

Robot assembly information

Introduction:

We are providing this document as a means of providing more enjoyment of the robot. Please keep in mind as you read through the drawings that any attempt at opening the robot could and most likely will void any warranty that was provided with the product.

This document can give you an idea of what is inside the robot and how it was put together. The manufacturer made these documents for the people involved in the assembly work of the robot. Most of the pages came from internal documents that reside in the factory. As you browse through the pages, you will see abbreviations that may have no meaning to you. The list below is intended to take some of the mystery out of the drawings. The list is in no particular order.

LED: Light Emitting Diode. Some LEDs are colorful to give the robot some personality. Others, which you cannot see, create infrared light that the robot uses for navigation.

IR: InfraRed. The robot uses IR LEDs to create light for various purposes. Some LEDs create light so that the robot can see in the dark with the camera. Some LEDs create light in a certain frequency which will reflect off walls and other objects and be picked up by receivers. This tells the robot when it is near objects so he can change direction.

IR Receivers: These parts detect IR light reflected from objects such as walls and people. This is useful for navigation.

Interrupter: This is a special U-shaped part that has an IR LED on one leg and an IR receiver on the other. The robot uses a thin metal wheel with notches or teeth in critical positions around the outside edge. This wheel is inserted between legs of the U-shaped interrupter. When the wheel is rotating, the IR beam will be alternately interrupted or allowed to pass through. By counting the number of times the beam was interrupted, the robot can calculate the position of his arms, head, and body.

Tilt: The robot has a pendulum made out of metal that will make contact with a ring if the robot is pushed too hard or falls over. The robot will then react in an appropriate manner.

Bezel: This is just a panel with holes. Usually push buttons fill these holes to make a keypad assembly.

AA Glue: This is a super glue type adhesive.

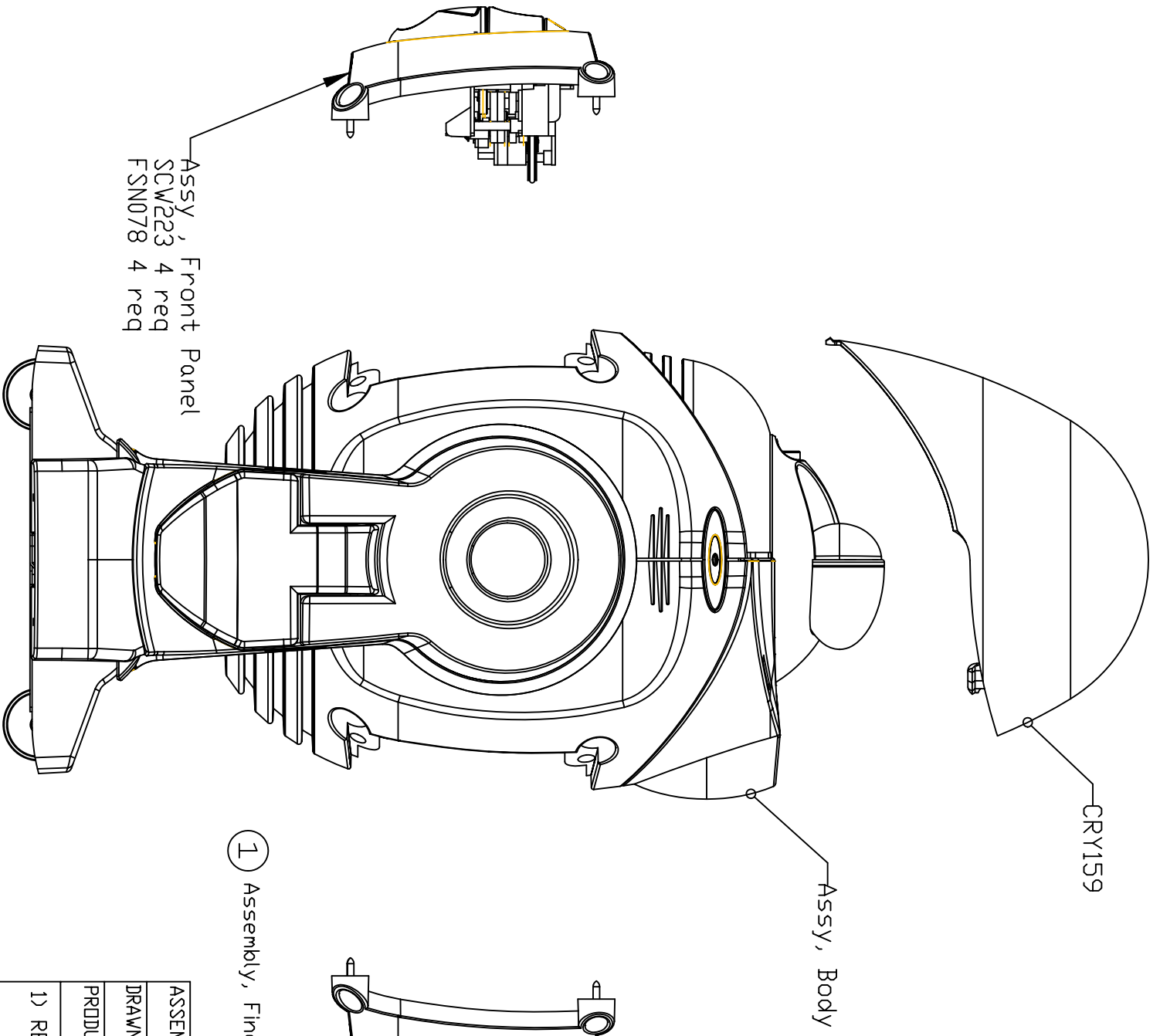
Hot Melt: This is a milky white plastic that comes in a rod. The rods are inserted into a gun that melts the material. When the material cools, the parts are bonded together.

RF Module: RF means Radio Frequency. The robot has two of these modules. One is a lower frequency (433 MHz) device that allows the robot to take commands from a remote control. The other is of a higher frequency (2.4 GHz) that transmits video signals from the robot to the remote.

PIR: Passive Infrared. This part is a motion detector. If a source of heat moves in front of the sensor, it sends a signal to the robot. This part is used in security systems to detect intruders while ignoring other sources of heat such as radiators. The robot has one of these mounted on a rotating platform. This allows the robot to tell the difference between a person and an inanimate object such as a piece of furniture.

Part numbers: Part numbers indicate roughly what kind of part they stand for. The part numbers are in the format PPPxxx, where PPP is a prefix indicating the part type, and xxx is the number for the part. Here is a list of prefixes you'll find in these drawings:

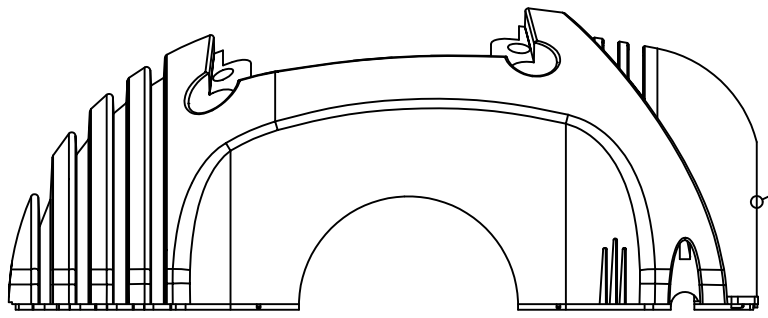
SCW	Screws
PCB	Printed Circuit Boards
BKT	Bracket
CAB	Cabinets, usually plastic
FSN	Washers
CRY	Clear parts used as lenses
MIS	Miscellaneous parts
MIC	Microphones
GEA	Round parts that rotate, such as gears and interrupters
JAK	Jacks and sockets
MTR	Motors
SPR	Springs
SPK	Speakers



