

Shop Manual

HYDRAULIC
EXCAVATOR

HB205 -1
HB215LC-1

SERIAL NUMBERS HB205- 1001 and up
HB215LC-1001

Hybrid

ecot3

KOMATSU

Notice of revision

4th revision

The affected pages are indicated by the use of the following marks. It is requested that necessary actions must be taken to these pages according to the list below.

2013/03

Mark	Indication	Action required
○	Page to be newly added	Add
●	Page to be replaced	Replace
()	Page to be deleted	Discard

List of revised pages

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
●	1	(04)		00-25			10-1			10-41	
●	2	(04)		00-26			10-2			10-42	
●	3	(04)		00-27			10-3			10-43	
●	4	(04)		00-28			10-4			10-44	
●	5	(04)		00-29			10-5			10-45	
●	6	(04)		00-30			10-6			10-46	
●	7	(04)		00-31			10-7			10-47	
●	8	(04)		00-32			10-8			10-48	
	00-1			00-33			10-9			10-49	
	00-2	(01)		00-34			10-10			10-50	
	00-3	(01)		00-35			10-11			10-51	
	00-3-1	(03)		00-36	(03)		10-12	(03)		10-52	
	00-3-2	(03)		00-37	(03)	●	10-13	(04)		10-53	
	00-3-3	(03)		00-38	(03)	○	10-13-1	(04)		10-54	
	00-3-4	(03)		00-39	(03)	○	10-13-2	(04)		10-55	
	00-3-5	(03)		00-40	(03)		10-14			10-56	
	00-3-6	(03)		00-41	(03)		10-15			10-57	
	00-3-7	(03)		00-42			10-16			10-58	
	00-3-8	(03)		00-43			10-17			10-59	
	00-3-9	(03)		00-44			10-18			10-60	
	00-3-10	(03)		00-45			10-19			10-61	
	00-4	(03)		00-46			10-20			10-62	
	00-5	(03)		00-47			10-21			10-63	
	00-6			00-48			10-22			10-64	
	00-7			00-49			10-23			10-65	
	00-8			00-50			10-24			10-66	
	00-9			00-51			10-25			10-67	
	00-10			00-52			10-26			10-68	
	00-11			00-53			10-27			10-69	
	00-12			00-54			10-28			10-70	
	00-13			01-1			10-29			10-71	
	00-14			01-2			10-30			10-72	
	00-15			01-3			10-31			10-73	
	00-16			01-4			10-32			10-74	
	00-17			01-5			10-33			10-75	
	00-18			01-6			10-34			10-76	
	00-19			01-7			10-35			10-77	
	00-20			01-8			10-36			10-78	
	00-21			01-9			10-37			10-79	
	00-22			01-10			10-38			10-80	
	00-23			01-11	(03)		10-39			10-81	
	00-24			01-12	(03)		10-40			10-82	

