Clearance Envelopes for Six- and Eight-Bolt Truck Transmission Mounted Power Take-Offs —SAE J772 NOV83

SAE Recommended Practice
Completely Revised November 1983

THIS IS A PREPRINT WHICH IS SUBJECT TO REVISIONS AND CORRECTIONS. THE FINAL VERSION WILL APPEAR IN THE 1985 EDITION OF THE SAE HANDBOOK.

SAE The Engineering Resource For Advancing Mobility

PREPRINT

CLEARANCE ENVELOPES FOR SIX- AND EIGHT-BOLT TRUCK TRANSMISSION MOUNTED POWER TAKE-OFFS—SAE J772 NOV83

SAE Recommended Practice

Report of the Transmission Committee, approved June 1961, completely revised by Truck and Bus Powertrain Committee November 1983.

Scope and Purpose—The purpose of this SAE Recommended Practice is to provide dimensions of clearance envelopes for various types of 6-bolt regular duty and 8-bolt heavy duty truck transmission side-mounted power take-offs. These envelopes are applicable to the clearance required immediately adjacent to the power take-off openings on truck transmissions. Clearance envelopes are provided for the purpose of documenting current practice. It must be recognized that many current designs do not provide these clearances in all orientations and variations. New transmission and power take-off designs should attempt to adhere to these envelopes where practical, but they should not be construed to be design restrictive; ultimately, the actual power take-off clearance must be established for each application. In order to provide realistic envelope sizes, there are six basic "types" of side-mounted P.T.O. envelopes as follows:

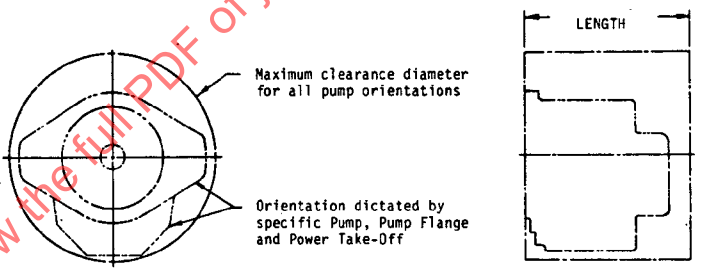
Envelope Type	Power Take-Off Types Included	Typical Usage
I	Single Gear, 6-Bolt P.T.O.	Remote mounted hydraulic pumps up to 15 G.P.M.; light duty mechanical loads.
II	2-Gear, Single Speed, 6-Bolt P.T.O.	Remote or direct mounted hydraulic pumps up to 35 G.P.M.; medium duty mechanical loads.
III	Multiple Speed, 6-Bolt P.T.O.	Mechanical winches; transfer pumps.
IV	2-Gear, Single Speed, 6-Bolt P.T.O. Automatic Transmissions	Remote or direct mount hydraulic pumps up to 35 G.P.M.; medium duty mechanical loads.
V	Single Gear, 8-Bolt P.T.O.	Large remote mounted hydraulic pumps; high mechical loads.
VI	2-Gear, Single Speed and Multiple Speed 8-Bolt	Large direct or remote mounted pumps; high mechanical loads, large mechanical winches.

All envelopes shown are basic and can be reversed for output to the front or rear of the vehicle. On Types II, III, IV and VI, output shaft locations can additionally be reversed from that shown to the opposite side of the P.T.O. opening centerline. Driveline envelopes, front or rear, above or below centerline of opening as required, must be a cylinder of the minimum diameter shown and fall within the 15-deg maximum half-cone extending vertically up and down and horizontally outward from the driveline cone apex, for a distance equivalent to that required to bring the P.T.O. driveline beyond points of interference so that auxiliary equipment can be driven.

Clearance should be provided on 6-bolt openings on mechanical transmissions for Types I, II and III with Types I and II being a *minimum* requirement. Clearance should be provided on automatic transmissions for Types IV and VI depending on 6- or 8-bolt P.T.O openings. Mechanical transmissions with 8-bolt openings should have Type V and VI clearances provided.

