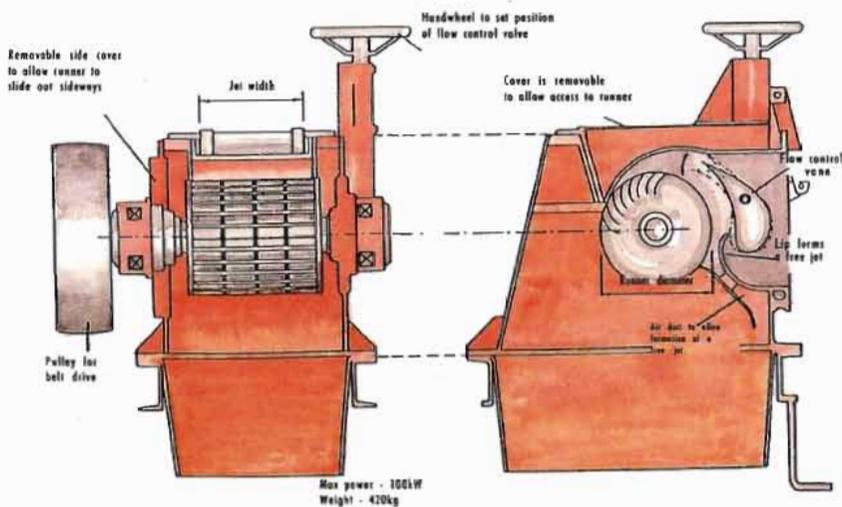


Installation and Commissioning Manual for Private Micro-hydropower Plants



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Prepared by
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International
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Preface

Private or community owned and managed micro-hydropower (MHP) schemes are now accepted as viable, least-cost options for many under-developed and inaccessible mountain areas in the Hindu Kush-Himalayan (HKH) region. Local entrepreneurs and/or communities are likely to initiate, manage, operate, and maintain such plants themselves. The technology is simple and low cost. However, the implementers/surveyors, designers, manufacturers, installers, and other technical people involved are usually not highly qualified and may lack the necessary expertise in their respective fields. Therefore, institutional arrangements and properly designed and implemented inputs are needed for these groups of professionals (both implementers and operators/managers) in the form of training opportunities, manuals and guidelines, back-stopping back-up support, maintenance and repair facilities, and know-how support. Without such inputs, the performance and viability of many plants may be less successful than hoped.

With these needs in view, ICIMOD decided to develop and disseminate a series of four information manuals for MHP schemes on site survey and layout design, manufacture, installation, management and operation, and maintenance and repairs. The manuals have been prepared as part of a project entitled 'Capacity Building for Mini- and Micro-hydropower Development in Selected Countries of the Hindu Kush-Himalayan Region, Phase II'. Like its predecessor, the first phase, the project has been generously supported by the Norwegian Government. The project has been designed and implemented by ICIMOD in the HKH regions of Pakistan, India, and Nepal, in collaboration with suitable focal agencies in each country.

The current manual focusses on the installation, commissioning, and handing over of MHP plants to owner-managers. The target group includes installers and/or supervisors of the installation process. Since these people may have limited formal education and technical qualifications, an attempt has been made to keep the contents simple and brief. However, there is always a problem of balance between simplifying so far that the information is no longer useful, and the information being so complicated that those who need it are unable to use it. An attempt has been made to achieve the optimum balance.

The original version of the manual was prepared by DCS-Technology Development, Butwal, Nepal, and has been revised by the project coordinator, Dr. A. A. Junejo, and two consultants, Mr. Ajoy Karki and Mr. Girish Kharel. The revision is based on the recommendations of an Experts' Consultation organized by ICIMOD in February 1998, as well as on some suggestions from other experts. DCS did a very good job in collecting the basic

information and compiling it in one place; while the consultants rewrote some chapters to improve the contents and cover some additional topics. The Coordinator and ICIMOD are grateful to DCS and the consultants for their contribution.

This manual is probably the first of its kind on the subject aimed at this particular target group. Although every effort has been made to make it useful for the target group, it is quite possible that some important aspects have been overlooked, or some information not provided in the most effective way. We would very much welcome receiving any comments and suggestions for improvements or additions for subsequent editions from users of the manual, experts, and institutions concerned with MHP.

After necessary modifications these manuals will be translated, published, and distributed in India, Nepal, and Pakistan to prospective users and beneficiaries and relevant institutions. It is also hoped that some training agencies will find the manuals to be useful supporting material for their training programmes.

Anwar A. Junejo
Coordinator MMHP Project
ICIMOD, November 1998

Abbreviations and Acronyms

MASL :	Metres above sea level
CGI :	Corrugated galvanized iron
ELC :	Electronic load controller
GI :	Galvanized iron
HDPE :	High density polyethylene
HKH :	Hindu Kush-Himalayas
MHP :	Micro-hydropower
SWG :	Standard wire gauge

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