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	10-83			10-135			10-187			30-27	(01)
	10-84			10-136			10-188			30-28	(01)
	10-85			10-137			10-189			30-29	(01)
	10-86			10-138			10-190			30-30	(01)
	10-87			10-139			10-191			30-31	(01)
	10-88			10-140			10-192			30-32	(01)
	10-89			10-141			10-193			30-33	(01)
	10-90			10-142			10-194			30-34	(01)
	10-91			10-143			10-195			30-35	(01)
	10-92			10-144			10-196			30-36	(01)
	10-93			10-145			10-197			30-37	(01)
	10-94			10-146			10-198			30-38	(01)
	10-95			10-147			20-1	(01)		30-39	(01)
	10-96			10-148			20-2	(01)		30-40	(01)
	10-97			10-149			20-3	(01)		30-41	(01)
	10-98			10-150			20-4	(01)		30-42	(01)
	10-99			10-151			20-5	(01)		30-43	(01)
	10-100			10-152			20-6	(01)		30-44	(01)
	10-101			10-153			20-7	(01)		30-45	(01)
	10-102			10-154			20-8	(01)		30-46	(01)
	10-103			10-155	(03)		20-9	(01)		30-47	(01)
	10-104			10-156			20-10	(01)		30-48	(01)
	10-105			10-157			20-11	(01)		30-49	(01)
	10-106			10-158			20-12	(01)		30-50	(01)
	10-107			10-159			20-13	(01)		30-51	(01)
	10-108			10-160			20-14	(01)		30-52	(01)
	10-109			10-161			30-1	(01)		30-53	(01)
	10-110			10-162			30-2	(01)		30-54	(01)
	10-111			10-163			30-3	(01)		30-55	(01)
	10-112			10-164			30-4	(01)		30-56	(01)
	10-113			10-165	(03)		30-5	(01)		30-57	(01)
	10-114			10-166			30-6	(01)		30-58	(01)
	10-115			10-167			30-7	(03)		30-59	(01)
	10-116			10-168			30-8	(01)		30-60	(01)
	10-117			10-169			30-9	(01)		30-61	(01)
	10-118			10-170			30-10	(01)		30-62	(01)
	10-119			10-171			30-11	(01)		30-63	(01)
	10-120			10-172			30-12	(01)		30-64	(01)
	10-121			10-173			30-13	(01)		30-65	(01)
	10-122			10-174			30-14	(01)		30-66	(01)
	10-123			10-175			30-15	(01)	●	30-67	(04)
	10-124			10-176			30-16	(01)		30-68	(03)
	10-125			10-177			30-17	(01)		30-69	(01)
	10-126			10-178			30-18	(01)		30-70	(01)
	10-127			10-179			30-19	(01)		30-71	(01)
	10-128			10-180			30-20	(01)		30-72	(01)
	10-129			10-181			30-21	(01)		30-73	(01)
	10-130			10-182			30-22	(01)		30-74	(01)
	10-131			10-183			30-23	(01)		30-75	(01)
	10-132			10-184			30-24	(01)		30-76	(01)
	10-133			10-185			30-25	(01)		30-77	(01)
	10-134			10-186			30-26	(01)		30-78	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	30-79	(01)		30-131	(01)		40-37	(01)		40-89	(01)
	30-80	(01)		30-132	(01)		40-38	(01)		40-90	(01)
	30-81	(01)		30-133	(01)		40-39	(01)		40-91	(01)
	30-82	(01)		30-134	(01)		40-40	(01)		40-92	(01)
	30-83	(01)		30-135	(01)		40-41	(01)		40-93	(01)
	30-84	(01)		30-136	(01)		40-42	(01)		40-94	(01)
	30-85	(01)		30-137	(01)		40-43	(01)		40-95	(01)
	30-86	(01)		30-138	(01)		40-44	(03)		40-96	(01)
	30-87	(01)		30-139	(01)		40-45	(03)		40-97	(01)
	30-88	(01)		30-140	(01)		40-46	(03)		40-98	(01)
	30-89	(01)		30-141	(01)		40-47	(03)		40-99	(01)
	30-90	(01)		30-142	(01)		40-48	(03)		40-100	(01)
	30-91	(03)		30-143	(01)		40-49	(03)		40-101	(01)
	30-92	(03)		30-144	(01)		40-50	(03)		40-102	(01)
	30-93	(01)		30-145	(01)		40-51	(03)		40-103	(01)
	30-94	(01)		30-146	(01)		40-52	(01)		40-104	(01)
	30-95	(01)		40-1	(01)		40-53	(01)		40-105	(01)
	30-96	(01)		40-2	(03)		40-54	(01)		40-106	(01)
	30-97	(01)		40-3	(03)		40-55	(01)		40-107	(01)
	30-98	(01)		40-4	(03)		40-56	(01)		40-108	(01)
	30-99	(01)		40-5	(03)		40-57	(01)		40-109	(01)
	30-100	(01)		40-6	(03)		40-58	(01)		40-110	(01)
	30-101	(01)		40-7	(03)		40-59	(01)		40-111	(03)
	30-102	(01)		40-8	(03)		40-60	(01)		40-111-1	(03)
	30-103	(01)		40-9	(01)		40-61	(01)		40-111-2	(03)
	30-104	(01)		40-10	(01)		40-62	(01)		40-112	(01)
	30-105	(01)		40-11	(01)		40-63	(01)		40-113	(01)
	30-106	(01)		40-12	(01)		40-64	(01)		40-114	(01)
	30-107	(01)		40-13	(01)		40-65	(01)		40-115	(01)
	30-108	(01)		40-14	(01)		40-66	(01)		40-116	(03)
	30-109	(01)		40-15	(01)		40-67	(01)		40-117	(01)
	30-110	(01)		40-16	(01)		40-68	(01)		40-118	(01)
	30-111	(01)		40-17	(01)		40-69	(01)		40-119	(01)
	30-112	(01)		40-18	(01)		40-70	(01)		40-120	(01)
	30-113	(01)		40-19	(01)		40-71	(01)		40-121	(01)
	30-114	(03)		40-20	(01)		40-72	(01)		40-122	(01)
	30-115	(01)		40-21	(01)		40-73	(01)		40-123	(01)
	30-116	(01)		40-22	(01)		40-74	(01)		40-124	(01)
	30-117	(01)		40-23	(01)		40-75	(01)		40-125	(01)
	30-118	(01)		40-24	(01)		40-76	(01)		40-126	(01)
	30-119	(01)		40-25	(01)		40-77	(01)		40-127	(01)
	30-120	(01)		40-26	(01)		40-78	(01)		40-128	(01)
	30-121	(01)		40-27	(01)		40-79	(01)		40-129	(01)
	30-122	(01)		40-28	(01)		40-80	(01)		40-130	(01)
	30-123	(03)		40-29	(01)		40-81	(01)		40-131	(01)
	30-124	(01)		40-30	(01)		40-82	(01)		40-132	(01)
	30-125	(01)		40-31	(01)		40-83	(01)		40-133	(01)
	30-126	(01)		40-32	(01)		40-84	(01)		40-134	(01)
	30-127	(01)		40-33	(01)		40-85	(01)		40-135	(01)
	30-128	(01)		40-34	(01)		40-86	(01)		40-136	(01)
	30-129	(01)		40-35	(01)		40-87	(01)		40-137	(01)
	30-130	(01)		40-36	(01)		40-88	(01)		40-138	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	40-139	(01)		40-191	(01)		40-243	(01)		40-295	(01)
	40-140	(01)		40-192	(01)		40-244	(01)		40-296	(01)
	40-141	(01)		40-193	(01)		40-245	(01)		40-297	(01)
	40-142	(01)		40-194	(01)		40-246	(01)		40-298	(01)
	40-143	(01)		40-195	(01)		40-247	(01)		40-299	(01)
	40-144	(01)		40-196	(01)		40-248	(01)		40-300	(01)
	40-145	(01)		40-197	(01)		40-249	(01)		40-301	(01)
	40-146	(01)		40-198	(01)		40-250	(01)		40-302	(01)
	40-147	(01)		40-199	(01)		40-251	(01)		40-303	(01)
	40-148	(01)		40-200	(01)		40-252	(01)		40-304	(01)
	40-149	(01)		40-201	(01)		40-253	(01)		40-305	(01)
	40-150	(01)		40-202	(01)		40-254	(01)		40-306	(01)
	40-151	(01)		40-203	(01)		40-255	(01)		40-307	(01)
	40-152	(01)		40-204	(01)		40-256	(01)		40-308	(01)
	40-153	(01)		40-205	(01)		40-257	(01)		40-309	(01)
	40-154	(01)		40-206	(01)		40-258	(01)		40-310	(01)
	40-155	(01)		40-207	(01)		40-259	(01)		40-311	(01)
●	40-156	(04)		40-208	(01)		40-260	(01)		40-312	(01)
	40-157	(01)		40-209	(01)		40-261	(01)		40-313	(01)
	40-158	(01)		40-210	(01)		40-262	(01)		40-314	(01)
	40-159	(01)		40-211	(01)		40-263	(01)		40-315	(01)
	40-160	(01)		40-212	(01)		40-264	(01)		40-316	(01)
	40-161	(01)		40-213	(01)		40-265	(01)		40-317	(01)
	40-162	(01)		40-214	(01)		40-266	(01)		40-318	(01)
	40-163	(01)		40-215	(01)		40-267	(01)		40-319	(01)
	40-164	(01)		40-216	(01)		40-268	(01)		40-320	(01)
	40-165	(01)		40-217	(01)		40-269	(01)		40-321	(01)
	40-166	(01)		40-218	(01)		40-270	(01)		40-322	(01)
	40-167	(01)		40-219	(01)		40-271	(01)		40-323	(01)
	40-168	(01)		40-220	(01)		40-272	(01)		40-324	(01)
	40-169	(01)		40-221	(01)		40-273	(01)		40-325	(01)
	40-170	(01)		40-222	(01)		40-274	(01)		40-326	(01)
	40-171	(01)		40-223	(01)		40-275	(01)		40-327	(01)
	40-172	(01)		40-224	(01)		40-276	(01)		40-328	(01)
	40-173	(01)		40-225	(01)		40-277	(01)		40-329	(01)
	40-174	(01)		40-226	(01)		40-278	(01)		40-330	(01)
	40-175	(01)		40-227	(01)		40-279	(01)		40-331	(01)
	40-176	(01)		40-228	(01)		40-280	(01)		40-332	(03)
	40-177	(01)		40-229	(01)		40-281	(01)	●	40-333	(04)
	40-178	(01)		40-230	(01)		40-282	(01)	○	40-333-1	(04)
	40-179	(01)		40-231	(01)		40-283	(01)	○	40-333-2	(04)
	40-180	(01)		40-232	(01)		40-284	(01)		40-334	(01)
	40-181	(01)		40-233	(01)		40-285	(01)		40-335	(01)
	40-182	(01)		40-234	(01)		40-286	(01)		40-336	(01)
	40-183	(01)		40-235	(01)		40-287	(01)		40-337	(01)
	40-184	(01)		40-236	(01)		40-288	(01)		40-338	(01)
	40-185	(01)		40-237	(01)		40-289	(01)		40-339	(01)
	40-186	(01)		40-238	(01)		40-290	(01)		40-340	(01)
	40-187	(01)		40-239	(01)		40-291	(01)		40-341	(01)
	40-188	(01)		40-240	(01)		40-292	(01)		40-342	(01)
	40-189	(01)		40-241	(01)		40-293	(01)		40-343	(01)
	40-190	(01)		40-242	(01)		40-294	(01)		40-344	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	40-345	(01)		40-395	(01)		40-441	(01)		40-493	(01)