Direct mount hydraulic pump clearance envelopes are included as an option, and are commonly used with Types II, IV and VI P.T.O. envelopes. If pump clearance is restricted it should be evaluated on a specific basis. If specific pump sizes are not available, direct mount pump clearance envelopes should be used as follows:

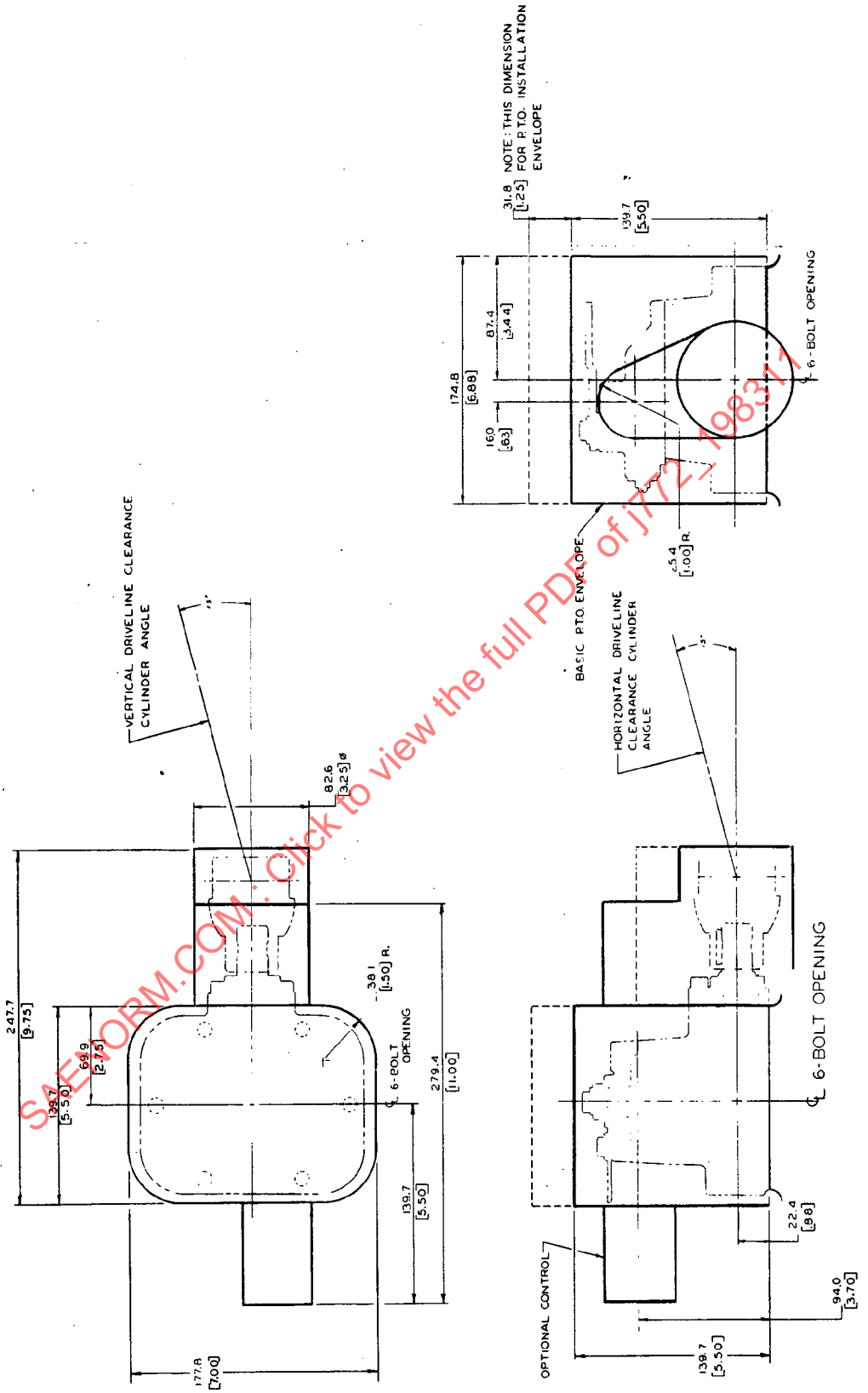
P.T.O. Envelope Type	Direct Mount Pump Envelope
II, IV	8 in diameter × 12 in long centered on driveline cylinder flush to P.T.O. envelope at pump flange face
VI	10 in diameter × 14 in long centered on driveline cylinder flush to P.T.O. envelope at pump flange face



