

KOWA SINGLE LINE LUBRICATING SYSTEMS
MOTOR-DRIVEN LUBRICATING PUMP

MODEL : KSP850SV SERIES

INSTRUCTION MANUAL

KWK

KOWA CORPORATION

Introduction

Thank you very much for purchasing the KOWA SINGLE LINE LUBRICATING SYSTEM.

This Instruction Manual has been compiled as a practical guide for the operation and maintenance of lubricating system which incorporates the model KSP850SV motor driven lubricating pump.

All descriptions contained here in are based on the standard system, which may, therefore, be different from those of the purchased system. Such a problem can be solved by referring to the final specifications. However, it is required to understand that some changes caused by the modification of equipment may not be described in the final specifications.

Guarantee

The guaranteed period for this system will be one year from the commencement of operation.

Any defect or failure occurring during the guaranteed period, for which KWK is liable in design and manufacturing, shall be corrected and / or eliminated by KWK without compensation.

However, any defect or failure caused by improper operation which is not described in this Instruction Manual shall not be guaranteed, even though the defect or failure occurs with the guaranteed period.

PRECAUTIONS OF SAFETY

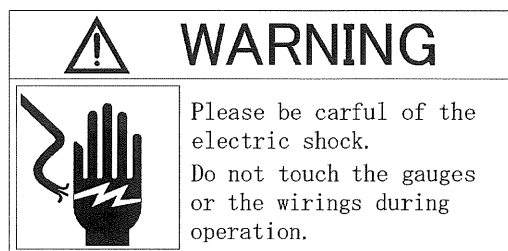
- Before the installation, operation, maintenance and inspection, read carefully this instruction manual and other accompanying documents for correct service.

Familiarize with the knowledge of equipment, information of safety and all of cautionary instructions for service.

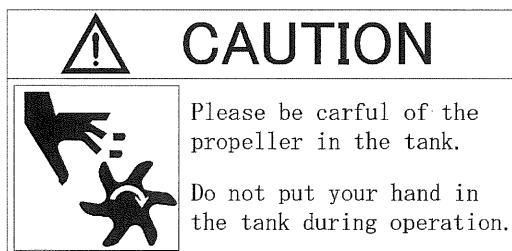
The precautions of safety is shown in each equipment of the centralized lubricating system by using safety mark.

Particular attention should be called to the places where these safety marks are given.

The safety marks are divided into "WARNING" and "CAUTION".



If mishandled; In case a dangerous situation may occur, it could result in death or serious injury.



If mishandled; in case a middle injury or light injury and in case a physical damage may occur.

For the matter being mentioned in the CAUTION, it may result in an importance according to circumstances. The important content is given to all of safety mark, and obeys it without fail.

- This system provides the max. Working pressure 21MPa (210kg/cm²). When each equipment is disassembled and inspected, stop the operation of pump, and release the pressure to perform the operation as 0MPa (0kg/cm²).

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1. GENERAL DESCRIPTION OF KWK SINGLE LINE LUBRICATING SYSTEM

(1) Composition of the system

The system comprises the motor-driven lubricating pump, which will supply grease under a high pressure, external piping, measuring valves and the control panel, which is used to operate the system.

The outline of the system is as given to Fig.1. All the following descriptions are for the type used for greasing.

The motor-driven lubricating pump being employed for the system includes lubricating pump body, electric motor with reduction gear and pail for grease is provided below the pump body.

A pressure gauge is attached to show the discharge pressure of the pump.

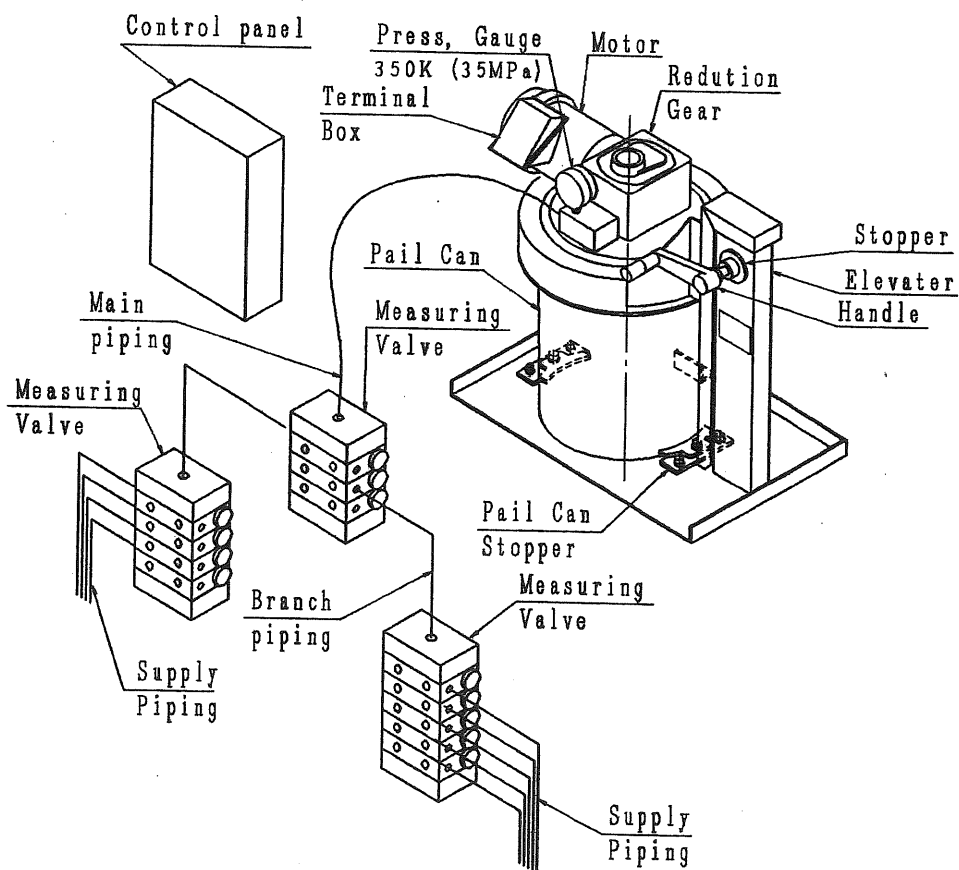


Fig.1

2. FEATURES OF KSP850 TYPE MOTOR-DRIVEN LUBRICATING PUMP

The pail (16kg or 18kg) is set to this motor-driven lubricating pump to feed the grease. This type of pump has been conventionally limited to the low pressure in specification and for filling in applications.

However, this pump has made it possible to discharge under a high pressure and is provided with the following features:

- (1) Saving in weight and smaller in size results in easy handling and space saving.
- (2) Suction efficiency has been improved by means of stirring blade, and grease level has been reduced evenly. In case of loading and unloading which are defective in a follower plate, its troublesome working has been released.
- (3) A low level switch not being loaded in this of pump has become feasible through the compact method.
- (4) Double plunger method (no-check valve consisting of plunger for discharge and plunger for opening & closing) has been adopted.
Consequently, the effect of dust is lessened and is forcibly discharged in case of air entrapment.
(In the check valve, the function of pump is lost when dust adheres to the check valve.)
- (5) By considering the simplicity in case of replacement of pail, the pump body and manual handle rotary-lift has been developed.
- (6) This pump applies to either single line or dual line system.

3. SPECIFICATION

(1) Pump

Type	KSP851SV-4H
Driving System of Pump	Motor-driven
Discharge Pressure	Max. 20.6MPa
Discharge Capacity cm ³ /min	113 (50Hz)
Reduction Ratio	1/11
Pump Method	Double plunger method
Service Grease	Pail (18kg or 16kg) NLGI #2~4
Motor	AC400V 50Hz 3φ 0.4kW IP44
Low Level Switch	Model:D4C-1260 AC250V 0.5A
Pressure Switch	Model:CE25 AC250V 3A Adjust range : 3~25MPa Set pressure : 18MPa
Mass	50kg (without pail)

4. CONSTRUCTION AND FUNCTION OF PUMP UNIT

(1) Pump Body

This motor-driven grease pump is constructed as given below: Turning force is converted into reciprocating motion by means of the rotating shaft of pump being directly connected with reduction gear and the cam being fixed to the rotating shaft, and the suction and discharge of grease is accomplished by the use of plunger which reciprocates in pump cylinder and stirring blade being fixed to the rotating shaft.

This pump is not provided with check valve, and it is double plunger type of pump which is sucked and/or discharged by main plunger (for discharge) and valve plunger (for opening and closing).

(2) Operation of pump

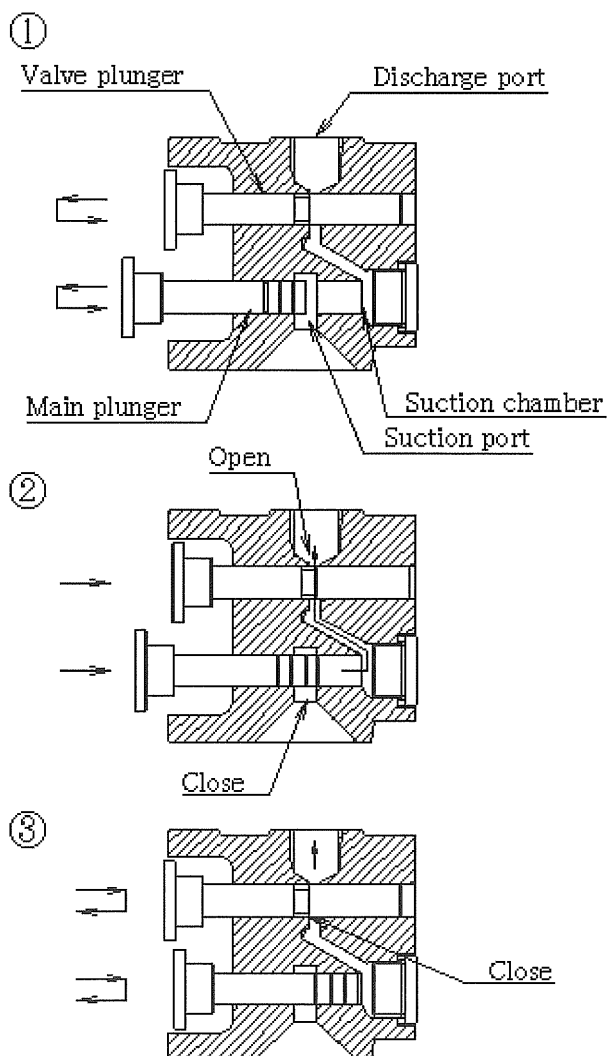


Fig.2

① Main plunger retracts, suction port is opened, and grease enters the suction chamber.