	40-346	(01)		40-396	(03)		40-442	(01)		40-494	(01)
	40-347	(01)		40-397	(01)		40-443	(01)		40-495	(01)
	40-348	(01)		40-398	(03)		40-444	(01)		40-496	(01)
	40-349	(01)		40-399	(03)		40-445	(01)		40-497	(01)
	40-350	(01)		40-400	(03)		40-446	(01)		40-498	(01)
	40-351	(01)		40-401	(01)		40-447	(01)		40-499	(01)
	40-352	(01)		40-402	(01)		40-448	(01)		40-500	(01)
	40-353	(01)		40-403	(03)		40-449	(01)		40-501	(01)
	40-354	(01)		40-404	(03)		40-450	(01)		40-502	(01)
	40-355	(01)		40-404-1	(03)		40-451	(01)		40-503	(01)
	40-356	(01)		40-404-2	(03)		40-452	(01)		40-504	(01)
	40-357	(01)		40-404-3	(03)		40-453	(01)		40-505	(01)
	40-358	(01)		40-404-4	(03)		40-454	(01)		40-506	(01)
	40-359	(03)		40-405	(03)		40-455	(01)		40-507	(01)
	40-360	(01)		40-406	(03)		40-456	(01)		40-508	(01)
	40-361	(01)		40-407	(03)		40-457	(01)		40-509	(01)
	40-362	(03)		40-407-1	(03)		40-458	(01)		40-510	(01)
	40-363	(01)		40-407-2	(03)		40-459	(01)		40-511	(01)
	40-364	(01)		40-408	(03)		40-460	(01)		40-512	(01)
	40-365	(01)		40-409	(03)		40-461	(01)		40-513	(01)
	40-366	(01)		40-410	(03)		40-462	(01)		40-514	(01)
	40-367	(01)		40-411	(01)		40-463	(01)		40-515	(01)
	40-368	(01)		40-412	(01)		40-464	(01)		40-516	(01)
	40-369	(01)		40-413	(01)		40-465	(01)		40-517	(01)
	40-370	(01)		40-414	(03)		40-466	(01)		40-518	(01)
	40-371	(01)		40-415	(03)		40-467	(01)		40-519	(01)
	40-372	(01)		40-416	(03)		40-468	(01)		40-520	(01)
	40-373	(01)		40-417	(01)		40-469	(01)		40-521	(01)
	40-374	(01)		40-418	(01)		40-470	(01)		40-522	(01)
	40-375	(01)		40-419	(01)		40-471	(01)		40-523	(01)
	40-376	(01)		40-420	(01)		40-472	(01)		40-524	(01)
	40-377	(01)		40-421	(01)		40-473	(01)		40-525	(01)
	40-378	(01)		40-422	(01)		40-474	(01)		40-526	(01)
	40-379	(01)		40-423	(03)		40-475	(01)		40-527	(01)
	40-380	(01)		40-424	(03)		40-476	(01)		40-528	(01)
	40-381	(01)		40-425	(03)		40-477	(01)		40-529	(01)
	40-382	(01)		40-426	(03)		40-478	(01)		40-530	(01)
	40-383	(01)		40-427	(03)		40-479	(01)		40-531	(01)
	40-384	(01)		40-428	(03)		40-480	(01)		40-532	(01)
	40-385	(03)		40-429	(01)		40-481	(01)		40-533	(01)
	40-386	(01)		40-430	(01)		40-482	(01)		40-534	(01)
	40-387	(01)		40-431	(01)		40-483	(01)		40-535	(01)
	40-388	(01)		40-432	(01)		40-484	(01)		40-536	(01)
	40-389	(01)		40-433	(01)		40-485	(01)		40-537	(01)
	40-390	(01)		40-434	(01)		40-486	(01)		40-538	(01)
	40-391	(01)		40-435	(01)		40-487	(01)		40-539	(01)
	40-392	(03)		40-436	(01)		40-488	(01)		40-540	(01)
	40-393	(03)		40-437	(01)		40-489	(01)		40-541	(01)
	40-393-1	(03)		40-438	(01)		40-490	(01)		40-542	(01)
	40-393-2	(03)		40-439	(01)		40-491	(01)		40-543	(01)
	40-394	(03)		40-440	(01)		40-492	(01)		40-544	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	40-545	(01)		50-43	(01)		50-95	(01)	●	50-141	(04)
	40-546	(01)		50-44	(01)		50-96	(01)	●	50-142	(04)
	40-547	(01)		50-45	(01)		50-97	(01)	●	50-143	(04)
	40-548	(01)		50-46	(01)		50-98	(01)	●	50-144	(04)
	40-549	(01)		50-47	(01)		50-99	(01)	○	50-144-1	(04)
	40-550	(01)		50-48	(01)		50-100	(01)	○	50-144-2	(04)
	40-551	(01)		50-49	(01)		50-101	(01)	○	50-144-3	(04)
	40-552	(01)		50-50	(01)		50-102	(01)	○	50-144-4	(04)
	40-553	(01)		50-51	(01)		50-103	(01)	○	50-144-5	(04)
	40-554	(01)		50-52	(01)		50-104	(01)	○	50-144-6	(04)
	50-1	(01)		50-53	(01)		50-105	(01)		50-145	(01)
	50-2	(01)		50-54	(01)		50-106	(01)		50-146	(01)
	50-3	(01)		50-55	(01)		50-107	(01)		50-147	(01)
	50-4	(01)		50-56	(01)		50-108	(01)		50-148	(01)
	50-5	(01)		50-57	(01)		50-109	(03)		50-149	(01)
	50-6	(01)		50-58	(01)		50-110	(01)		50-150	(01)
	50-7	(01)		50-59	(01)		50-111	(01)		50-151	(01)
	50-8	(01)		50-60	(01)		50-112	(01)		50-152	(01)
	50-9	(01)		50-61	(01)		50-113	(01)		50-153	(01)
	50-10	(01)		50-62	(01)		50-114	(01)		50-154	(01)
●	50-11	(04)		50-63	(01)		50-115	(01)		50-155	(01)
●	50-12	(04)		50-64	(01)		50-116	(01)		50-156	(01)
	50-13	(01)		50-65	(01)		50-117	(01)		50-157	(01)
	50-14	(01)		50-66	(01)		50-118	(01)		50-158	(01)
	50-15	(01)		50-67	(01)		50-119	(01)		50-159	(01)
	50-16	(01)		50-68	(01)		50-120	(01)		50-160	(01)
	50-17	(01)		50-69	(01)		50-121	(03)		50-161	(01)
	50-18	(01)		50-70	(01)	●	50-122	(04)		50-162	(01)
	50-19	(01)		50-71	(01)	●	50-123	(04)		50-163	(01)
	50-20	(01)		50-72	(01)	●	50-124	(04)		50-164	(01)
	50-21	(01)		50-73	(01)	●	50-125	(04)		50-165	(01)
	50-22	(01)		50-74	(01)	●	50-126	(04)		50-166	(01)
	50-23	(01)		50-75	(01)	●	50-127	(04)		50-167	(01)
	50-24	(01)		50-76	(01)	●	50-128	(04)		50-168	(01)
	50-25	(01)		50-77	(01)	○	50-128-1	(04)		50-169	(01)
	50-26	(01)		50-78	(01)	○	50-128-2	(04)		50-170	(01)
	50-27	(01)		50-79	(01)	○	50-128-3	(04)		50-171	(01)
	50-28	(01)		50-80	(01)	○	50-128-4	(04)		50-172	(01)
	50-29	(01)		50-81	(01)	○	50-128-5	(04)		50-173	(01)
	50-30	(01)		50-82	(01)	○	50-128-6	(04)		50-174	(01)
	50-31	(01)		50-83	(01)		50-129	(01)		50-175	(01)
	50-32	(01)		50-84	(01)		50-130	(01)		50-176	(01)
	50-33	(01)		50-85	(01)		50-131	(01)		50-177	(01)
	50-34	(01)		50-86	(01)		50-132	(01)		50-178	(01)
	50-35	(01)		50-87	(01)		50-133	(01)		50-179	(01)
	50-36	(01)		50-88	(01)		50-134	(01)		50-180	(01)
	50-37	(01)		50-89	(01)		50-135	(01)		50-181	(01)
	50-38	(01)		50-90	(03)		50-136	(01)		50-182	(01)
	50-39	(01)		50-91	(03)		50-137	(01)		50-183	(01)
	50-40	(01)		50-92	(03)		50-138	(01)		50-184	(01)
	50-41	(01)		50-93	(01)		50-139	(01)		50-185	(01)
	50-42	(01)		50-94	(01)		50-140	(01)		50-186	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	50-187	(01)		50-239	(01)		60-37			80-23	(01)
	50-188	(01)		50-240	(01)		60-38			80-24	(01)
	50-189	(01)		50-241	(01)		60-39			80-25	(01)
	50-190	(01)		50-242	(01)		60-40			80-26	(01)
	50-191	(01)		50-243	(01)		60-41			80-27	(01)
	50-192	(03)		50-244	(01)		60-42			80-28	(01)
	50-193	(01)		50-245	(01)		60-43			80-29	(01)
	50-194	(01)		50-246	(01)		60-44			80-30	(01)
	50-195	(01)		50-247	(01)		60-45			80-31	(01)
	50-196	(01)		50-248	(01)		60-46			80-32	(01)
	50-197	(01)		50-249	(03)		60-47			80-33	(01)
	50-198	(01)		50-250	(03)		60-48			80-34	(01)
	50-199	(01)		50-251	(01)		60-49			80-35	(01)
	50-200	(01)		50-252	(01)		60-50			80-36	(01)
	50-201	(01)		50-253	(01)		60-51			80-37	(01)
	50-202	(01)		50-254	(01)		60-52			80-38	(01)
	50-203	(01)		60-1			60-53			80-39	(01)
	50-204	(01)		60-2			60-54			80-40	(01)
	50-205	(01)		60-3			60-55			80-41	(01)
	50-206	(01)		60-4			60-56			80-42	(01)
	50-207	(01)		60-5			60-57			80-43	(01)
	50-208	(01)		60-6			60-58			80-44	(01)
	50-209	(01)		60-7			60-59			80-45	(01)
	50-210	(01)		60-8			60-60			80-46	(01)
	50-211	(01)		60-9			60-61			80-47	(01)
	50-212	(01)		60-10			60-62			80-48	(01)
	50-213	(01)		60-11			60-63			80-49	(01)
	50-214	(01)		60-12			60-64			80-50	(01)
	50-215	(01)		60-13			60-65			80-51	(01)
	50-216	(01)		60-14			60-66			80-52	(01)
	50-217	(01)		60-15			80-1	(01)		80-53	(01)
	50-218	(01)		60-16			80-2	(01)		80-54	(01)
	50-219	(01)		60-17			80-3	(01)		80-55	(01)
	50-220	(01)		60-18			80-4	(01)		80-56	(01)
	50-221	(01)		60-19			80-5	(01)		80-57	(01)
	50-222	(01)		60-20			80-6	(01)		80-58	(01)
	50-223	(01)		60-21			80-7	(01)		80-59	(01)
	50-224	(01)		60-22			80-8	(01)		80-60	(01)
	50-225	(01)		60-23			80-9	(01)		80-61	(01)
	50-226	(01)		60-24			80-10	(01)		80-62	(01)
	50-227	(01)		60-25			80-11	(01)		80-63	(01)
	50-228	(01)		60-26			80-12	(01)		80-64	(01)
	50-229	(01)		60-27			80-13	(01)		80-65	(01)
	50-230	(01)		60-28			80-14	(01)		80-66	(01)
	50-231	(01)		60-29			80-15	(01)		80-67	(01)
	50-232	(01)		60-30			80-16	(01)		80-68	(01)
	50-233	(01)		60-31			80-17	(01)		80-69	(01)
	50-234	(01)		60-32			80-18	(01)		80-70	(01)
	50-235	(01)		60-33			80-19	(01)		80-71	(01)
	50-236	(01)		60-34			80-20	(01)		80-72	(01)
	50-237	(01)		60-35			80-21	(01)		80-73	(01)
	50-238	(01)		60-36			80-22	(01)		80-74	(01)

Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number	Mark	Page	Revision number
	80-75	(01)									
	80-76	(01)									
	80-77	(01)									
	80-78	(01)									
	80-79	(01)									
	80-80	(01)									
	80-81	(01)									
	80-82	(01)									
	90-1										
	90-2										
	90-3										
	90-4										
	90-5										
	90-6										
	90-7										
	90-9										
	90-10										
	90-11										
	90-12										
	90-13										
	90-15										
	90-17										
	90-19										
	90-21										
	90-23										
	1	(01)									
	2	(03)									
	3	(03)									
	4	(03)									
	5	(03)									
	6	(03)									
	7	(03)									
●	Colophon	(04)									

SHOP MANUAL

HYDRAULIC EXCAVATOR

HB205-1

HB215LC-1

Machine model	Serial number
HB205-1	1001 and up
HB215LC-1	1001 and up

00 Index and foreword

Table of Contents

00 Index and Foreword	
Table of Contents.....	00- 2
Table of Contents.....	00- 2
Foreword and general information	00- 4
Safety notice	00- 4
How to read the shop manual	00- 9
Explanation of terms for maintenance standard	00- 11
Handling of hydraulic components.....	00- 13
Method of disconnecting and connecting push-pull type coupler	00- 15
Handling of electric equipment.....	00- 18
How to read electric wire code.....	00- 28
Precautions when performing work.....	00- 33
Handling of hybrid devices and high-voltage wirings	00- 36
Standard tightening torque table.....	00- 42
List of Abbreviation	00- 46
Conversion table	00- 50
01 Specifications	
Specifications.....	01- 3
Outline of hybrid system	01- 3
Specification dimension drawing.....	01- 4
Working range diagram.....	01- 5
Specifications.....	01- 6
Weight table	01- 9
Table of fuel, coolant and lubricants	01- 11
10 Structure and function	
Engine and cooling system	10- 3
Engine related parts.....	10- 3
Cooling system	10- 4
Hybrid relation	10- 6
Configuration and safety functions of hybrid system	10- 6
Cooling system of hybrid component.....	10- 10
Motor-generator	10- 12
Swing electric motor.....	10- 13
Electric control unit.....	10- 14
High-voltage wiring (power cable).....	10- 15
Water pump	10- 16
Power train system	10- 18
Power train.....	10- 18
Swing circle.....	10- 19
Swing machinery.....	10- 20
Swing brake	10- 22
Final drive	10- 24
Undercarriage and frame	10- 26
Track frame and idler cushion.....	10- 26
Hydraulic system.....	10- 28
Hydraulic components layout drawing	10- 28
Valve control	10- 30
Hydraulic tank	10- 31
CLSS.....	10- 32
Main pump	10- 36