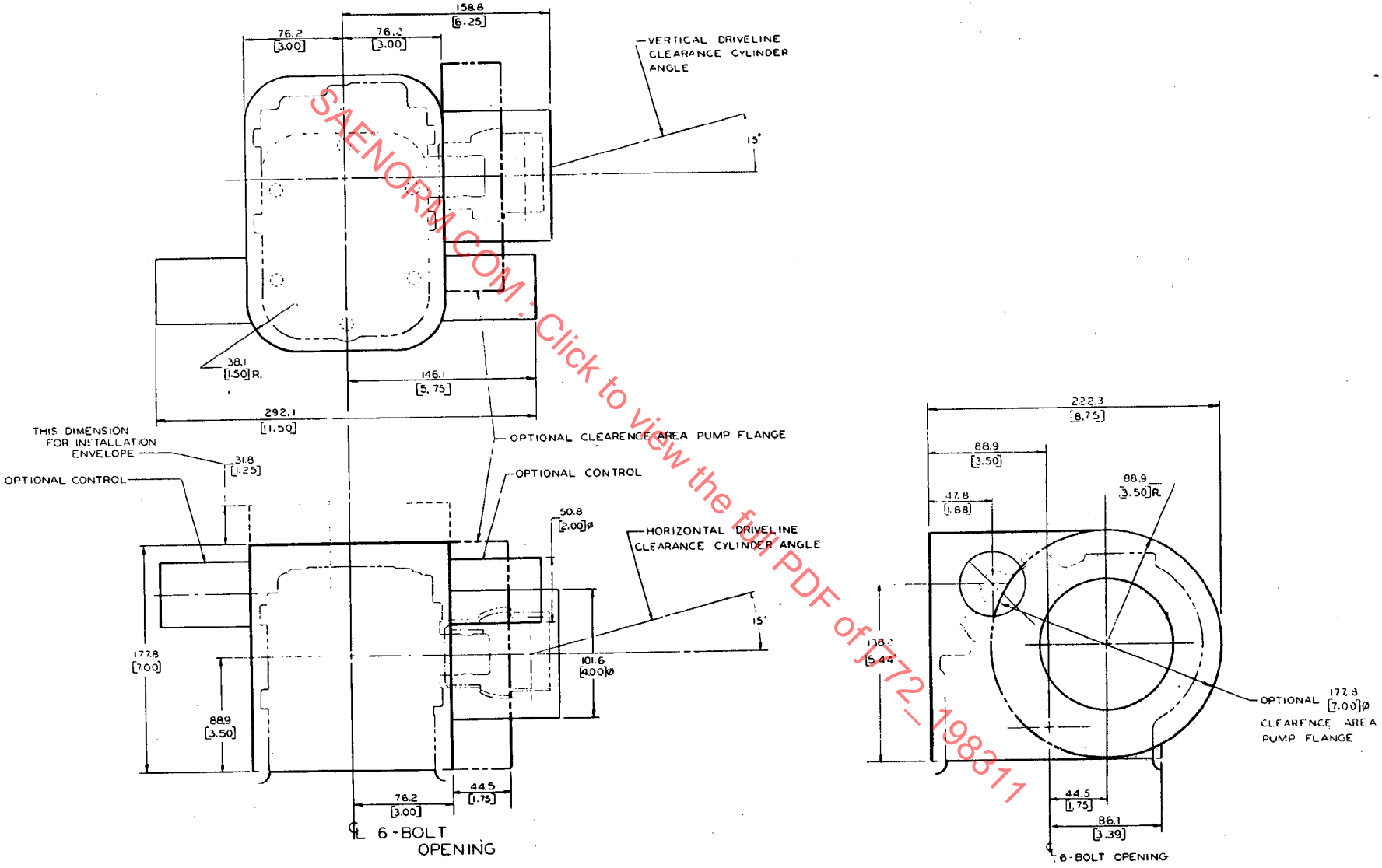
NOTE: Clearance must be provided rear of the pump for hydraulic lines.

