できる。

また、ジョルダン国の将来に対する考え方として、その立地条件を生かして、当国の知的水準を向上させることによる経済活動を中近東地域で展開させていこうとする思想が、ジョルダン側政府高官との協議の中で強く感じられた。

天然資源に恵まれない当国にとって、国の自立を考えれば当然の思想であるかもしれないが、このような考え方が社会的に根ざしているとするれば、当国の発展性には非常に明るい期待が持てるのではないだろうか。

今回の調査は、アフターケアの内容を詰めるのが主目的ではあるが、電力そのものが民衆の生活向上に不可欠のものであり、その成果がジョルダンのみならず、近隣アラブ諸国にも被益していくことは、ひいては中東和平にも繋がる可能性をも秘めていると考えられ、今後ともJEAに対して個別派遣専門家、JOCV隊員などの派遣を継続していくことは非常に大きな意義があると思われる。

6. 先方側との主な協議事項

- ① 資機材の供与に関しては、アフターケア予算の規模もあり、ジョルダン側の希望する将来の訓練コースの拡張に資するための機材までは含めることが不可能な場合があることを説明し、先方もこれを了承した。

しかしながら、JEA及びETCの活動が非常に活発であり、将来性が期待できることから今回のアフターケアで取り込むことができない場合は、単独機材供与もしくは昨年からジョルダン国が対象となった無償資金協力を考慮することを提案し、JEA側も前向きにジョルダン計画省及び日本大使館、JICA事務所と連絡を取り合っていくとの発言を得た。

- ② JEAでは、JEAの保持する発電所などの全ての維持・管理要員の育成を当ETCに期待している。そのために、送電線保守、火力発電所の施設の維持管理技術などの日本からの技術移転を強く望んでいる。

当アフターケアでは、溶接、自動制御装置操作、機材保守・点検の短期専門家の派遣を見込んでいるが、その他上記に対応できないような分野では、個別派遣専門家及びJOCV隊員派遣を示唆し、JEA側も計画省、日本大使館、JICA事務所と連絡を取りながら、前向きに検討するとの発言を得た。

- ③ 第3国研修に関しては、非常に好評であり、定員に対して応募者が倍以上もあることからJEA側では研修生の受講枠をJICAに対して増加してくれるように望んでいる。

この件に関しては、アフターケア調査団としては、コメントできる立場にないので、次回の(第3回)コースの際にも同様に応募者が定員を大きく上回った場合には、正式にデータを添えてJICA事務所に申請を出すことを提案し、JEA側もこれを了解した。

資料1 ミニッツ


MINUTES OF DISCUSSIONS
BETWEEN THE JAPANESE AFTERCARE SURVEY TEAM
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT
OF HASHEMITE KINGDOM OF JORDAN ON THE JAPANESE TECHNICAL COOPERATION FOR
THE ELECTRICAL POWER TRAINING CENTRE

The Japanese Aftercare Survey Team (hereinafter referred to as " the Team ") organized by the Japan International Cooperation Agency (hereinafter referred to as " JICA ") and headed by Mr. Takeshi Naruse, Deputy Director, Mining and Industrial Cooperation Division, Mining and Industrial Cooperation Dept., JICA, has visited the Hashemite Kingdom of Jordan from May 19 to May 25, 1993 for the purpose of working out the details of the aftercare program for the Project on the Electric Power Training Centre in the Hashemite Kingdom of Jordan (hereinafter referred to as " the Program ").


During their stay in the Hashemite Kingdom of Jordan, the Team has conducted a field survey and held a series of discussions with the authorities concerned of the Government of Hashemite Kingdom of Jordan in respect of the desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Program.

As a result of the survey and the discussions, and taking account of the provisions of the Agreement on Technical Cooperation between the Government of Japan and the Government of Hashemite Kingdom of Jordan, signed in Amman on July 16, 1985, (hereinafter referred to as " the Agreement"), the Team and the authorities concerned of the Government of Hashemite Kingdom of Jordan agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Amman, May 24, 1993



Mr. Takeshi Naruse
Leader,
Aftercare Survey Team,
Japan International Cooperation
Agency,
Japan.



Mr. Walid Jaouni
Acting Director General,
Jordan Electricity Authority,
The Hashemite Kingdom of Jordan.

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of Hashemite Kingdom of Jordan cooperate with each other in implementing the Program for the purpose of furthering the effect of the Project on the Electric Power Training Centre (hereinafter referred to as " the Project ") through the Program on technical cooperation and thus contributing to the promotion of the electric power technology in the Hashemite Kingdom of Jordan.
2. The Program will be implemented in accordance with the Tentative Schedule of Implementation which is given in ANNEX I .

II. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan, and the provisions of Article III of the Agreement, the Government of Japan will take, at its own expense, the following measures through JICA according to the normal procedures of its technical cooperation scheme:

1. DISPATCH OF JAPANESE EXPERTS;

The Government of Japan will provide the services of the Japanese experts as listed in ANNEX II . The provisions of the Articles IV , V VI & VII of the Agreement will apply to the above-mentioned experts.

2. PROVISION OF MACHINERY AND EQUIPMENT;

The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") as listed in ANNEX III . The provisions of Article VIII of the Agreement will apply to the Equipment.

3. TRAINING OF JORDANIAN COUNTERPART PERSONNEL IN JAPAN;

Training of Jordanian counterpart personnel in Japan is not included in the scheme of the Program.

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF HASHEMITE KINGDOM OF JORDAN

In accordance with the laws and regulations in force in the Hashemite Kingdom of Jordan and the provisions of the Agreement, the Government of Hashemite Kingdom of Jordan will take, at its own expense, the following measures:

1. SUPPLY AND REPLACEMENT OF MACHINERY AND EQUIPMENT;

The Government of Hashemite Kingdom of Jordan will supply and/or replace machinery, equipment, instrument, vehicles, tools, spare parts and any other materials necessary for the implementation of the Program other than those provided through JICA under II.2. above.

2. JORDANIAN COUNTERPART AND ADMINISTRATIVE PERSONNEL;

1) In accordance with the provision of Article IV - (b) of the Agreement, the Government of Hashemite Kingdom of Jordan will secure the services of qualified Jordanian counterpart and administrative personnel.

2) The Government of Hashemite Kingdom of Jordan will take the necessary measures to ensure that the knowledge and experience acquired by the personnel participated in the technical training will be utilized effectively for the implementation of the Program.

3. ALL RUNNING EXPENSES;

The Government of Hashemite Kingdom of Jordan will meet all running expenses necessary for the implementation of the Program.

4. SUSTAINED OPERATION OF THE ELECTRIC POWER TRAINING CENTRE;

The Government of Hashemite Kingdom of Jordan will ensure that the technical skills and knowledge acquired by the Jordan nationals through the technology transfer by the Japanese technical cooperation will be utilized in a manner which will contribute to the economic and social development of the Hashemite Kingdom of Jordan and that operation of the Electric Power Training Centre will be sustained during and after the implementation of the Japanese technical cooperation.

IV. CLAIMS AGAINST JAPANESE EXPERTS

Claims against the Japanese experts will be settled in accordance with the provisions of Article VII of the Agreement.

V. TERM OF COOPERATION

The technical cooperation for the Program mentioned in this Attached Document will be completed on March 31, 1995 (within the Japanese fiscal year 1994).

2

12

ANNEX I

TENTATIVE SCHEDULE OF IMPLEMENTATION

CALENDER YEAR	1993												1994												1995		
MONTH	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3				
DISPATCH OF THE SURVEY TEAM	*																										
DISPATCH OF JAPANESE EXPERTS	*****																										
PROVISION OF THE EQUIPMENT (1) Procurement in Japan (2) Shipping (3) Arrival	<p style="text-align: center;">*****</p> <p style="text-align: center;">****</p> <p style="text-align: center;">****</p>																										
※Submission of A1 and A4 forms by Jordanian Side	*																										

Notes :

1. A few Japanese experts on repair and maintenance of the Equipment will be dispatched if necessity arises.
2. The dispatch of the Japanese experts and the provision of the Equipment are subject to the recruitment of the expert and the budgetary condition of JICA.

ANNEX II

JAPANESE EXPERTS

If necessity arises, a few Japanese experts will be dispatched to render such technical guidance as follows:



1. Short-term experts in the field of;
 - (1) Welding Technique
 - (2) Automatic-control Computer Operation
 - (3) Repair and maintenance of the Equipment
2. Scope of technical guidance;
 - (1) Welding
 - (2) Computer Operation
 - (3) Repair and maintenance

To train Jordanian counterpart personnel to obtain the technology for the operation, maintenance, and effective application of the Equipment provided by the Government of Japan.

ANNEX III

PROVISION OF THE EQUIPMENT

The Equipment to be provided by the Government of Japan through JICA is shown in the Equipment List attached hereto.
The Equipment List attached is in priority order.



LIST NO. (1)

EQUIPMENT FOR
AUTOMATIC CONTROL COMPUTER OPERATION

1. Software development

- (1) Graphic Screen (4 screens)
- (2) Trend Screen
- (3) Group Screen

2. MC Bas Cable

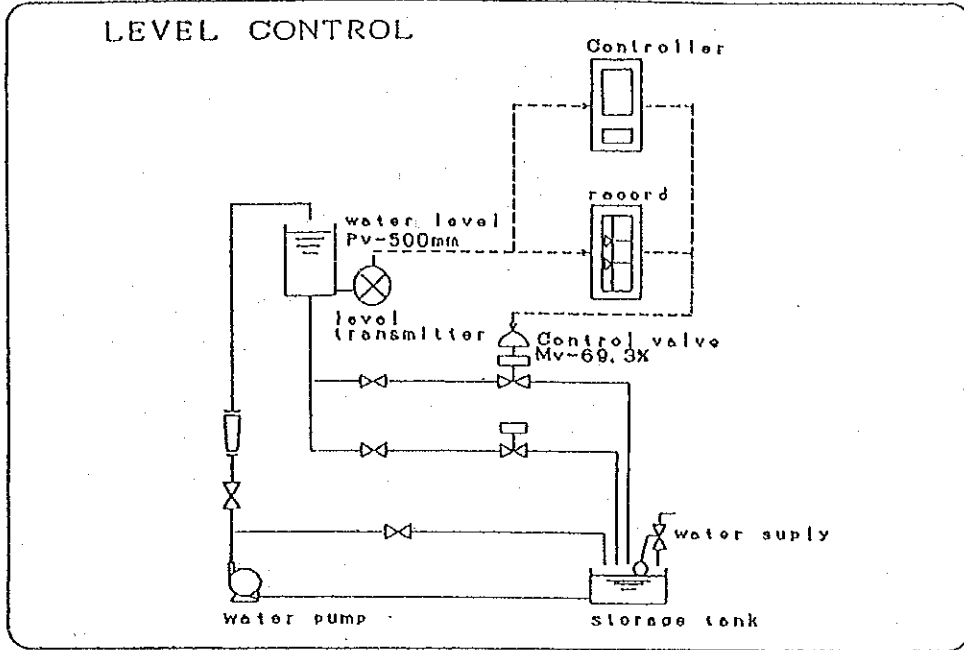
3. Alarm indicator and accessories

LIST NO (2) PRIORITY (A,
 SPARE PARTS FOR
 THE EQUIPMENT IN MECHANICAL WORK SHOP

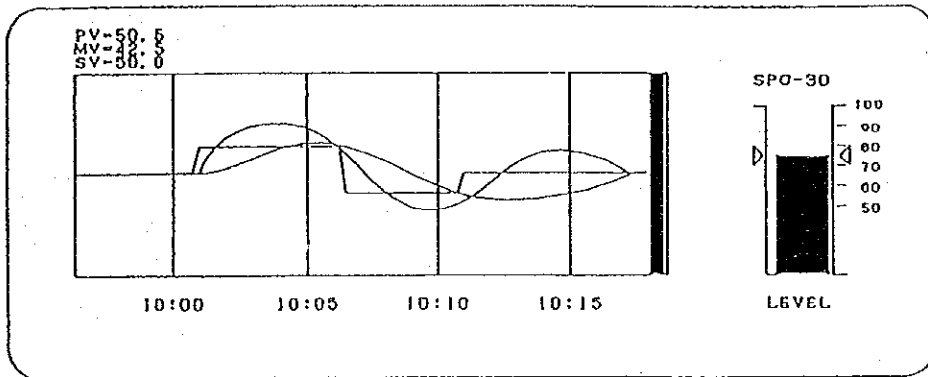
NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	REX PIPE THREAD- ING MACHINE	DIES 1/2" - 3/4"	REX 90 III	3
		1" - 2"		3
		2 1/2" - 3"		1
2-	DIE STECK SONE	DIES 10MM (3/8")	SONE SRB 1 1PT	3
		DIES 1/2"	SONE SRB 1 1PT	3
		DIES 3/4"	SONE SRB 1 1PT	3
		1" (25mm)	SONE SRB 1 1PT	3
3-	LATHE MACHINE	TAPER ROLLED EMCO	ZLG - 320096 BEARING	12
		TAPER ROLLED BEARING	ZLG - 320086	12
		TAIL STOCK	C6A - 044000	12
		BARRET METR REVOLING CENTER	MT2 (ORD.NO 732000)	6
4-	WELDING TORCH	TIP NO.1 (S)		12
		TIP NO.2 (M)		12
5-	ARGON WELDING	TUNGESTON ELECT- RODE		10
6-	MILLING MACHINE	GEAR MILLS	INNER DIAM. 1 INCH	
		MILL NO.FROM 1 TO 8	MODULE 0.5 mm	2
			MODULE 0.6 mm	2
			MODULE 0.7 mm	2
			MODULE 0.75 mm	2
			MODULE 1.5 mm	2
		MODULE 2.5 mm	2	

NOTE:

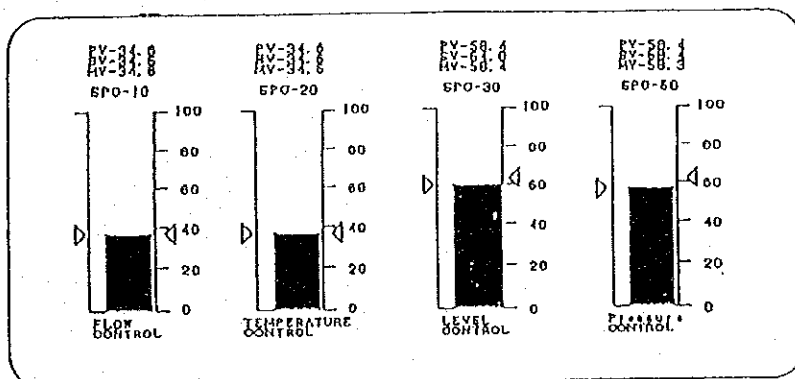
(1) Graphic Screen



(2) Trend Screen



(3) Group Screen



LIST NO. (3) PRIORITY (A,
SPARE PARTS FOR
CHEMICAL LAB

NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	PH METER	PH METER ELECTRODE	DESKTOP PH METER MODEL COM - 8 [D K K]	2
2-	CONDUCTIVITY METER	ELECTRODE	DESKTOP DIGITAL CONDUCTIVITY METER MODEL AOC - 10 [D K K]	2