Control valve.....	10- 58
Functions and operation by valve.....	10- 70
Travel motor.....	10-107
PPC valve.....	10-117
Solenoid valve.....	10-136
Attachment circuit selector valve.....	10-138
Return oil filter.....	10-140
Center swivel joint.....	10-142
Accumulator.....	10-143
Electrical system.....	10-144
Electrical control system.....	10-144
Machine monitor system.....	10-174
KOMTRAX system.....	10-190
Sensors.....	10-192
20 Standard value table	
Standard value table.....	20- 3
Standard value table for engine.....	20- 3
Standard value table for machine.....	20- 4
30 Testing and adjusting	
Tools for testing, adjusting and troubleshooting.....	30- 4
Tools for testing, adjusting and troubleshooting.....	30- 4
Engine and cooling system.....	30- 9
Testing engine speed.....	30- 9
Testing boost pressure.....	30- 11
Checking exhaust gas color.....	30- 12
Adjusting valve clearance.....	30- 13
Testing compression pressure.....	30- 15
Testing blowby pressure.....	30- 18
Testing engine oil pressure.....	30- 19
Handling fuel system parts.....	30- 20
Releasing remaining pressure from fuel system.....	30- 20
Testing fuel system pressure.....	30- 21
Cylinder cut-out test mode operation.....	30- 23
No injection cranking operation.....	30- 23
Testing fuel delivery, return rate and leakage.....	30- 24
Bleeding air from fuel circuit.....	30- 28
Testing fuel circuit for leakage.....	30- 29
Handling of controller high-voltage circuit.....	30- 30
Testing and adjusting air conditioner compressor belt tension.....	30- 31
Replacement of fan belt.....	30- 32
Undercarriage and frame.....	30- 33
Testing swing circle bearing clearance.....	30- 33
Testing and adjusting track tension.....	30- 34
Hydraulic system.....	30- 37
Testing and adjusting hydraulic oil pressure in work equipment and travel circuits.....	30- 37
Testing source pressure of control circuit.....	30- 40
Testing and adjusting oil pressure in pump PC control circuit.....	30- 41
Testing and adjusting oil pressure in pump LS control circuit.....	30- 44
Testing solenoid valve output pressure.....	30- 48
Testing PPC valve output pressure.....	30- 51
Adjusting play of work equipment and swing PPC valves.....	30- 53
Checking parts which cause hydraulic drift of work equipment.....	30- 54

Releasing remaining pressure from hydraulic circuit	30- 56
Testing oil leakage	30- 57
Bleeding air from each part.....	30- 59
Cab and its attachments	30- 61
Checking cab tipping stopper.....	30- 61
Adjusting mirrors	30- 62
Angle adjustment of rear view camera.....	30- 65
Hybrid relation	30- 66
Testing swing holding brake	30- 66
Cleaning and replacement of oil filter of swing electric motor	30- 67
Operation check of swing emergency stop switch	30- 68
Electrical system	30- 70
Special functions of machine monitor	30- 70
Handling voltage circuit of engine controller	30-132
Precautions related to hybrid machines.....	30-133
Preparation work for troubleshooting of electrical system	30-134
Procedure for testing diodes	30-140
Pm Clinic.....	30-141
Pm Clinic service	30-141
40 Troubleshooting	
General information on troubleshooting	40- 10
Points to remember when troubleshooting	40- 10
Sequence of events in troubleshooting.....	40- 11
Checks before troubleshooting	40- 12
Classification and procedures for troubleshooting	40- 41
Failure codes table.....	40- 44
Symptom and troubleshooting numbers	40- 52
Information in troubleshooting table.....	40- 55
Troubleshooting method for open circuit in wiring harness of pressure sensor system	40- 57
Connector list and layout	40- 59
Connection table for connector pin numbers	40- 70
T- branch box and T- branch adapter table	40-106
Fuse location table.....	40-109
Troubleshooting by failure code.....	40-111
Failure code [989L00] Engine Controller Lock Caution 1	40-111
Failure code [989M00] Engine Controller Lock Caution 2	40-111
Failure code [989N00] Engine Controller Lock Caution 3.....	40-111-1
Failure code [AA10NX] Air Cleaner Clogging	40-111-2
Failure code [AB00KE] Charge Voltage Low	40-112
Failure code [B@BAZG] Eng Oil Press Low.....	40-114
Failure code [B@BAZK] Eng Oil Level Low.....	40-115
Failure code [B@BCNS] Eng Water Overheat	40-116
Failure code [B@BCZK] Eng Water Level Low	40-118
Failure code [B@HANS] Hyd Oil Overheat.....	40-120
Failure code [CA111] ECM Critical Internal Failure	40-121
Failure code [CA115] Eng Ne and Bkup Speed Sens Error	40-121
Failure code [CA122] Chg Air Press Sensor High Error	40-122
Failure code [CA123] Chg Air Press Sensor Low Error	40-124
Failure code [CA131] Throttle Sensor High Error	40-126
Failure code [CA132] Throttle Sensor Low Error	40-128
Failure code [CA144] Coolant Temp Sens High Error	40-130
Failure code [CA145] Coolant Temp Sens Low Error.....	40-132
Failure code [CA153] Chg Air Temp Sensor High Error	40-134

Failure code [CA154] Chg Air Temp Sensor Low Error	40- 136
Failure code [CA155] Chg Air Temp High Speed Derate	40- 138
Failure code [CA187] Sens Supply 2 Volt Low Error	40- 140
Failure code [CA221] Ambient Press Sens High Error	40- 142
Failure code [CA222] Ambient Press Sens Low Error	40- 144
Failure code [CA227] Sens Supply 2 Volt High Error	40- 146
Failure code [CA234] Eng Overspeed	40- 146
Failure code [CA238] Ne Speed Sens Supply Volt Error.....	40- 147
Failure code [CA271] IMV/PCV1 Short Error.....	40- 148
Failure code [CA272] IMV/PCV1 Open Error	40- 150
Failure code [CA322] Inj #1(L#1) Open/Short Error	40- 152
Failure code [CA324] Inj #3(L#3) Open/Short Error	40- 154
Failure code [CA331] Inj #2(L#2) Open/Short Error	40- 156
Failure code [CA332] Inj #4(L#4) Open/Short Error	40- 158
Failure code [CA342] Calibration Code Incompatibility	40- 160
Failure code [CA351] Injectors Drive Circuit Error.....	40- 161
Failure code [CA352] Sens Supply 1 Volt Low Error.....	40- 162
Failure code [CA386] Sens Supply 1 Volt High Error	40- 164
Failure code [CA428] Water in Fuel Sensor High Error.....	40- 166
Failure code [CA429] Water in Fuel Sensor Low Error.....	40- 168
Failure code [CA435] Eng Oil Press Sw Error	40- 170
Failure code [CA441] Battery Voltage Low Error.....	40- 172
Failure code [CA442] Battery Voltage High Error	40- 174
Failure code [CA449] Rail Press Very High Error.....	40- 175
Failure code [CA451] Rail Press Sensor High Error.....	40- 176
Failure code [CA452] Rail Press Sensor Low Error.....	40- 178
Failure code [CA488] Chg Air Temp High Torque Derate	40- 180
Failure code [CA553] Rail Press High Error	40- 181
Failure code [CA559] Supply Pump Press Low Error 1	40- 182
Failure code [CA689] Eng Ne Speed Sensor Error	40- 184
Failure code [CA731] Eng Bkup Speed Sens Phase Error.....	40- 186
Failure code [CA757] All Continuous Data Lost Error	40- 187
Failure code [CA778] Eng Bkup Speed Sensor Error.....	40- 188
Failure code [CA1633] KOMNET Datalink Timeout Error.....	40- 191
Failure code [CA2185] Throt Sens Sup Volt High Error	40- 192
Failure code [CA2186] Throt Sens Sup Volt Low Error	40- 193
Failure code [CA2249] Rail Press Very Low Error.....	40- 194
Failure code [CA2311] IMV Solenoid Error.....	40- 195
Failure code [CA2555] Grid Htr Relay Open Circuit Error	40- 196
Failure code [CA2556] Grid Htr Relay Short Circuit Error	40- 198
Failure code [D19JKZ] Personal Code Relay Abnormality	40- 200
Failure code [D862KA] GPS Antenna Open Circuit.....	40- 203
Failure code [DA22KK] Pump Solenoid Power Low Error	40- 204
Failure code [DA25KP] 5V Sensor1 Power Abnormality	40- 206
Failure code [DA26KP] 5V Sensor2 Power Abnormality	40- 208
Failure code [DA29KQ] Model Selection Abnormality	40- 210
Failure code [DA2RMC] CAN Discon (Pump Con Detected)	40- 212
Failure code [DAF8KB] Camera Power Supply Short Circuit	40- 218
Failure code [DAFGMC] GPS Module Error	40- 220
Failure code [DAFRMC] CAN Discon (Monitor Detected)	40- 221
Failure code [DGH2KB] Hyd Oil Sensor Short	40- 228
Failure code [DHPAMA] Pump Press Sensor Abnormality.....	40- 230
Failure code [DHPBMA] R Pump Press Sensor Abnormality	40- 232
Failure code [DHS3MA] Arm IN PPC Sen. Abnormality	40- 234