This SAE Recommended Practice is intended as a guide toward standard practice but may be subject to frequent change to keep pace with experience and technical advances.

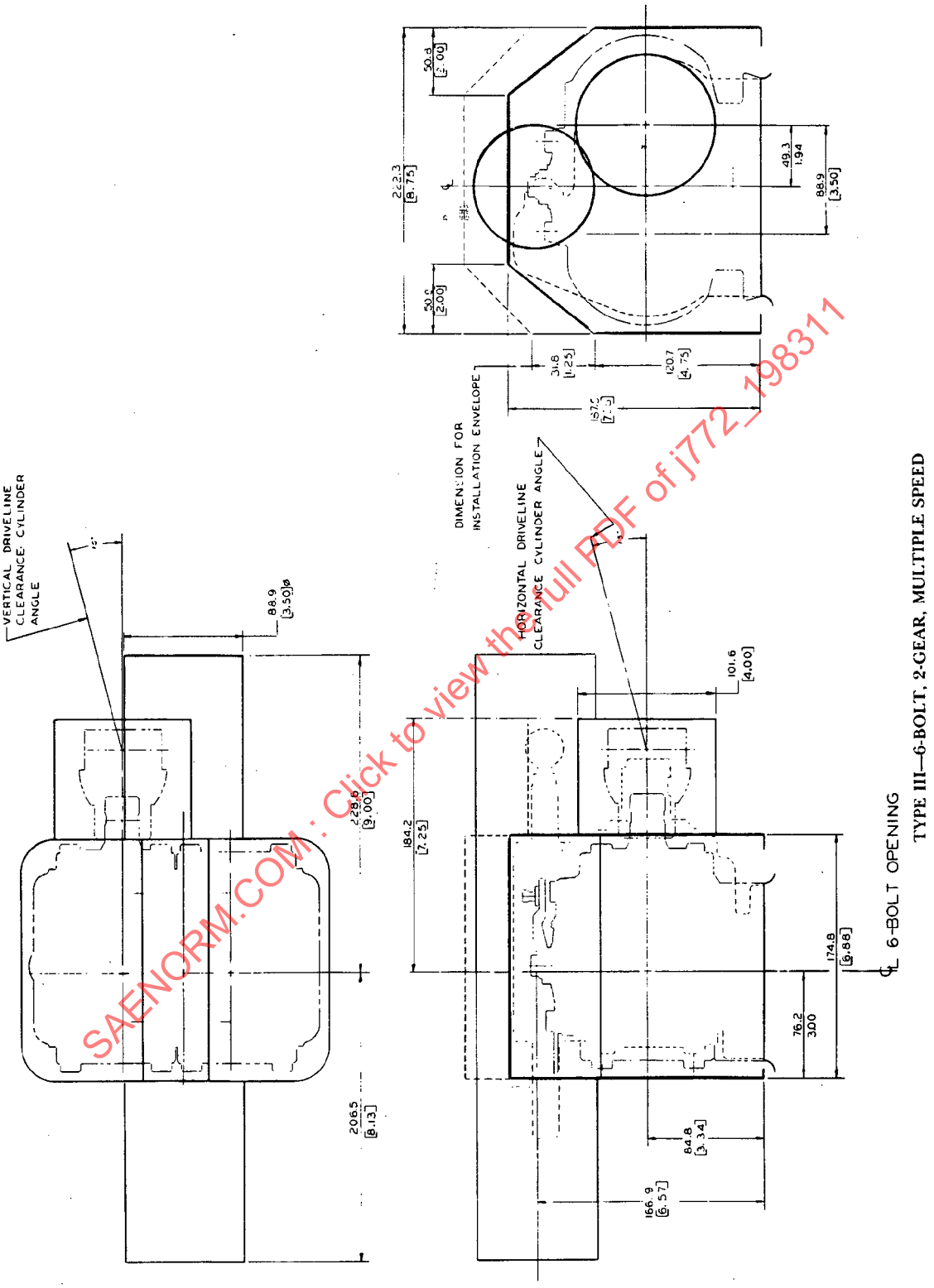
The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.