Then, the discharge port is closed by the valve plunger.

② Main plunger advances, simultaneously the valve plunger advances, the port opens, and grease is pushed out of the discharge chamber to the discharge port.

③ Valve plunger retreats, discharge port and main plunger's port are closed. Simultaneously main plunger begins to retract suction chamber provides negative pressure to prepare suction.

(3) Relief Valve

1) Relief valve

Relief valve is installed to the pump body.

This relief valve is provided for emergency pressure release when the pipe clogged for some reason. If such should happen, the pressurized grease, released from the pipe, is admitted into the pail to protect the lubricating system from being damaged.

The set pressure of relief valve provides $25\text{MPa}\pm 0.5\text{MPa}$.

Type of grease pump	Max. discharge pressure	Set pressure of relief valve
KSP850SV	20.6MPa	$25\text{MPa}\pm 0.5\text{MPa}$

2) If the pump reverses

At a test run or when the electric wiring is changed, the pump (motor) sometimes reverses.

If the pump reverses, grease is not discharged, but released into the pail through the function of relief valve.

When the pump reverses, unlike the condition of forward turn of the double plunger timing, the reverse safety valve causes abnormal high pressure in the cylinder, resulting in broken plunger. Therefore, to prevent the breakage, the abnormal high pressure is released to protect the pump.

The reverse of motor adversely affects the pump, and finds it as soon as possible, and care should be exercised to avoid the reverse for a long time.

The correct direction of rotation of pump is shown on arrow name-plate.

(4) Low Level Switch

The low level switch is provided so that pump operation stops and the alarm is given when grease is consumed to a definite limit. The switch turns ON at a low level.

Rating	50VA AC Max.250V,Current 5A
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(5) Pressure switch

Pressure switch is attached to the front side of the pump. Its purpose is to sense thereby when the system pressure of line increases abnormally owing to the clogging or the measuring valve's choking in the single line lubricating system.

The pressure switch is capable of performing the adjustment of 3~25 MPa and it is set up in 18MPa at the time of shipment.

5. CAUTIONARY INTRUCTIONS OF MAINTENANCE AND HANDLING

(1) Replacement of Grease

- ① After opening Air vent valve for pail, handle is turned and a pump is raised. Although a pump is automatically stopped on the top please fasten set-screw for safety. Please check whether the handle has stopped whether moving. This is because it is highly dangerous when the pail moves down during the replacement. Pull out horizontally the emptied grease pail to this side as it is.
- ② Push horizontally a new pail from this side to the inner part with the pail stopper opened, and the pail is able to be automatically fixed. If the pail is pushed fully to the inner part, remove handle stopper and move down the pump. Make sure that it moves down to the bottom position.

(2) Operation method of set-screw for lifter.

When you operate a stopper, please be sure to grasp a handle strongly.

A stopper needs to operate a handle, loosening little by little and applying brakes by hand.

(3) Operation method Air vent valve for pail

- ① Open air vent valve.
- ② Drop a pump above (2) passage and put follower plate into a pail can.
- ③ Loosen set-screw for lifter
- ④ Shut air vent valve, if grease comes from air vent pipe.
- ⑤ Operation was ended.
- ⑥ When air enters, please loosen air vent valve near discharge port' and take out air.

6. TEST OPERATION

(1) Confirmation Before Operation

- 1) Prior to test operation, check that no problem exists in installation, piping, and wiring :
 - (a) Are unions and flanges of main supply pipe and branch pipe connected surely ?
 - (b) Are sub-supply pipes connected to all bearings to be lubricated ?
 - (c) Are the electric wiring works completed on the primary and secondary sides ?

2) Direction of Pump's Rotation

- (a) Turn the power supply switch and control supply switch to ON. Depress the push-button switch for manual starting, and confirm the direction of lubricating pump's rotation. As to the direction of rotation, follow the arrow mark on the coupling cover.
The correct rotation is anti-clockwise from the motor fan side.
- (b) In case of a reverse rotation, no grease will be discharged. If the pump is rotated reversely, stop it immediately avoid the operation for a long time.
- (c) When the reverse rotation is corrected to the forward rotation, the motor should be rewired by interchanging 2 lines of 3 power lines.

(2) Selection of Grease

There are many kinds of grease in different quality and characteristics.

Select suitable grease to the operating conditions from the recommended kinds of grease as given below.

Generally, any grease is applicable with the range of NLGI Standard No.2~No.3 (Consistently : 430~250).

(3) Flushing

Foreign matter such as spatter & dust in the piping cause the malfunction in the measuring valve as well as the failure of bearing. Hence perform fully cleaning in the piping.

7. MAINTENANCE AND INSPECTION

(1) Cautionary Instructions in case of Replacement of Grease

- 1) When grease is mixed with other brand, grease may be deteriorated.
It is recommended to obtain the adequate instructions from a grease manufacturer when using a different brand of grease.
- 2) When grease being left in the pail is admitted into a new pail in case of replacement of pail, it causes overflow with setting of pump, and avoid it. Be careful to prevent dust from mixing into grease of the new pail.

(2) Preparation for Spare Parts

It is recommended that the following spare parts should be provided to minimize the shut-down period of the system in case of emergency.

- 1) Pump parts
 - (a) Pressure gauge
- 2) Various measuring valves
- 3) Control panel
 - (a) Indicator lamp
 - (b) Fuse
 - (c) Various relays
 - (d) Timers
- 4) Miscellaneous
 - (a) Flexible hose
 - (b) Pipes and joints

(3) Inspection

Periodically inspect the following items :

- 1) Lubricating time, discharge pressure
- 2) Operation of indicating rod of measuring valve
- 3) Possible leakage from piping
- 4) Possible breakage of equipment
- 5) Residue in grease can

8. TROUBLE SHOOTING AND REMEDIES

No.	Fault	Possible Cause	Remedies
1	Even if the starting button is depressed, the pump does not start.	Power is not turned to ON.	Turn the power switch operation switch to ON. Check to see if the power is turned ON to the primary side.
		Fuse or breaker drops.	Turn the Molded Case Breaker to ON. Replace the fuse.
		Disconnection of motor circuit.	Repair and check of wiring.
2	Alarm lamp goes on. Even if the clear button is depressed, the alarm button goes on, and pump is not capable being operated.	Pail is emptied.	Change the pail.
		Overload of motor. Galling of reduction gear.	Check & repair. Replacement of reduction gear.
		Disconnection of motor circuit. (Voltage is exerted upon two-phase only of three-phase.)	Repair of wiring or replacement of motor.
		Pressure switch goes ON.	Decrease the pressure in the piping.
3	The needle's movement of pressure gauge for pump is large.	Mixing of the air in the piping.	Release the air in the piping.
4	Alarm lamp goes on. The clear lamp is depressed. (Or the operating power supply is once turned off.) When the operation is conducted, the pump runs. The alarm lamp soon goes on, and the pump stops.	(1) Lubrication is delayed.	
		Galling of plunger or its breakage.	Replacement of pump ass'y.
		Shortage of discharge capacity or discharge pressure caused by wear of cylinder plunger.	Replacement of pump ass'y.
		Air is included in the pump.	Loosen the air vent of pump block, and operate the pump until the air is eliminated.

4		Since the service grease is hard, the suction is not made.	Replace it with soft grease.
		Leakage disengagement.	Repair of piping.
		Improper setting of protective timer.	Reset.
		Improper function of pressure switch.	Check or repair of pressure switch.
		(2) Abnormal high pressure occurs.	
		Measuring valve is choked.	Disassembly and cleaning
		Piping is choked.	Repair of piping.
		Bearing is choked.	Examination and correction of bearing.
		The discharge port of measuring valve is plugged.	Make the correction as per the plan.
		Erroneous setting of pressure switch.	Reset.
5	High operating sound or abnormal noise of pump.	Wear.	Check and repair of reduction gear & lubricating pump body.
6	Water collects in the pail.	Improper properties of the supplied grease.	Check the grease, and make inquiries to the grease makers about it.
		Pump is sprinkled with water.	Fit up the cover.

