SERVICE MANUAL

LOADER
TM180, TM220

EN - 9813/3150 - ISSUE 2 - 08/2018

This manual contains original instructions, verified by the manufacturer (or their authorized representative).

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Foreword

The Operator's Manual

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You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

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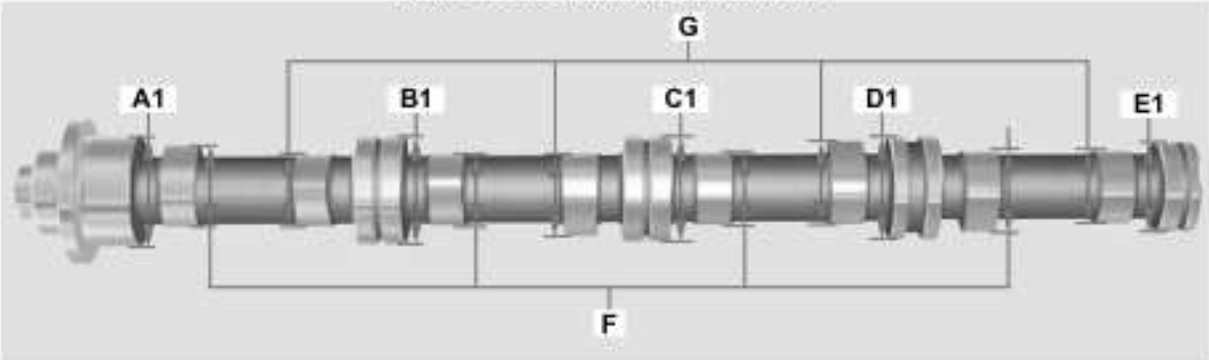
Technical Data

Table 63. Camshaft Data

Camshaft lobe diameter	
Inlet	32.638mm (1.2850in) - 32.700mm (1.2874in)(1)
Exhaust	32.998mm (1.2991in) - 33.060mm (1.3016in)(1)

(1) If the dimensions of cam lobe are lower than the values shown by 0.1 mm (maximum dimension), replace the camshaft.