LIST NO. (4) PRIORITY (A₁)
 SPARE PARTS FOR
 AUTOMATIC CONTROL LABORATORY

NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	PRESS. CONTROL	PRESS. GAUGE	0 - 10kg/cm (DALICHL KEIKI)	2
2-	PRESS. CONTROL	SOLENOID VALVE	MODULE PKW - 04 -27 (C K D CORPORATION)	2
3-	PRESS. CONTROL	PRESSURE TRANS- MITTER	TOSHIBA CAT. NO. 386	1
4-	LEVEL CONTROL	LEVEL TRANS- MITTER	MODLE NO. 1P600- 010-X97 (TOKO)	1
5-	LEVEL CONTROL	TRANSFORMER	220/100V MODULE SE - 600 (SUGANS ELECTRIC LABOR CO. LTD)	2
6-	LEVEL CONTROL	AUTO BREAKER	SA32 (FUGI ELECTRIC JAPAN)	2
7-	FLOW CONTROL	FLOW TRANSMITTER	MODULE 335/372-ISA (TOSHIBA CORPORATION)	1
8-	FLOW CONTROL	ONE LOOP CONTR- OLLER	TOSDIC 211D1 (TOSHIBA CORP.)	1
9-	FLOW CONTROL	RECORDER	MODULE TOSMAC 735D (TOSHIBA CORP.)	1
		RECORDER	MODULE TODMAC 735	1

LIST NO. (5) PRIORITY (A_i)SPARE PARTS FOR ELECTRICAL MAINTENANCE
WORKSHOP

S.N	NAME OF THE EQUIP.	SPARE PART	SPECIFICATION	QTY
1	DECADE RESISTANCE BOXES TYPE 2780-10 RESISTANCE RANGE : (0.1 TO 111.111) OHM	FAULTY RHEOSTAT ARE: - 1 OHM - 10 OHM - 100 OHM	AS ATTACH. NO. 1	10 10 10

2. NAMES AND FUNCTIONS OF COMPONENTS.

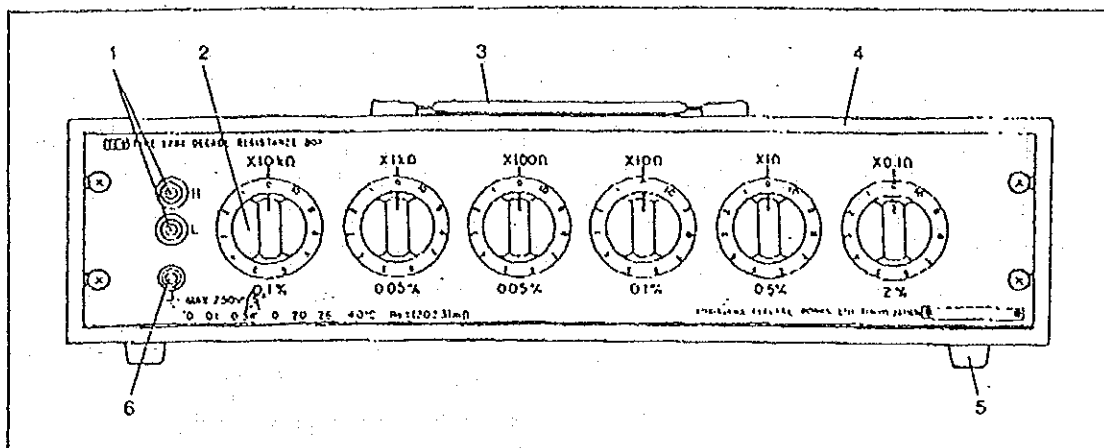


Figure 2-1. Type 2786-10.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Resistance Terminals: Addition of the values indicated on the dials gives the resistance between the terminals.</p> <p>2 Resistance Setting Decade Dials: Set the desired resistance value for each digit.</p> | <p>3 Carrying Handle:</p> <p>4 Metal Case:</p> <p>5 Rubber Feet:</p> <p>6 Earth Terminal: This earth (ground) terminal is connected to the front panel.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

IM 2786-01E

3. CIRCUIT DIAGRAM AND PARTS LIST.

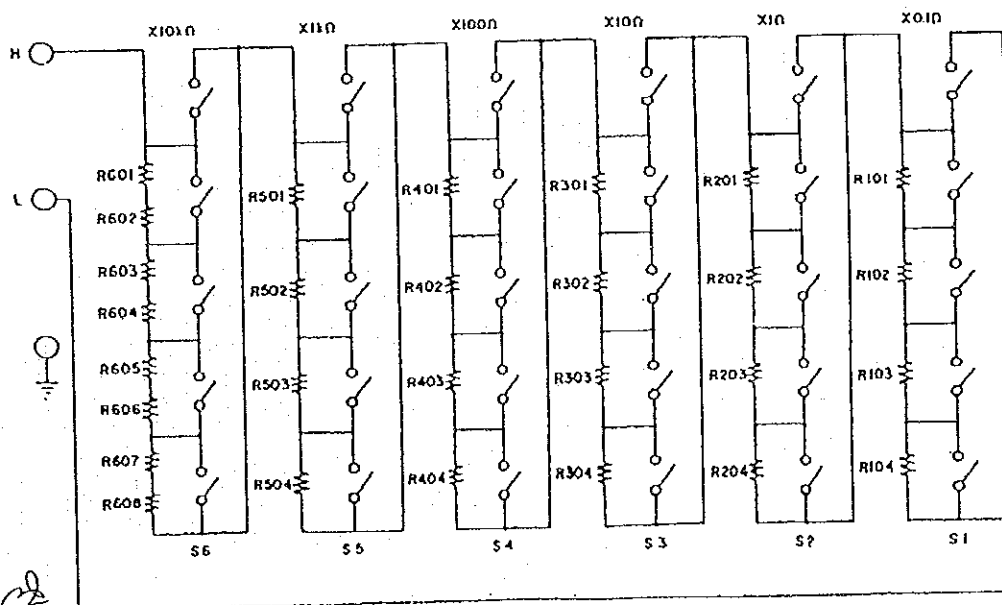


Figure 5-1. Type 2786-10.

LIST NO. (6)

PRIORITY (B)

EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

S.N.	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	INFRA RED SYSTEM FOR HOT SPO DETECTING	-THERMOVISION INFRA-RED THERMAL MEASUREMENT AND IMAGING SYSTEM - USED FOR HOT SPOT DETECTING - COMPLETELY PORTABLE PACKAGE INCLUDING: 1)- SCANNER UNIT 2)- BELT-MOUNTED RECHARGABLE BATTERY PACK 3)- POWER SUPPLY UNIT 4)- SCANNER SHOULDER STRAP 5)- BATTERY CABLE CHARGER 6)- SHOULDER PAD 7)- 7 & 20 LENSES 8)- SUN REFLEX FILTER 9)- FLAME FILTER - THE SYSTEM IS PREFERABLE TO BE INCORPORATED WITH A COMPUTER SYSTEM COMPLETE WITH : 1)- SOFTWARE PACKAGE 2)- VIDEO RECCORDER 3)- COLOUR VIDEO PRINTER	1

LIST No (7) PRIORITY (B₂)Training for Electronic & Maintenance ProgrammeA- Objectives

- 1- Upgrade the technical knowledge of the maintenance staff in the theoretical, and practical fields of Electronic, Communication, Instrumentation and Control fields, to enable them to maintain all the electronic equipment used in an electric power utility.
- 2- Generate specialised training courses including Hardware, Test equipment study materials & Audio Visual facilities to train maintenance personal and students in the Electronics, Control, Instrumentation and Communication fields as per requirements of an Electric Power Utility.

B- Required Resources1- Training Facilities

- * Color Video projector and Multiplexer with inputs for PC-computer interf, optical disc recorder and video recorder, Video Terminal, and Video Camera.
- * Optical disc recorder.
- * Optical disc records with training materials specific for electronic maintenance.

2- Test Equipment

- * In circuit/ out of circuit fault finding test bench. for testing electronic printed circuit boards (PCBS).
- * Programmer/Reader for firmware of EEPROM.
- * Microprocessor training packages (different CPU's) complete with hardware and software.
- * Power supplies: D.C., regulated AC, Variacs.
- * Decadic resistor, capacitor boxes.
- * Spectrum Analyser 3/GHZ.

* Digital Oscilloscope, multichannel with storage capability.

* Logic Analyser.

* Multifunction signal generator.

* Distortion Analyser.

* Digital Multi meters.

3- Components

* Digital components complete sets.

* Analogue components for general purpose.

* Accessories to build bench test rigs to test printed circuit cards:

* plugs, clamps, connectors, ... etc.

4- Tools

* Complete sets of electronic tool in boxes or cases.

5- Documentation

1- Data sheets for semiconductor devices and equivalent sheets for products of the following companies:

* NEC

* Hitachi

* Toshiba

* National

* Texas instruments

* Intel

* Others

- 2- Reference books in the following fields
- * Digital microwave
 - * Analogue microewave
 - * Private Automatic Exchange
 - * Fibre Optics
 - * Multiplexers
 - * Power supplies
 - * Radio Equipment
- 3- Training courses lectures and manuals in the same fields as above. On Laser Discs, Video cassettes,... etc. including Reference manuals & books.

LIST NO. (8) PRIORITY (B3)
EQUIPMENT FOR AERIAL BUNDLE
CONDUCTOR (ABC)

NO.	NAME OF EQUIP. OR MAT.	SPECIFICATION	QUN.
1-	PORTABLE PULLING DEVICE	CAN BE FASTENED TO POLE OR TREE SUITABLE FOR <u>INSTALLING OR CHANGING</u> OVERHEAD CABLES OR BARE LINES SEE CAT. NO (1)	2
2-	SINGLE OFFSET SHEAVE RUNNING OUT BLOCK	CAT NO (2) CBS 65	15
3-	INTERMEDIATE RUNNING OUT BLOCK	CAT NO(2) CBS 686	15
4-	POLE ROLLER BLOCK	CAT NO(2) CBS 793	8
5-	ANGLE PULL-IN BLOCK	CAT NO(2) CBS 810	8
6-	POLE TRAVERSING BLOCK	CAT NO(2) CBS 798	6
7-	PULLING HOSES	FOR PULLING AERIAL BUNDLE CONDUCTOR (ABC) CAT NO(3)	10
8-	TACKLE	FOR TIGHTENING A CABLE CAT NO(4)	5
9-	COME ALONG	FOR GRIPPING (ABC) CONDUCTOR CAT NO(5)	6
10-	PULLING ROPE	FOR PULLING (ABC) CONDUCTOR MADE OF POLYPROPYLENE CAT NO(6)	1650M
11-	DYNAMOMETER	FOR SAGING (ABC) CONDUCTOR CAT NO(7)	2
12-	WEDGES	FOR SEPARATING (ABC) CONDUCTOR MADE OF HARD INSULATING MATERIAL COLD RESISTANT POLYETHYLENE CAN NO(8)	24
13-	FOUR-WAY WRENCH	FOR TIGHTENING NUT AND BOLTS OF CONNECTOR CAT NO(9)	10
14-	DRUMLIFTING DEVICE	FOR LIFTING DRUM CAT NO (10)	2
15-	FORK SPANNER	FOR TIGHTNING BOLT CAT NO(11)	6

PULLING DEVICE DOLMAR LM 152 / 444

General Portable pulling device which can be fastened to a pole or a tree.
Suitable when installing or changing overhead cables or bare lines.

Technical data

TK 34400 DOLMAR motor

- air cooled, 2-cycle engine, 90 cm³
- 7.3 kW, 142 r/s
- fuel normal bensin +5% oil
- fuel tank 1 litre
- centrifugal clutch
- electronic ignition system
- electric system from Bosch
- gear box filled lastingly with oil, built together with motor
- worm gear
- shifting clutch of direction
- brake for overload
- firm silencer
- weight 19 kg

TK 34401 zinced body for motor weight 13 kg

TK 34402 drum for polyamid rope

- outside diameter 400 mm
- inside diameter 50 mm
- pressed plate, zinced
- Ø 7 mm polyamid rope, 550 m
- weight 11 kg

TK 34412 polyamid rope

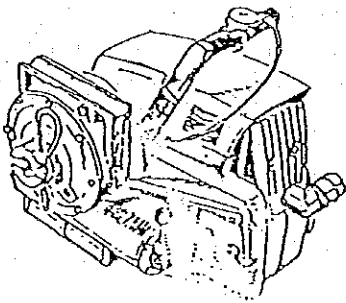
- Ø 7 mm, 550 m, pulling strength 7.5 kN

JKIA ENGINEERING

- TK 34410 exhaust pipe
- can be fastened to the silencer
 - flexible armoured tube, zинced
 - length 5 m
 - weight 2 kg

- TK 34408 storage box
- for motor
 - 400 x 400 x 300 mm
 - weight 5 kg

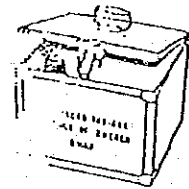
- TK 34409 Tool set
- weight 0.4 kg



TK 3440



TK 34402



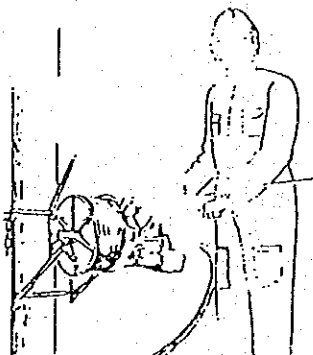
TK 34408



TK 34412



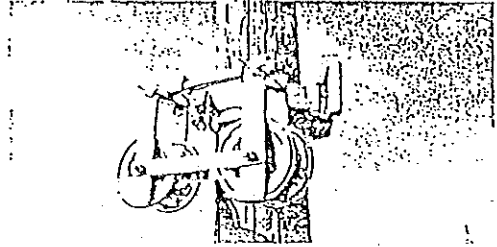
TK 34410



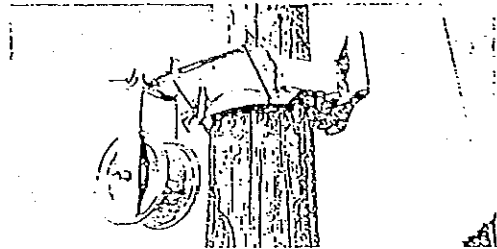


**AERIAL BUNDLE CONDUCTOR (ABC)
RUNNING OUT BLOCKS**

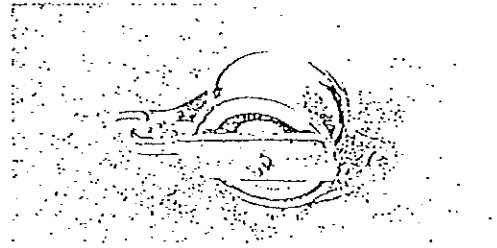
CBS 687 DOUBLE SHEAVE RUNNING OUT BLOCK
Designed to be strong but light, suitable for pole work. The aluminium sheaves are mounted on sealed ball bearings for low resistance. The webbing ratchet device makes securing to pole very quick and simple.
Dimensions: 210mm x 200mm x 360mm
Weight: 6kg