① Assembly, Final Robot

ASSEMBLY INSTRUCTIONS:		
DRAWN	DATE	
PRODUCT ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION		
		NID. 0025

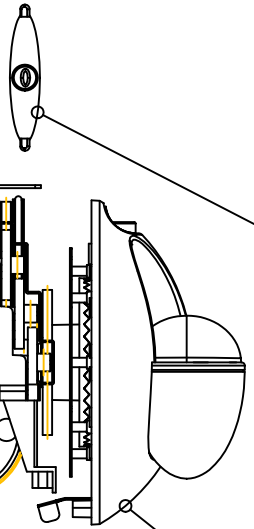
Assy, Chest
SCW030 4 req



SPK009A
MIS978

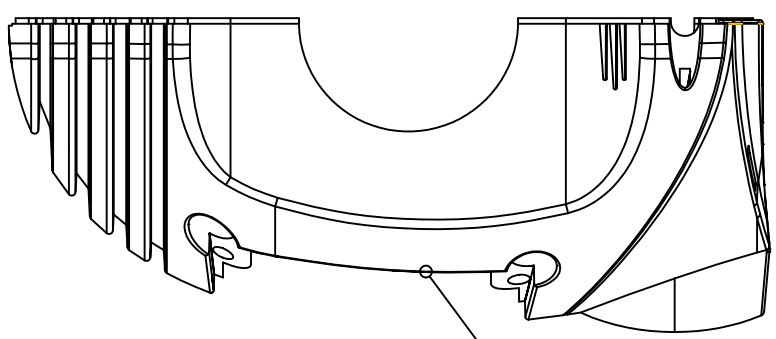


BKT666
MIC053
MIS486A

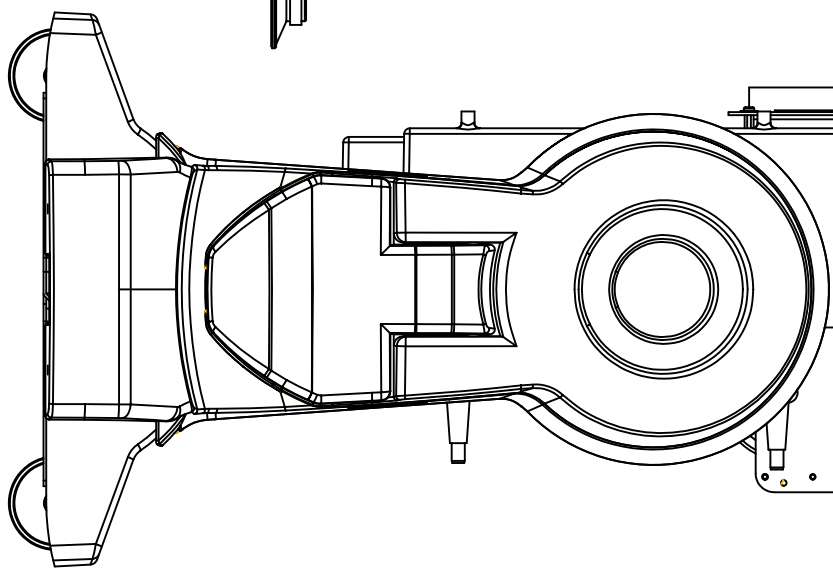


Assy, Skeleton

BKT666
MIC053
MIS486A



Assy, Back
SCW030 4 req



1.6 Assy, Body

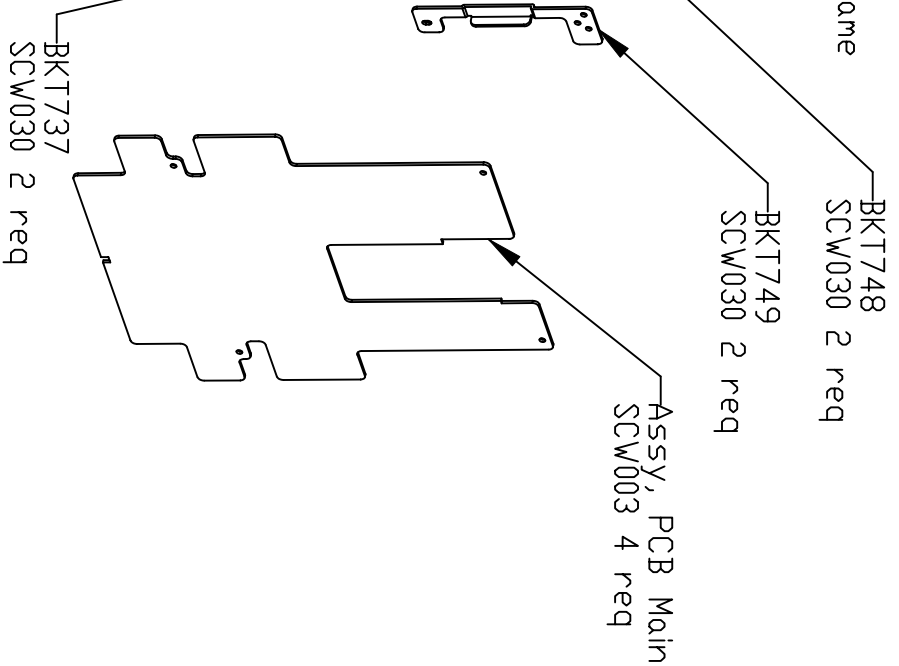
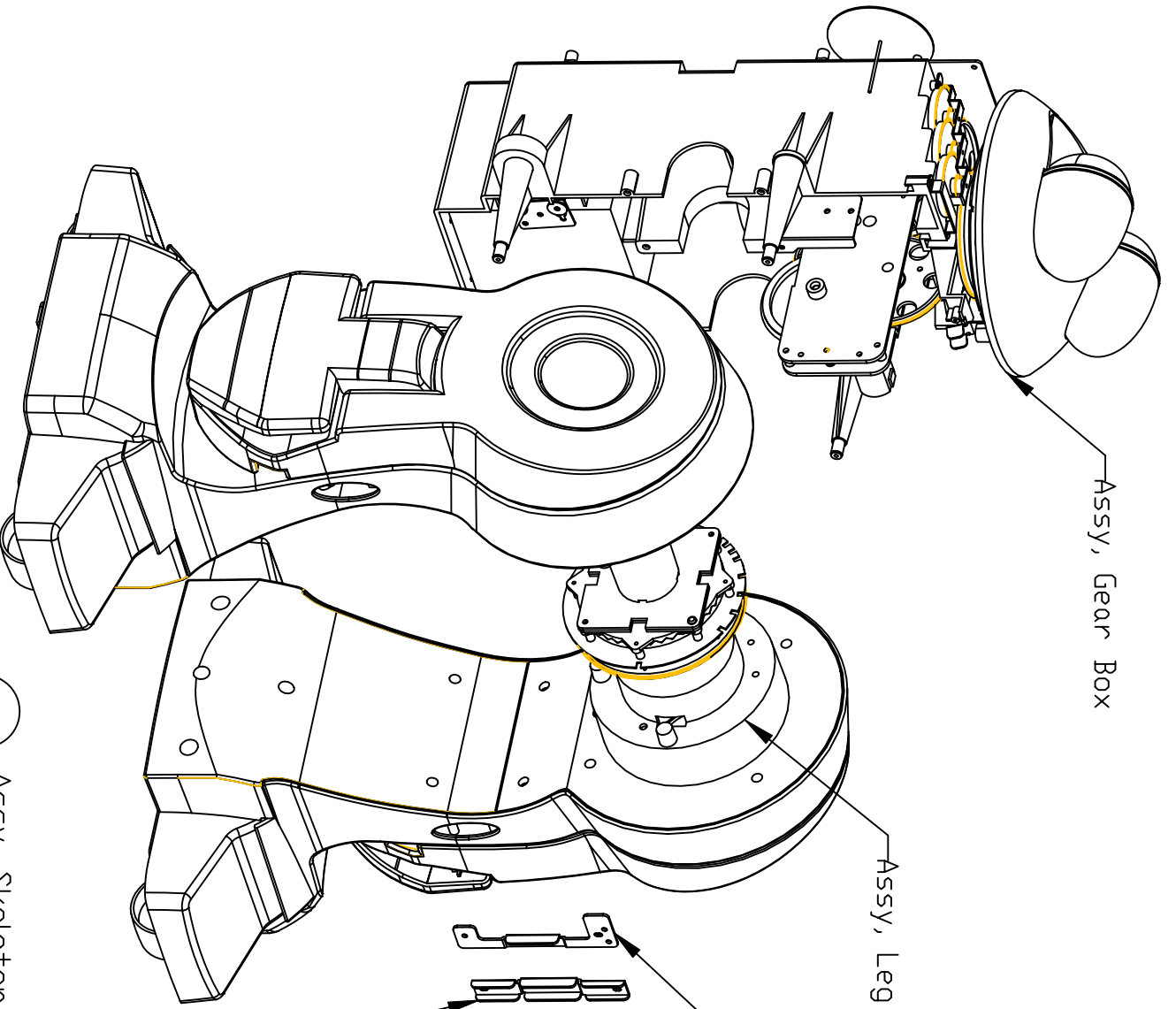
ASSEMBLY INSTRUCTIONS:

DRAWN DATE

PRODUCT ROBOT CHANGES ISSUE: 1

1) RELEASE TO PRODUCTION

ND, 0024

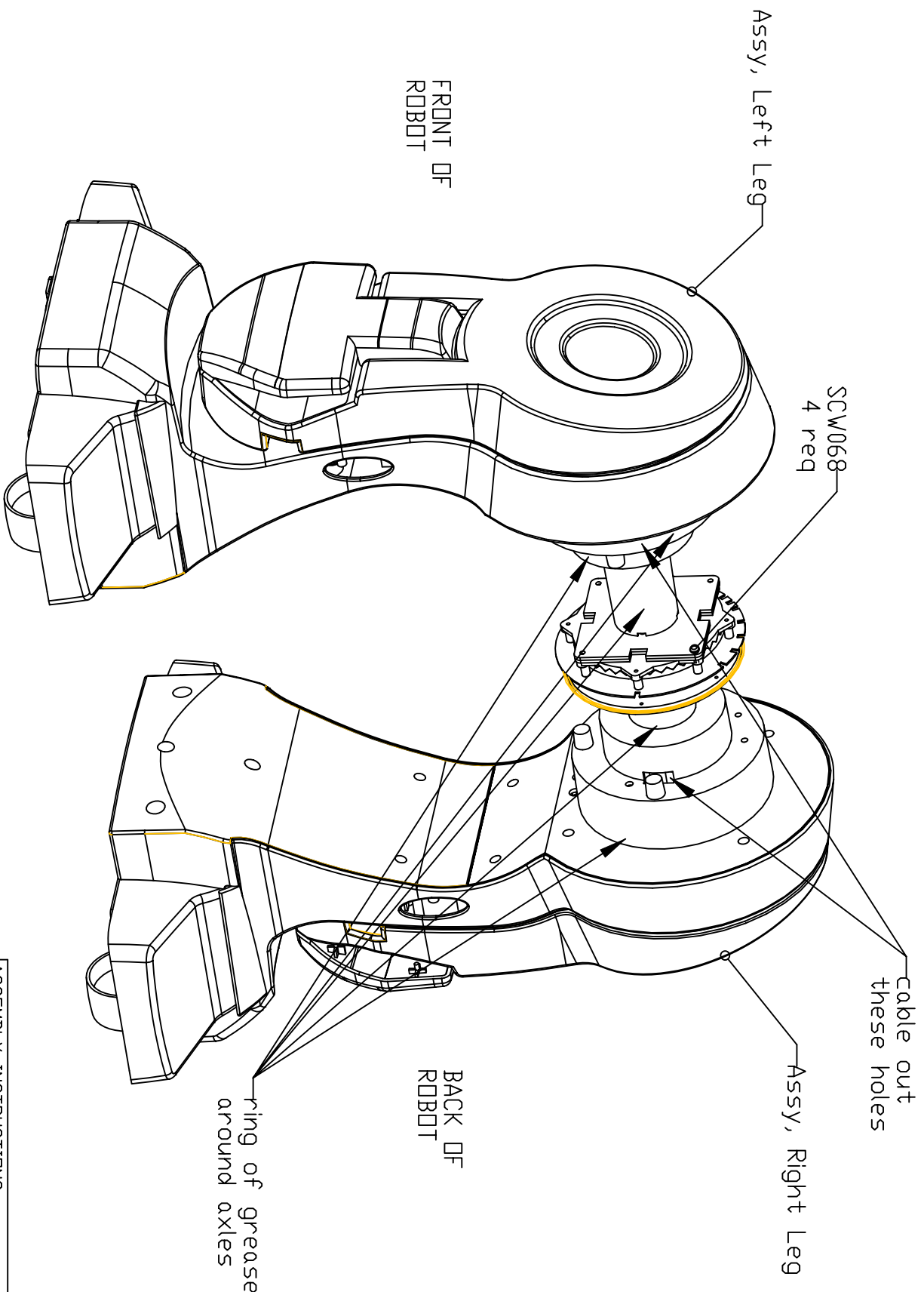


ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
ISSUE: 1	

1) RELEASE TO PRODUCTION

N.D. 0023

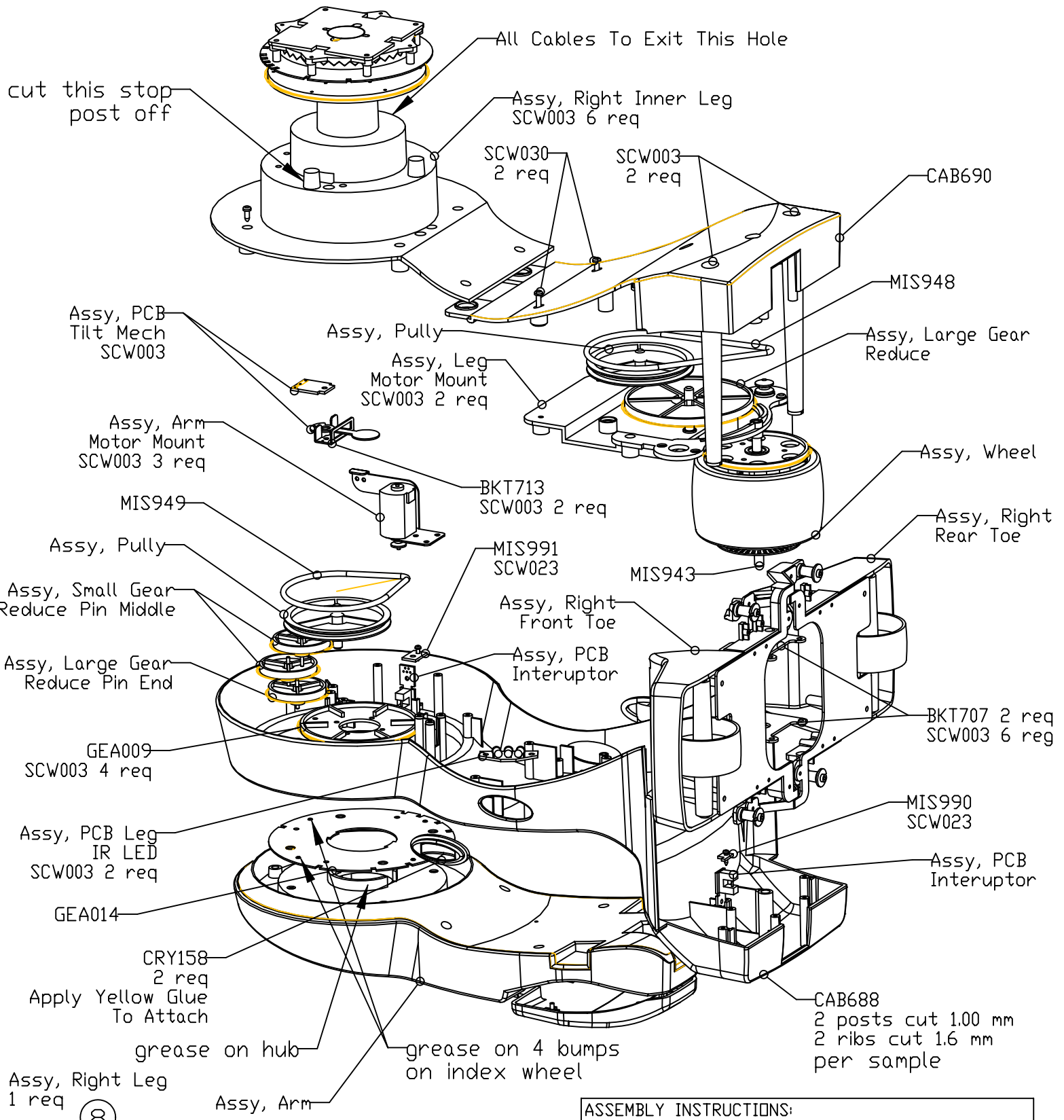


- ② Assy, Leg Frame
1 req

Note: Assembly must pass test fixture

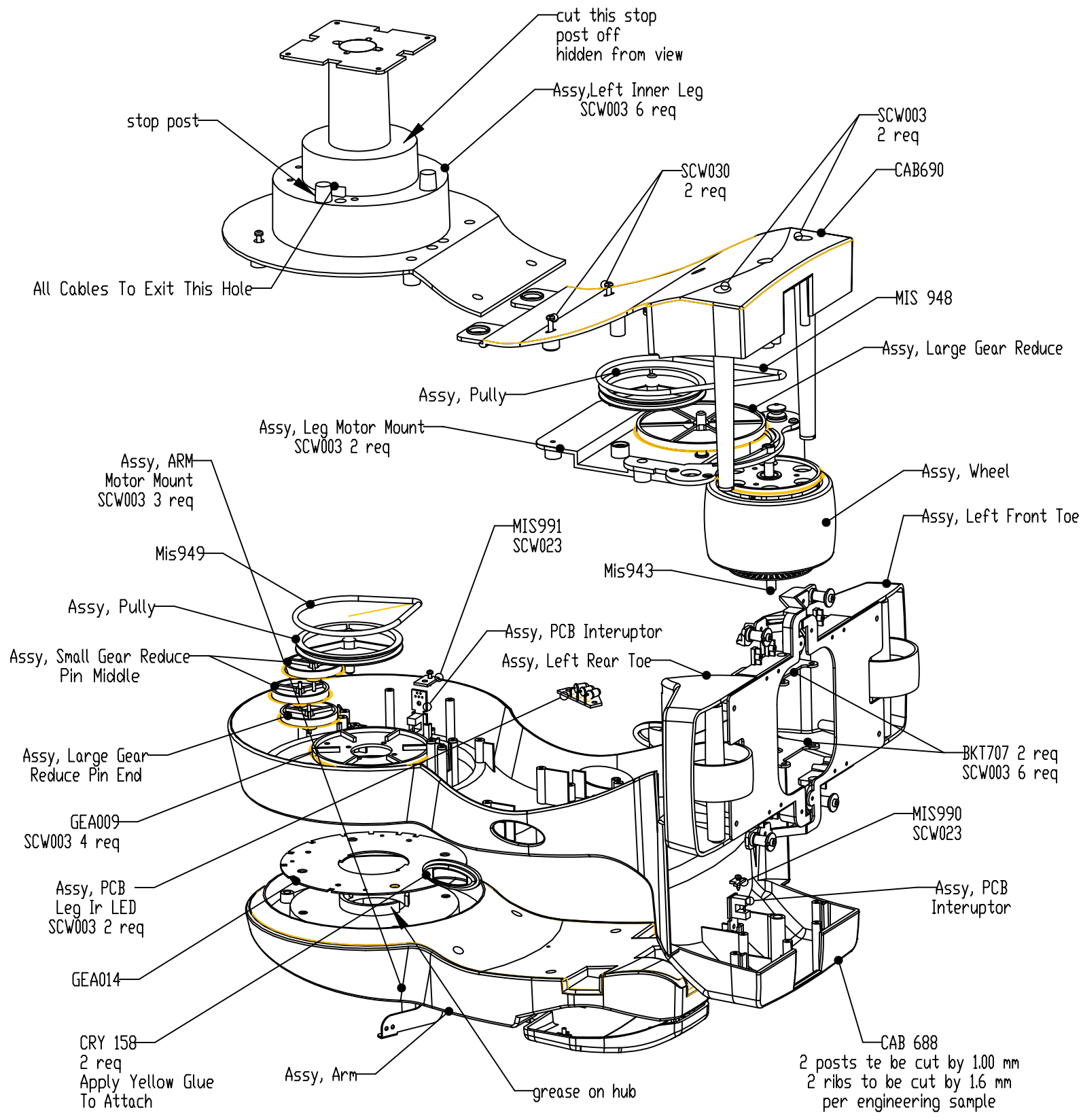
ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	ISSUE: 1
NID. 0022	



- Note:
- 1) Apply grease on all metal pins and gear teeth
 - 2) Leg motor current less than 0.8A
 - 3) Arm motor current less than 0.5A
 - 4) IR LEDs adjusted by fixture before start of assy
 - 5) Photo interuptors to be tested
 - 6) Tilt mechanism must be tested

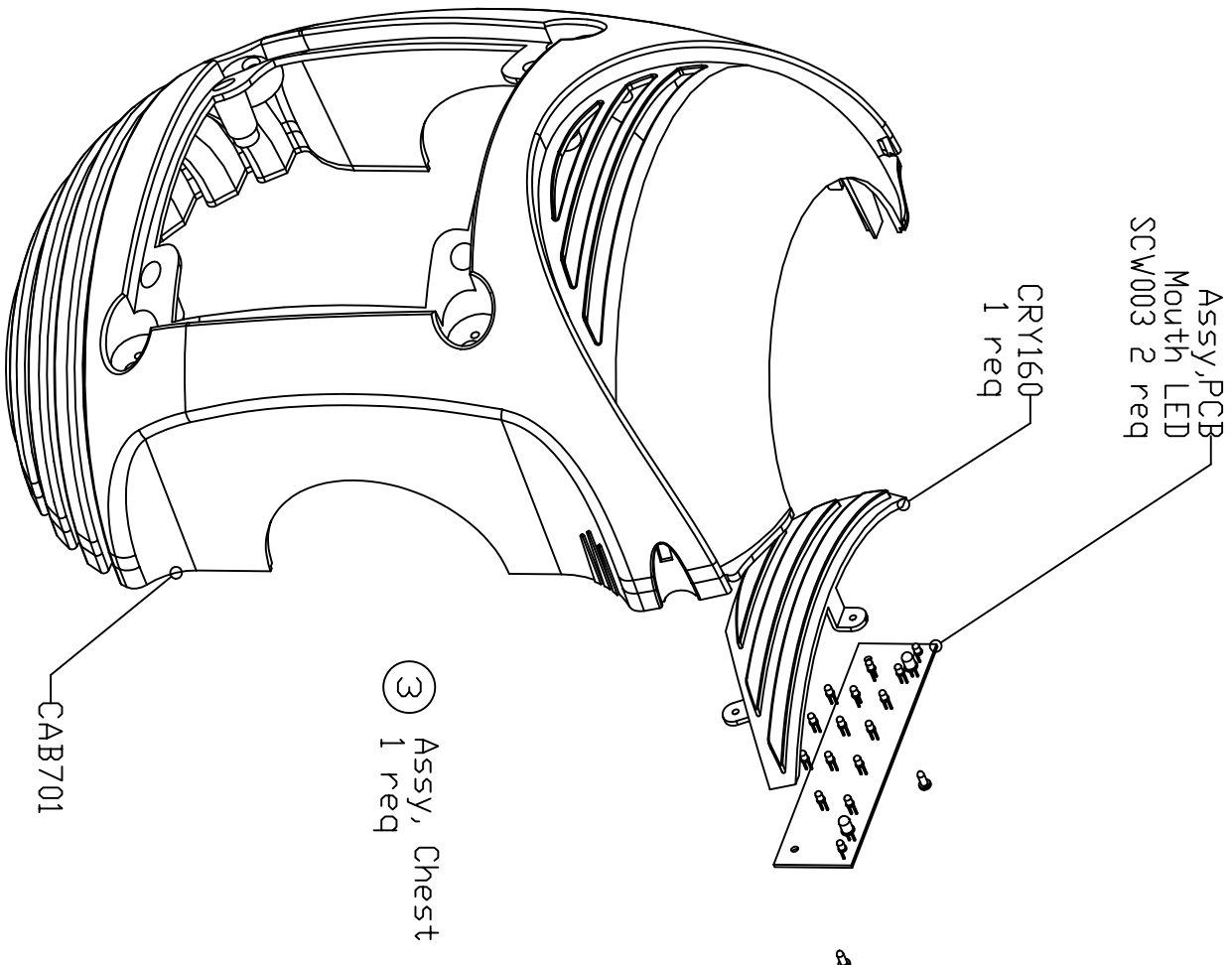
ASSEMBLY INSTRUCTIONS:			
DRAWN		DATE	
PRODUCT ROBOT		CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION			
			NO. 0021