Failure code [DHS4MA] Bucket CURL PPC Press Sensor Abnormality	40- 236
Failure code [DHS8MA] Boom RAISE PPC Press Sensor Abnormality	40- 238
Failure code [DHS AKZ] Swing RIGHT PPC pressure sensor system open or short circuit	40- 240
Failure code [DHSBKZ] Swing LEFT PPC pressure sensor system open or short circuit...	40- 242
Failure code [DHSAMA] Swing RH PPC Press Sensor Abnormality	40- 244
Failure code [DHSBMA] Swing LH PPC Press Sensor Abnormality.....	40- 246
Failure code [DHSDMA] Bucket Dump PPC Press Sensor Abnormality	40- 248
Failure code [DHV3KZ] HYB system arm IN PPC pressure sensor open or short circuit....	40- 250
Failure code [DHV9KZ] HYB Boom Lower PPC Pr. Sen. Open/Shrt Cir	40- 252
Failure code [DHVAKZ] HYB Swing-R PPC Pr. Sen. Opn/Short Cir	40- 254
Failure code [DHVAL8] HYB system swing RIGHT PPC pressure sensor signal abnormality	40- 256
Failure code [DHVAMA] HYB system swing RIGHT PPC pressure sensor malfunction	40- 257
Failure code [DHVBKZ] HYB Swing-L PPC Pr. Sen. Opn/short Cir	40- 258
Failure code [DHVBL8] HYB system swing LEFT PPC pressure sensor signal abnormality	40- 260
Failure code [DHVBMA] HYB system swing LEFT PPC pressure sensor malfunction	40- 261
Failure code [DHVCKZ] HYB Arm Dump PPC Pr. Sen. Opn/short Cir	40- 262
Failure code [DW43KA] Travel Speed Sol Open Circuit.....	40- 264
Failure code [DW43KB] Travel Speed Sol Short Circuit	40- 266
Failure code [DW45KA] Swing holding brake solenoid valve open circuit.....	40- 268
Failure code [DW45KB] Swing holding brake solenoid valve short circuit.....	40- 271
Failure code [DW45KK] Swing holding brake solenoid valve power voltage drop.....	40- 274
Failure code [DW45KY] swing holding brake Sol. Val. Pow. Short Cir	40- 276
Failure code [DW4WKA] Cancel Bucket Dump Open Circuit	40- 278
Failure code [DW4WKB] Cancel Bucket Dump Short Circuit	40- 280
Failure code [DW91KA] Travel Junction Sol. Disc.....	40- 282
Failure code [DW91KB] Travel Junction Sol. S/C.....	40- 284
Failure code [DWA2KA] Attachment Sol Open Circuit.....	40- 286
Failure code [DWA2KB] Attachment Sol Short Circuit.....	40- 288
Failure code [DWK0KA] 2-stage Relief Sol Open Circuit.....	40- 290
Failure code [DWK0KB] 2-stage Relief Sol Short Circuit.....	40- 292
Failure code [DXA8KA] PC-EPC (F) Sol Open Circuit.....	40- 294
Failure code [DXA8KB] PC-EPC (F) Sol Short Circuit.....	40- 296
Failure code [DXA9KA] PC-EPC (R) Sol Open Circuit	40- 298
Failure code [DXA9KB] PC-EPC (R) Sol Short Circuit	40- 300
Failure code [DXE0KA] LS-EPC Sol Open Circuit.....	40- 302
Failure code [DXE0KB] LS-EPC Sol Short Circuit.....	40- 304
Failure code [DXE4KA] Service Current EPC Disc.....	40- 306
Failure code [DXE4KB] Service Current EPC S/C.....	40- 308
Failure code [DXE5KA] Merge-divider Main Sol Open Circuit	40- 310
Failure code [DXE5KB] Merge-divider Main Sol Short Circuit	40- 312
Failure code [DXE6KA] Merge-divider LS Sol Open Circuit	40- 314
Failure code [DXE6KB] Merge-divider LS Sol Short Circuit.....	40- 316
Failure code [DY20KA] Wiper Working Abnormality	40- 318
Failure code [DY20MA] Wiper Parking Abnormality	40- 320
Failure code [DY2CKA] Washer drive discon	40- 322
Failure code [DY2CKB] Washer drive short.....	40- 324
Failure code [DY2DKB] Wiper Drive (Fwd) Short Circuit	40- 326
Failure code [DY2EKB] Wiper Drive (Rev) Short Circuit.....	40- 328
Troubleshooting by failure code [GA****] (code display).....	40- 330
Precaution in hybrid device troubleshooting, and common troubleshooting procedures for high voltage devices	40- 330
Failure code [GA----] Hybrid devices monitoring items list and check sheet.....	40- 355