9. Specifications of measuring valve

形式	ピストン種類	吐出量 $\text{cm}^3/\text{ストローク}$	1ブロック当たり吐出口数
KJ	5T	0.082	2
	5S	0.164	1
	10T	0.164	2
	10S	0.328	1
	15T	0.246	2
	15S	0.492	1
KM	10T	0.164	2
	10S	0.328	1
	15T	0.246	2
	15S	0.492	1
	20T	0.328	2
	20S	0.656	1
	25T	0.410	2
	25S	0.820	1
	30T	0.492	2
	30S	0.984	1
	35T	0.574	2
	35S	1.148	1
KL	25T	0.410	2
	25S	0.820	1
	50T	0.820	2
	50S	1.640	1
	75T	1.230	2
	75S	2.460	1
	100T	1.640	2
	100S	3.280	1
	125T	2.050	2
	125S	4.100	1
	150T	2.460	2
	150S	4.920	1

10. Operation Record of KWK SINGLE LINE LUBRICATING SYSTEMS

Specifications		
Type of pump	Grease filling method : Concentrated filling, Exclusive pump, etc.	
Pump No.	Type of filling pump	
Motor voltage _____ V	Name of grease used	
Type of control panel	Type of measuring valve used	
Control system Auto/Manual start	Number of measuring valve used : Approx.	
Details of test operation		
Lubricating pump	Control panel	
Lubricating pump & Reduction gear oil volume : good / bad	Voltage motor : _____ V , control : _____ V	
Motor rotating direction : normal / reverse	Pilot lamp (power supply) : good / bad	
Lubricating pump operation noise : normal / reverse	Pilot lamp (operation) : good / bad	
	Pilot lamp (alarm) : good / bad	
Lubricating time : min. _____ sec.	Auto start of pump : good / bad	
	Auto stop of pump : good / bad	
Lubricating time : min. _____ sec.	Alarm buzzer (low level switch) : good / bad	
	Alarm buzzer (over time) : good / bad	
Discharge pressure : _____ kg/cm ²	Overload of alarm buzzer motor : good / bad	
	Timer setting (for start) : hrs.	
Discharge pressure : _____ kg/cm ²	Timer setting (for protection) : min.	
	Measuring valve	
	All operations : good / bad	
Others	Grease leakage from piping : yes / no	Damage of piping : yes / no
Special notes		

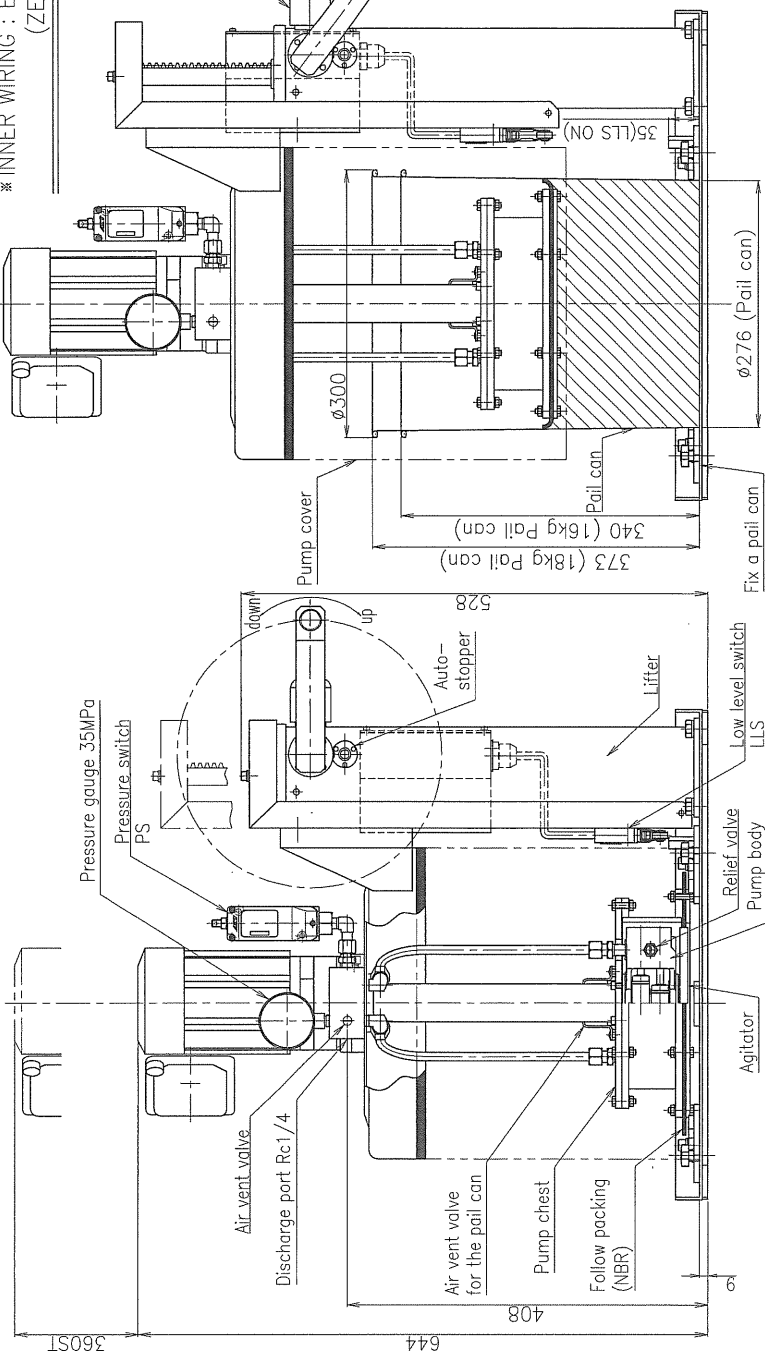
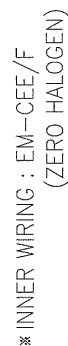
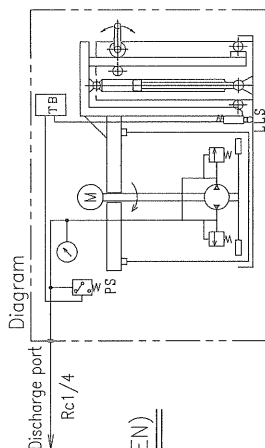
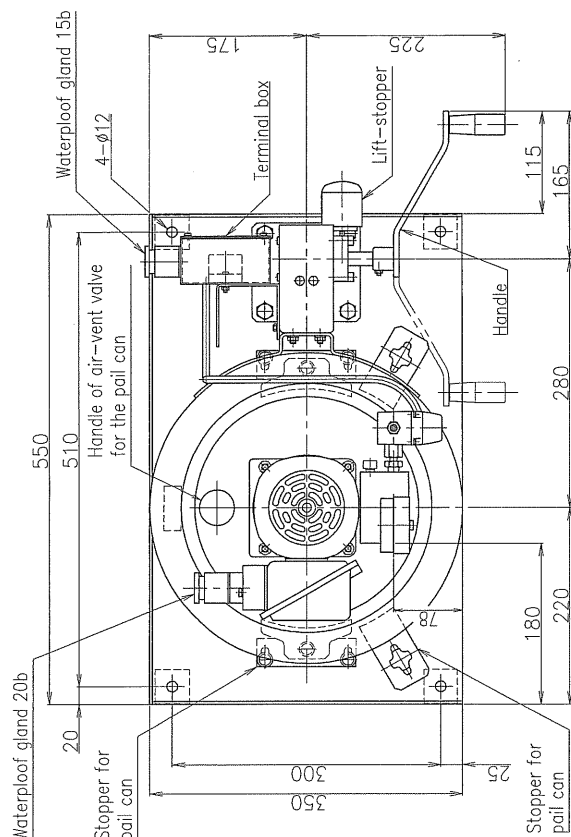
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Specification

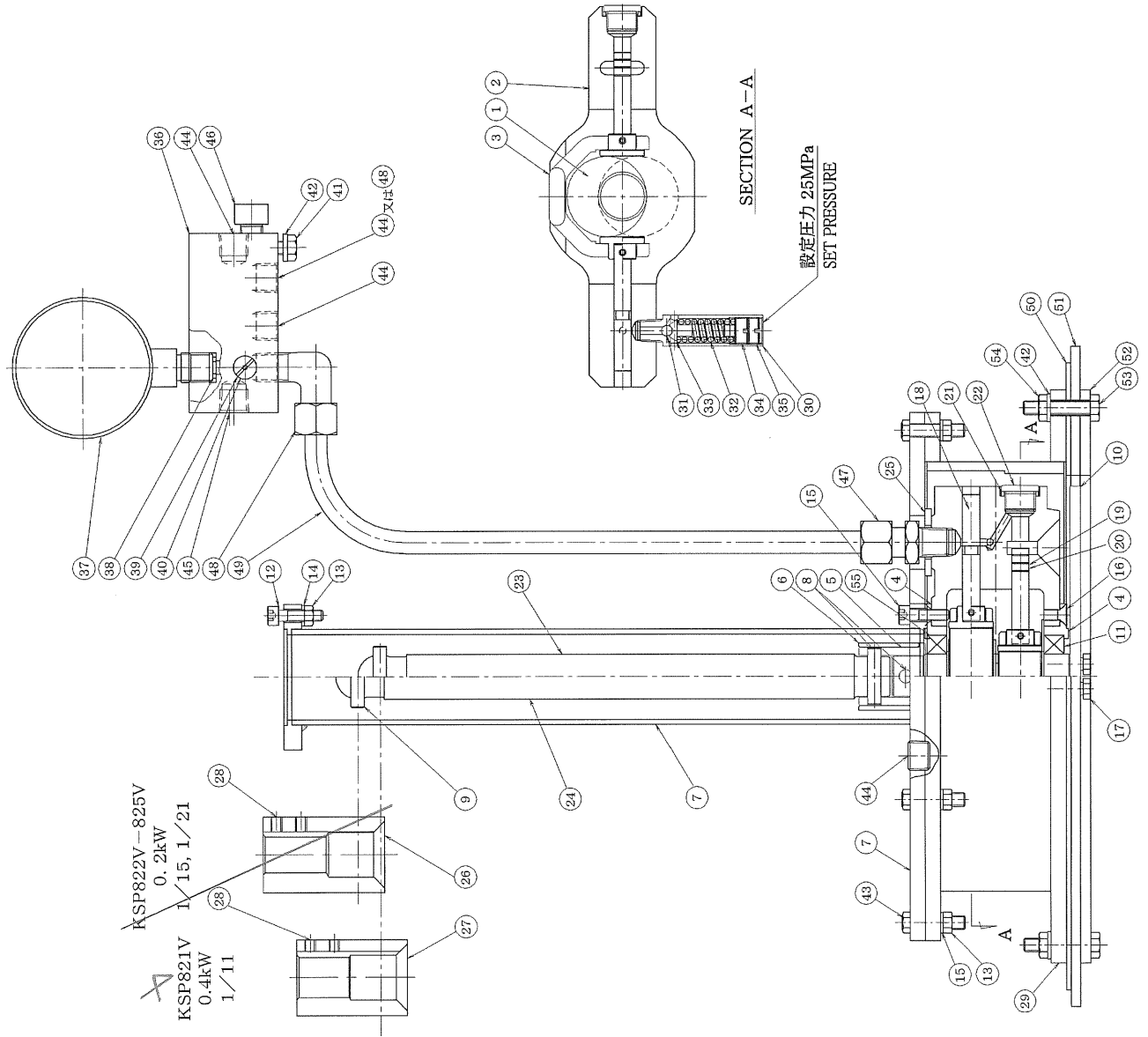
Model	KSP851SV-4H-D11
Discharge capacity	113 ml/min (50Hz)
Reduction ratio	1/11
Motor	AC400V 50Hz #3 0.2kW 4P IP44 INSULATION CLASS:E
Discharge pressure	Max.20.6MPa
Pump	Double Plunger
Usable Grease	16kg or 18kg pail can NLGI.No.2 ~ No.4
Low level switch	D4C-1260 AC250V 0.5A
Pressure switch	CE25 AC250V 3A Set of shop : 18MPa Adjustable range : 3 ~ 25 MPa
Color of Painting	Munsell 2.5G6/2
Mass	50kg (without pail can)

