The group G is isomorphic to the group labelled by [40, 3] in the Small Groups library.
Ordinary character table of $G \cong$ C5 : C8:

	$1a$	$5a$	$2a$	$10a$	$4a$	$4b$	$8a$	$8b$	$8c$	$8d$
χ_1	1	1	1	1	1	1	1	1	1	1
χ_2	1	1	1	1	1	1	-1	-1	-1	-1
χ_3	1	1	1	1	-1	-1	$E(4)$	$E(4)$	$-E(4)$	$-E(4)$
χ_4	1	1	1	1	-1	-1	$-E(4)$	$-E(4)$	$E(4)$	$E(4)$
χ_5	1	1	-1	-1	$E(4)$	$-E(4)$	$E(8)$	$-E(8)$	$E(8)^3$	$-E(8)^3$
χ_6	1	1	-1	-1	$E(4)$	$-E(4)$	$-E(8)$	$E(8)$	$-E(8)^3$	$E(8)^3$
χ_7	1	1	-1	-1	$-E(4)$	$E(4)$	$E(8)^3$	$-E(8)^3$	$E(8)$	$-E(8)$
χ_8	1	1	-1	-1	$-E(4)$	$E(4)$	$-E(8)^3$	$E(8)^3$	$-E(8)$	$E(8)$
χ_9	4	-1	4	-1	0	0	0	0	0	0
χ_{10}	4	-1	-4	1	0	0	0	0	0	0

Trivial source character table of $G \cong$ C5 : C8 at $p = 2$:

Normalisers N_i	N_1		N_2		N_3	N_4
p-subgroups of G up to conjugacy in G	P_1		P_2		P_3	P_4
Representatives $n_j \in N_i$	$1a$	$5a$	$1a$	$5a$	$1a$	$1a$
$1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 1 \cdot \chi_5 + 1 \cdot \chi_6 + 1 \cdot \chi_7 + 1 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10}$	8	8	0	0	0	0
$0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 1 \cdot \chi_9 + 1 \cdot \chi_{10}$	8	-2	0	0	0	0
$1 \cdot \chi_1 + 1 \cdot \chi_2 + 1 \cdot \chi_3 + 1 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10}$	4	4	4	4	0	0
$0 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 1 \cdot \chi_9 + 0 \cdot \chi_{10}$	4	-1	4	-1	0	0
$1 \cdot \chi_1 + 1 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10}$	2	2	2	2	2	0
$1 \cdot \chi_1 + 0 \cdot \chi_2 + 0 \cdot \chi_3 + 0 \cdot \chi_4 + 0 \cdot \chi_5 + 0 \cdot \chi_6 + 0 \cdot \chi_7 + 0 \cdot \chi_8 + 0 \cdot \chi_9 + 0 \cdot \chi_{10}$	1	1	1	1	1	1

$P_1 = Group([()]) \cong 1$
$P_2 = Group([(1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40)]) \cong C2$
$P_3 = Group([(1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40), (1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24)]) \cong C4$
$P_4 = Group([(1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40), (1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24), (1,2,3,6,4,7,9,13)(5,16,34,30,11,23,39,36)(8,18,37,27,15,25,40,20)(10,22,35,31,17,29,28,24)(12,32,26,14,19,38,33,21)]) \cong C8$

$N_1 = Group([(1,2,3,6,4,7,9,13)(5,16,34,30,11,23,39,36)(8,18,37,27,15,25,40,20)(10,22,35,31,17,29,28,24)(12,32,26,14,19,38,33,21), (1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24), (1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40), (1,5,12,20,28)(2,8,16,24,32)(3,10,18,26,34)(4,11,19,27,35)(6,14,22,30,37)(7,15,23,31,38)(9,17,25,33,39)(13,21,29,36,40)]) \cong C5 : C8$
$N_2 = Group([(1,2,3,6,4,7,9,13)(5,16,34,30,11,23,39,36)(8,18,37,27,15,25,40,20)(10,22,35,31,17,29,28,24)(12,32,26,14,19,38,33,21), (1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24), (1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40), (1,5,12,20,28)(2,8,16,24,32)(3,10,18,26,34)(4,11,19,27,35)(6,14,22,30,37)(7,15,23,31,38)(9,17,25,33,39)(13,21,29,36,40)]) \cong C5 : C8$
$N_3 = Group([(1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24), (1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40), (1,2,3,6,4,7,9,13)(5,16,34,30,11,23,39,36)(8,18,37,27,15,25,40,20)(10,22,35,31,17,29,28,24)(12,32,26,14,19,38,33,21)]) \cong C8$
$N_4 = Group([(1,2,3,6,4,7,9,13)(5,16,34,30,11,23,39,36)(8,18,37,27,15,25,40,20)(10,22,35,31,17,29,28,24)(12,32,26,14,19,38,33,21), (1,3,4,9)(2,6,7,13)(5,34,11,39)(8,37,15,40)(10,35,17,28)(12,26,19,33)(14,38,21,32)(16,30,23,36)(18,27,25,20)(22,31,29,24), (1,4)(2,7)(3,9)(5,11)(6,13)(8,15)(10,17)(12,19)(14,21)(16,23)(18,25)(20,27)(22,29)(24,31)(26,33)(28,35)(30,36)(32,38)(34,39)(37,40)]) \cong C8$