⑦ Assy, Left Leg
1 req

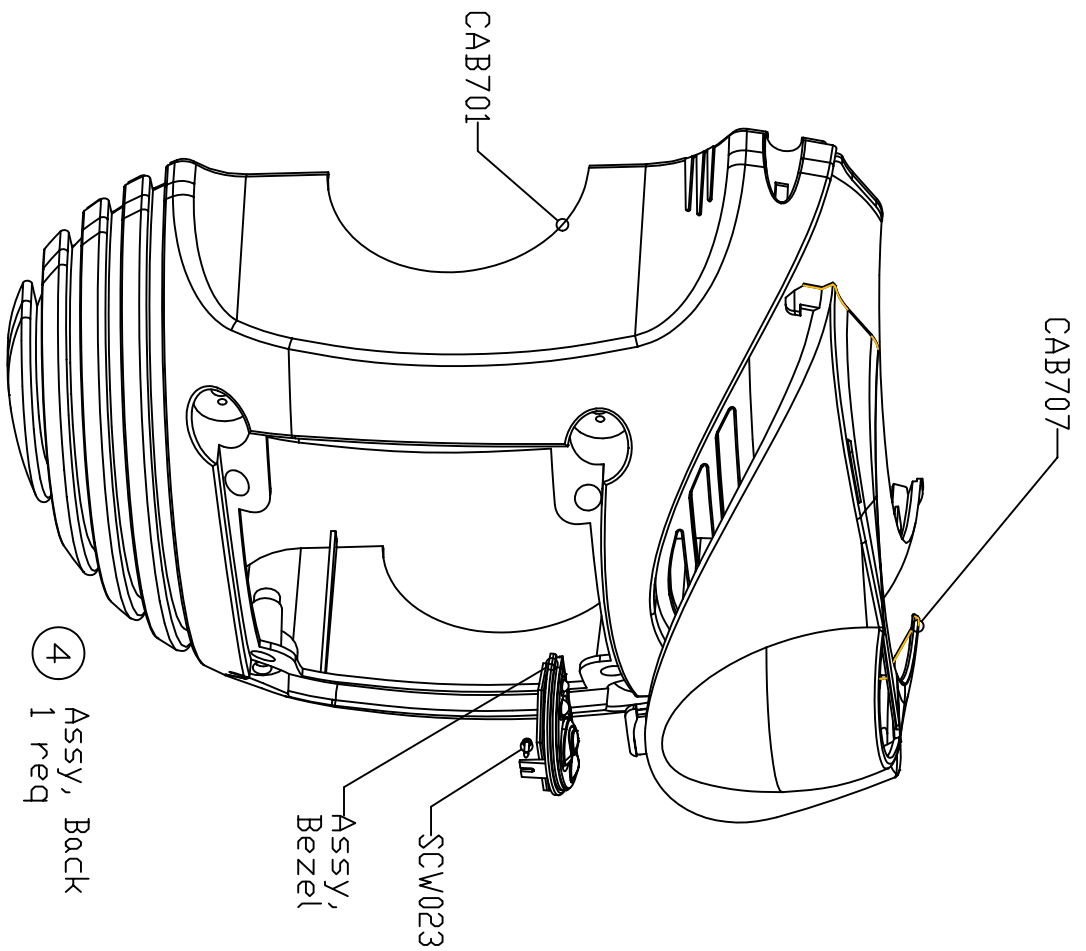
- Note
- 1) Apply grease on all metal pins & gear teeth as shown
 - 2) Leg motor current less than .8A
 - 3) Arm motor current less than .5A
 - 4) IR LEDs to be adjusted by fixture before start of assy
 - 5) Photo Interruptors must be tested

ASSEMBLY INSTRUCTIONS:			
DRAWN		DATE	
PRODUCT	ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION			
			NO. 0020



③ Assy, Chest
1 req

CAB701



④ Assy, Back
1 req

Assy,
Bezel

SCW023

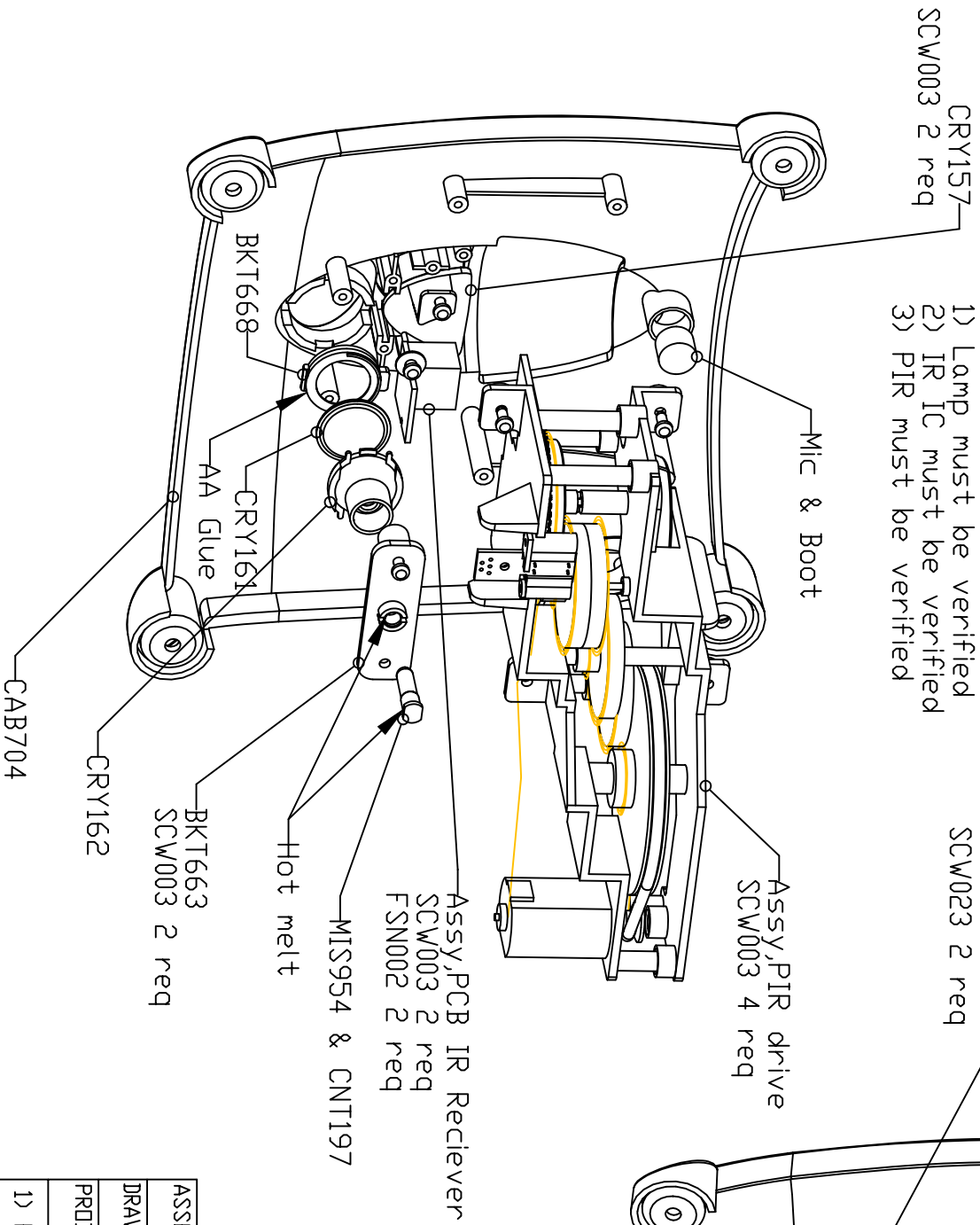
CAB707

CAB701

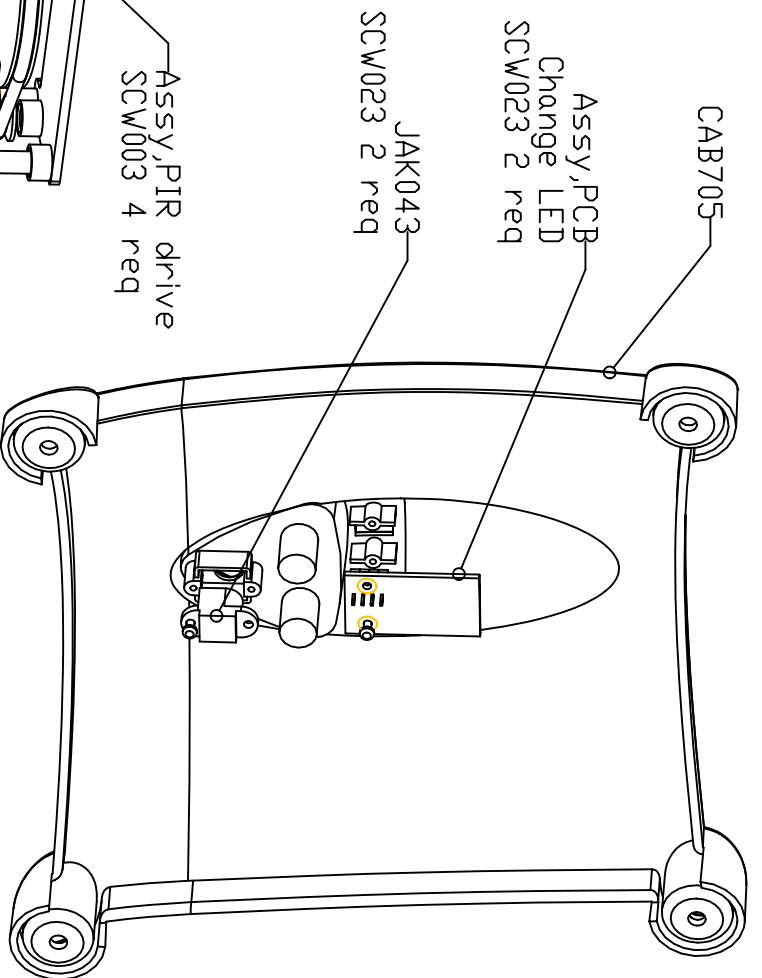
ASSEMBLY INSTRUCTIONS:		
DRAWN	DATE	
PRODUCT ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION		
NID, 0019		

⑤ Assy, Front Panel
1 req

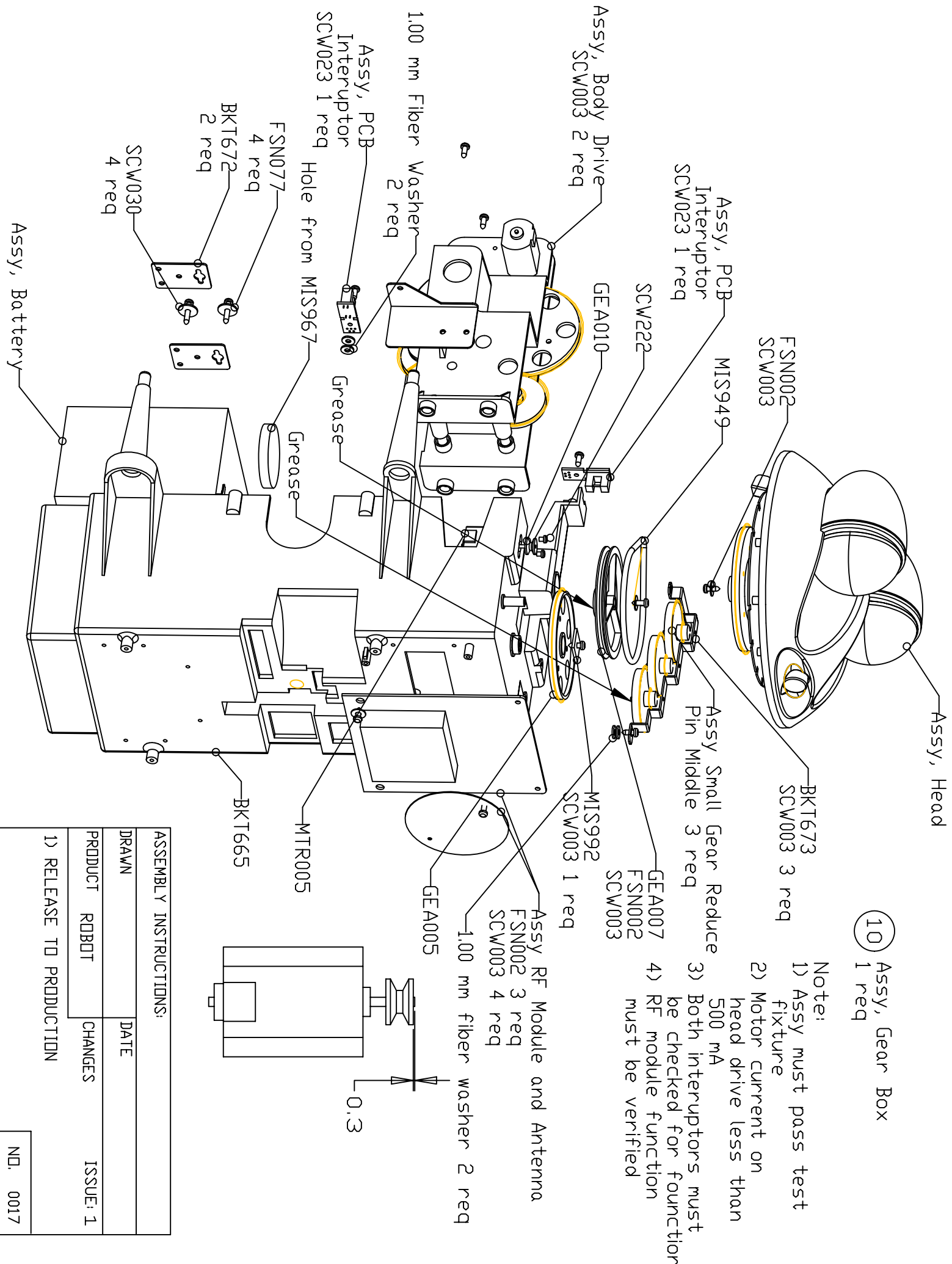
Note:
1) Lamp must be verified
2) IR IC must be verified
3) PIR must be verified