Figure 143. Camshaft Dimensions



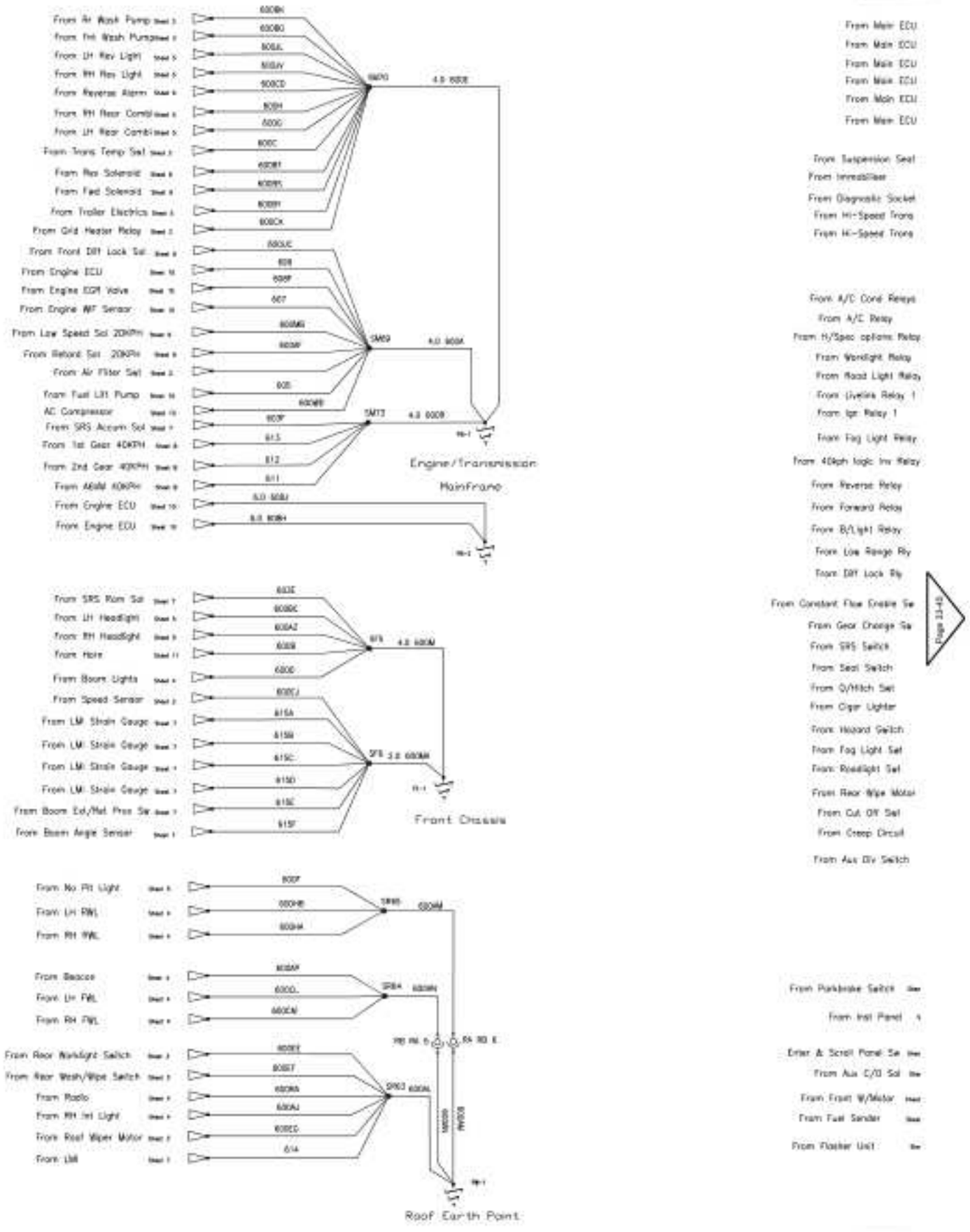
F Intake lobe diameter

G Exhaust lobe diameter

Table 64. Housing and Camshaft Journal Dimensions

Item	Dimensions	Clearance	Wear Limit
A	44.000mm - 44.025mm	A-A1 = 0.040mm - 0.085mm	0.120mm
A1	43.940mm - 43.960mm		
B	43.000mm - 43.025mm	B-B1 = 0.060mm - 0.105mm	
B1	42.920mm - 42.940mm		
C	42.000mm - 42.025mm	C-C1 = 0.060mm - 0.105mm	
C1	41.920mm - 41.940mm		
D	41.000mm - 41.025mm	D-D1 = 0.060mm - 0.105mm	
D1	40.920mm - 40.940mm		
E	36.000mm - 36.025mm	E-E1 = 0.060mm - 0.105mm	
E1	35.920mm - 35.940mm		

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Introduction

Should faults occur related to an ECU (Electronic Control Unit) or devices connected to it, the electronic system will generate the applicable fault codes. A complete list of fault codes is stored within the applicable Servicemaster tools set.

Fault Code Structure

The structure of fault codes, otherwise known as DTC (Diagnostic Trouble Code)'s has been standardised to a 7 digit code for all on and off-highway machine and vehicle applications. The standard (referred to as J2012) requires all fault codes to conform to the following structure.

- 1st character - defines the system on the vehicle (e.g. P = Powertrain, C= Chassis, U = Network).
- 2nd and 3rd characters - defines the sub-system (e.g. transmission, CAN (Controller Area Network) network, brakes etc).
- 4th and 5th characters - specifies the particular component, circuit or fault (e.g. starter relay).
- 6th and 7th characters - referred to as the 'Failure Type Byte' (FTB) which indicates the particular failure (e.g. 11 = short circuit to ground). See FTB Numbers below for a full list.

Some specific fault codes are defined by international standard, while other codes may be defined by individual vehicle manufacturers.

Fault Code Display Systems

Depending on the machine specification fault codes recorded by the engine ECU can be accessed and displayed in several ways:

CAN Enabled Display

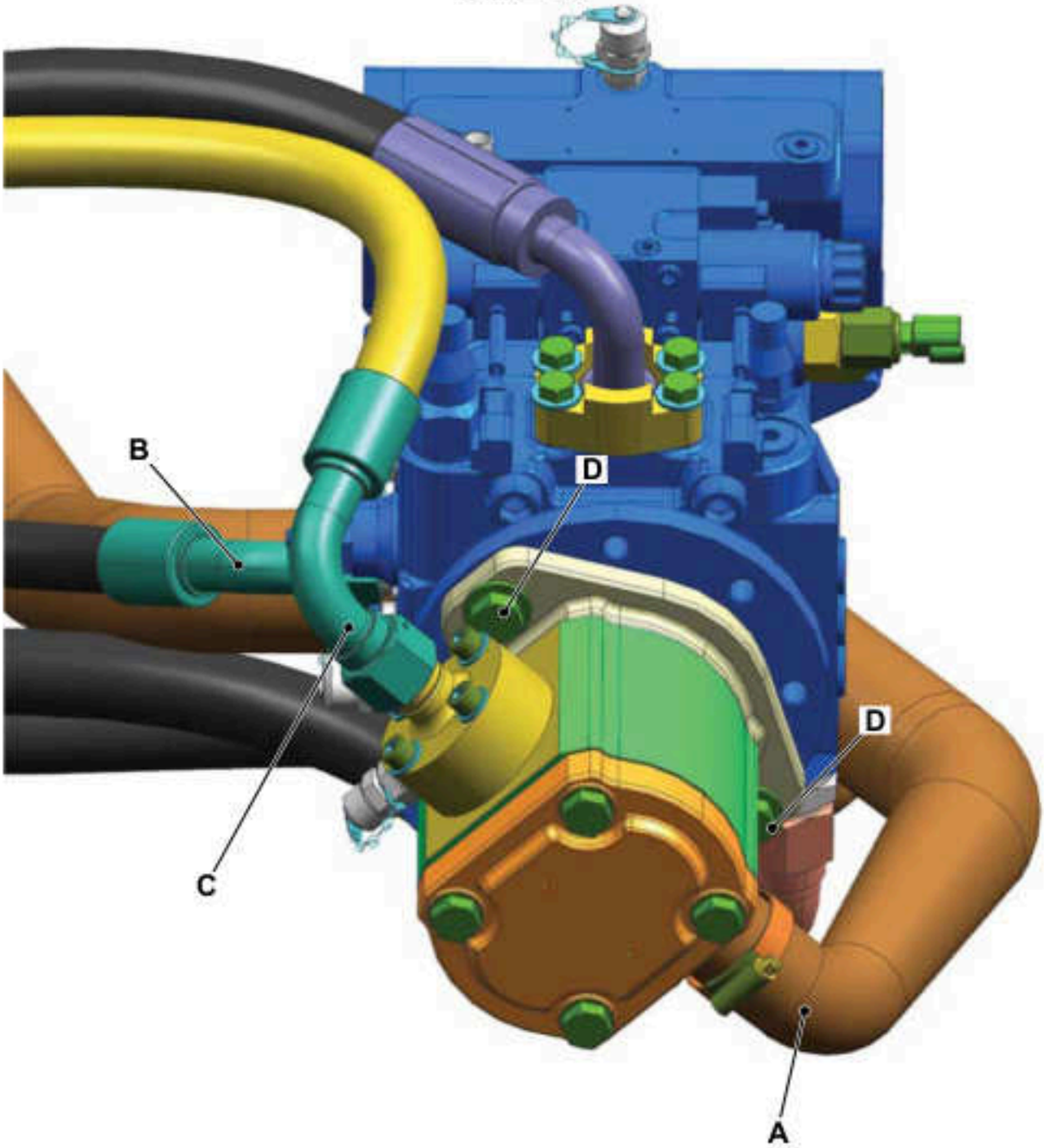
The machine may be equipped with a CAN enabled display. Such a display will be capable of displaying all recorded codes, for example P0047. All logged codes will be displayed. The operator may also have a facility to erase the fault code log. See the applicable machine documentation for further information.

CAN BUS Connected Computer

Fault codes logged can be accessed via a suitable laptop computer running the applicable diagnostics software, JCB 444 Engine Diagnostics for example. The computer must be connected to the machine CAN BUS socket using a DLA (Data Link Adaptor). Once connected all recorded codes can be displayed. The engineer also has a facility to erase the fault code log.