Failure code [GA00NS] HYB devices overheat	40- 359
Failure code [GA01KA] Power Cable Interlock Open Circuit.....	40- 360
Failure code [GA02KZ] DC Line Open/Short Circuit.....	40- 362
Failure code [GA04KG] Abnormal DC HW Volt. Before Booster.....	40- 363
Failure code [GA05KG] Abnormal DC SW Volt. Before Booster.....	40- 364
Failure code [GA05KP] Low DC SW Output Volt. Bef. Booster.....	40- 365
Failure code [GA06KZ] DC Vlt. Sen. Opn./Shrt. Cir. Bef. Booster.....	40- 366
Failure code [GA08KG] Abnormal. DC HW Volt. After Booster.....	40- 367
Failure code [GA09KG] Abnormal. DC SW Volt. After Booster.....	40- 368
Failure code [GA09KP] Low DC SW Output Volt. After Booster.....	40- 369
Failure code [GA0AKZ] DC Volt. Sen. Op./Shrt cir. Aft. Booster.....	40- 370
Failure code [GA0BKZ] AC Line Open/Short Circuit	40- 371
Failure code [GA12MC] HYB Cont. Pow. Suppl. Failure	40- 372
Failure code [GA12NK] HYB Cont. Pow. Suppl. Not Turn. ON.....	40- 373
Failure code [GA12NL] HYB Cont. Pow. Suppl. Not Turn. OFF.....	40- 374
Failure code [GA13MC] HYB Control. Sen. Power Sup. Failure.....	40- 376
Failure code [GA14KR] HYB Control. KOMNET Comm. Failure.....	40- 378
Failure code [GA15KZ] HYB Cont. Bad Insul. Sen. Opn/Short. Cir.....	40- 379
Failure code [GA17KR] Gen. Mot. Drv. Communication Failure	40- 379
Failure code [GA17KY] Gen. Mot Dr. Power Line Short Circuit.....	40- 380
Failure code [GA17KZ] Gen. Motor Driver Open/Short Circuit.....	40- 380
Failure code [GA17MB] Gen. Mot. Drv. Function Degraded	40- 381
Failure code [GA18MC] Gen.Mo. Dr. Excite. Pow. Sup. Failure	40- 381
Failure code [GA19KK] Gen. Mot. Drv. Sub-CPU Low Sup. Volt.....	40- 382
Failure code [GA19KR] Gen. Motor Driver Sub-CPU Comm. Failure	40- 382
Failure code [GA19KT] Int. Abnorm. Gen. Mot. Drv. Sub-CPU Con.	40- 383
Failure code [GA19MA] Gen. Mot. Drv. Sub-CPU Malfunction	40- 383
Failure code [GA19MC] Gen. Mot. Drv. Sub-CPU Defect. Operation	40- 384
Failure code [GA19NA] Gen. Mot. Drv. Sub-CPU Start Disabled.....	40- 384
Failure code [GA1BMA] Gen. Mot. Dr. DC Vlt. Sens. Malfunction	40- 385
Failure code [GA1FKR] Swing Mot. Drv. Communication Failure	40- 385
Failure code [GA1FMA] Abnormal Swing Motor Driver	40- 386
Failure code [GA1GKK] Low Sup. Volt. Swing Motor Drv. Sub-CPU	40- 386
Failure code [GA1GKR] Swing Mot. Driver Sub-CPU Comm. Failure.....	40- 387
Failure code [GA1GKT] Swing Mot. Drv. Sub-CPU Cont. Abnormal.....	40- 387
Failure code [GA1GMA] Swing Motor Drv. Sub-CPU Malfunction	40- 388
Failure code [GA1GMB] Swing Mot. Drv. Sub-CPU Funct. Degraded	40- 388
Failure code [GA1GMC] Swing Mot. Drv. Sub-CPU Defect Op.....	40- 389
Failure code [GA1GNA] Swing Mot. Drv. Sub-CPU Start Disabled.....	40- 389
Failure code [GA1HKZ] Swg Mot. Dr. Ph-U Tem. Sens Opn/Shrt Cir.	40- 390
Failure code [GA1JKZ] Swg Mot. Dr. Ph-V Tem. Sens Opn/Shrt Cir.	40- 390
Failure code [GA1KKZ] Swg Mot. Dr. Ph-W Tem. Sens Opn/Shrt Cir.....	40- 391
Failure code [GA1LKZ] Swg Mot. Dr. Current. Sens Opn/Shrt Cir.	40- 391
Failure code [GA1MKZ] Swg Mot. Dr. DC Vlt. Sen Opn/Shrt Cir.....	40- 392
Failure code [GA1NNS] Swing Motor Driver IGBT Overheat	40- 393
Failure code [GA1SFS] Contactor Locked.....	40- 394
Failure code [GA1SMC] Contactor Failure	40- 394
Failure code [GA1TKP] Capacitor Low Output Voltage.....	40- 395
Failure code [GA1TNS] Capacitor Overheat	40- 396
Failure code [GA1UKZ] Capacitor Temp. Sensor Opn/Short Cir.....	40- 398
Failure code [GA1VFS] Capacitor Contactor Locked.....	40- 400
Failure code [GA1VMC] Capacitor Contactor Failure.....	40- 402
Failure code [GA1XKZ] Boost. Ind. Temp. Sens. Open/Shrt. Circ.	40- 403
Failure code [GA1YNS] Booster Inductor Overheat	40- 404

Failure code [GA1ZKZ] Booster IGBT Temp. Sens. Opn/Shrt. Circ.	40-404-1
Failure code [GA1ZNS] Booster IGBT Temp. Sens. Overheat.....	40-404-2
Failure code [GA21KB] Booster IGBT Short Circuit.....	40-404-3
Failure code [GA22NS] Booster IGBT Junction Overheat.....	40-405
Failure code [GA23KZ] Gen. Mot. Dr. Temp. Sens.0 Opn/Short Cir.	40-406
Failure code [GA24KZ] Gen. Mot. Dr. Temp. Sens.1 Opn/Short Cir.	40-406
Failure code [GA25MA] Gen. Motor Driver IGBT0 Abnormality.....	40-407
Failure code [GA25NS] Gen. Motor Driver IGBT0 Overheat.....	40-407-1
Failure code [GA26MA] Gen. Motor Driver IGBT1 Abnormality.....	40-407-2
Failure code [GA26NS] Gen. Motor Driver IGBT1 Overheat.....	40-408
Failure code [GA27KZ] DC before boosting sensor open or short circuit.....	40-409
Failure code [GA28KZ] DC after boosting sensor open or short circuit.....	40-409
Failure code [GA60MC] Generator Motor Failure.....	40-410
Failure code [GA60MD] Gen. Mot. Defective Movement.....	40-411
Failure code [GA60N1] Generator Motor Overrun.....	40-412
Failure code [GA61KZ] Gen. Motor Temp. Sens. Open/Short Cir.	40-414
Failure code [GA61NS] Generator Motor Temp. Sensor Overheat.....	40-416
Failure code [GA62KY] Gen. Mot. Ph-A Cur. Sen. Power Short Cir.....	40-417
Failure code [GA62KZ] Gen. Mot. Ph-A Cur. Sen. Open/Short Cir.	40-418
Failure code [GA62MA] Gen. Mot. Ph-A Current Sen. Malfunction.....	40-419
Failure code [GA63KY] Gen. Mot. Ph-B Cur. Sen. Power Short Cir.....	40-419
Failure code [GA63KZ] Gen. Mot. Ph-B Cur. Sen. Open/Short Cir.	40-420
Failure code [GA63MA] Gen. Mot. Ph-B Current Sen. Malfunction.....	40-420
Failure code [GA64KY] Gen. Mot. Ph-C Cur. Sen. Power Short Cir.....	40-421
Failure code [GA64KZ] Gen. Mot. Ph-C Cur. Sen. Open/Short Cir.	40-422
Failure code [GA64MA] Gen. Mot. Ph-C Current Sen. Malfunction.....	40-422
Failure code [GA70KB] HYB Swing Motor Short Circuit.....	40-423
Failure code [GA70MD] HYB Swing Motor Defective Stirr. Motion.....	40-423
Failure code [GA70NS] HYB Swing Motor Overheat.....	40-424
Failure code [GA71KZ] HYB Swing Mot. Temp. Sens. Opn/Shrt Cir.....	40-426
Failure code [GA72MA] HYB Swing Motor Resolver Malfunction.....	40-428
Failure code [GA72MC] HYB Swing Motor Resolver Defect Op.....	40-430
Failure code [GA81KZ] Swing Motor Power Cable Opn/Shrt Cir.....	40-430
Failure code [GAA100] Swing emergency stop switch operated.....	40-431
Failure code [GAA2KB] Swing Brake sol. Supply Line short cir.	40-432
Troubleshooting of electrical system (E-mode).....	40-434
E-1 Engine does not start (Engine does not crank).....	40-434
E-2 Preheater does not operate.....	40-440
E-3 When starting switch is turned to ON position, machine monitor displays nothing.....	40-445
E-4 When starting switch is turned to ON position (with engine stopped), basic check monitor lights up.....	40-448
E-5 Precaution monitor lights up while engine is running.....	40-449
E-6 Emergency stop monitor lights up while engine is running.....	40-451
E-7 Fuel level gauge does not indicate properly.....	40-452
E-8 Engine coolant temperature gauge does not indicate properly.....	40-454
E-9 Hydraulic oil temperature gauge does not indicate properly.....	40-456
E-10 HYB system temperature gauge does not indicate properly.....	40-458
E-11 Displays on machine monitor are different from those for actual machine.....	40-460
E-12 Machine monitor does not display some items.....	40-460
E-13 Function switch does not work.....	40-460
E-14 Automatic warm-up system does not operate (in cold season).....	40-461
E-15 Auto-decelerator does not operate normally.....	40-462
E-16 Working mode does not change.....	40-463
E-17 Travel speed does not change.....	40-464