⑥ Assy, Back Panel
1 req

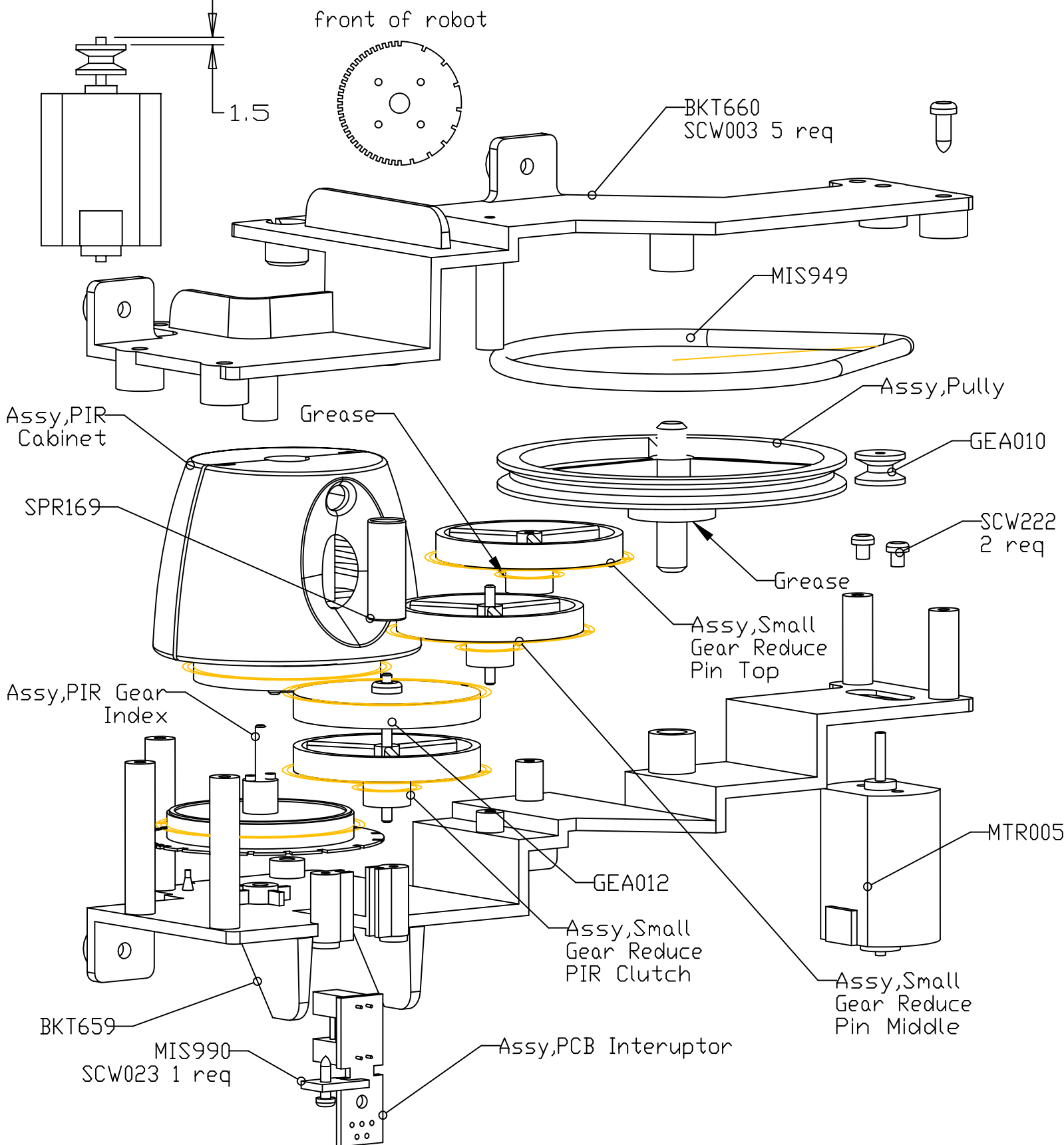


ASSEMBLY INSTRUCTIONS:	
DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	
ISSUE: 1	
N.D. 0018	



ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	
ISSUE: 1	
ND, 0017	

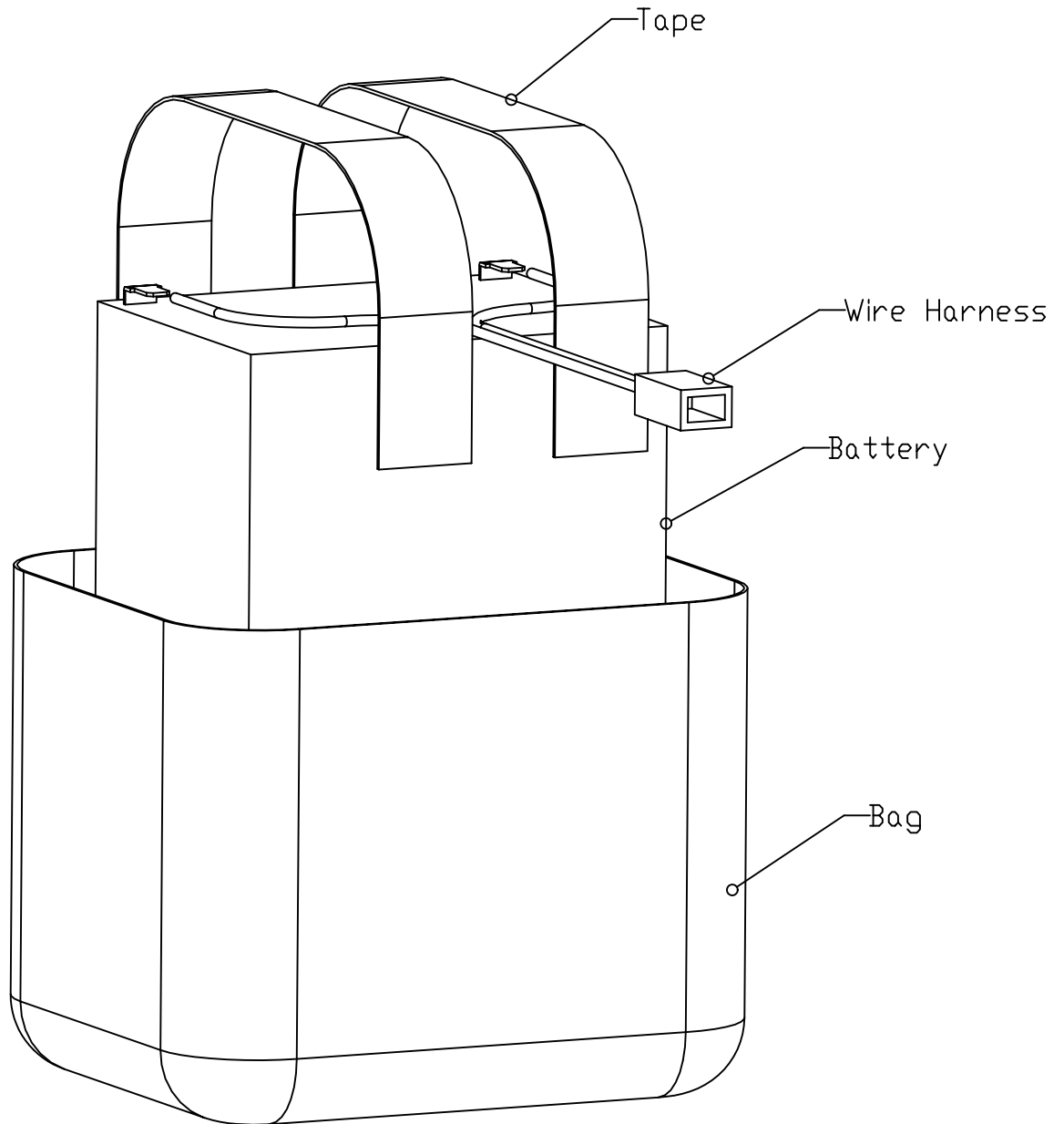


12 Assy, PIR Drive
1 req

- Note:
- 1) Assy must pass test fixture
 - 2) Motor current less than 500 mA
 - 3) Interuptor function must be checked