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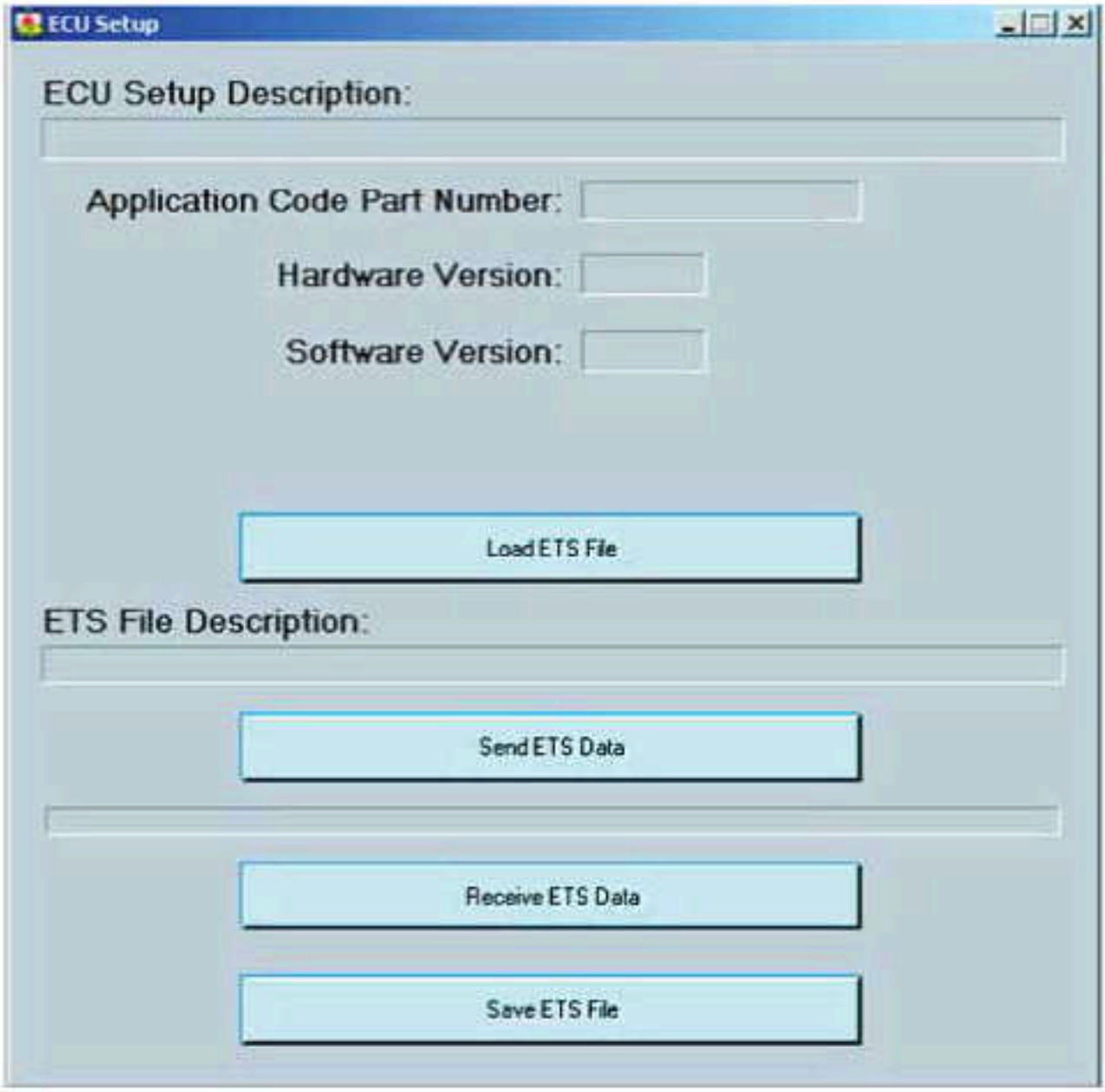
Figure 1029.



A Suction hose
B Hydraulic pipe 1
C Hydraulic pipe 2
D Bolts

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Figure 1141.



ETS Function

The ETS function provides a means of loading and uploading gearbox ECU software setup files between the ECU and the computer. On earlier versions of servicemaster a separate program was required to perform this function. This is now incorporated within shiftmaster diagnostics 2.3. The setup files have a file name extension of.ets.

- Load ETS File: A revision to the gearbox ECU software file may be supplied by JCB for installation on particular ECU models. Store the file on the computer which is to be connected to the gearbox ECU. The shiftmaster diagnostic program needs to open this file and obtain the software version and other applicable information to make sure it is compatible with the ECU connected to the computer.
- Send ETS Data: This allows the computer to send a software setup file to the gearbox ECU.
- Receive ETS Data: This reads the existing setup file from the gearbox ECU.
- Save ETS File: This saves the data received from the ECU onto the computer.

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