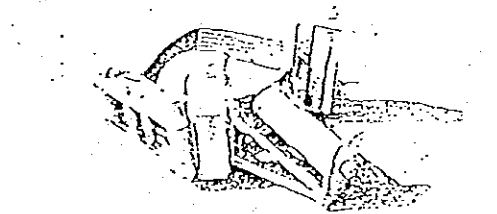
CBS 685 SINGLE OFFSET SHEAVE RUNNING OUT BLOCK
This block has the same features as the CBS 687. The single sheave is offset to assist with fixing conductor to clamp.
Dimensions: 210mm x 280mm x 330mm
Weight: 4kg



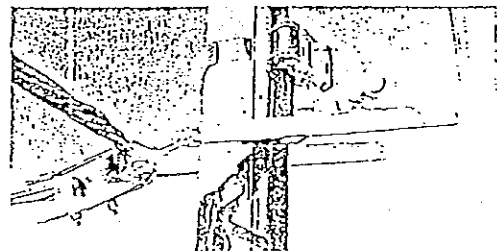
CBS 686 INTERMEDIATE RUNNING OUT BLOCK
Designed to have a split frame and hooks, to locate on brackets. The aluminium sheave is mounted on sealed ball bearings. Guide rings protect conductor from damage.
Dimensions: 110mm x 250mm x 140mm
Weight: 2kg



CBS 793 POLE ROLLER BLOCK
Designed to provide the facility to string conductors at the rear of an angle pole.
Dimensions: 250mm x 200mm x 300mm
Weight: 10kg



CBS 810 ANGLE PULL-IN BLOCK
Designed for angle poles when conductor is required to be pulled into clamp after stringing. Features aluminium sheaves with ball bearings and quick fixing arrangement. Sheaves are adjustable independently to pull conductor into clamp.
Dimensions: 470mm x 750mm x 130mm
Weight: 15kg



CBS 798 POLE TRAVERSING BLOCK
This block allows the stringing operation to be fed up or down poles, when access at the rear of the pole is not available. The block has a 260mm sheave with quick acting ratchet fixing and a conductor side gate.
Dimensions: 260mm x 260mm x 100mm
Weight: 10kg



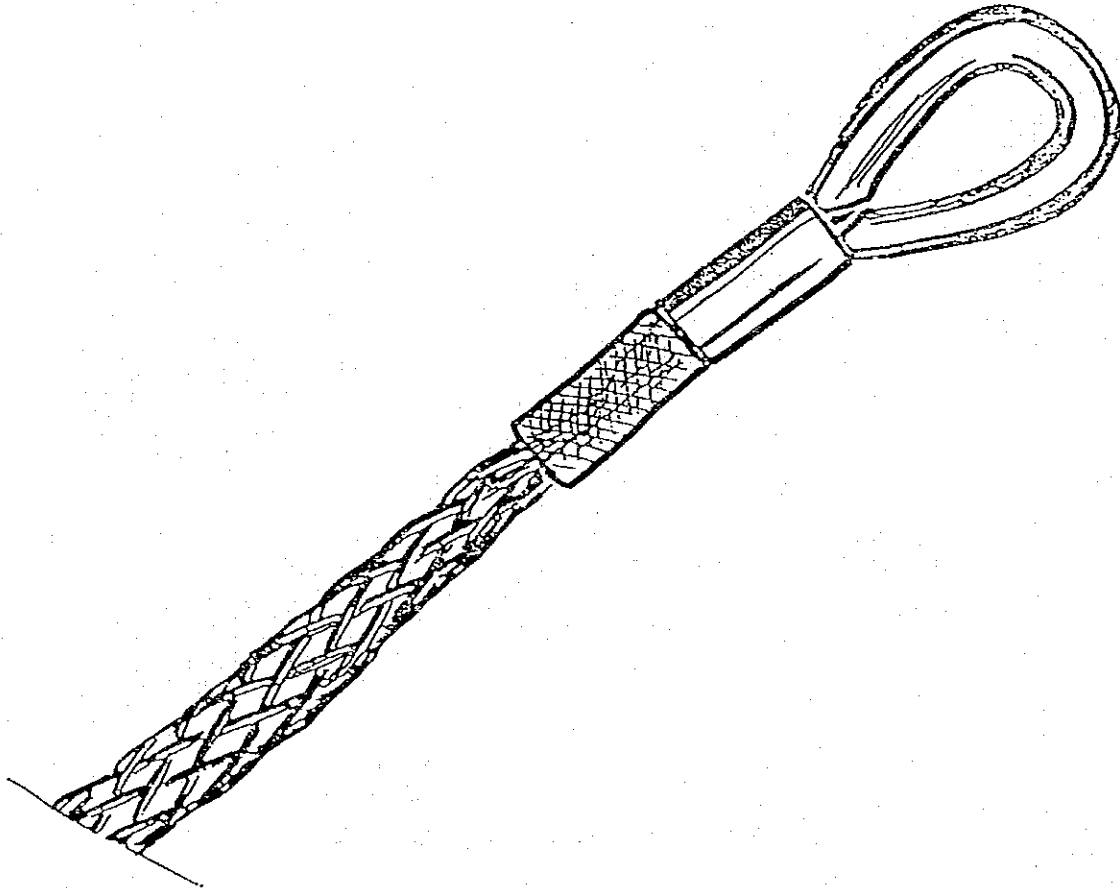
Following our company policy of continual product development C.B.S. reserve the right to amend this specification without prior notice.

FOR FURTHER INFORMATION CONTACT C.B.S. PRODUCTS LTD (0572) 726654 FAX (0572) 726609

10.06.1980

PULLING HOSES

For pulling AMKA-T cables. Made of steel. Pulling hoses tighten and secure cables to a pulling rope. Pulling hoses do not damage the insulation of the messenger.



Technical data

Cat. No.	For cable diamter	mm	Allowed load	kN	Length mm	Weight kg	Package pcs
TK 34050	15...22		4.0		400	0.07	1
TK 34051	22...30		5.5		550	0.12	1
TK 34052	31...45		8.0		850	0.40	1

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

TELEX:
124553
CABNO SF

P3 0105 BWAJ 10.7.9 UK/2/71

NOKIA ENGINEERING

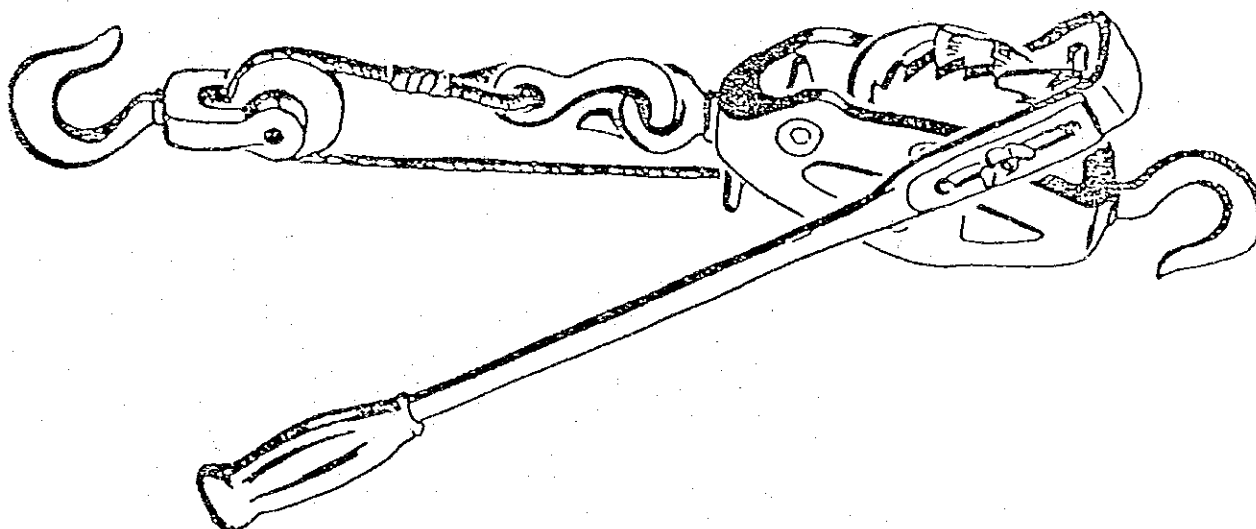
CAT N^o (4)

13.07.1979

TACKLE TK 31045

Tackle

For tightening a cable. Heat treated aluminium alloy frame. Special steel rope, diameter 4.8 mm. Three workable hooks instead of two. Interlocking pawl system, will not slip even if wet or oily. Operates at two speeds. Factory tested to 50% overload.



Technical data

Cat.No.	Effect		Weight kg	Package pcs
	singlewire	kg double wire		
TK 31045	500	1000	4	1

No 0105 5000 S.79 UK/1498

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

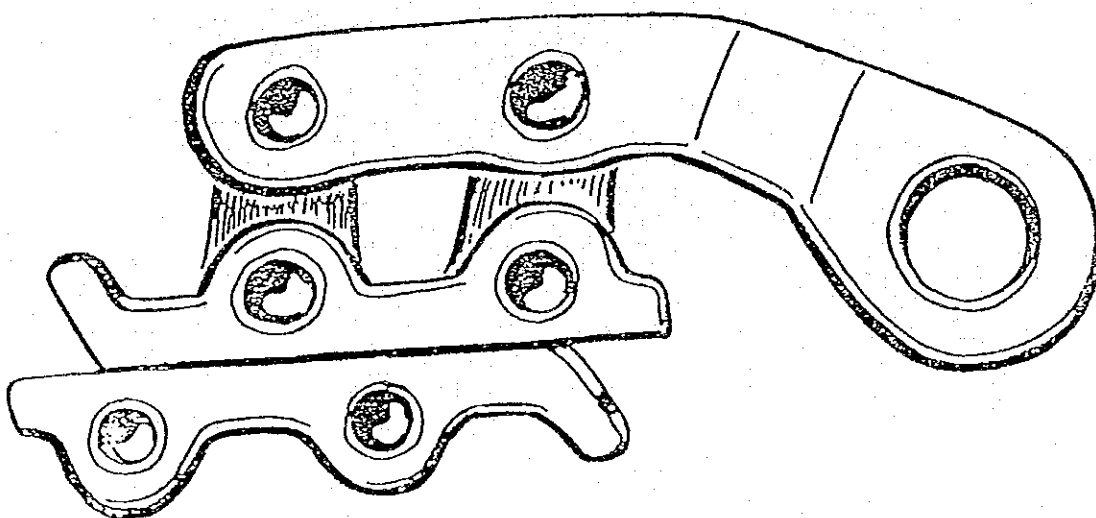
TELEX:
124553
CABNO SF

NOKIA ENGINEERING CAT No (5)

10.06.1980

COME ALONG

For gripping AMKA-T cable messengers when pulling.
Return-spring model with very fine toothed jaws
which do not damage the strands of the messenger.



Technical data

Cat. No.	For messenger diameter mm ²	Weight kg	Allowed load kN	Package pcs
TK 30011	25...35	0.9	10	1
TK 30013	50...70	0.9	17	1

No 0105 5000 5.79 UK/1-133

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

TELEX:
124553
CABNO SF

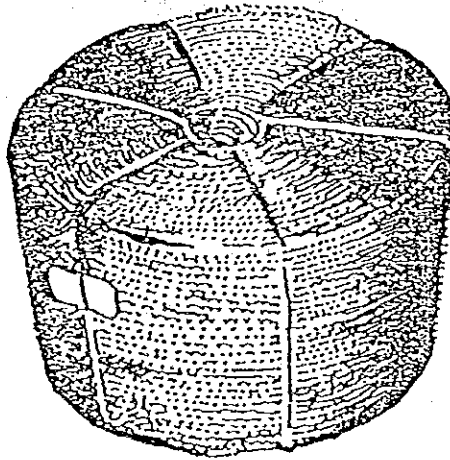
CAT NO (6)

NOKIA ENGINEERING

24.11.1980

PULLING ROPE TK 34412

A pulling rope for pulling AMKA cables. The rope is made of polypropylen.



Technical data

Cat.No.	Length m	Diameter mm	Tensile strenght kN
TK 34412	550	6	5.9

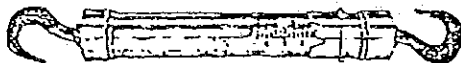
Nokia Engineering P.O.Box 419 SF 00101 Helsinki 10 Finland Tel. Int. +358-0-6131 Tlx 124276 cabno sf Cables; Finncables

13.07.1979

DYNAMOMETER

For metering tension when stringing overhead cable by come-along and tackle.

Made of special steel. Hooks electroplated. Pipe chromeplated.