ASSEMBLY INSTRUCTIONS:			
DRAWN		DATE	
PRODUCT	ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION			
			NO. 0016

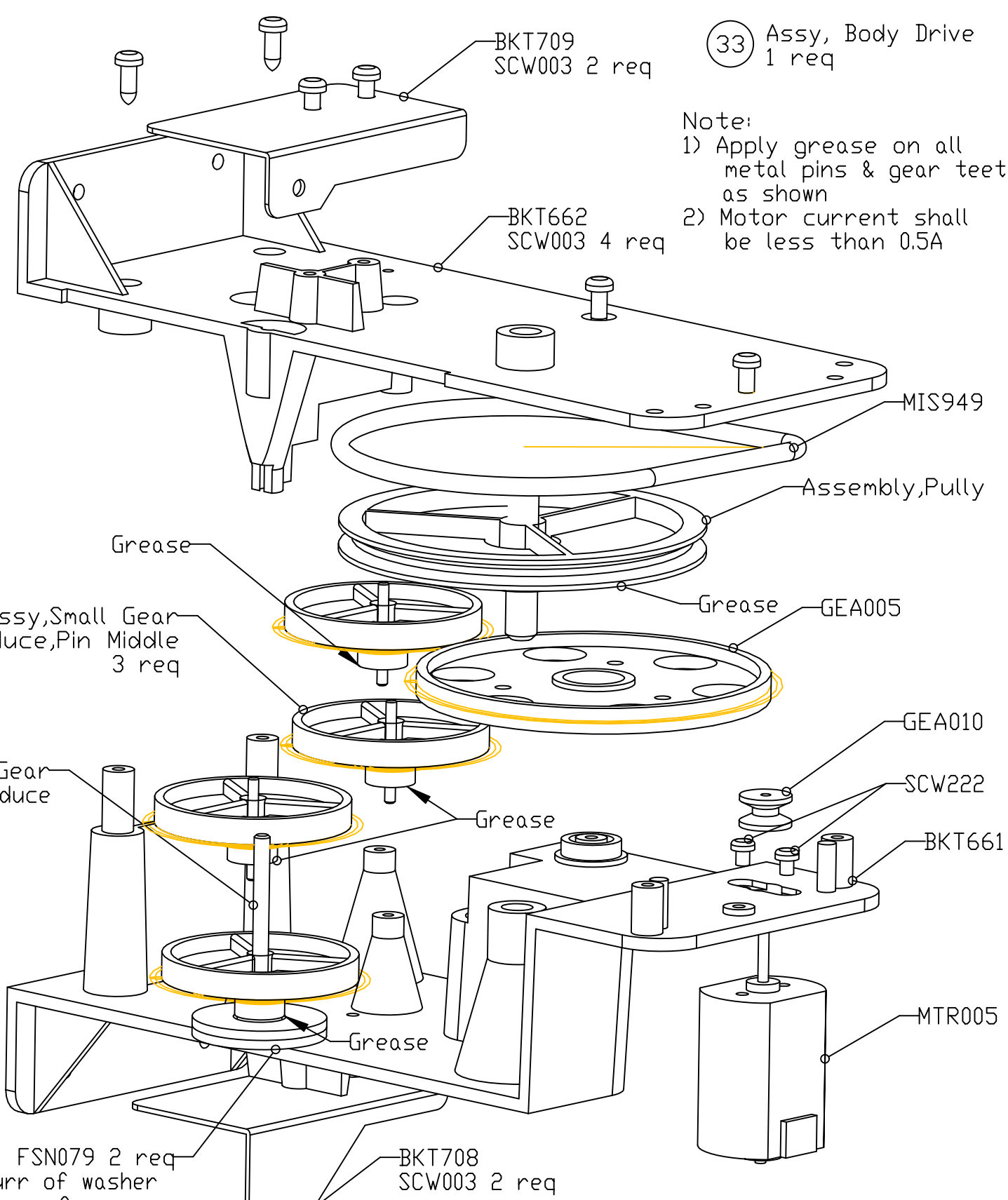
34 Assy, Battery
1 req



Notes:

- 1) Wrap tape completely around battery & bag to seal Battery
- 2) Red wire on pos terminal, black on negative
- 3) After assembly, Battery should be tested for voltage & current and be fully charged

ASSEMBLY INSTRUCTIONS:			
DRAWN		DATE	
PRODUCT	ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION			
			NO. 0015



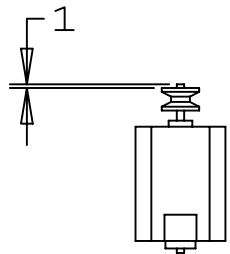
33 Assy, Body Drive
1 req

Note:
1) Apply grease on all metal pins & gear teeth as shown
2) Motor current shall be less than 0.5A

Assy, Small Gear Reduce, Pin Middle
3 req

Assy, Gear Body Reduce

FSN079 2 req
Burr of washer away from gear

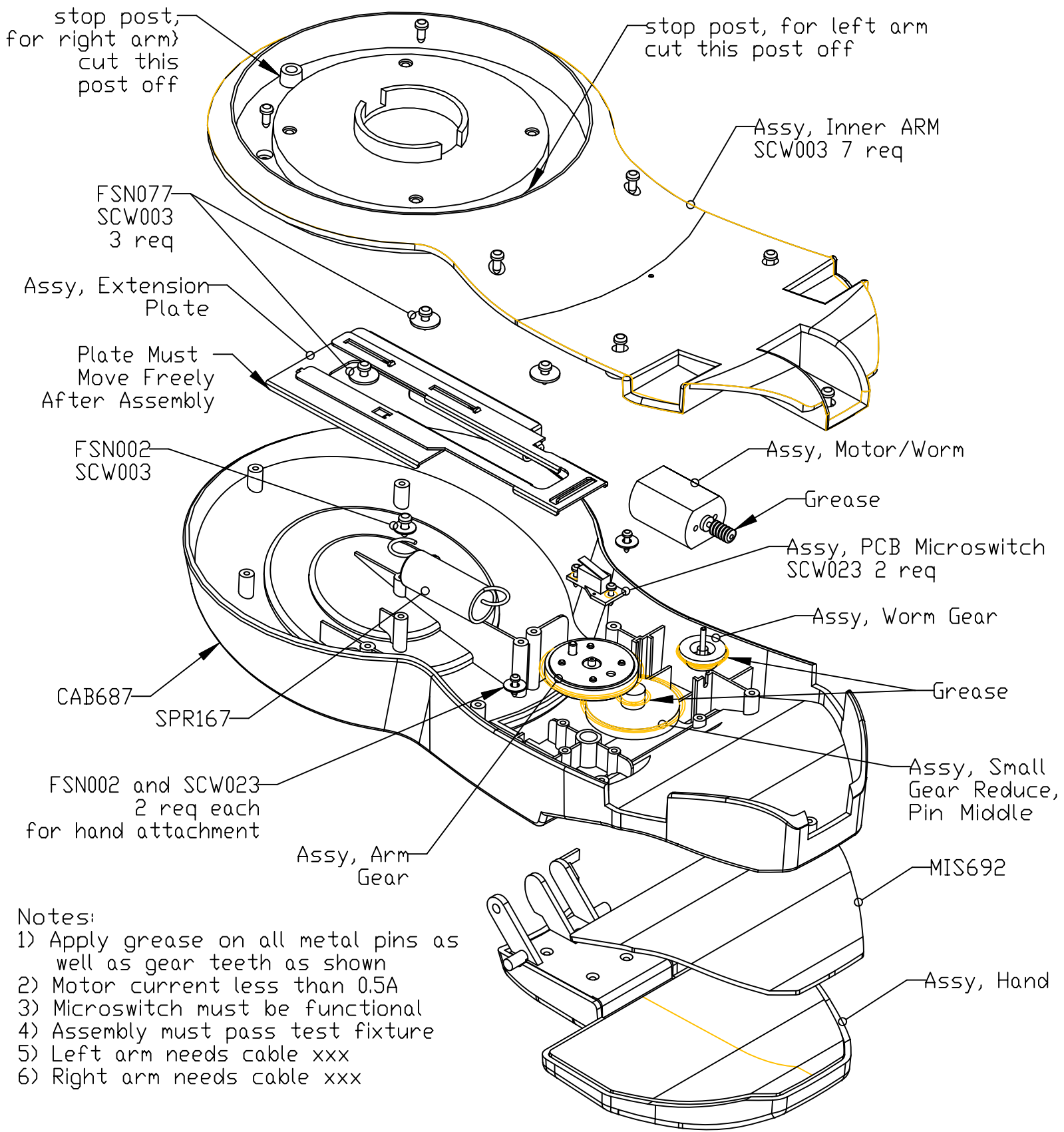


ASSEMBLY INSTRUCTIONS:

DRAWN		DATE	
PRODUCT ROBOT		CHANGES	ISSUE: 1

1) RELEASE TO PRODUCTION

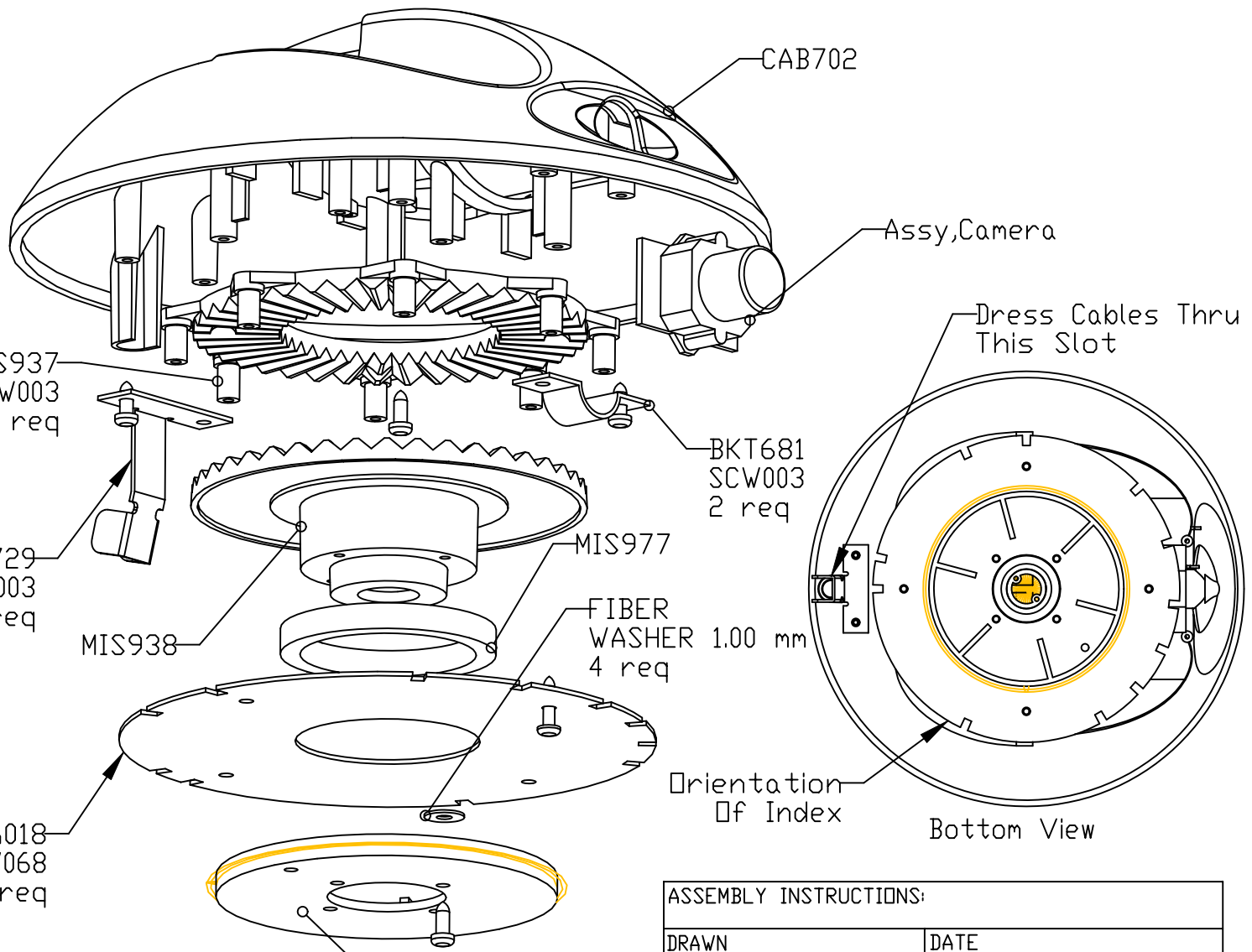
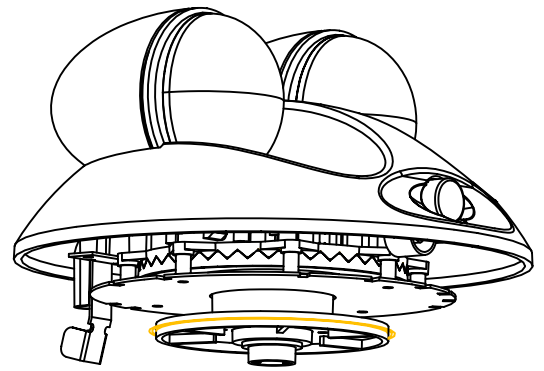
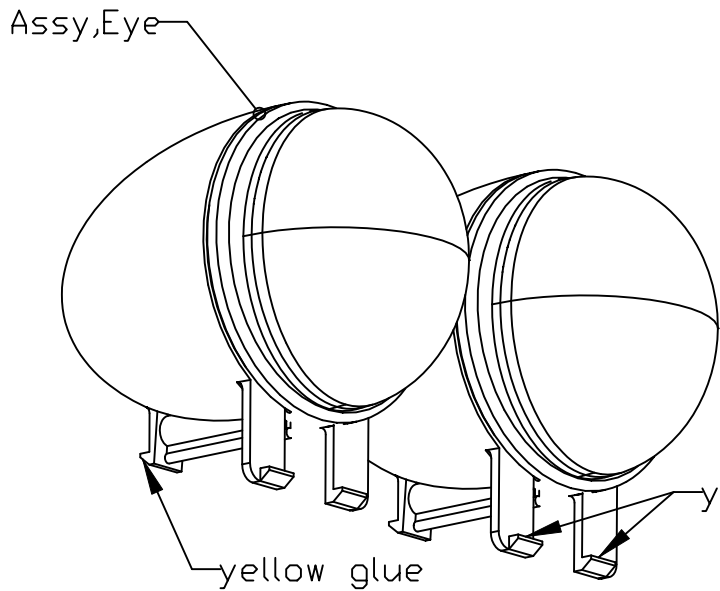
NO. 0014