※Note

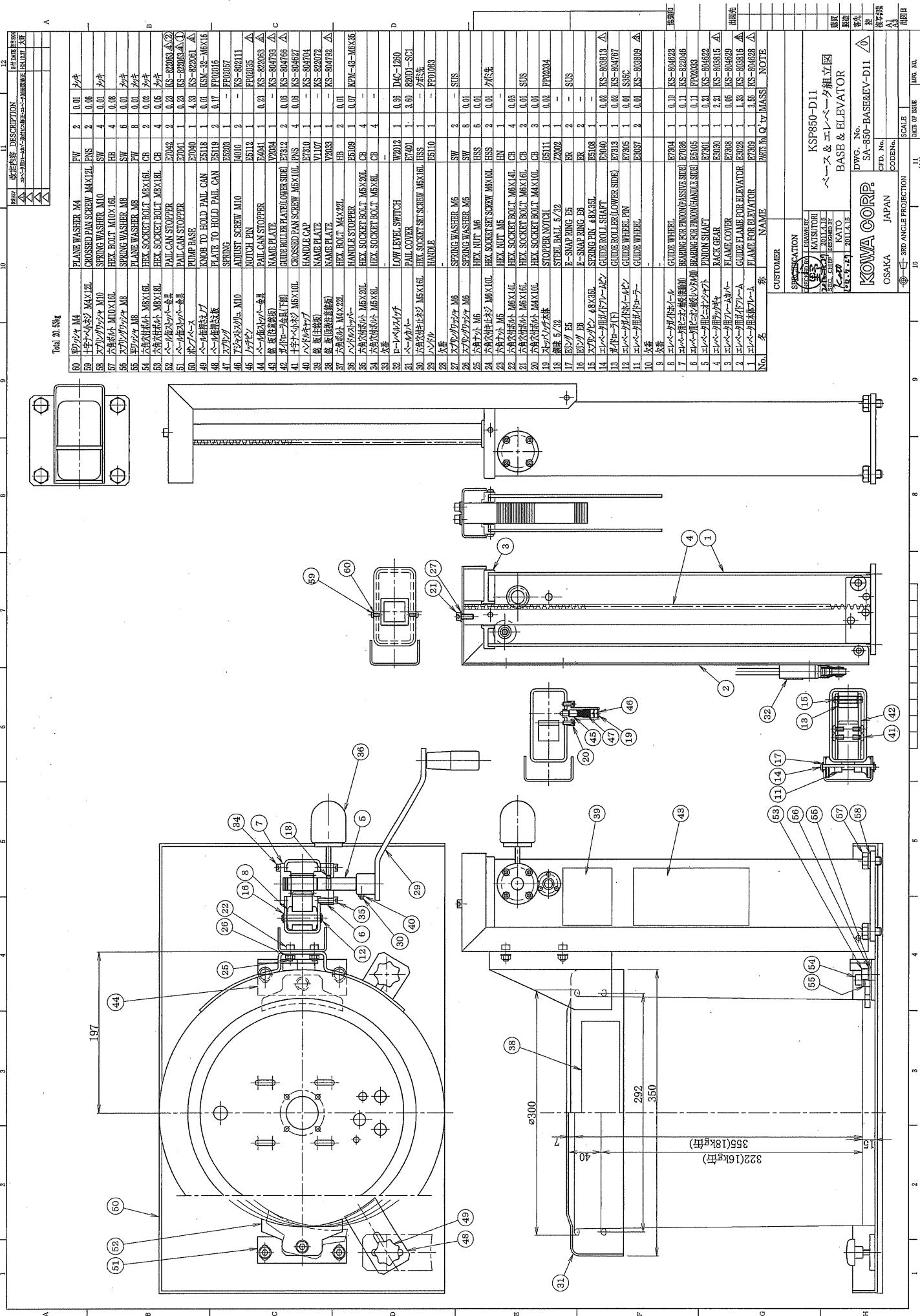
1. Please turn off power when you work.
2. Please open the air vent valve for pail can when you move the pump.
Please close the air vent valve for pail can after setting.
3. When you change a pail can, put up a lifter to a top, and please fix a handle with a lift-stopper.
Automatic stopper operates in a top.
When you lower a lifter, please loosen the lift-stopper.
4. Because it is danger, you remove it from a bottom of a pump, and please do not put a hand or a tool in a pump chest.
There is a agitator inside.



CUSTOMER		
SPECIFICATION		
APPROVED	CHECKED BY	
<i>K. Kato</i>	<i>Y. Matsuyama</i>	
DESIGNED BY	DRAWN BY	
KIKAI SUTORI	KATSUTORI	
2014.5.27	2014.5.27	
SINGLE LINE LUBRICATION SYSTEM MOTOR DRIVEN PUMP KSP851SV-4H-D11		D.W.G. No. 314C0143-A2 
KOWA CORP. OSAKA JAPAN		CFD.No. CODE No
 3RD ANGLE PROJECTION		SCALE ~
5 (A3)		DATE OF ISSUE MFG. NO.