E-18 Alarm buzzer does not stop sounding.....	40- 465
E-19 When starting switch is at OFF position, service meter is not displayed	40- 465
E-20 Machine monitor cannot be set in service mode.....	40- 465
E-21 All of work equipment, swing, and travel mechanism do not move or are not locked.	40- 466
E-22 Swing holding brake does not operate properly.....	40- 469
E-23 One-touch power max. function does not operate	40- 472
E-24 Travel alarm does not sound or does not stop sounding	40- 476
E-25 Horn does not sound or does not stop sounding	40- 478
E-26 Windshield wiper and window washer do not operate	40- 480
E-27 "BOOM LOWER" indicator is not displayed properly with monitoring function	40- 482
E-28 "ARM OUT" indicator is not displayed properly with monitoring function.....	40- 484
E-29 "ARM IN" indicator is not displayed properly with monitoring function.....	40- 486
E-30 "BOOM RAISE" indicator is not displayed properly with monitoring function.....	40- 486
E-31 "BUCKET CURL" indicator is not displayed properly with monitoring function	40- 486
E-32 "BUCKET DUMP" indicator is not displayed properly with monitoring function	40- 487
E-33 "SWING" indicator is not displayed properly with monitoring function	40- 487
E-34 "TRAVEL" indicator is not displayed properly with monitoring function.....	40- 488
E-35 "TRAVEL STEERING" indicator is not displayed properly with monitoring function ...	40- 490
E-36 "SERVICE" indicator is not displayed properly with monitoring function.....	40- 492
E-37 Attachment hydraulic circuit cannot be changed.....	40- 494
E-38 KOMTRAX system does not operate properly	40- 495
Troubleshooting of hydraulic and mechanical system (H-mode).....	40-496
Information in troubleshooting table (H mode).....	40- 498
System diagram of hydraulic and mechanical system.....	40- 496
H-1 Speed or power of all work equipment and travel is low	40- 499
H-2 Engine speed lowers significantly or engine stalls.....	40- 501
H-3 All work equipment and travel systems do not work	40- 502
H-4 Unusual noise comes out from around hydraulic pump.....	40- 502
H-5 Auto-decelerator does not operate	40- 503
H-6 Fine control performance or response is low	40- 503
H-7 Speed or power of boom is low.....	40- 504
H-8 Speed or power of arm is low	40- 505
H-9 Speed or power of bucket is low	40- 506
H-10 Work equipment does not move in its single operation	40- 506
H-11 Hydraulic drift of work equipment is large	40- 507
H-12 Time lag of work equipment is large	40- 509
H-13 When part of work equipment is relieved singly, other parts of work equipment move	40- 509
H-14 Power maximizing function does not work.....	40- 510
H-15 In combined operation of work equipment, speed of part loaded more is low	40- 510
H-16 When machine swings and travels simultaneously, travel speed is low	40- 510
H-17 Machine deviates during travel	40- 511
H-18 Travel speed is low	40- 512
H-19 Machine is not steered well or steering power is low.....	40- 513
H-20 Travel speed does not shift or travel speed is low or high	40- 514
H-21 Travel system does not work (only one side).....	40- 515
H-22 Upper structure does not swing	40- 516
H-23 Swing acceleration or swing speed of upper structure is low	40- 516
H-24 Upper structure overruns remarkably when it stops swinging	40- 516
H-25 Large shock is made when upper structure stops swinging	40- 517
H-26 Large sound is made when upper structure stops swinging	40- 517
H-27 Upper structure lowers largely by its own weight.....	40- 517
Troubleshooting of engine (S-mode)	40-518
Method of using troubleshooting chart.....	40- 518
S-1 Engine startability is poor	40- 522

S-2 Engine does not start	40- 523
S-3 Engine does not pick up smoothly.....	40- 526
S-4 Engine stops during operations.....	40- 527
S-5 Engine does not rotate smoothly.....	40- 528
S-6 Engine lacks output (or lacks power)	40- 529
S-7 Exhaust gas is black (incomplete combustion)	40- 530
S-8 Oil consumption is excessive (or exhaust gas is blue).....	40- 531
S-9 Oil becomes contaminated quickly.....	40- 532
S-10 Fuel consumption is excessive.....	40- 533
S-11 Oil is in coolant (or coolant spurts or coolant level goes down)	40- 534
S-12 Oil pressure drops	40- 535
S-13 Oil level rises (coolant or fuel in oil).....	40- 536
S-14 Coolant temperature rises too high (overheating).....	40- 537
S-15 Unusual noise is made	40- 538
S-16 Vibration is excessive.....	40- 539
Troubleshooting hybrid system (Y-mode).....	40- 540
Precautions related to hybrid machine.....	40- 540
Y-1 Hybrid monitor does not go out	40- 542
Y-2 Upper structure does not swing.....	40- 544
Y-3 Swing acceleration or swing speed is low	40- 546
Y-4 Upper structure overruns largely when stop swinging.....	40- 547
Y-5 Large shock is made when upper structure stops swinging.....	40- 548
Y-6 Large unusual noise is made when upper structure stops swinging	40- 548
Y-7 Swing drift on a slope is large	40- 549
Y-8 Electric swing motor temperature increases abnormally.....	40- 550
Y-9 Motor-generator temperature increases abnormally	40- 552
Y-10 Inverter overheats	40- 553
Y-11 Capacitor overheats	40- 554
50 Disassembly and assembly	
General information on disassembly and assembly	50- 4
How to read Disassembly and Assembly.....	50- 4
Precautions related to hybrid machine.....	50- 6
Coating materials list.....	50- 7
Special tools list	50- 10
Sketches of special tools	50- 15
Engine and cooling system	50- 20
Removal and installation of fuel supply pump assembly	50- 20
Removal and installation of fuel injector assembly	50- 25
Removal and installation of cylinder head assembly	50- 32
Removal and installation of radiator assembly	50- 55
Removal and installation of hydraulic oil cooler assembly.....	50- 57
Removal and installation of aftercooler assembly.....	50- 59
Removal and installation of engine front seal	50- 62
Removal and installation of engine rear seal	50- 64
Removal and installation of fuel cooler assembly	50- 68
Removal (and installation) of engine, motor generator, and main pump assembly	50- 70
Removal and installation of fuel tank assembly	50- 86
Hybrid.....	50- 89
Draining adding coolant and bleeding air for hybrid system	50- 89
Removal and installation of hybrid radiator assembly.....	50- 93
Removal and installation of water pump assembly for hybrid system	50- 96
Removal and installation of inverter assembly.....	50- 99
Removal and installation of inverter and capacitor assembly	50- 103