- Notes:
- 1) Apply grease on all metal pins as well as gear teeth as shown
 - 2) Motor current less than 0.5A
 - 3) Microswitch must be functional
 - 4) Assembly must pass test fixture
 - 5) Left arm needs cable xxx
 - 6) Right arm needs cable xxx

ASSEMBLY INSTRUCTIONS:			
DRAWN		DATE	
PRODUCT	ROBOT	CHANGES	ISSUE: 1
1) RELEASE TO PRODUCTION			
NO. 0013			

15 Assembly, Arm 2 req



MIS937
SCW003
4 req

BKT729
SCW003
2 req

GEA018
SCW068
4 req

32 Assy, Head
1 req

Note: Assembly Must Pass Test Fixture

GEA009
SCW003 4 req

CAB702

Assy, Camera

Dress Cables Thru
This Slot

BKT681
SCW003
2 req

MIS977

FIBER
WASHER 1.00 mm
4 req

MIS938

Orientation
of Index

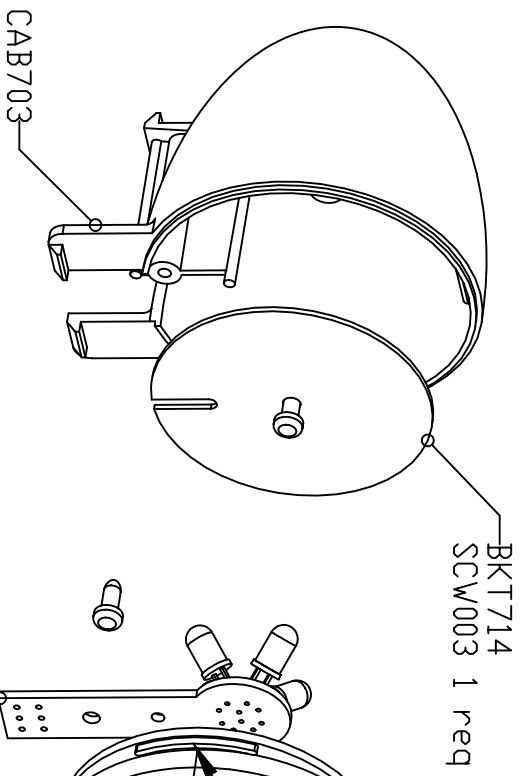
Bottom View

ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
	ISSUE: 1

1) RELEASE TO PRODUCTION

NO. 0012

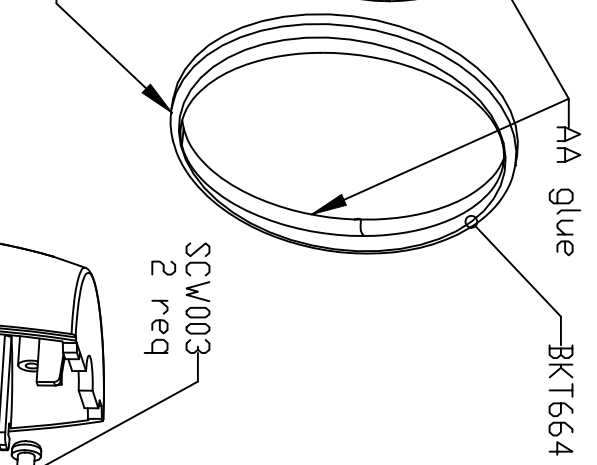


BKT714
SCW003 1 req

Assy,PCB
Eye Led
SCW003 1 req

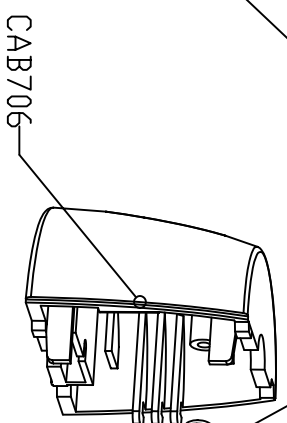
CRY155
Gate Of Part
Dn Bottom

Blue LED should be adjusted
by fixture so light is in
center of lense



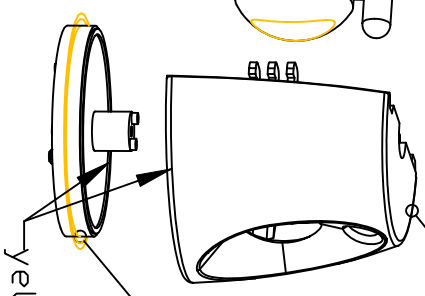
AA glue
BKT664

SCW003
2 req



ASSY,PCB PIR

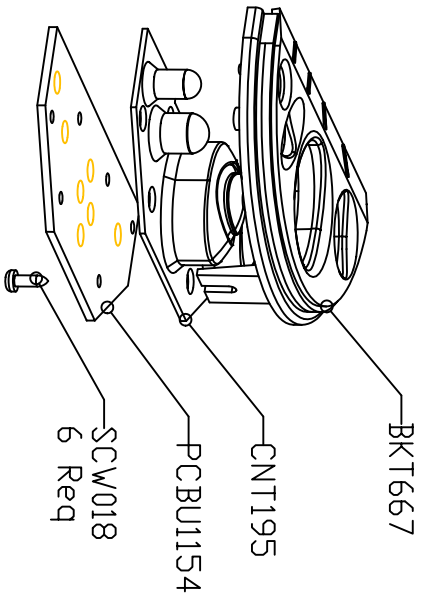
FSN002
SCW023
CAB706



GFA001
yellow glue

46
Assy, Eye
2 req

Note: Assembly Must Pass Test Fixture

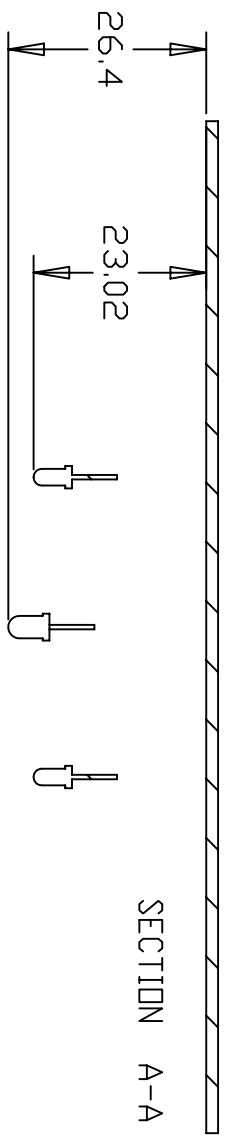


11
Assy, Bezel
1 req

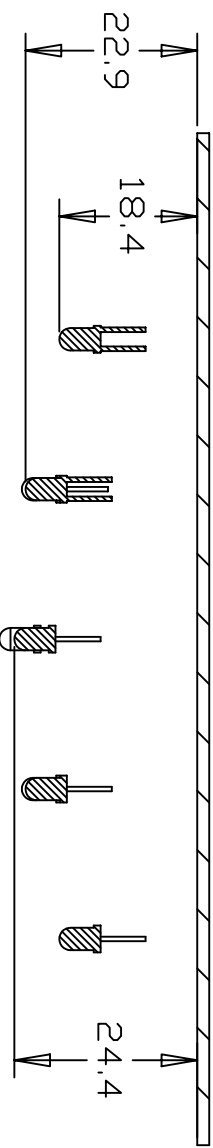
35
Assy, PIR Cabinet
1 req

Note: Assembly Must Pass Test Fixture

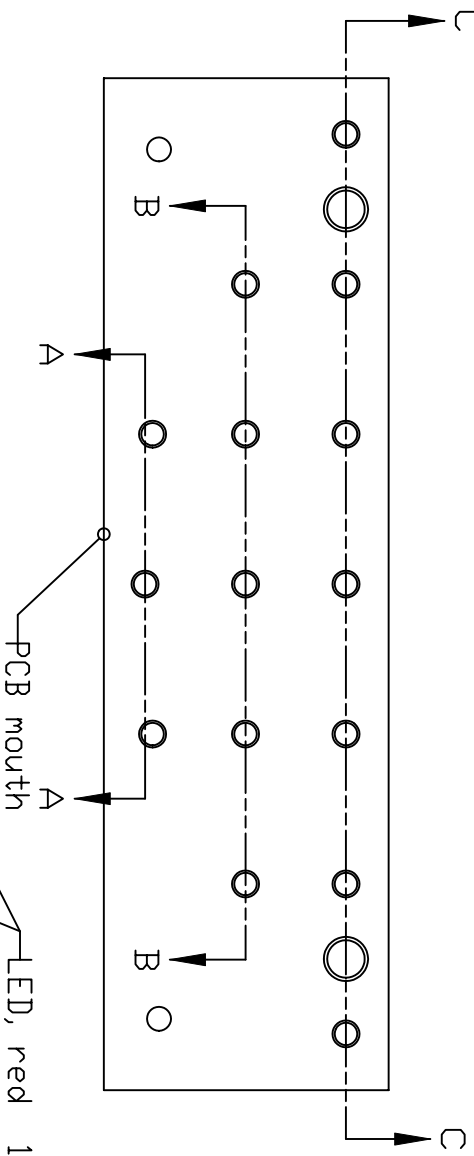
ASSEMBLY INSTRUCTIONS:	
Assemblies, Eye,PIR & Bezel	
DRAWN	DATE
PRODUCT ROBOT	CHANGES
	ISSUE: 1
1) RELEASE TO PRODUCTION	
N.D. 0011	