No 21

Technical data

Type	Limit of tension	One scale unit	Pipe diameter	Distance hook to hook	Weight
	kN	kN	mm	mm	kg
NO 21	2	0.1	38	440	1,9

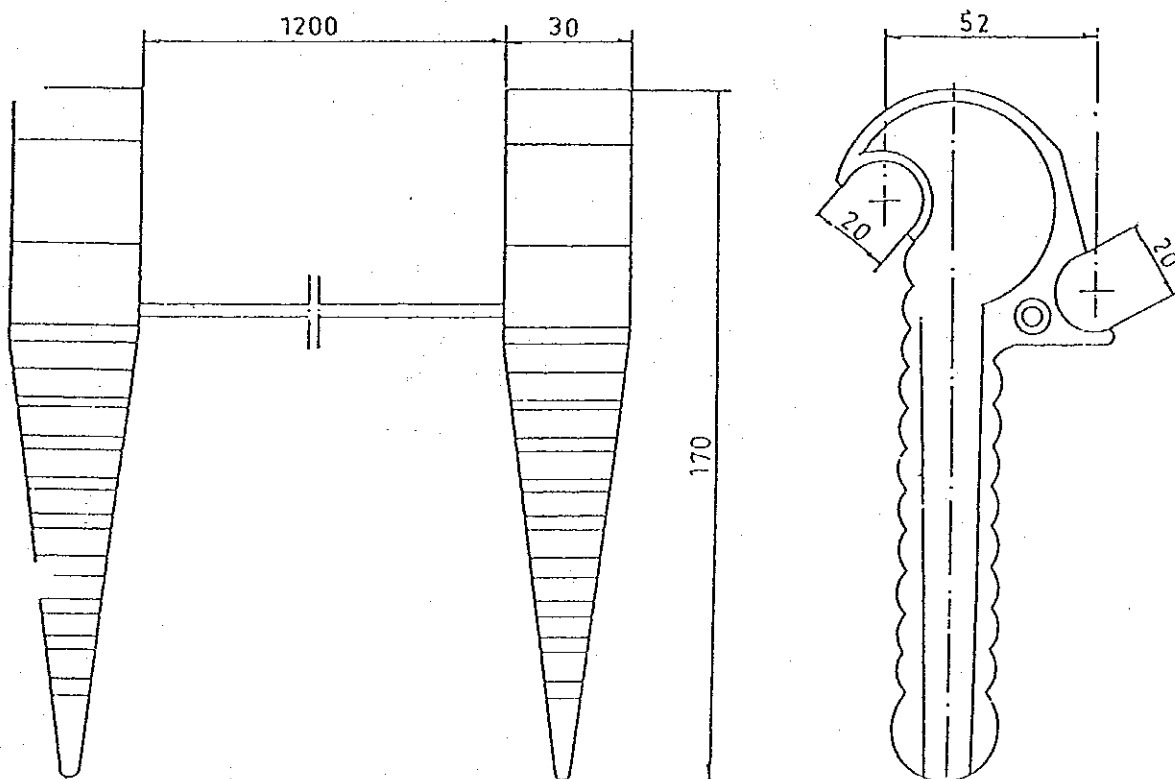
NOKIA ENGINEERING

CAT NO (8)

WEDGES ST 31

Wedges

For separating ANKA-T conductors when making joints.
Made of hard insulating material; cold resistant polyethylene.



Technical data

Cat. No.	For sections	Weight g	Package pcs
ST 31	16 - 120	100	10

NOKIA ENGINEERING

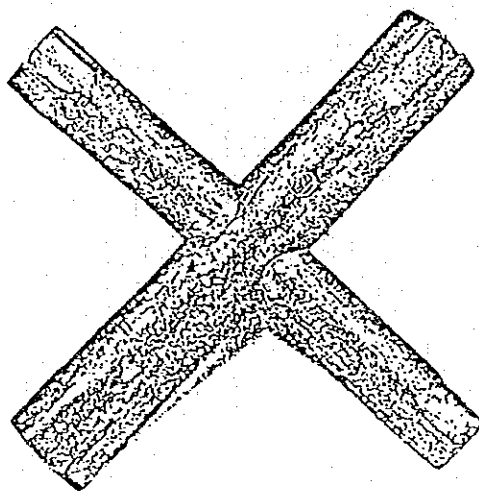
CAT No 9

03.12.1981

FOUR-WAY WRENCH

JORDANIAN ELECTRICAL AND
MECHANICAL ENGINEERING CO,
P. O. BOX 1210 - TEL. 551536

A universal tool for tightening nuts and bolts of
connectors.

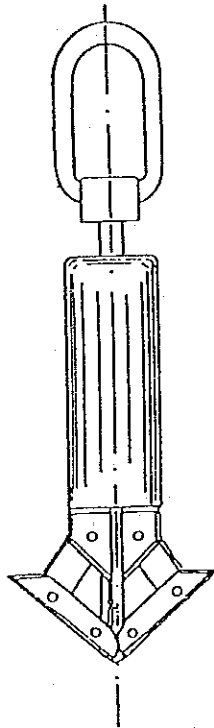


Technical data

Cat.No.	Model	For nut	Weight
TK 33160	05570a	M6,7,8,10mm	250 g

DRUM LIFTING DEVICE

Put together the drum lifting device can be pushed into the hole of the cable drum and by a simple hand movement the levers open. Thus the drum is stable and can be lifted. The drum can be turned around when attached to the drum lifting device.



Technical data

Cat.No.	Drum	Permissible load	Weight	Length
TK 31611	J-N0 hole \varnothing 103-130mm	2500 kg	6.5 kg	480 mm

LIST NO. (9) PRIORITY (B4)

EQUIPMENT FOR TRANSFORMER SUBSTATIONS
WORKSHOP

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	OIL TESTING MACHINE (for insulating oil)	INPUT 220 V OUTPUT 0-75 KV	1
2	ACIDITY TESTING SOLUTION (for insulating oil)		5 Kg
3	VOLTAGE REGULATOR	3 PH. INPUT 680 V OUTPUT VOL "0 - 360" V CAPACITY "around 50 KVA"	1
4	INSULATING OIL FILTER FILTERING MACHINE complete with the following spare parts:		1
	- SET VACUUM PUMP SPARES		1
	- COMPLETE SET PACK REFILLS		1
	- "O" SEAL FOR COVER		1

LIST NO. (10) PRIORITY (Bs)

EQUIPMENT FOR ELECTRICAL MAINTENANCE
WORKSHOP

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	VARIABLE POWER FACTOR LOAD	3 PH. , 3 KVA , 380 V 4.55 A , 50 HZ POWER FACTOR LAG/LEAD (0.1 - 0.99)	2
2	DECADE RESISTANCE BOX	50 W, 250 V. NUMBER OF DIALS 5 RESISTANCE RANGE (0.1 TO 111,111) OHM	5
3	DIGITAL MULTY METER		10

LIST NO. (11) PRIORITY (B6)
EQUIPMENT FOR CABLE JOINTING

NO.	NAME OF THE EQUIP OR MATERIAL	SPECIFICATION	QUAN
1-	CABLE JOINTING MATERIAL FOR XLPE CABLE WITH ARMOUR (HEAT SHRINKABLE)	STRAIGHT JOINT FOR 3 X 70 MM 11K.V	25
		TERMINAL JOINT FOR 3 X 70 MM 11K.V (OUT DOOR USE)	25
		TERMINAL JOINT FOR 3 X 70MM 11 K.V FOR (IN DOOR USE)	25
		T-JOINT FOR 3 X 70MM 11K.V	10
2-	CABLE JOINTING MATERIAL KIT FOR 0.4 KV	STRAIGHT JOINT HEAT SHRINKABLE FOR 3 X 120 + 1 X 70 P.V.C	50
		FOR 4 X 35 - P.V.C.	50
		TERMINAL JOINT HEAT SHRINKABLE FOR 3 X 120 + 1 X 70 P.V.C. ALUM STRAIGHT JOINT.	50
3-	SHARPENER	FOR XLPE CABLE	5

LIST NO. (12) PRIORITY (B7)
 ADDITIONAL EQUIPMENT
 EQUIPMENT FOR MECHANICAL MAINTENANCE WORK SHOP

NO.	NAME OF EQUIPMENT OR MATERIAL	SPECIFICATION	QUANTITY RQD
1-	INDUCTION HEATER FOR BEARING HEATING	220 V HEATING RANGE 30 - 400 C HEATING TIME CONTROLLER: 0 - 6 MIN	1
2-	DIAL GAUGE	SMALL SIZE OUTER DIAMETER 35 mm 0 - 3mm DIAL RANGE 0 - 0.50mm SCALE RANGE DIV. 0.01mm	3
3-	EXPLODED DIESEL MOTOR MODLE		1
4-	GAS TURBINE OPERATING MODLE		1
5-	EXTRACTOR	AS FIG. NO. 1	2

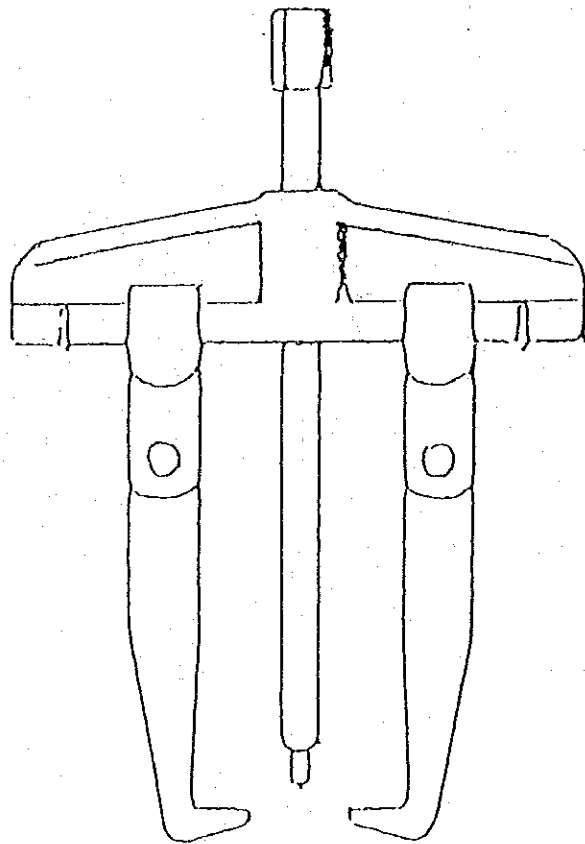


Fig. No 1

LIST NO. (13) PRIORITY (B_E)

EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	SAGGING BLOCKS	SAFETY WORKING LOAD 3 Ton	2
2	COME ALONG CLAMPS (for 240,400,,560 mm ² acsr Cond.)	SAFETY WORKING LOAD 5 Ton	5
3	LIFTING PLATE (for 20 KN insulators)	SAFETY WORKING LOAD 1300 lb	5
4	LIFTING SADDLE: -FOR SINGLE COND. 560 mm ² AAAC -FOR TWIN COND. 400 mm ² ACSR	SAFETY WORKING LOAD 2 Ton SAFETY WORKING LOAD 3 Ton	2 2
5	ROPE SHOTENER	SAFETY WORKING LOAD 3 Ton	5
6	ROPE TENSSIONER	SAFETY WORKING LOAD 850 lb	5
7	INSULATOR HOOK ON CHAIR (for tow men)		5

LIST NO (14) PRIORITY (B₂)
EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

NO.	NAME OF EQUIPMENT OR MATERIAL	SPECIFICATION	QUANTITY
1-	Tensioner	For Conductor & Earthwire	2
2-	Winch	Hydraulic Puller For Conductor With S.W.L. 2.5 Ton	2
3-	Drum Carrier	Self Breaking	1
4-	Drum Stands	Hydraulic Drum Jacks	1
5-	Running out Blocks	For Conductor & Earth-Wire YEW & ZEBRA 560 AAAC.	2
6-	lifting Saddles	For Conductors YEW & ZEBRA	3 + 3
7-	Dynamometer	10 Tons	4
8-	Thermometer	To measure Conductor Temperature	2 10
9-	Erection Equipment For Towers	1- Tirfors 5 Tons with 90 m Ropes 2- Tower Derrick With Head & Base Fittings 3- Holding - out Ropes 1000m 16mm & 13mm (manilla) 4- Falling Derrick 5- Tower Derrick Guys 500m 6- Falling Derrick Guys 100m	2 1 1000m 500m 100m

資料2 クエスチョネア（質問状）

QUESTIONNAIRE FOR THE AFTERCARE PROGRAM
ON THE JAPANESE TECHNICAL COOPERATION PROJECT
FOR THE ELECTRIC POWER TRAINING CENTRE OF HASHMITE KINGDOM OF JORDAN

April, 30 1993

To : Jordan Electricity Authority, the Electric Power Training Centre (ETC)
and the Authorities Concerned of the Government of Hashmite Kingdom of
Jordan

From: Japan International Cooperation Agency (JICA)

I. Contents of the Aftercare Program

The Aftercare Program is one of the Technical Cooperation Programs implemented by the Japan International Cooperation Agency (hereinafter referred to as "JICA") in order to promote the effects of the project which already finished by extending supplementary technical cooperation within the following scope.

1. To take additional care of the machinery and equipment already provided by the Government of Japan
 - (1) by dispatching short-term experts for repair and maintenance
 - (2) by providing necessary spare parts and consumables

2. Supplementary technical cooperation within the scope of the Record of Discussions (hereinafter referred to as "R/D")

(1) by dispatching short-term experts

(2) by providing necessary machinery and equipment

3. The duration of the Aftercare Program for the Project is for two Japanese fiscal years (from the date agreed by both sides in the Minutes of Discussions to be concluded between JICA and ETC).

JICA plans to implement the Aftercare Program on the Technical Cooperation Project for the Electric Power Training Centre (ETC) (hereinafter referred to as "the Project") and to send an Aftercare Survey Team within the Japanese Fiscal year 1993.

The purpose of the Team is to survey the present situation of the Project and to work out the details of its Aftercare Program through a series of discussions with the authorities concerned of the Government of Hashmite Kingdom of Jordan.

In order to make the activities of the Survey Team as effective as possible, JICA needs to get relevant data and information on the present situation of the Project by asking some questions mentioned below. It would be much appreciated if the authorities concerned of the Government of Hashmite Kingdom of Jordan prepare the answers by the middle of May, 1993.

II. Questions for the Implementation of the Aftercare Program of the Project

1. Request for obtaining additional care of machinery and equipment provided by the Government of Japan

(1) Request for repair of the machinery and equipment provided by the Government of Japan and that for providing spare parts and consumables

- a. Present condition of the machinery and equipment provided by the Government of Japan
- b. Name of the machinery and equipment needed to be repaired by the Japanese experts.
- c. Name of the spare parts and the consumables needed to be provided:
* please make sure whether the equipment can be purchased in Hashmite Kingdom of Jordan or not.
- d. Other relavant information

(2) Request for the supplementary technical cooperation

- a. Themes within the scope of R/D which need supplementary technical cooperation by the Japanese short-term experts and the detailed contents of the task for the said experts.
- b. Name of the machinery and equipment needed to be provided in order to transfer the technology on the theme.
* Please make sure whether the equipment can be purchased in Hashmite Kingdom of Jordan of not.