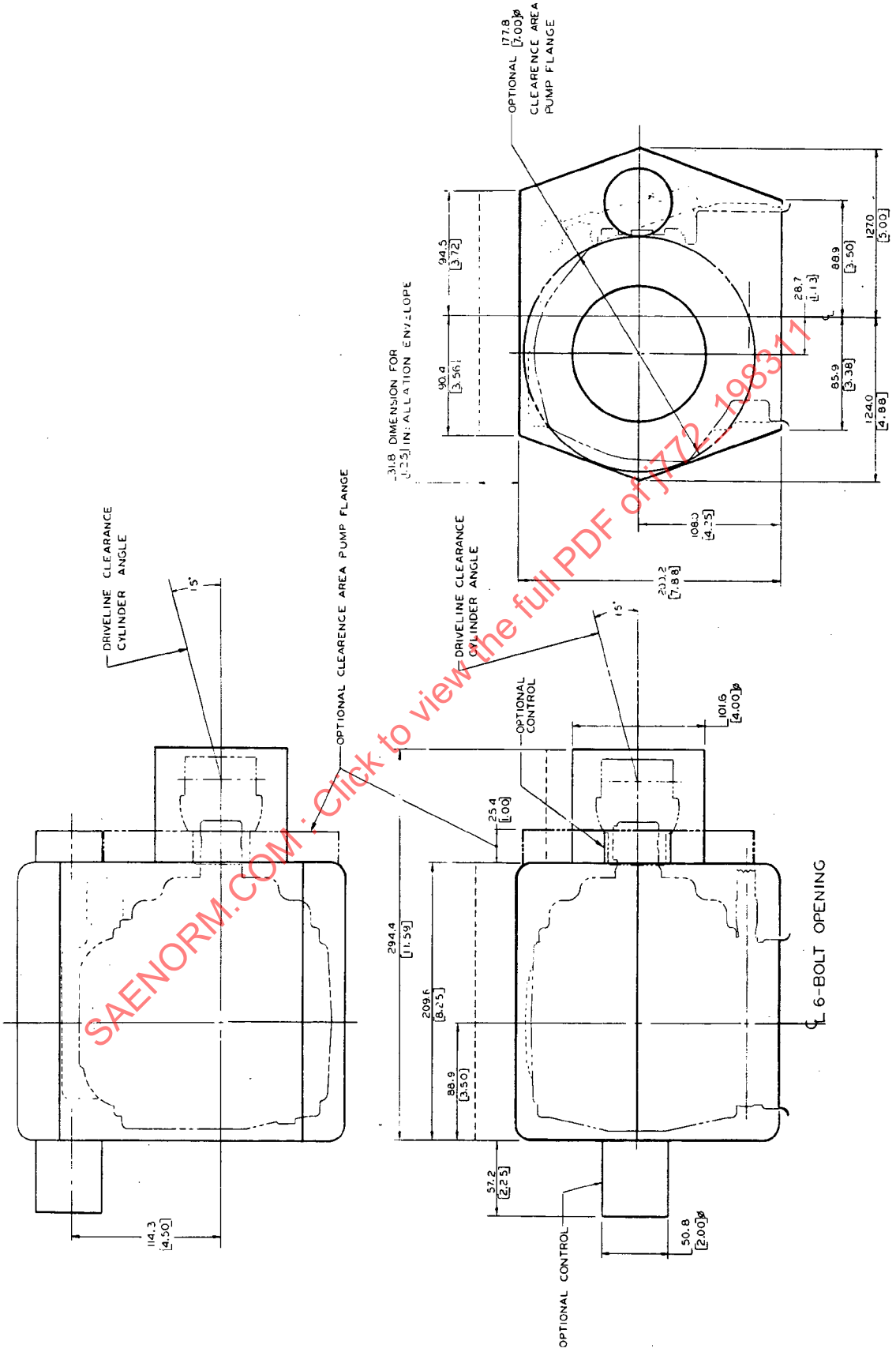
TYPE I—6-BOLT, SINGLE GEAR P.T.O.