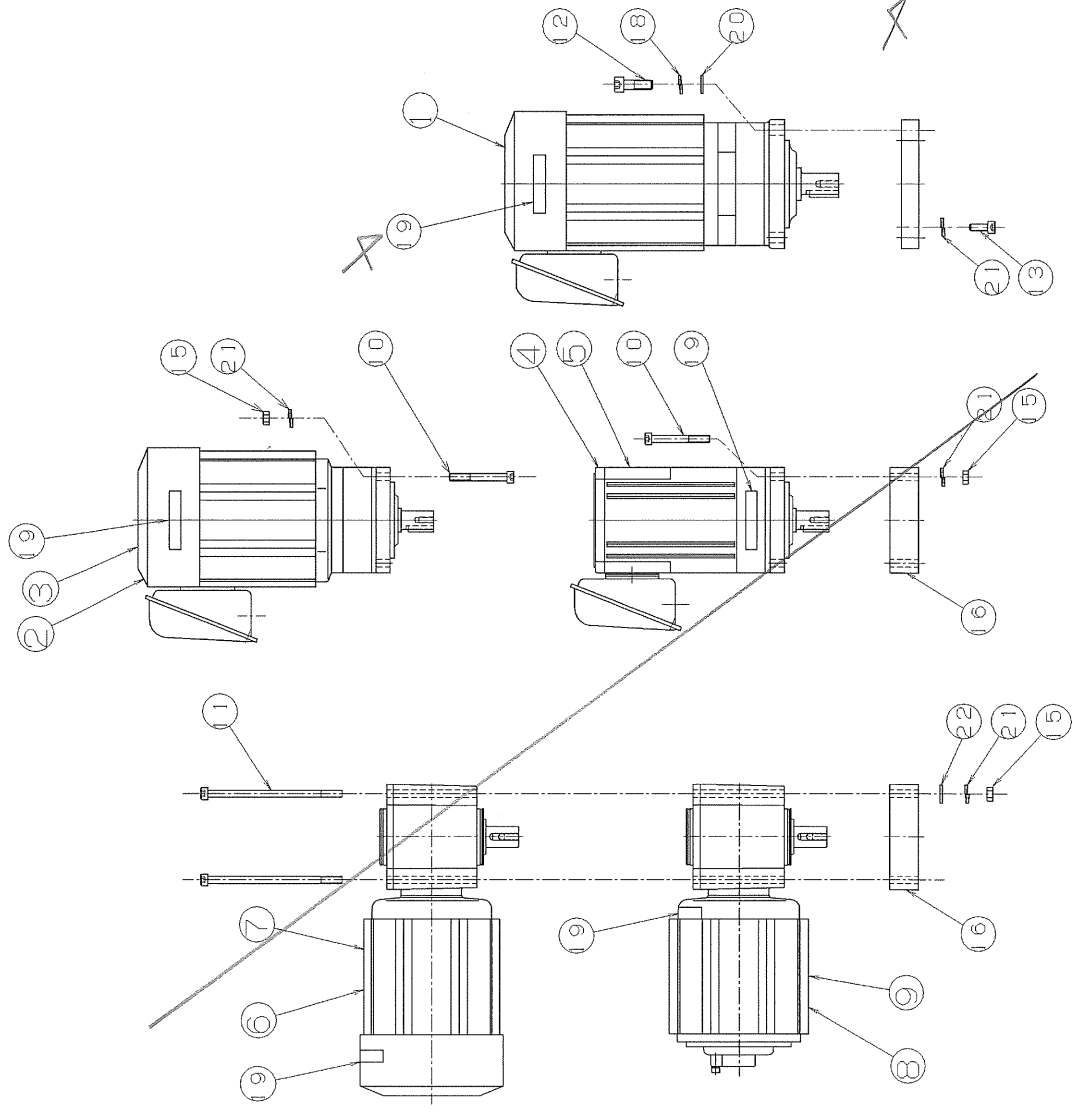
14. 1kg	15. 2kg	16. 3kg	17. 4kg	18. 5kg	19. 6kg	20. 7kg	21. 8kg	22. 9kg	23. 10kg	24. 11kg	25. 12kg	26. 13kg	27. 14kg	28. 15kg	29. 16kg	30. 17kg	31. 18kg	32. 19kg	33. 20kg	34. 21kg	35. 22kg	36. 23kg	37. 24kg	38. 25kg	39. 26kg	40. 27kg	41. 28kg	42. 29kg	43. 30kg	44. 31kg	45. 32kg	46. 33kg	47. 34kg	48. 35kg	49. 36kg	50. 37kg	51. 38kg	52. 39kg	53. 40kg	54. 41kg	55. 42kg	56. 43kg	57. 44kg	58. 45kg	59. 46kg	60. 47kg	61. 48kg	62. 49kg	63. 50kg	64. 51kg	65. 52kg	66. 53kg	67. 54kg	68. 55kg	69. 56kg	70. 57kg	71. 58kg	72. 59kg	73. 60kg	74. 61kg	75. 62kg	76. 63kg	77. 64kg	78. 65kg	79. 66kg	80. 67kg	81. 68kg	82. 69kg	83. 70kg	84. 71kg	85. 72kg	86. 73kg	87. 74kg	88. 75kg	89. 76kg	90. 77kg	91. 78kg	92. 79kg	93. 80kg	94. 81kg	95. 82kg	96. 83kg	97. 84kg	98. 85kg	99. 86kg	100. 87kg	101. 88kg	102. 89kg	103. 90kg	104. 91kg	105. 92kg	106. 93kg	107. 94kg	108. 95kg	109. 96kg	110. 97kg	111. 98kg	112. 99kg	113. 100kg	114. 101kg	115. 102kg	116. 103kg	117. 104kg	118. 105kg	119. 106kg	120. 107kg	121. 108kg	122. 109kg	123. 110kg	124. 111kg	125. 112kg	126. 113kg	127. 114kg	128. 115kg	129. 116kg	130. 117kg	131. 118kg	132. 119kg	133. 120kg	134. 121kg	135. 122kg	136. 123kg	137. 124kg	138. 125kg	139. 126kg	140. 127kg	141. 128kg	142. 129kg	143. 130kg	144. 131kg	145. 132kg	146. 133kg	147. 134kg	148. 135kg	149. 136kg	150. 137kg	151. 138kg	152. 139kg	153. 140kg	154. 141kg	155. 142kg	156. 143kg	157. 144kg	158. 145kg	159. 146kg	160. 147kg	161. 148kg	162. 149kg	163. 150kg	164. 151kg	165. 152kg	166. 153kg	167. 154kg	168. 155kg	169. 156kg	170. 157kg	171. 158kg	172. 159kg	173. 160kg	174. 161kg	175. 162kg	176. 163kg	177. 164kg	178. 165kg	179. 166kg	180. 167kg	181. 168kg	182. 169kg	183. 170kg	184. 171kg	185. 172kg	186. 173kg	187. 174kg	188. 175kg	189. 176kg	190. 177kg	191. 178kg	192. 179kg	193. 180kg	194. 181kg	195. 182kg	196. 183kg	197. 184kg	198. 185kg	199. 186kg	200. 187kg	201. 188kg	202. 189kg	203. 190kg	204. 191kg	205. 192kg	206. 193kg	207. 194kg	208. 195kg	209. 196kg	210. 197kg	211. 198kg	212. 199kg	213. 200kg	214. 201kg	215. 202kg	216. 203kg	217. 204kg	218. 205kg	219. 206kg	220. 207kg	221. 208kg	222. 209kg	223. 210kg	224. 211kg	225. 212kg	226. 213kg	227. 214kg	228. 215kg	229. 216kg	230. 217kg	231. 218kg	232. 219kg	233. 220kg	234. 221kg	235. 222kg	236. 223kg	237. 224kg	238. 225kg	239. 226kg	240. 227kg	241. 228kg	242. 229kg	243. 230kg	244. 231kg	245. 232kg	246. 233kg	247. 234kg	248. 235kg	249. 236kg	250. 237kg	251. 238kg	252. 239kg	253. 240kg	254. 241kg	255. 242kg	256. 243kg	257. 244kg	258. 245kg	259. 246kg	260. 247kg	261. 248kg	262. 249kg	263. 250kg	264. 251kg	265. 252kg	266. 253kg	267. 254kg	268. 255kg	269. 256kg	270. 257kg	271. 258kg	272. 259kg	273. 260kg	274. 261kg	275. 262kg	276. 263kg	277. 264kg	278. 265kg	279. 266kg	280. 267kg	281. 268kg	282. 269kg	283. 270kg	284. 271kg	285. 272kg	286. 273kg	287. 274kg	288. 275kg	289. 276kg	290. 277kg	291. 278kg	292. 279kg	293. 280kg	294. 281kg	295. 282kg	296. 283kg	297. 284kg	298. 285kg	299. 286kg	300. 287kg	301. 288kg	302. 289kg	303. 290kg	304. 291kg	305. 292kg	306. 293kg	307. 294kg	308. 295kg	309. 296kg	310. 297kg	311. 298kg	312. 299kg	313. 300kg	314. 301kg	315. 302kg	316. 303kg	317. 304kg	318. 305kg	319. 306kg	320. 307kg	321. 308kg	322. 309kg	323. 310kg	324. 311kg	325. 312kg	326. 313kg	327. 314kg	328. 315kg	329. 316kg	330. 317kg	331. 318kg	332. 319kg	333. 320kg	334. 321kg	335. 322kg	336. 323kg	337. 324kg	338. 325kg	339. 326kg	340. 327kg	341. 328kg	342. 329kg	343. 330kg	344. 331kg	345. 332kg	346. 333kg	347. 334kg	348. 335kg	349. 336kg	350. 337kg	351. 338kg	352. 339kg	353. 340kg	354. 341kg	355. 342kg	356. 343kg	357. 344kg	358. 345kg	359. 346kg	360. 347kg	361. 348kg	362. 349kg	363. 350kg	364. 351kg	365. 352kg	366. 353kg	367. 354kg	368. 355kg	369. 356kg	370. 357kg	371. 358kg	372. 359kg	373. 360kg	374. 361kg	375. 362kg	376. 363kg	377. 364kg	378. 365kg	379. 366kg	380. 367kg	381. 368kg	382. 369kg	383. 370kg	384. 371kg	385. 372kg	386. 373kg	387. 374kg	388. 375kg	389. 376kg	390. 377kg	391. 378kg	392. 379kg	393. 380kg	394. 381kg	395. 382kg	396. 383kg	397. 384kg	398. 385kg	399. 386kg	400. 387kg	401. 388kg	402. 389kg	403. 390kg	404. 391kg	405. 392kg	406. 393kg	407. 394kg	408. 395kg	409. 396kg	410. 397kg	411. 398kg	412. 399kg	413. 400kg	414. 401kg	415. 402kg	416. 403kg	417. 404kg	418. 405kg	419. 406kg	420. 407kg	421. 408kg	422. 409kg	423. 410kg	424. 411kg	425. 412kg	426. 413kg	427. 414kg	428. 415kg	429. 416kg	430. 417kg	431. 418kg	432. 419kg	433. 420kg	434. 421kg	435. 422kg	436. 423kg	437. 424kg	438. 425kg	439. 426kg	440. 427kg	441. 428kg	442. 429kg	443. 430kg	444. 431kg	445. 432kg	446. 433kg	447. 434kg	448. 435kg	449. 436kg	450. 437kg	451. 438kg	452. 439kg	453. 440kg	454. 441kg	455. 442kg	456. 443kg	457. 444kg	458. 445kg	459. 446kg	460. 447kg	461. 448kg	462. 449kg	463. 