2. Organization in charge of implementation of the Aftercare Program

- (1) Present activities of the ETC
- (2) Present organization chart, function and staff assignment of the ETC
- (3) Relations with other governmental organizations, which will support the Aftercare Program

3. Other Related Items

- (1) Budgetary condition of the ETC and perspective of its defrayal of local costs for the implementation of the Aftercare Program
e.g. * expenses for the internal transportation for the machinery and equipment to be provided by the Government of Japan
* expenses for the supply of the machinery, the equipment and other materials necessary for the Aftercare Program other than those provided by the Government of Japan
* all the other running expenses for the Aftercare Program
- (2) Present positions and activities of the former counterpart personnel and major changes since completion of the Project

ジョルダン電力訓練センター自動制御装置アフターケアに伴う提案書

1. 概要

ジョルダン電力訓練センター自動制御装置（流量、温度、レベル、圧力）各4機種の装置が1987年に納入済みになり完動している。

しかしながら、1989年に現地からの要請により TOSDIC-243Dが納入になったが、現地からの要請品目はハードのみの要請であったため現在動作してないと思われる（ソフトは先方で組み込むことになっていた）。

そこで現地に以下の提案をし、1987年、1989年に納入された製品が有効に使用されるよう調査、協議を行うものである。

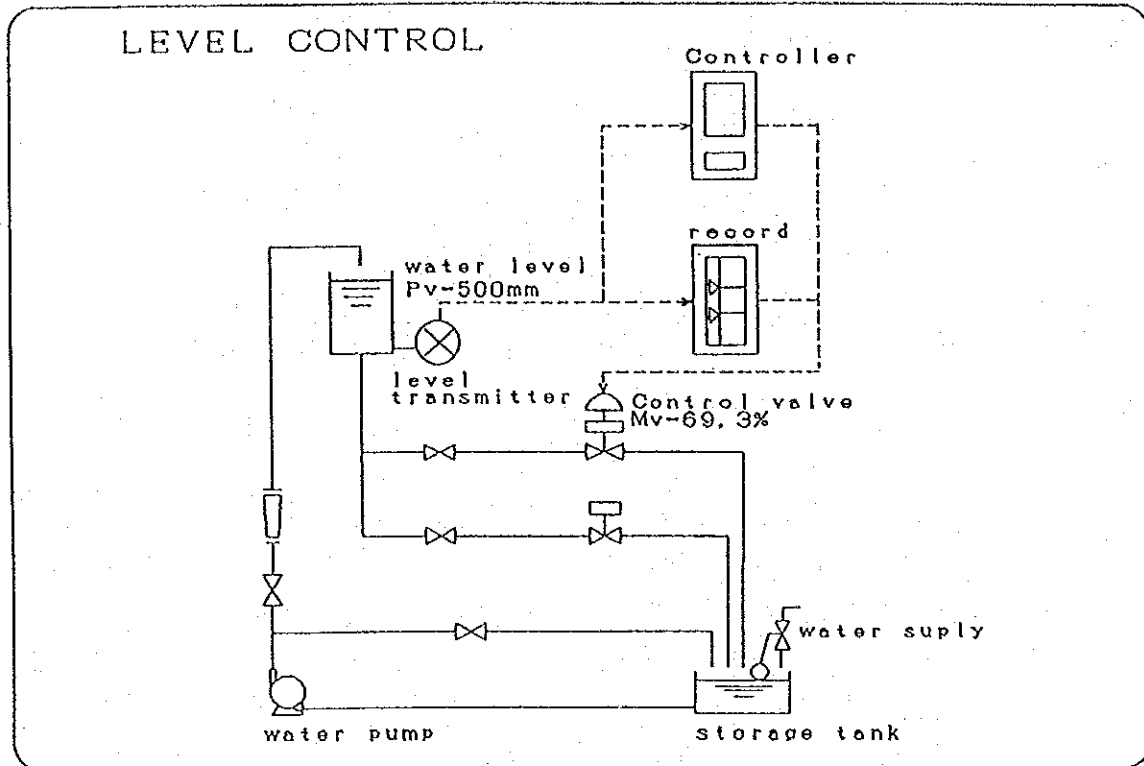
2. 調査計画

オペレータステーション(TOSDIC-243D) による分散形制御システム化 (Distributed Control System) による自動制御装置の実験を可能にする調査を実施する。

3. ソフト作成計画

- 1) グラフィック画面 ……… 4画面（流量、温度、レベル、圧力）
- 2) トレンド画面
- 3) グループ画面

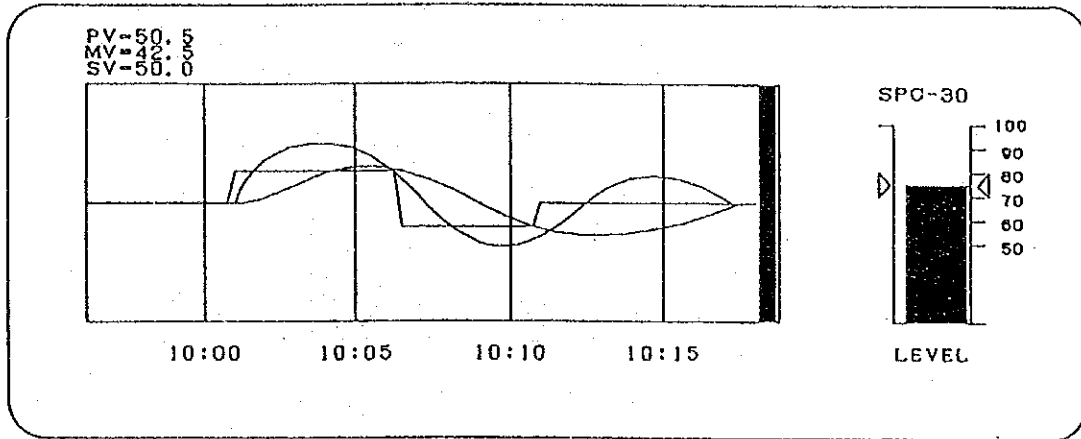
グラフィックパネル



最終出力イメージ図 実働グラフは若干喪失があります

CRT上にプロセスの計装フローシートなどの画を表示させた画面をグラフィックパネルという。例えば計器のシンボルが表示され、かつ測定器(PV)、目標値(SV)、操作出力値などもその場に常時表示するので、この画面だけでプロセスの監視が可能である。

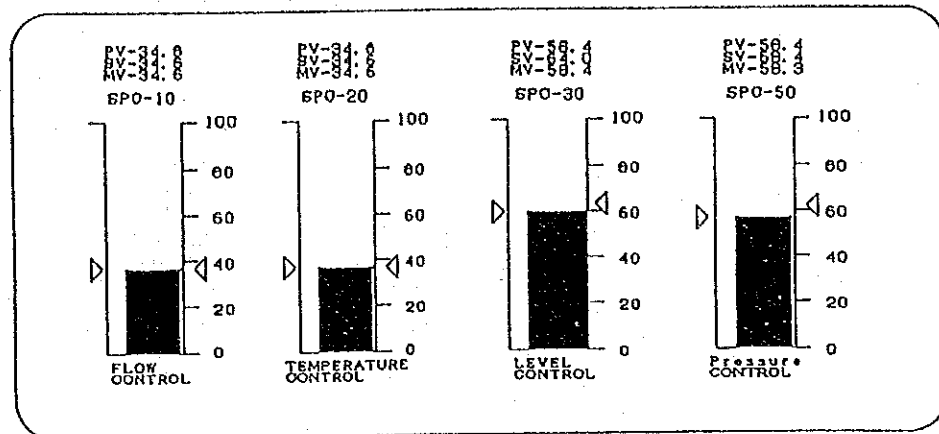
トレンド表示パネル



最終出力イメージ図 実働グラフは若干喪失があります

トレンド記録機能は、内部計器の各種データを周期的に収集されたデータをグラフ形式で表示するのがトレンドパネルです。またグラフは、測定値（PV）、目標値（SV）、操作出力値（MV）が色別に表示されます。

コントロールグループパネル



最終出力イメージ図 実働グラフは若干喪失があります

4 点数（流量、温度、レベル、圧力）の制御状態を計器図に表示し、測定値、操作出力値、測定値等を 4 点分同時に操作、監視できるパネルです。

資料3 クエスチョネアに対する回答

JORDAN ELECTRICITY AUTHORITY
ELECTRIC TRAINING CENTER

ANSWERS TO QUESTIONNAIRE PRESENTED FOR THE AFTER
CARE PROGRAM ON THE JAPANESE TECHNICAL CO-OPERATION
PROJECT.

REFERENCE TO THE QUESTIONNAIRE PRESENTED BY THE
AFTER CARE PROGRAM SURVEY TEAM VISITING JORDAN IN THE
PERIOD 19-28/5/1993 THE FOLLOWING ANSWERS AND
INFORMATION ARE STATED FOR EACH OF THE QUESTIONS IN A
RESPECTIVE MANNER.

1- Request for obtaining additional care....

(1) Request for repair of the machinery and equipment
provided by the Government of Japan and for providing
spare parts and consumables.

a- present condition of the machinery and equipment
provided by the Government of Japan .

All the equipment and machinery provided by the
Government... of Japan through the co-operation
agreement are in excellent condition and well kept
except for the normal tear and wear.

b.c- ANNEX III A shows the equipment and machinery that
need provision of spare and consumable parts .

d- As the majority of the equipment is of
Japanese manufacture and origin, a system is
needed to be set down to facilitate the
possibility of obtaining spare parts in case of
emergency knowing that no local agents are
available.

(2) Request for supplementary technical co-operation.

- a- Need for short term experts.
ANNEX No. II details the needed short term experts as well as their field of specialization.
- b- Machinery and equipment needed to be provided.
ANNEX No. III B lists the additional equipment needed to be provided by the Japanese Government to enable the E.T.C. of meeting the training needs and programs requested for both the local electrical sector and the neighbouring Countries.

2- Organization in charge of implementation of the after care program.

- (1) Present activities of E.T.C.
The current annual work plan ANNEX No. 4 briefs the present activities of the E.T.C.
- (2) Present organization chart of the E.T.C.

The organization chart shown in ANNEX No. 5 details the present situation of the staff and the minor changes which was imposed by different circumstances and assures the consistency of JEA'S obligation towards the E.T.C.'S continuous success.

3- Other related items

- (1) Budgetary condition of the E.T.C.
ANNEX No. 6 shows that the centre is capable of meeting any local expenses that might be incurred through the implementation of the after care program.
- (2) Present positions and activities of the former counter-part personnel

ANNEX No. 4 the present organization chart shows the positions and present activities of the counter-part personnel with the temporary changes that were imposed due to the different reasons that are shown on the said chart.

LIST NO (1)
SPARE PARTS FOR
THE EQUIPMENT IN MECHANICAL WORK SHOP

NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	REX PIPE THREAD- ING MACHINE	DIES 1/2" - 3/4"	REX 90 III	3
		1" - 2"		3
		2 1/2" - 3"		1
2-	DIE STECK SONE	DIES 10MM (3/8")	SONE SRB 1 1PT	3
		DIES 1/2"	SONE SRB 1 1PT	3
		DIES 3/4"	SONE SRB 1 1PT	3
		1" (25mm)	SONE SRB 1 1PT	3
3-	LATHE MACHINE	TAPER ROLLED EMCO	ZLG - 320096 BEARING	12
		TAPER ROLLED BEARING	ZLG - 320086	12
		TAIL STOCK	C6A - 044000	12
		BARRET METR REVOLING CENTER	MT2 (ORD.NO 732000)	6
4-	WELDING TORCH	TIP NO.1 (S)		12
		TIP NO.2 (M)		12
5-	ARGON WELDING	TUNGESTON ELECT- RODE		10
6-	MILLING MACHINE	GEAR MILLS	INNER DIAM. 1 INCH	
		MILL NO.FROM 1 TO 8	MODULE 0.5 mm	2
			MODULE 0.6 mm	2
			MODULE 0.7 mm	2
			MODULE 0.75 mm	2
			MODULE 1.5 mm	2
		MODULE 2.5 mm	2	

LIST NO. (2)
SPARE PARTS FOR
CHEMICAL LAB

NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	PH METER	PH METER ELECTRODE	DESKTOP PH METER MODEL COM - 8 [D K K]	2
2-	CONDUCTIVITY METER	ELECTRODE	DESKTOP DIGITAL CONDUCTIVITY METER MODEL AOC - 10 [D K K]	2

LIST NO. (3)
SPARE PARTS FOR
AUTOMATIC CONTROL LABORATORY

NO.	EQUIPMENT NAME	SPARE PART	REF. NO. & SPECIFICATION	QUANTITY RQD
1-	PRESS. CONTROL	PRESS. GAUGE	0 - 10kg/ cm (DALICHL KEIKI)	2
2-	PRESS. CONTROL	SOLENOID VALVE	MODULE PKW - 04 -27 (C K D CORPORATION)	2
3-	PRESS. CONTROL	PRESSURE TRANS- MITTER	TOSHIBA CAT. NO. 386	1
4-	LEVEL CONTROL	LEVEL TRANS- MITTER	MODLE NO. 1P600- 010-X97 (TOKO)	1
5-	LEVEL CONTROL	TRANSFORMER	220/100V MODULE SE - 600 (SUGANS ELECTRIC LABOR CO. LTD)	2
6-	LEVEL CONTROL	AUTO BREAKER	SA32 (FUGI ELECTRIC JAPAN)	2
7-	FLOW CONTROL	FLOW TRANSMITTER	MODULE 335/372-ISA (TOSHIBA CORPORATION)	1
8-	FLOW CONTROL	ONE LOOP CONTR- OLLER	TOSDIC 211D1 (TOSHIBA CORP.)	1
9-	FLOW CONTROL	RECORDER	MODULE TOSMAC 735D (TOSHIBA CORP.)	1
		RECORDER	MODULE TODMAC 735	1

LIST NO. (4)

SPARE PARTS FOR ELECTRICAL MAINTENANCE
WORKSHOP

S.N	NAME OF THE EQUIP.	SPARE PART	SPECIFICATION	QTY
1	DECADE RESISTANCE BOXES TYPE 2788-10 RESISTANCE RANGE : (0.1 TO 111.111) OHM	FAULTY RHEOSTAT ARE: - 1 OHM - 10 OHM - 100 OHM	AS ATTACH. NO. 1	10 10 10