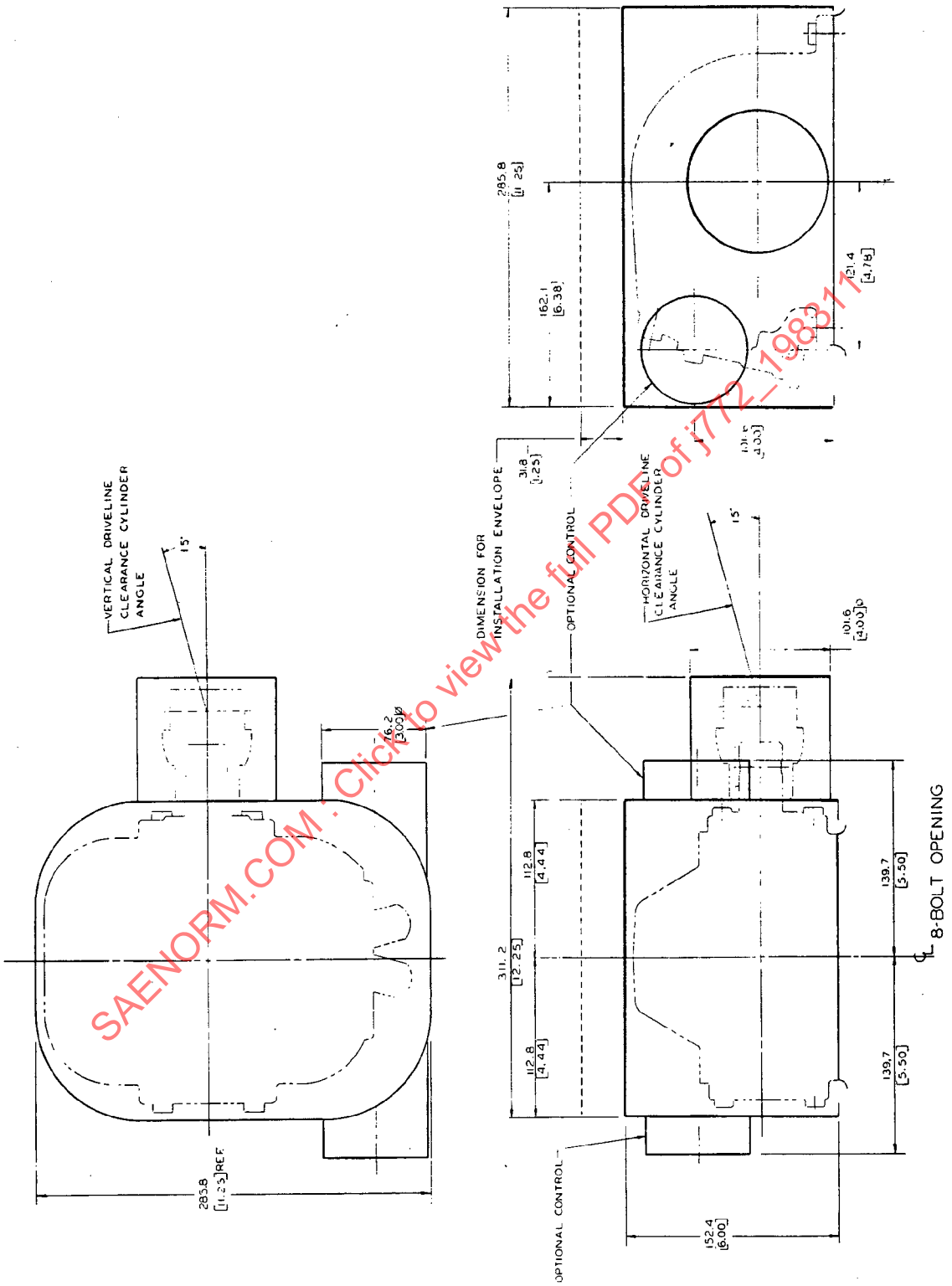
TYPE II—6-BOLT, P.T.O.-2-GEAR, SINGLE SPEED



TYPE III—6-BOLT, 2-GEAR, MULTIPLE SPEED



TYPE IV—6-BOLT P.T.O.-HEAVY DUTY FOR AUTOMATIC TRANSMISSION



TYPE V—SINGLE GEAR, 8-BOLT P.T.O.