450kg	464. 451kg	465. 452kg	466. 453kg	467. 454kg	468. 455kg	469. 456kg	470. 457kg	471. 458kg	472. 459kg	473. 460kg	474. 461kg	475. 462kg	476. 463kg	477. 464kg	478. 465kg	479. 466kg	480. 467kg	481. 468kg	482. 469kg	483. 470kg	484. 471kg	485. 472kg	486. 473kg	487. 474kg	488. 475kg	489. 476kg	490. 477kg	491. 478kg	492. 479kg	493. 480kg	494. 481kg	495. 482kg	496. 483kg	497. 484kg	498. 485kg	499. 486kg	500. 487kg	501. 488kg	502. 489kg	503. 490kg	504. 491kg	505. 492kg	506. 493kg	507. 494kg	508. 495kg	509. 496kg	510. 497kg	511. 498kg	512. 499kg	513. 500kg	514. 501kg	515. 502kg	516. 503kg	517. 504kg	518. 505kg	519. 506kg	520. 507kg	521. 508kg	522. 509kg	523. 510kg	524. 511kg	525. 512kg	526. 513kg	527. 514kg	528. 515kg	529. 516kg	530. 517kg	531. 518kg	532. 519kg	533. 520kg	534. 521kg	535. 522kg	536. 523kg	537. 524kg	538. 525kg	539. 526kg	540. 527kg	541. 528kg	542. 529kg	543. 530kg	544. 531kg	545. 532kg	546. 533kg	547. 534kg	548. 535kg	549. 536kg	550. 537kg	551. 538kg	552. 539kg	553. 540kg	554. 541kg	555. 542kg	556. 543kg	557. 544kg	558. 545kg	559. 546kg	560. 547kg	561. 548kg	562. 549kg	563. 550kg	564. 551kg	565. 552kg	566. 553kg	567. 554kg	568. 555kg	569. 556kg	570. 557kg	571. 558kg	572. 559kg	573. 560kg	574. 561kg	575. 562kg	576. 563kg	577. 564kg	578. 565kg	579. 566kg	580. 567kg	581. 568kg	582. 569kg	583. 570kg	584. 571kg	585. 572kg	586. 573kg	587. 574kg	588. 575kg	589. 576kg	590. 577kg	591. 578kg	592. 579kg	593. 580kg	594. 581kg	595. 582kg	596. 583kg	597. 584kg	598. 585kg	599. 586kg	600. 587kg	601. 588kg	602. 589kg	603. 590kg	604. 591kg	605. 592kg	606. 593kg	607. 594kg	608. 595kg	609. 596kg	610. 597kg	611. 598kg	612. 599kg	613. 600kg	614. 601kg	615. 602kg	616. 603kg	617. 604kg	618. 605kg	619. 606kg	620. 607kg	621. 608kg	622. 609kg	623. 610kg	624. 611kg	625. 612kg	626. 613kg	627. 614kg	628. 615kg	629. 616kg	630. 617kg	631. 618kg	632. 619kg	633. 620kg	634. 621kg	635. 622kg	636. 623kg	637. 624kg	638. 625kg	639. 626kg	640. 627kg	641. 628kg	642. 629kg	643. 630kg	644. 631kg	645. 632kg	646. 633kg	647. 634kg	648. 635kg	649. 636kg	650. 637kg	651. 638kg	652. 639kg	653. 640kg	654. 641kg	655. 642kg	656. 643kg	657. 644kg	658. 645kg	659. 646kg	660. 647kg	661. 648kg	662. 649kg	663. 650kg	664. 651kg	665. 652kg	666. 653kg	667. 654kg	668. 655kg	669. 656kg	670. 657kg	671. 658kg	672. 659kg	673. 660kg	674. 661kg	675. 662kg	676. 663kg	677. 664kg	678. 665kg	679. 666kg	680. 667kg	681. 668kg	682. 669kg	683. 670kg	684. 671kg	685. 672kg	686. 673kg	687. 674kg	688. 675kg	689. 676kg	690. 677kg	691. 678kg	692. 679kg	693. 680kg	694. 681kg	695. 682kg	696. 683kg	697. 684kg	698. 685kg	699. 686kg	700. 687kg	701. 688kg	702. 689kg	703. 690kg	704. 691kg	705. 692kg	706. 693kg	707. 694kg	708. 695kg	709. 696kg	710. 697kg	711. 698kg	712. 699kg	713. 700kg	714. 701kg	715. 702kg	716. 703kg	717. 704kg	718. 705kg	719. 706kg	720. 707kg	721. 708kg	722. 709kg	723. 710kg	724. 711kg	725. 712kg	726. 713kg	727. 714kg	728. 715kg	729. 716kg	730. 717kg	731. 718kg	732. 719kg	733. 720kg	734. 721kg	735. 722kg	736. 723kg	737. 724kg	738. 725kg	739. 726kg	740. 727kg	741. 728kg	742. 729kg	743. 730kg	744. 731kg	745. 732kg	746. 733kg	747. 734kg	748. 735kg	749. 736kg	750. 737kg	751. 738kg	752. 739kg	753. 740kg	754. 741kg	755. 742kg	756. 743kg	757. 744kg	758. 745kg	759. 746kg	760. 747kg	761. 748kg	762. 749kg	763. 750kg	764. 751kg	765. 752kg	766. 753kg	767. 754kg	768. 755kg	769. 756kg	770. 757kg	771. 758kg	772. 759kg	773. 760kg	774. 761kg	775. 762kg	776. 763kg	777. 764kg	778. 765kg	779. 766kg	780. 767kg	781. 768kg	782. 769kg	783. 770kg	784. 771kg	785. 772kg	786. 773kg	787. 774kg	788. 775kg	789. 776kg	790. 777kg	791. 778kg	792. 779kg	793. 780kg	794. 781kg	795. 782kg	796. 783kg	797. 784kg	798. 785kg	799. 786kg	800. 787kg	801. 788kg	802. 789kg	803. 790kg	804. 791kg	805. 792kg	806. 793kg	807. 794kg	808. 795kg	809. 796kg	810. 797kg	811. 798kg	812. 799kg	813. 800kg	814. 801kg	815. 802kg	816. 803kg	817. 804kg	818. 805kg	819. 806kg	820. 807kg	821. 808kg	822. 809kg	823. 810kg	824. 811kg	825. 812kg	826. 813kg	827. 814kg	828. 815kg	829. 816kg	830. 817kg	831. 818kg	832. 819kg	833. 820kg	834. 821kg	835. 822kg	836. 823kg	837. 824kg	838. 825kg	839. 826kg	840. 827kg	841. 828kg	842. 829kg	843. 830kg	844. 831kg	845. 832kg	846. 833kg	847. 834kg	848. 835kg	849. 836kg	850. 837kg	851. 838kg	852. 839kg	853. 840kg	854. 841kg	855. 842kg	856. 843kg	857. 844kg	858. 845kg	859. 846kg	860. 847kg	861. 848kg	862. 849kg	863. 850kg	864. 851kg	865. 852kg	866. 853kg	867. 854kg	868. 855kg	869. 856kg	870. 857kg	871. 858kg	872. 859kg	873. 860kg	874. 861kg	875. 862kg	876. 863kg	877. 864kg	878. 865kg	879. 866kg	880. 867kg	881. 868kg	882. 869kg	883. 870kg	884. 871kg	885. 872kg	886. 873kg	887. 874kg	888. 875kg	889. 876kg	890. 877kg	891. 878kg	892. 879kg	893.
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1 2 3 4 5 6 7 8