2. NAMES AND FUNCTIONS OF COMPONENTS.

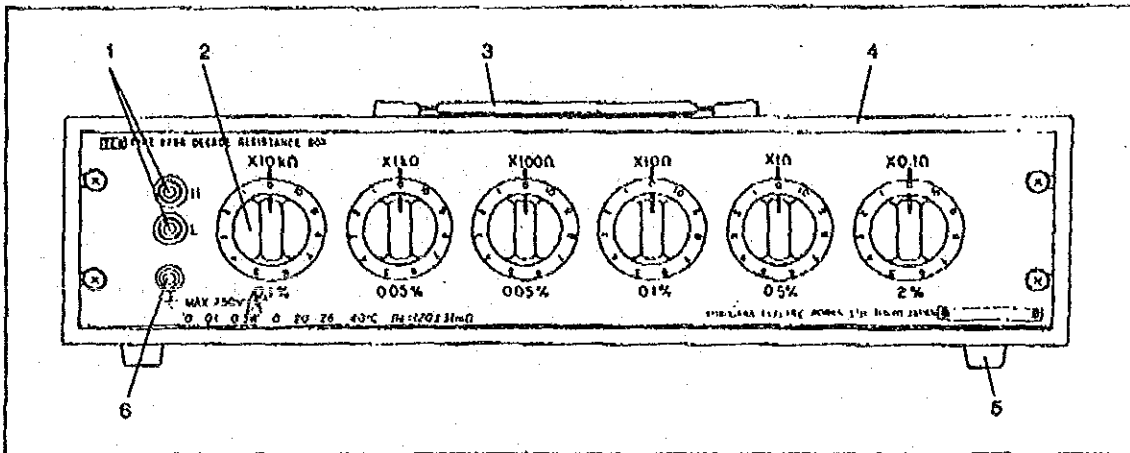


Figure 2-1. Type 2786-10.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Resistance Terminals: Addition of the values indicated on the dials gives the resistance between the terminals.</p> <p>2 Resistance Setting Decade Dials: Set the desired resistance value for each digit.</p> | <p>3 Carrying Handle:</p> <p>4 Metal Case:</p> <p>5 Rubber Feet:</p> <p>6 Earth Terminal: This earth (ground) terminal is connected to the front panel.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

IM 2786-01E

5. CIRCUIT DIAGRAM AND PARTS LIST.

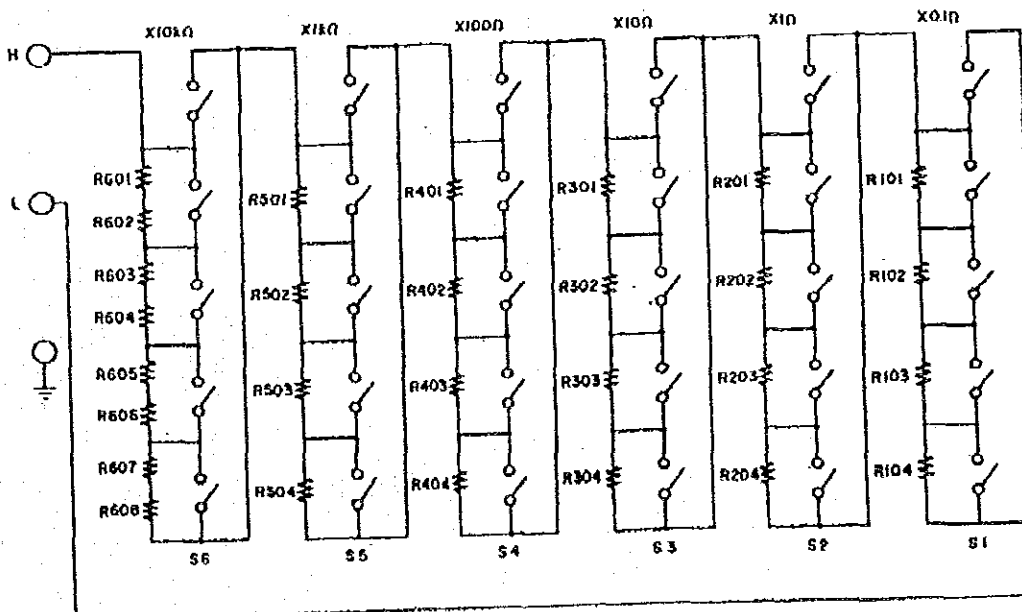


Figure 5-1. Type 2786-10.

SHORT-TERM EXPERTS

2) REQUEST FOR THE SUPPLEMENTRY TECHNICAL CO-OPERATION

A- SHORT-TERM EXPERTS IN THE FOLLOWING SUBJECTS:-

1) WELDING TECHNIQUES IN :-

- HIGH PRESSURE PIPE WELDING.

- ALLOY WELDING.

- ARGON WELDING.

2) AUTOMATIC - CONTROL COMPUTER OPERATION.

LIST NO. (5)

EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	SAGGING BLOCKS	SAFETY WORKING LOAD 3 Ton	2
2	COME ALONG CLAMPS (for 240,400,560 mm ² acsr Cond.)	SAFETY WORKING LOAD 5 Ton	6
3	LIFTING PLATE (for 80 KN insulators)	SAFETY WORKING LOAD 1300 lb	6
4	LIFTING SADDLE: -FOR SINGLE COND. 560 mm ² AAAC -FOR TWIN COND. 400 mm ² ACSR	SAFETY WORKING LOAD 2 Ton SAFETY WORKING LOAD 3 Ton	2 2
5	ROPE SHOTENER	SAFETY WORKING LOAD 3 Ton	6
6	ROPE TENSIGNER	SAFETY WORKING LOAD 650 lb	6
7	INSULATOR HOOK ON CHAIR (for tow men)		6

LIST NO (6)
EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

NO.	NAME OF EQUIPMENT OR MATERIAL	SPECIFICATION	QUANTITY
1-	Tensioner	For Conductor & Earthwire	2
2-	Winch	Hydraulic Puller For Conductor With S.W.L. 2.5 Ton	2
3-	Drum Carrier	Self Breaking	1
4-	Drum Stands	Hydraulic Drum Jacks	1
5-	Running out Blocks	For Conductor & Earth-Wire YEW & ZEBRA 560 AAAC.	2
6-	lifting Saddles	For Conductors YEW & ZEBRA	3 + 3
7-	Dynamometer	10 Tons	4
8-	Thermometer	To measure Conductor Temperature	2 10
9-	Erection Equipment For Towers	1- Tirfors 5 Tons with 90 m Ropes 2- Tower Derrick With Head & Base Fittings 3- Holding - out Ropes 16mm & 13mm (manilla) 4- Falling Derrick 5- Tower Derrick Guys 6- Falling Derrick Guys	2 1 1000m 500m 100m

LIST NO. (7)

EQUIPMENT FOR OVERHEAD TRANSMISSION LINES

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	INFRA RED SYSTEM FOR HOT SPOT DETECTING	<p>-THERMOVISION INFRA-RED THERMAL MEASUREMENT AND IMAGING SYSTEM</p> <p>- USED FOR HOT SPOT DETECTING</p> <p>- COMPLETELY PORTABLE PACKAGE INCLUDING:</p> <p>1)- SCANNER UNIT</p> <p>2)- BELT MOUNTED RECHARGABLE BATTERY PACK</p> <p>3)- POWER SUPPLY UNIT</p> <p>4)- SCANNER SHOULDER STRAP</p> <p>5)- BATTERY CABLE CHARGER</p> <p>6)- SHOULDER PAD</p> <p>7)- 7 & 20 LENSES</p> <p>8)- SUN REFLEX FILTER</p> <p>9)- FLAME FILTER</p> <p>- THE SYSTEM IS PREFERABLE TO BE INCORPORATED WITH A COMPUTER SYSTEM COMPLETE WITH :</p> <p>1)- SOFTWARE PACKAGE</p> <p>2)- VIDEO RECORDER</p> <p>3)- COLOUR VIDEO PRINTER</p>	1

LIST NO. (8)

EQUIPMENT FOR ELECTRICAL MAINTENANCE
WORKSHOP

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	VARIABLE POWER FACTOR LOAD	3 PH. , 3 KVA , 380 V 4.56 A , 50 HZ POWER FACTOR LAG/LEAD (0.1 - 0.99)	2
2	DECADE RESISTANCE BOX	50 W , 250 V. NUMBER OF DIALS 6 RESISTANCE RANGE (0.1 TO 111,111) OHM	5
3	DIGITAL MULTY METER		10

LIST NO. (9)

EQUIPMENT FOR TRANSFORMER SUBSTATIONS
WORKSHOP

S.N	NAME OF THE EQUIPMENT	SPECIFICATION	QTY
1	OIL TESTING MACHINE (for insulating oil)	INPUT 220 V OUTPUT 0-75 KV	1
2	ACIDITY TESTING SOLUTION (for insulating oil)		5 Kg
3	VOLTAGE REGULATOR	3 PH. INPUT 380 V OUTPUT VOL "0 - 380" V CAPACITY "around 50 KVA"	1
4	INSULATING OIL FILTER FILTERING MACHINE complete with the following spare parts:		1
	- SET VACUUM PUMP SPARES		1
	- COMPLETE SET PACK REFILLS		1
	- "O" SEAL FOR COVER		1

LIST NO. (10)
EQUIPMENT FOR CABLE JOINTING

NO.	NAME OF THE EQUIP OR MATERIAL	SPECIFICATION	QUAN
1-	CABLE JOINTING MATERIAL FOR XLPE CABLE WITH ARMOUR (HEAT SHRINKABLE)	STRAIGHT JOINT FOR 3 X 70 MM 11K.V	25
		TERMINAL JOINT FOR 3 X 70 MM 11K.V (OUT DOOR USE)	25
		TERMINAL JOINT FOR 3 X 70MM 11 K.V FOR (IN DOOR USE)	25
		T-JOINT FOR 3 X 70MM 11K.V	10
2-	CABLE JOINTING MATERIAL KIT FOR 0.4 KV	STRAIGHT JOINT HEAT SHRINKABLE FOR 3 X 120 + 1 X 70 P.V.C	50
		FOR 4 X 35 - P.V.C.	50
		TERMINAL JOINT HEAT SHRINKABLE FOR 3 X 120 + 1 X 70 P.V.C. ALUM STRAIGHT JOINT.	50
3-	SHARPENER	FOR XLPE CABLE	5

Training for Electronic & Maintenance ProgrammeA- Objectives

- 1- Upgrade the technical knowledge of the maintenance staff in the theoretical, and practical fields of Electronic, Communication, Instrumentation and Control fields, to enable them to maintain all the electronic equipment used in an electric power utility.
- 2- Generate specialised training courses including Hardware, Test equipment study materials & Audio Visual facilities to train maintenance personal and students in the Electronics, Control, Instrumentation and Communication fields as per requirements of an Electric Power Utility.

B- Required Resources1- Training Facilities

- * Color Video projector and Multiplexer with inputs for PC-computer interf, optical disc recorder and video recorder, Video Terminal, and Video Camera.
- * Optical disc recorder.
- * Optical disc records with training materials specific for electronic maintenance.

2- Test Equipment

- * In circuit/ out of circuit fault finding test bench. for testing electronic printed circuit boards (PCBS).
- * Programmer/Reader for firmware of EEPROM.
- * Microprocessor training packages (different CPU's) complete with hardware and software.
- * Power supplies: D.C., regulated AC, Variacs.
- * Decadic resistor, capacitor boxes.
- * Spectrum Analyser 3/GHZ.

- 2- Reference books in the following fields
- * Digital microwave
 - * Analogue microewave
 - * Private Automatic Exchange
 - * Fibre Optics
 - * Multiplexers
 - * Power supplies
 - * Radio Equipment
- 3- Training courses lectures and manuals in the same fields as above. On Laser Discs, Video cassettes,... etc. including Reference manuals & books.

- * Digital Oscilloscope, multichannel with storage capability.
- * Logic Analyser.
- * Multifunction signal generator.
- * Distortion Analyser.
- * Digital Multi meters.

3- Components

- * Digital components complete sets.
- * Analogue components for general purpose.
- * Accesories to build bench test gigs to test printed circuit cards:
- * plugs, clamps, connectors,... etc.

4- Tools

- * Complete sets of electronic tool in boxes or cases.

5- Documentation

- 1- Data sheets for semiconductor devices and equivalent steets for products of the following companies:

- * NEC
- * Hitacha
- * Toshiba
- * National
- * Texas instruments
- * Intel
- * Others

LIST NO. (12)
 ADDITIONAL EQUIPMENT
 EQUIPMENT FOR MECHANICAL MAINTENANCE WORK SHOP

NO.	NAME OF EQUIPMENT OR MATERIAL	SPECIFICATION	QUANTITY RQD
1-	INDUCTION HEATER FOR BEARING HEATING	220 V HEATING RANGE 30 - 400 C HEATING TIME CONTROLLER: 0 - 6 MIN	1
2-	DIAL GAUGE	SMALL SIZE OUTER DIAMETER 35 mm 0 - 3mm DIAL RANGE 0 - 0.50mm SCALE RANGE DIV. 0.01mm	3
3-	EXPLODED DIESEL MOTOR MODLE		1
4-	GAS TURBINE OPERATING MODLE		1
5-	EXTRACTOR	AS FIG. NO. 1	2

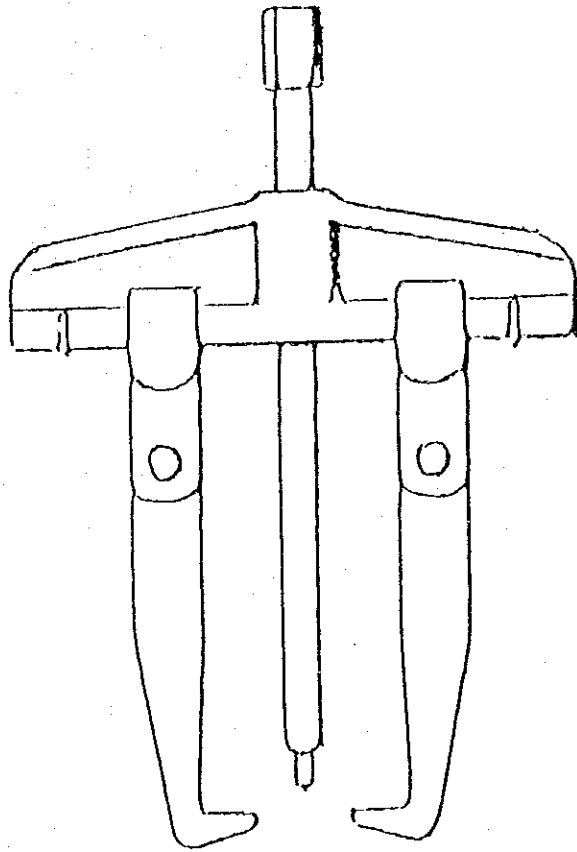


Fig. No 1

LIST NO. (13)
EQUIPMENT FOR AERIAL BUNDLE
CONDUCTOR (ABC)

NO.	NAME OF EQUIP. OR MAT.	SPECIFICATION	QUN.
1-	PORTABLE PULLING DEVICE	CAN BE FASTENED TO POLE OR TREE SUITABLE FOR INSTALLING OR CHANGING OVERHEAD CABLES OR BARE LINES SEE CAT. NO (1)	2
2-	SINGLE OFFSET SHEAVE RUNNING OUT BLOCK	CAT NO (2) CBS 65	15
3-	INTERMEDIATE RUNNING OUT BLOCK	CAT NO (2) CBS 686	15
4-	POLE ROLLER BLOCK	CAT NO (2) CBS 793	8
5-	ANGLE PULL-IN BLOCK	CAT NO (2) CBS 810	8
6-	POLE TRAVERSING BLOCK	CAT NO (2) CBS 798	6
7-	PULLING HOSES	FOR PULLING AERIAL BUNDLE CONDUCTOR (ABC) CAT NO (3)	10
8-	TACKLE	FOR TIGHTENING A CABLE CAT NO (4)	5
9-	COME ALONG	FOR GRIPPING (ABC) CONDUCTOR CAT NO (5)	6
10-	PULLING ROPE	FOR PULLING (ABC) CONDUCTOR MADE OF POLYPROPYLENE CAT NO (6)	1650M
11-	DYNAMOMETER	FOR SAGING (ABC) CONDUCTOR CAT NO (7)	2
12-	WEDGES	FOR SEPARATING (ABC) CONDUCTOR MADE OF HARD INSULATING MATERIAL COLD RESISTANT POLYETHYLENE CAN NO (8)	24
13-	FOUR-WAY WRENCH	FOR TIGHTENING NUT AND BOLTS OF CONNECTOR CAT NO (9)	10
14-	DRUMLIFTING DEVICE	FOR LIFTING DRUM CAT NO (10)	2
15-	FORK SPANNER	FOR TIGHTENING BOLT CAT NO (11)	6

PULLING DEVICE DOLMAR LM 152 / 444

General

Portable pulling device which can be fastened to a pole or a tree.
Suitable when installing or changing overhead cables or bare lines.

Technical data

TK 34400 DOLMAR motor

- air cooled, 2-cycle engine, 90 cm³
- 7.3 kW, 142 r/s
- fuel normal bensin +5% oil
- fuel tank 1 litre
- centrifugal clutch
- electronic ignition system
- electric system from Bosch
- gear box filled lastingly with oil, built together with motor
- worm gear
- shifting clutch of direction
- brake for overload
- firm silencer
- weight 19 kg

TK 34401 zinned body for motor weight 13 kg

TK 34402 drum for polyamid rope

- outside diameter 400 mm
- inside diameter 50 mm
- pressed plate, zinned
- Ø 7 mm polyamid rope, 550 m
- weight 11 kg

TK 34412 polyamid rope

- Ø 7 mm, 550 m, pulling strength 7.5 kN

IUKIA ENGINEERING

TK 34410 exhaust pipe

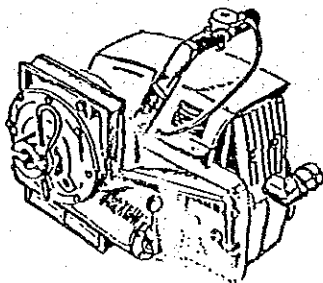
- can be fastened to the silencer
- flexible armoured tube, zincd
- length 5 m
- weight 2 kg

TK 34408 storage box

- for motor
- 400 x 400 x 300 mm
- weight 5 kg

TK 34409 Tool set

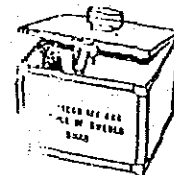
- weight 0.4 kg



TK 34409



TK 34402



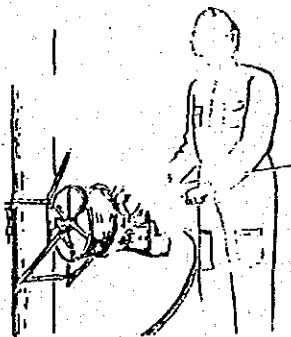
TK 34408



TK 34412



TK 34410

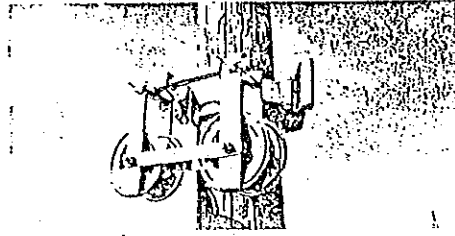


CAT N^o (2)

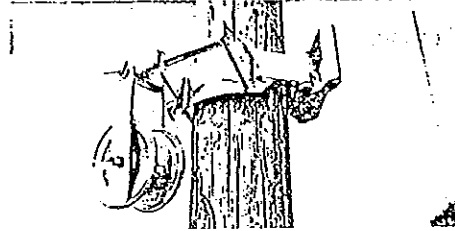


**AERIAL BUNDLE CONDUCTOR (ABC)
RUNNING OUT BLOCKS**

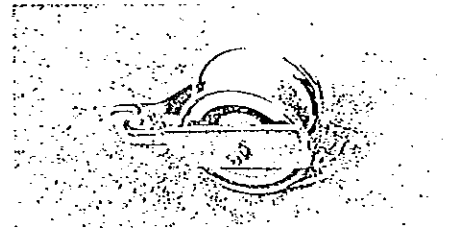
CBS 687 DOUBLE SHEAVE RUNNING OUT BLOCK
Designed to be strong but light, suitable for pole work. The aluminium sheaves are mounted on sealed ball bearings for low resistance. The webbing ratchet device makes securing to pole very quick and simple.
Dimensions: 210mm x 200mm x 360mm
Weight: 6kg



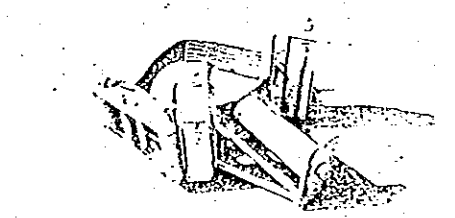
CBS 685 SINGLE OFFSET SHEAVE RUNNING OUT BLOCK
This block has the same features as the CBS 687. The single sheave is offset to assist with fixing conductor to clamp.
Dimensions: 210mm x 280mm x 330mm
Weight: 4kg



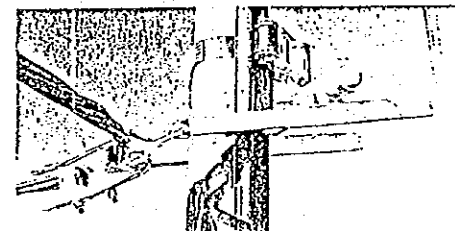
CBS 686 INTERMEDIATE RUNNING OUT BLOCK
Designed to have a split frame and hooks, to locate on brackets. The aluminium sheave is mounted on sealed ball bearings. Guide rings protect conductor from damage.
Dimensions: 110mm x 250mm x 140mm
Weight: 2kg



CBS 793 POLE ROLLER BLOCK
Designed to provide the facility to string conductors at the rear of an angle pole.
Dimensions: 250mm x 200mm x 300mm
Weight: 10kg



CBS 810 ANGLE PULL-IN BLOCK
Designed for angle poles when conductor is required to be pulled into clamp after stringing. Features aluminium sheaves with ball bearings and quick fixing arrangement. Sheaves are adjustable independently to pull conductor into clamp.
Dimensions: 470mm x 750mm x 130mm
Weight: 15kg



CBS 798 POLE TRAVERSING BLOCK
This block allows the stringing operation to be fed up or down poles, when access at the rear of the pole is not available. The block has a 260mm sheave with quick acting ratchet fixing and a conductor side gate.
Dimensions: 260mm x 260mm x 100mm
Weight: 10kg



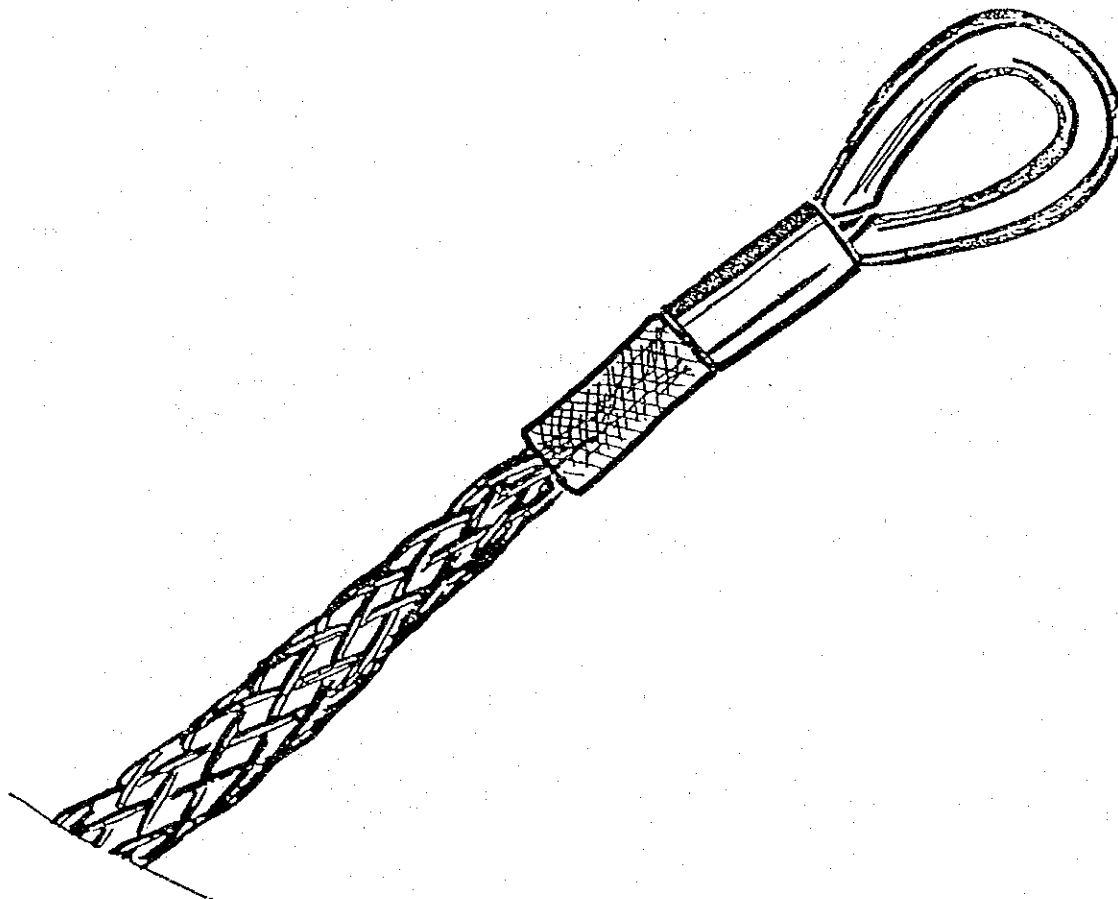
Following our company policy of continual product development C.B.S. reserve the right to amend this specification without prior notice.

FOR FURTHER INFORMATION CALL CBS PRODUCTS LTD (0572) 723665 • FAX (0572) 756009

10.06.1980

PULLING HOSES

For pulling AMKA-T cables. Made of steel. Pulling hoses tighten and secure cables to a pulling rope. Pulling hoses do not damage the insulation of the messenger.



Technical data

Cat. No.	For cable diameter mm	Allowed load kN	Length mm	Weight kg	Package pcs
TK 34050	15...22	4.0	400	0.07	1
TK 34051	22...30	5.5	550	0.12	1
TK 34052	31...45	8.0	850	0.40	1

No 0105 8000 10.79 UK/2731

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

TELEX:
124553
CABNO SF

NOKIA ENGINEERING

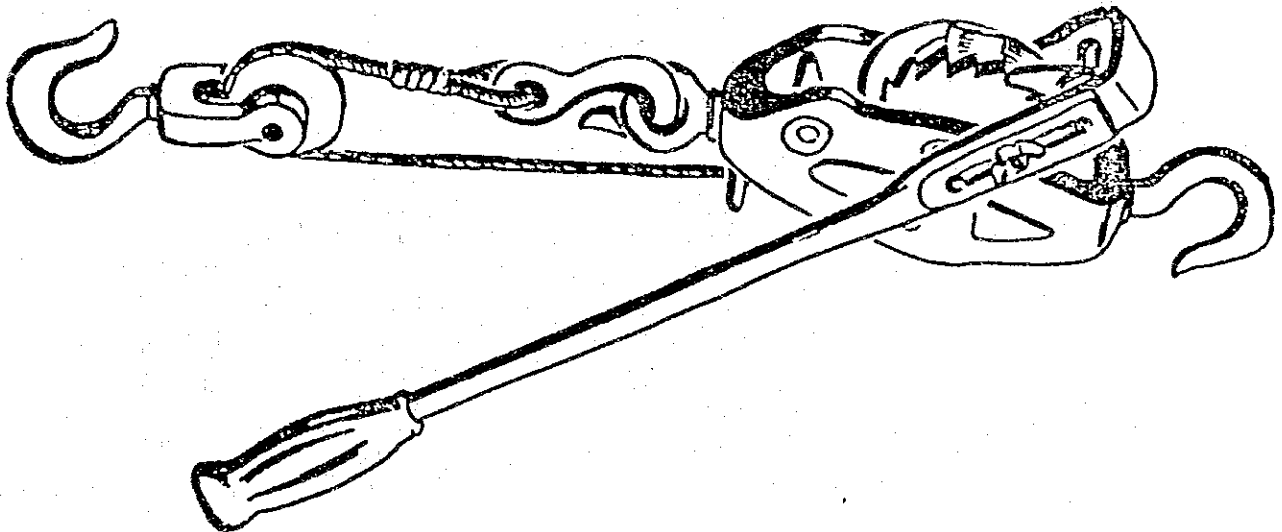
CAT No (4)

13.07.1979

TACKLE TK 31045

Tackle

For tightening a cable. Heat treated aluminium alloy frame. Special steel rope, diameter 4.8 mm. Three workable hooks instead of two. Interlocking pawl system, will not slip even if wet or oily. Operates at two speeds. Factory tested to 50% overload.