A B C D E F

図名	改定内容	DESCRIPTION	図面作成者
△	設計部より承認方向修正 (Vタイプ0.2kW)		田中 1229
△	モータ型式修正及び取付ボルト長さ修正		田中 1000
△	取付ボルト長さ修正 (No. 5)		田中 1011
△			田中 1011



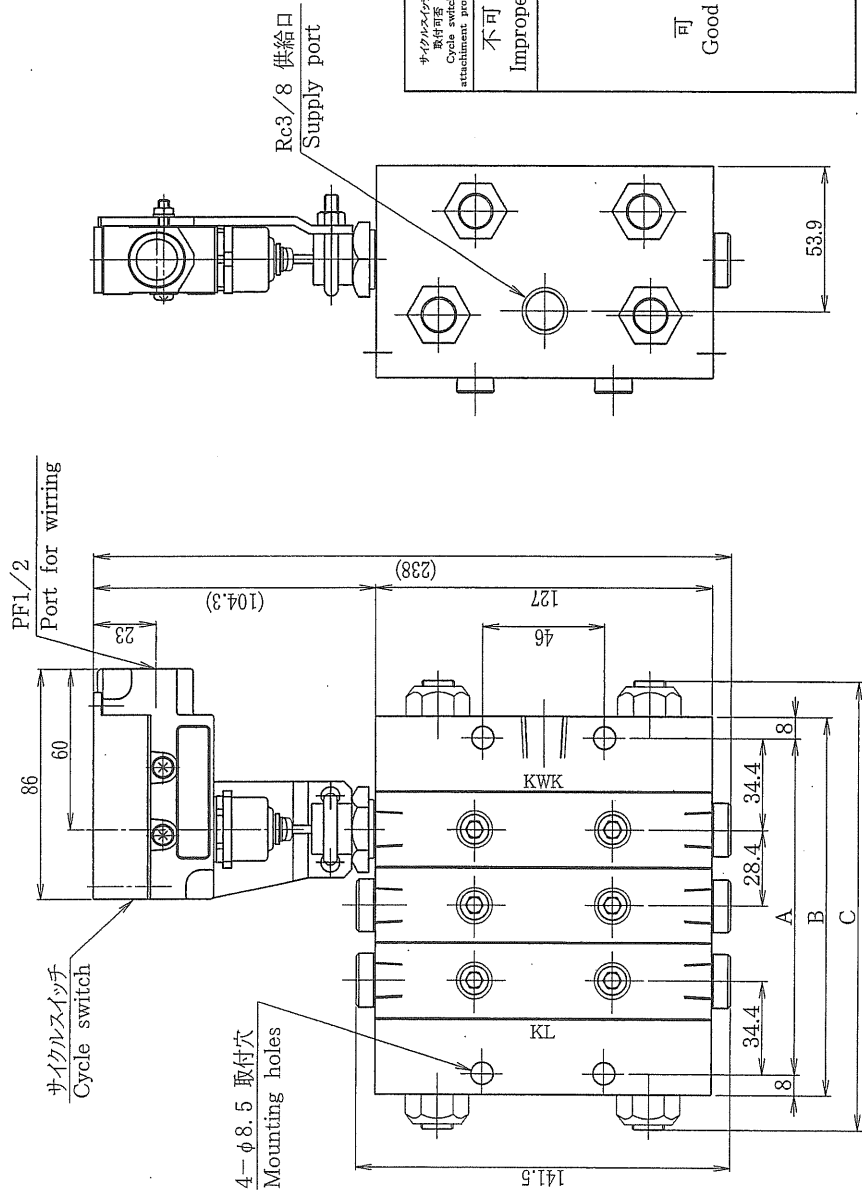
品番	名	部	品	番	数	量	備	考
22	平ワッシャ	PW	4	0.01	M6			
21	スプリングワッシャ	SW	4	0.01	M6			
20	平ワッシャ	PW	4	0.02	M8			
19	鉄板 (矢印)	V2019	1	-	KS-80	1334		
18	スプリングワッシャ	SW	1	0.02	M8			
17	ギヤードモータ用フランジ (注重)	E7407	1	0.21	820D1-SM2			
16	ギヤードモータ用フランジ (注重)	E7406	1	0.26	820D1-SM1	△		
15	六角ナット	HN	4	0.02	M6			
14	六角ナット	HN	4	0.04	M8			
13	六角穴付ボルト	CB	4	0.04	M6x16L			
12	六角穴付ボルト	CB	4	0.06	M8x25L			
11	六角穴付ボルト	CB	4	0.19	M6x115L			
10	六角穴付ボルト	CB	4	0.06	M6x50L			
9	ギヤードモータ (注重)	0.1kW 1/40	-	1	5.30	RNFMO1-190R-40		協議中
8	ギヤードモータ (注重)	0.1kW 1/30	-	1	5.30	RNFMO1-190R-30		
7	ギヤードモータ (注重)	0.2kW 1/20	-	1	6.50	RNFMO2-190R-20		
6	ギヤードモータ (注重)	0.2kW 1/15	-	1	6.50	RNFMO2-190R-15		
5	ギヤードモータ (注重)	0.1kW 1/43	-	1	4.00	CNVMO1-5067-43		
4	ギヤードモータ (注重)	0.1kW 1/29	-	1	4.00	CNVMO1-5067-29		
3	ギヤードモータ (注重)	0.2kW 1/21	-	1	6.50	CNVMO2-506H-21		出図先
2	ギヤードモータ (注重)	0.2kW 1/15	-	1	6.50	CNVMO2-506H-15		
1	ギヤードモータ (注重)	0.4kW 1/11	-	1	8.00	CNVMO5-5077-11		

CUSTOMER	
SPECIFICATION	
CHIEF ENGINEER	DRAWN BY
12/01/12	KATSUTORI
2006.6.13	2006.6.13
DESIGNED BY	DESIGNED BY
12/01/12	SHIMONO
2006.6.13	2006.6.13
DWG. No.	
SA-820-MOTOR-D1	
KSP820-D1	
ギヤードモータ&モータフランジ	
CFD. No.	CFD. No.
A1	A1
COD. No.	COD. No.
A3	A3
SCALE	
DATE OF ISSUE	
MFG. NO.	

図面No.	改定内容	DESCRIPTION	日付DATE	担当者
△	サイクルスイッチ型式変更(2E-5000→2E-N-2)		2002.08.01	下野
△	英文スペル一部修正		2003.04.03	中島
△	サイクル指示機、スイッチ取付可否、注記追加		2007.03.05	F.M

注

吐出口あるいは補助吐出口のいずれか一箇所に配管出来ます。
Either one discharge port or auxiliary discharge port can be piped.



サイクルスイッチ 取付可否 Cycle switch attachment propriety	ピストン種類 KIND OF PISTON	吐出量 (cm ³ /STROKE) DIS. CAPACITY	17ポート数 相当 吐出口数 NUMBER OF DIS. PORTS PER BLOCK	最高圧力 MAX. PRESSURE (MPa)
不可 Improper	25T	0.410	2	
	25S	0.820	1	
	50T	0.820	2	
	50S	1.640	1	
	75T	1.230	2	
	75S	2.460	1	
可 Good	100T	1.640	2	
	100S	3.280	1	
	125T	2.050	2	
	125S	4.100	1	
	150T	2.460	2	
	150S	4.920	1	

25T、25Sのピストンには、サイクルスイッチを取付けることができません。
An cycle switch is not installed on the following pistons. 25T, 25S

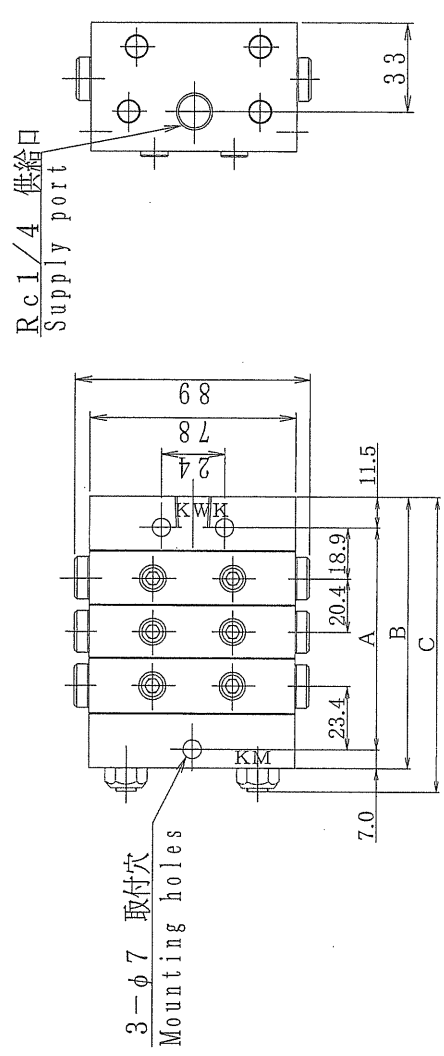
形式 Model	ブロック数 NUMBER OF BLOCKS			供給口径 SIZE OF SUPPLY PORT	吐出口径 SIZE OF DIS. PORT	最大吐出口数 MAX. NUMBER OF DIS. PORT	質量 (kg) MASS
	I	M	E				
KL-3	1	3	1	125.6	141.6	168	11.1
KL-4	1	4	1	154	170	196	13.3
KL-5	1	5	1	182.4	198.4	225	15.5
KL-6	1	6	1	210.8	226.8	253	17.7
KL-7	1	7	1	239.2	255.2	282	19.9
KL-8	1	8	1	267.6	283.6	310	22.1

【付属品】 M8×100L取付ボルト(ナット付き) 4組
Accessories: M8×100L mounting bolts (with nuts) 4 sets

CUSTOMER		SPECIFICATION		KL-3~8 サイクルスイッチ付分配弁 MEASURING VALVE (WITH CYCLE SWITCH)		DWG. No.		BW-0196		3	
DRAWN BY T. TAKATA 197/09/24 DESIGNED BY T. TAKATA 197/09/24 CHECKED BY T. TAKATA 197/09/24		DATE OF ISSUE MFG. NO.				CFD. No.					
						CODE No.					
KAWA CORP.		OSAKA		JAPAN							

REV	改定内容	DESCRIPTION	REV	改定内容	DESCRIPTION
△	取付穴の注記		△	取付穴の注記	
△	注記追加、他		△	注記追加、他	
△	注記削除 (付加が最付不可にかいて)		△	注記削除 (付加が最付不可にかいて)	
△			△		

注
吐出口あるいは補助吐出口のいずれか一箇所に配管出来ます。
Either one discharge port or auxiliary discharge port can be piped.

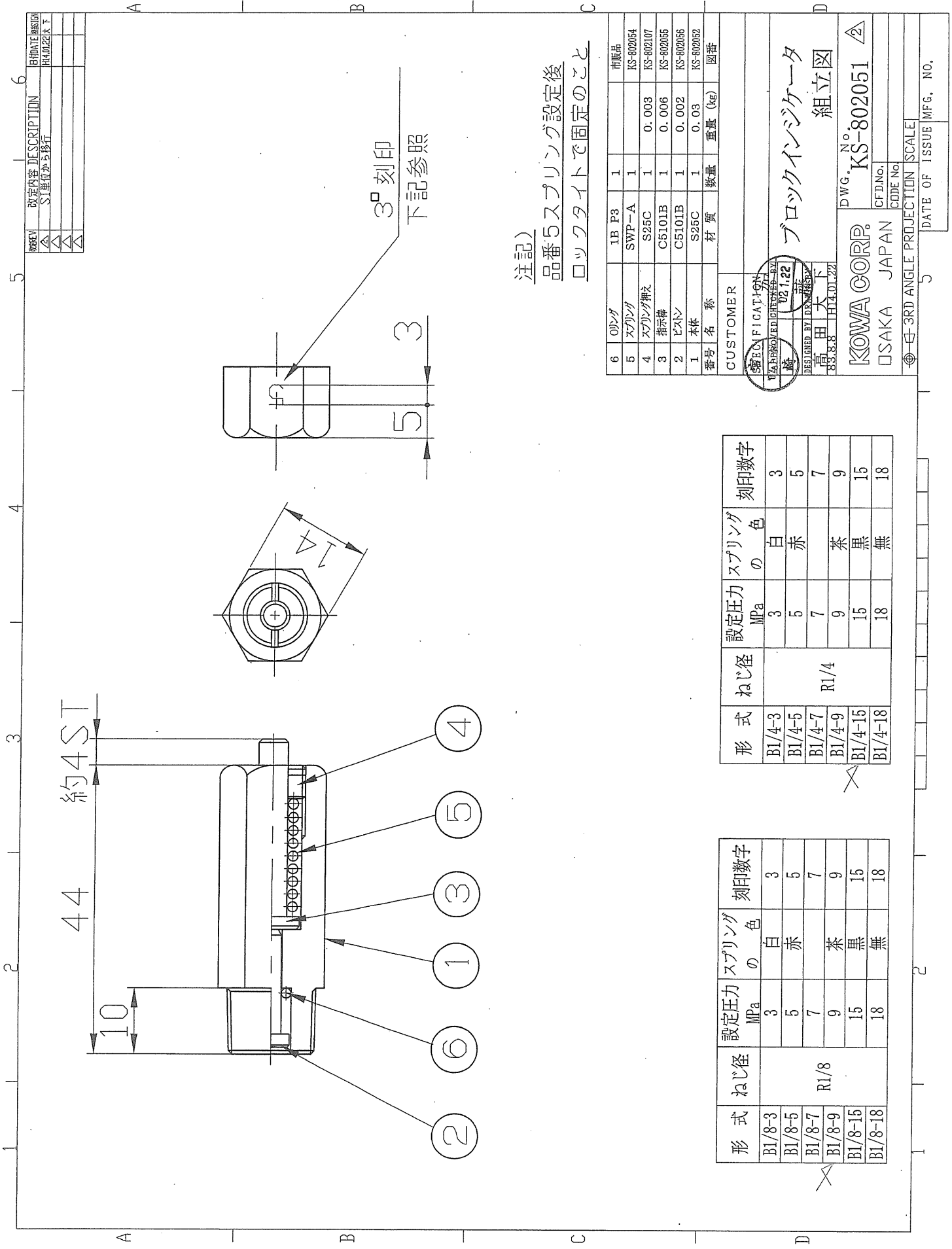


ピストン種類 KIND OF PISTON	吐出量 (cc/Stroke) DIS. CAPACITY	1ブロック数 1 BLOCK	1ブロック数 1 BLOCK	最高圧力 MAX. PRESSURE [MPa]
10T	0.164	2		
10S	0.328	1		
15T	0.246	2		
15S	0.492	1		
20T	0.328	2		20.6MPa (9.8MPa For oil)
20S	0.656	1		
25T	0.410	2		
25S	0.820	1		
30T	0.492	2		
30S	0.984	1		
35T	0.574	2		
35S	1.148	1		

形式 Model	ブロック数 BLOCKS	A	B	C	供給口径 SIZE OF SUPPLY PORT	吐出口径 SIZE OF DIS. PORT	最大吐出数 MAX. NUMBER OF DIS. PORT	質量 (kg) Mass
△ KM-3	1 3 1	83.1	101.6	112			6	2.9
△ KM-4	1 4 1	103.5	122	133			8	3.5
KM-5	1 5 1	123.9	142.4	153		Rc1/8	10	4.0
KM-6	1 6 1	144.3	162.8	173	Rc1/4		12	4.6
KM-7	1 7 1	164.7	183.2	194			14	5.2
KM-8	1 8 1	185.1	203.6	214			16	5.7

[付属品] M6×65L取付ボルト (ナット付き) 3組
Accessories: M6×65L mounting bolts (with nuts) 3 sets

CUSTOMER		SPECIFICATION	
CHECKED BY T. TAKATA 19.11.28		DRAWN BY T. TAKATA 19.11.28	
DESIGNED BY T. TAKATA 19.11.28		DWG. N° BW-0197	
OSAKA JAPAN		CFD. N°	
SCALE 1/2		DATE OF ISSUE	
MFG. NO.			



注記)
品番5スプリング設定後
ロックタイトで固定のこと

6	0112	1B P3	1	市販品
5	スプリング	SWP-A	1	KS-802054
4	スプリング押え	S25C	1	0.003 KS-802107
3	指示棒	C5101B	1	0.006 KS-802055
2	ピストン	C5101B	1	0.002 KS-802056
1	本体	S25C	1	0.03 KS-802052
番号	名 称	材 質	数 量	重 量 (kg)

CUSTOMER	
TECHNICAL INFORMATION	
DESIGNED BY 田 下 大 矢	
DATE 2012.1.22	
DWG. No. KS-802051	
組立図	
KOWA CORP.	
OSAKA JAPAN	
DATE OF ISSUE MFG. NO.	

形 式	ねじ径	設定圧力 MPa	スプリング の 色	刻印数字
B1/4-3	R1/4	3	白	3
B1/4-5		5	赤	5
B1/4-7		7	茶	7
B1/4-9		9	黒	9
B1/4-15		15	黒	15
B1/4-18		18	無	18

形 式	ねじ径	設定圧力 MPa	スプリング の 色	刻印数字
B1/8-3	R1/8	3	白	3
B1/8-5		5	赤	5
B1/8-7		7	茶	7
B1/8-9		9	黒	9
B1/8-15		15	黒	15
B1/8-18		18	無	18

REV	DESCRIPTION	DATE	SIN
△			
△			
△			
△			

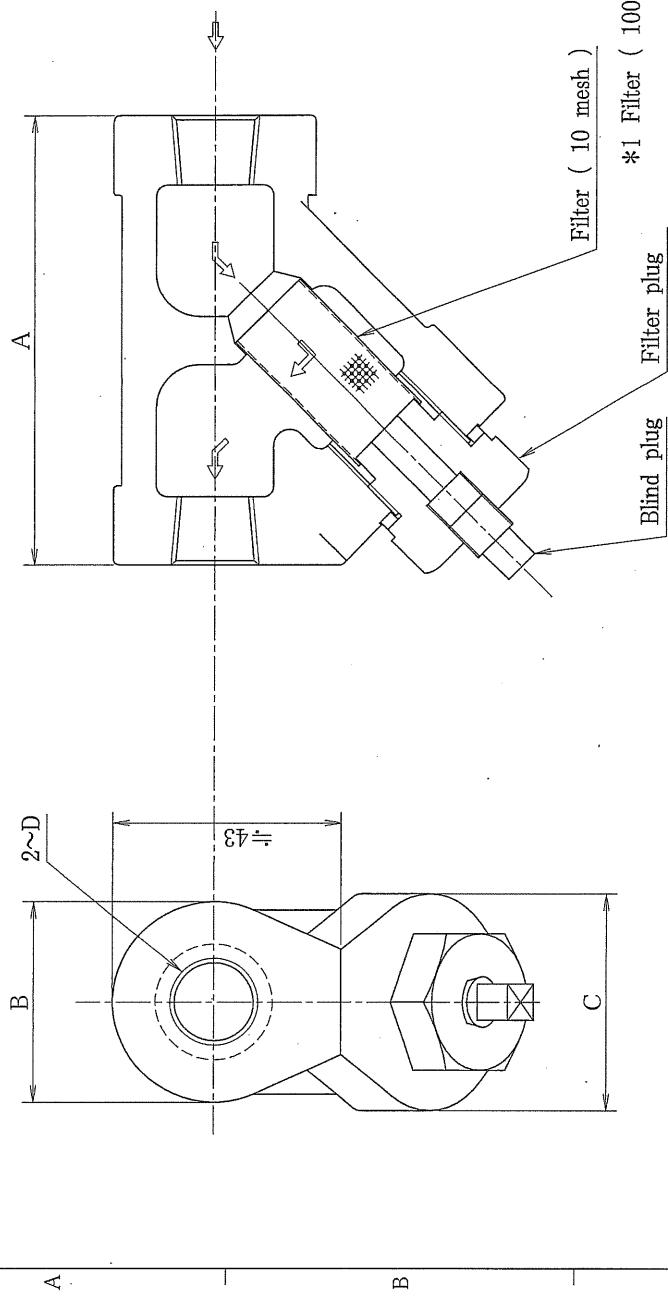
5

4

3

2

1



Material : Body=Ductile cast iron
Working pressure : Max. 20. 6MPa
Mass : 810g

Nominal size	A	B	C	D
3/8	85	38	41	RC3/8
1/2				RC1/2

※1 It is an option and there are as many as 100 filter meshes.

Method of handling(cleaning of filter)

The plug is removed first, grease is sent from the pump, and grease in the filter is taken out.
Next, the filter plug is removed and an inside filter is taken out by the finger.
The filter must wash the inside with the treated oil etc. , blow out air, and remove dirt.
When washing ends, the filter is inserted in the filter plug side, and is done by the hand and the filter plug is tightened to the main body.
It tightens with the tool at the end.
Grease is tightened with the pump and after pulling out of air in sending is done, the plug (It tries to reel the seal tape) is tightened again.

CUSTOMER		SPECIFICATION	
CHECKED BY	DRAWN BY	Y TYPE LINE STRAINERS	
YOHNO	YOHNO	Rc3/8~Rc1/2	
2011.12.8	2011.12.8		
SEC. CHIEF	DESIGNED BY		
MASHIMONO	MASHIMONO		
2011.12.8	2011.12.8		
KOWA CORP.		DWG. No. eYST	
OSAKA	JAPAN	CFD. No.	
		CODENo.	
		SCALE	

3RD ANGLE PROJECTION