Technical data

Cat.No.	Effect	kg	Weight kg	Package pcs
	singlewire	double wire		
TK 31045	500	1000	4	1

No 0105 5000 s.79 UK/1439

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

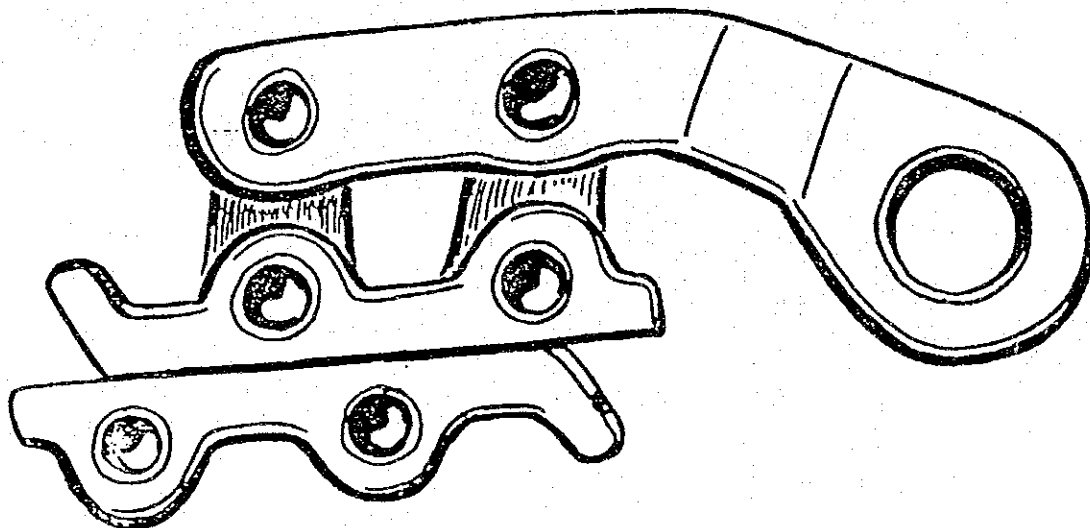
TELEX:
124553
CABNO SF

NOKIA ENGINEERING CAT No (5)

10.06.1980

COME ALONG

For gripping AMKA-T cable messengers when pulling.
Return-spring model with very fine toothed jaws
which do not damage the strands of the messenger.



Technical data

Cat. No.	For messenger diameter mm ²	Weight kg	Allowed load kN	Package pcs
TK 30011	25...35	0.9	10	1
TK 30013	50...70	0.9	17	1

No 0105 5000 5.79 UK/1-439

P.O. BOX 419
SF-00101 HELSINKI 10 FINLAND
TELEPHONE 6131

TELEGRAMS:
FINNCABLES
HELSINKI

TELEX:
124553
CABNO SF

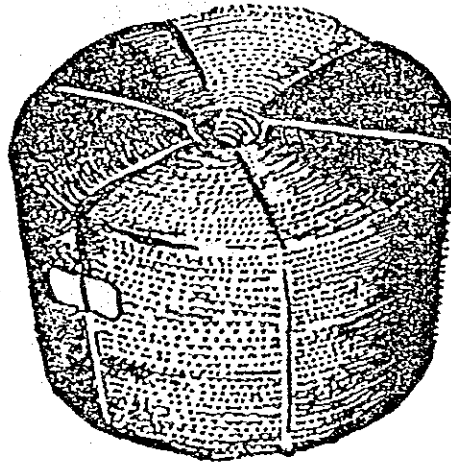
CAT NO (6)

NOKIA ENGINEERING

24.11.1980

PULLING ROPE TK 34412

A pulling rope for pulling AMKA cables. The rope is made of polypropylen.



Technical data

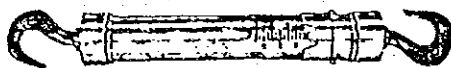
Cat.No.	Length m	Diameter mm	Tensile strenght kN
TK 34412	550	6	5.9

13.07.1979

DYNAMOMETER

For metering tension when stringing overhead cable by come-along and tackle.

Made of special steel. Hooks electroplated. Pipe chromeplated.



No 21

Technical data

Type	Limit of tension	One scale unit	Pipe diameter	Distance hook to hook	Weight
	kN	kN	mm	mm	kg
NO 21	2	0.1	38	440	1,9

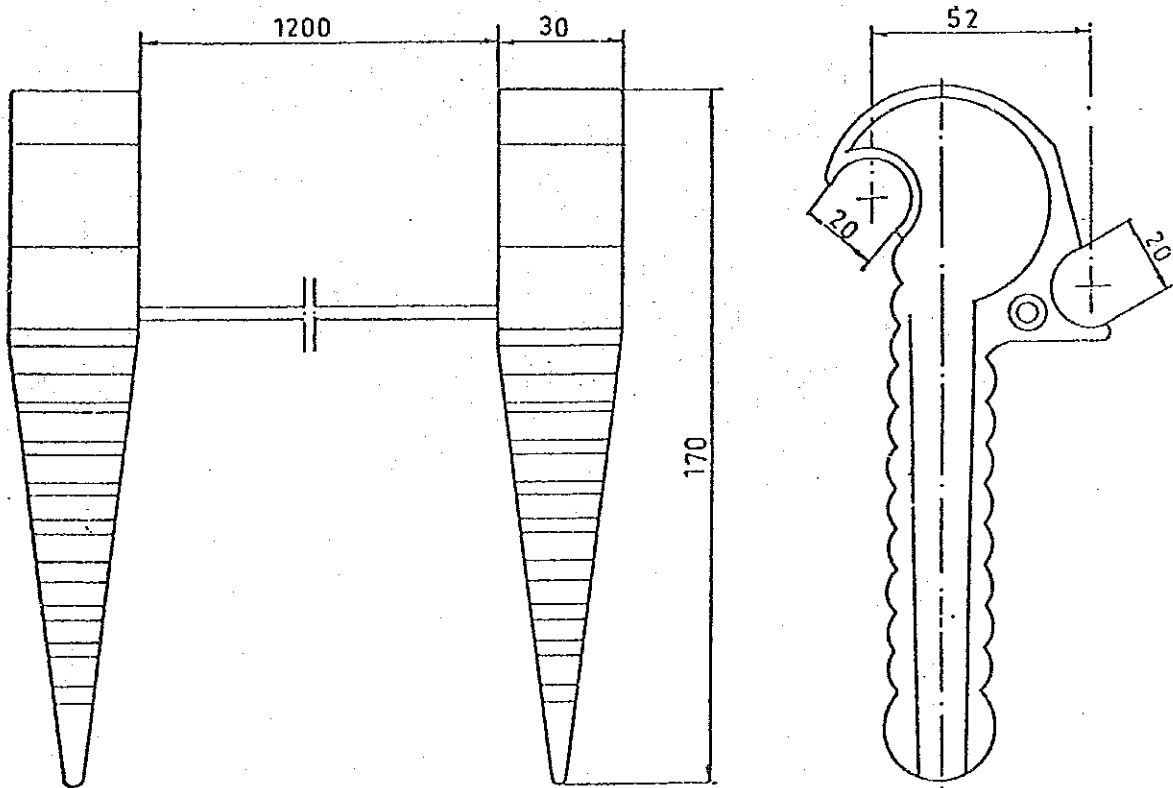
NOKIA ENGINEERING

CAT NO (8)

WEDGES ST 31

Wedges

For separating AMKA-T conductors when making joints.
Made of hard insulating material; cold resistant polyethylene.



Technical data

Cat. No.	For sections	Weight g	Package pcs
ST 31	16 - 120	100	10

NOKIA ENGINEERING

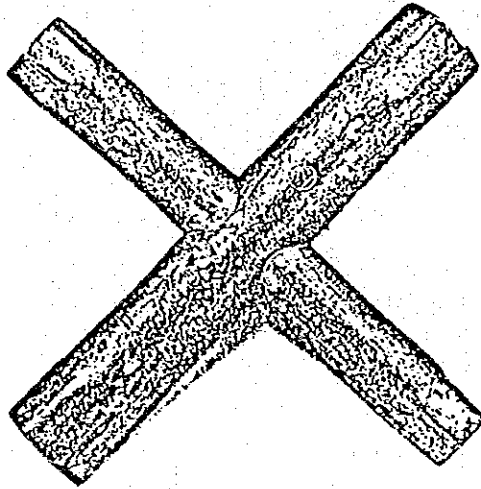
CAT No 9

03.12.1981

JORDANIAN ELECTRICAL AND
MECHANICAL ENGINEERING CO,
P. O. BOX 1210 - ILL. 661538

FOUR-WAY WRENCH

A universal tool for tightening nuts and bolts of
connectors.



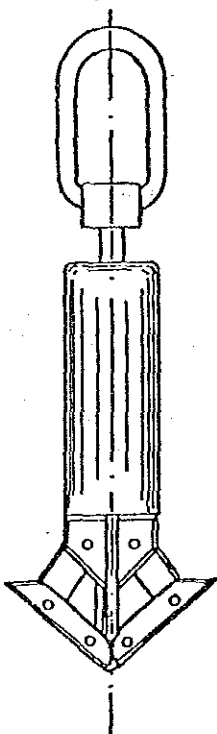
Technical data

Cat.No.	Model	For nut	Weight
TK 33160	05570a	M6,7,8,10mm	250 g

26.06.1981

DRUM LIFTING DEVICE

Put together the drum lifting device can be pushed into the hole of the cable drum and by a simple hand movement the levers open. Thus the drum is stable and can be lifted. The drum can be turned around when attached to the drum lifting device.



Technical data

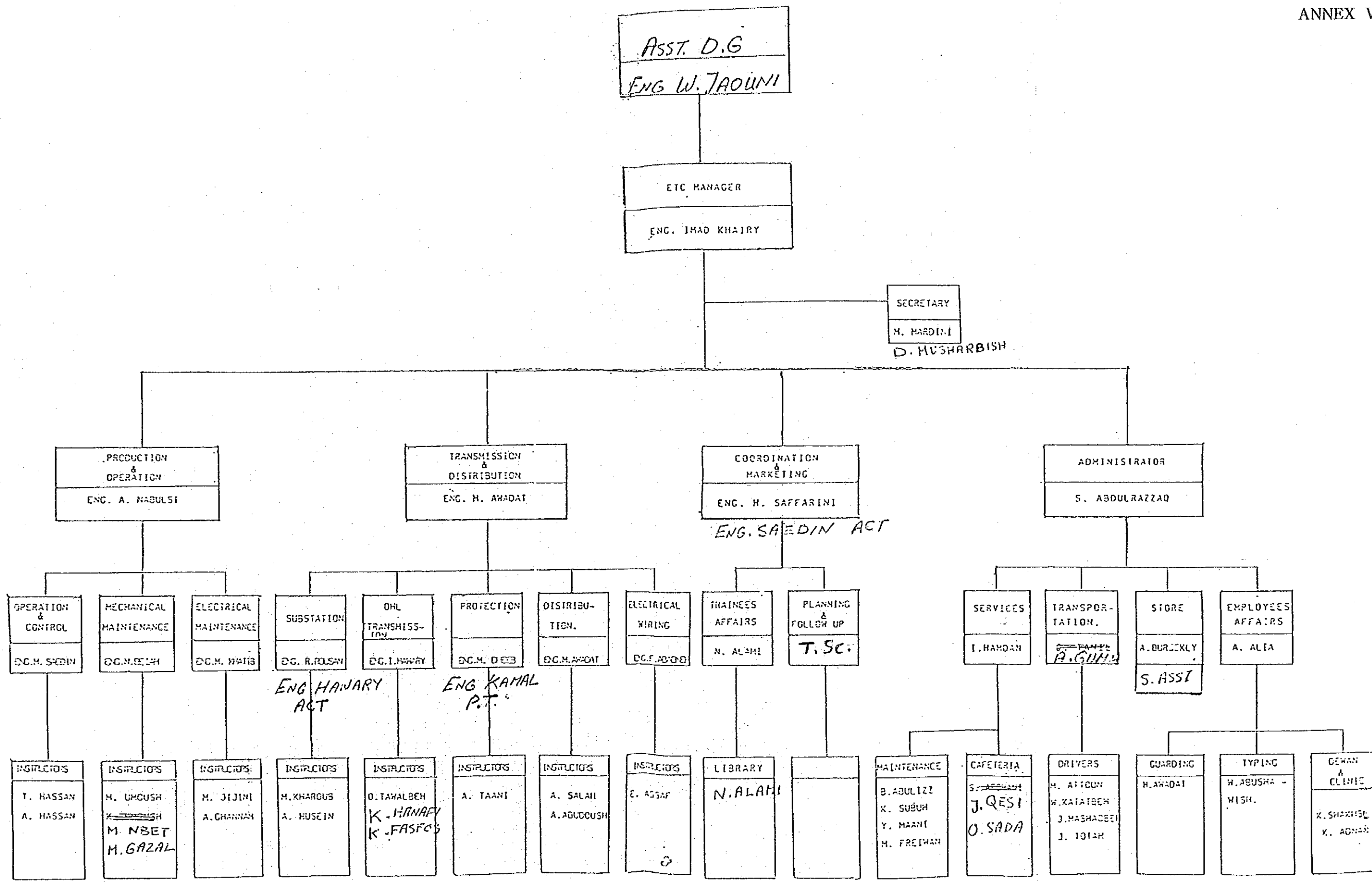
Cat.No.	Drum	Permissible load	Weight	Length
TK 31611	J-N0 hole \varnothing 103-130mm	2500 kg	6.5 kg	480 mm

JORDAN ELECTRICITY AUTHORITY
E. T. C. ' S WORK PLAN 1993

ANNEX IV

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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FEBRUARY	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> ← Batch No 4 → </div> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> ← Electrification project Engineers and Tech. Training → </div> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black;"> ← Amman Univ. College Students → </div>																														
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	← R. Electrification project →																														
	← up-grading courses →																														
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JULY	← Batch No 5 →																														
	← T.C.T.P 2 →																														
	← up-grading courses →																														
	← Univ. Summer Training →																														
AUGUST	← Batch No 5 →																														
	← T.C.T.P 2 →																														
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SEPTEMBER	← Batch No 5 →																														
	← T.C.T.P 2 →																														
	← up-grading courses →																														
OCTOBER	← Batch No 5 →																														
	← T.C.T.P 2 →																														
	← up-grading courses →																														
NOBEMBER	← Batch No 5 →																														
	← up-grading courses →																														
DECEMBER	← Batch No 5 →																														



ELECT. TRAINING CENTER
BUDGET
FOR THE YEAR 1993

NO.	ITEM	Th. J.D.
1-	Training Employees Salary	150
2-	Training Allowance	244
3-	Training Daily Allowance	15
4-	Training Transportation	8
5-	Training fees	6
6-	Training Materials	15
7-	Clearing and Transportation of Material and Equipment	33
8-	Other Training Material	3
TOTAL		474
		Equ. TO US\$ 700 000

JICA