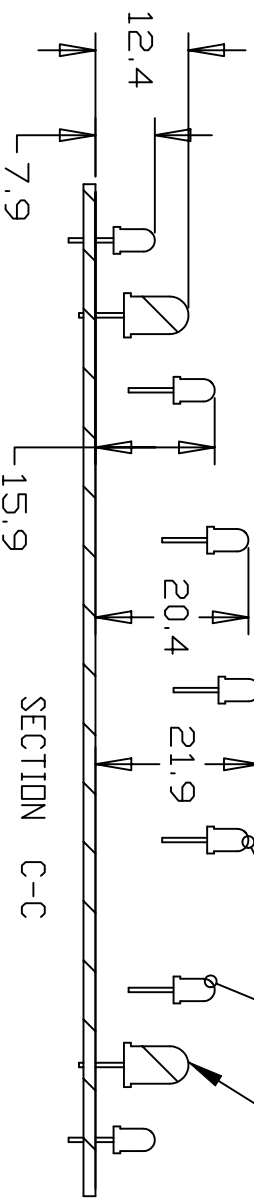
SECTION A-A



SECTION B-B

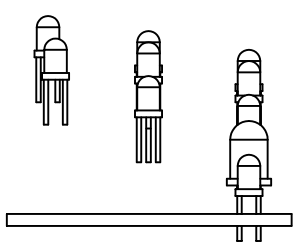


LED, red 15 req
IR LED, 2 req

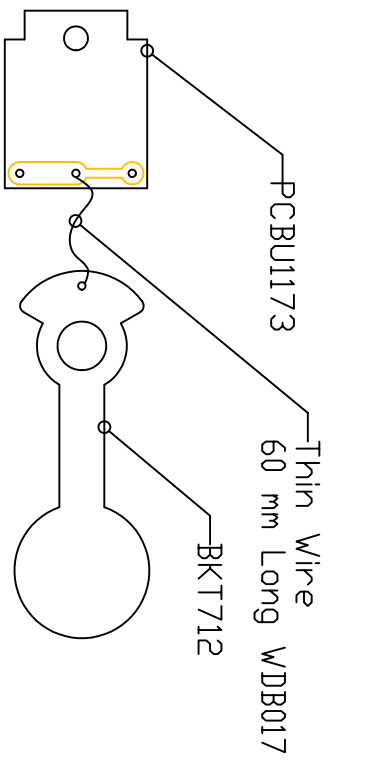


SECTION C-C

⑨ Assy, PCB Mouth LED
1 req
Note: Assy Must Pass
Test Fixture

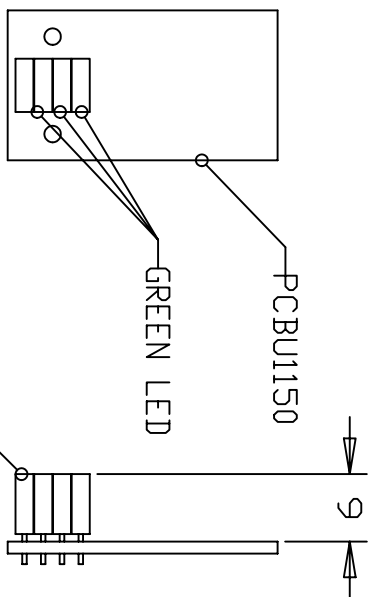


ASSEMBLY INSTRUCTIONS:	
DRAWN	DATE
PRODUCT ROBOT	CHANGES
ISSUE: 1	
1) RELEASE TO PRODUCTION	
NID, 0010	

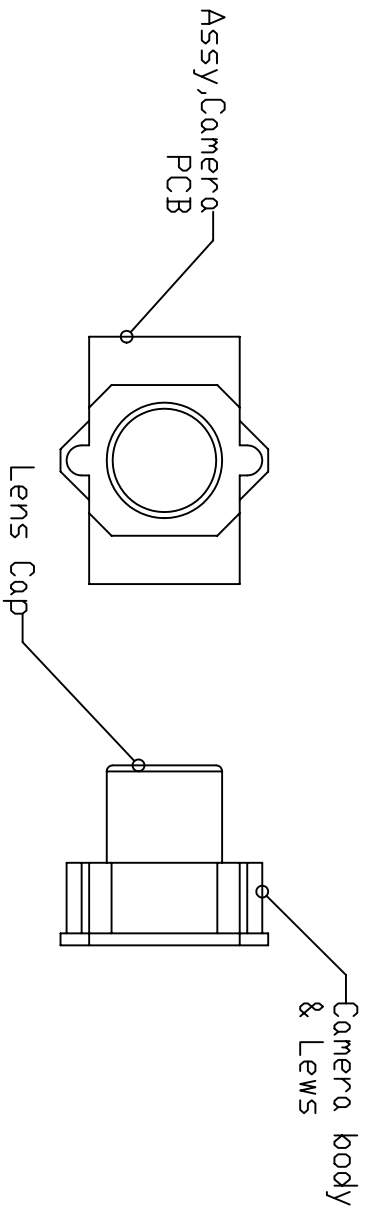


- 31 Assy, PCB Tilt Mechanism
1 req

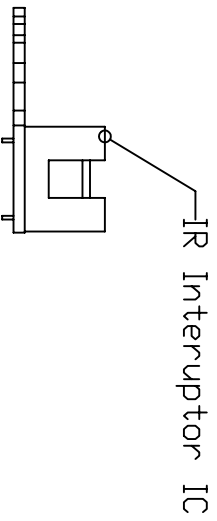
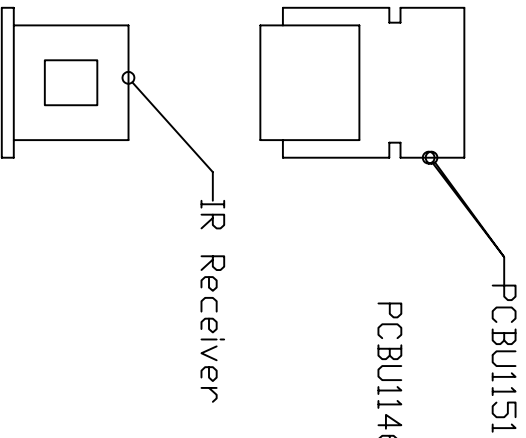
Note: Tape BKT712 to PCB
During Transportation and Storage



- 14 Assy, Charge LED
1 req
Note: Assy Must Pass Test Fixture



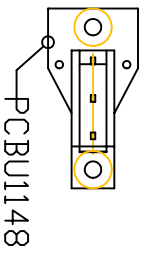
- 47 Assy, Camera
1 req
Note: Assy Must Pass Test Fixture



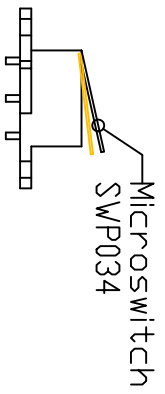
- 13 Assy, PCB IR Receiver
1 req
Note: Assy Must Pass
Test Fixture

- 21 Assy, PCB Interuptor
7 req
Note: Assy Must Pass Test Fixture

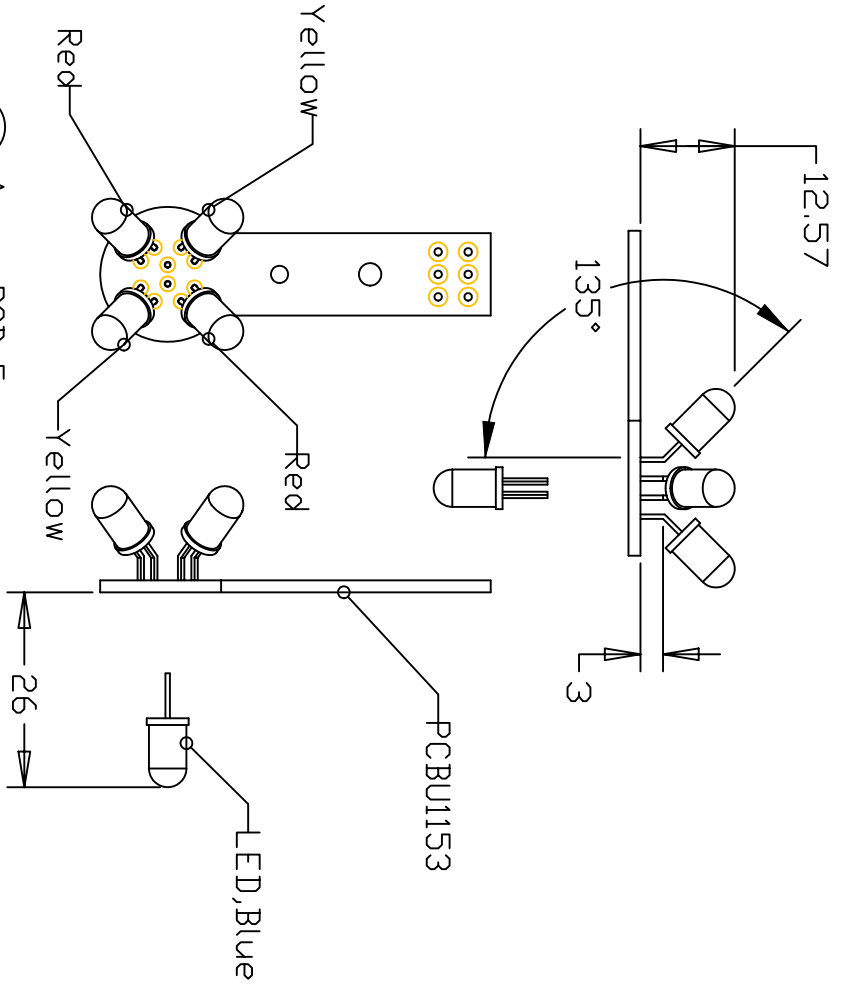
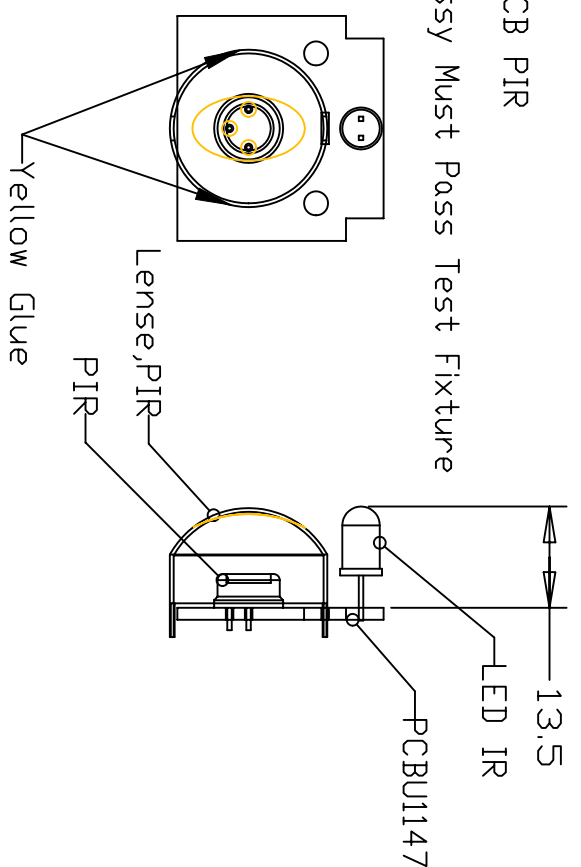
ASSEMBLY INSTRUCTIONS:	
DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	
ISSUE: 1	N/D. 0009



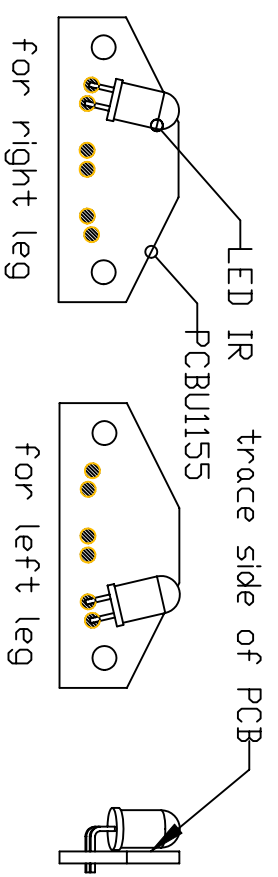
44 Assy, PCB Microswitch
4 req



49 Assy, PCB PIR
1 req
Note: Assy Must Pass Test Fixture



50 Assy, PCB Eye
2 req
Note: Assy Must Pass Test Fixture

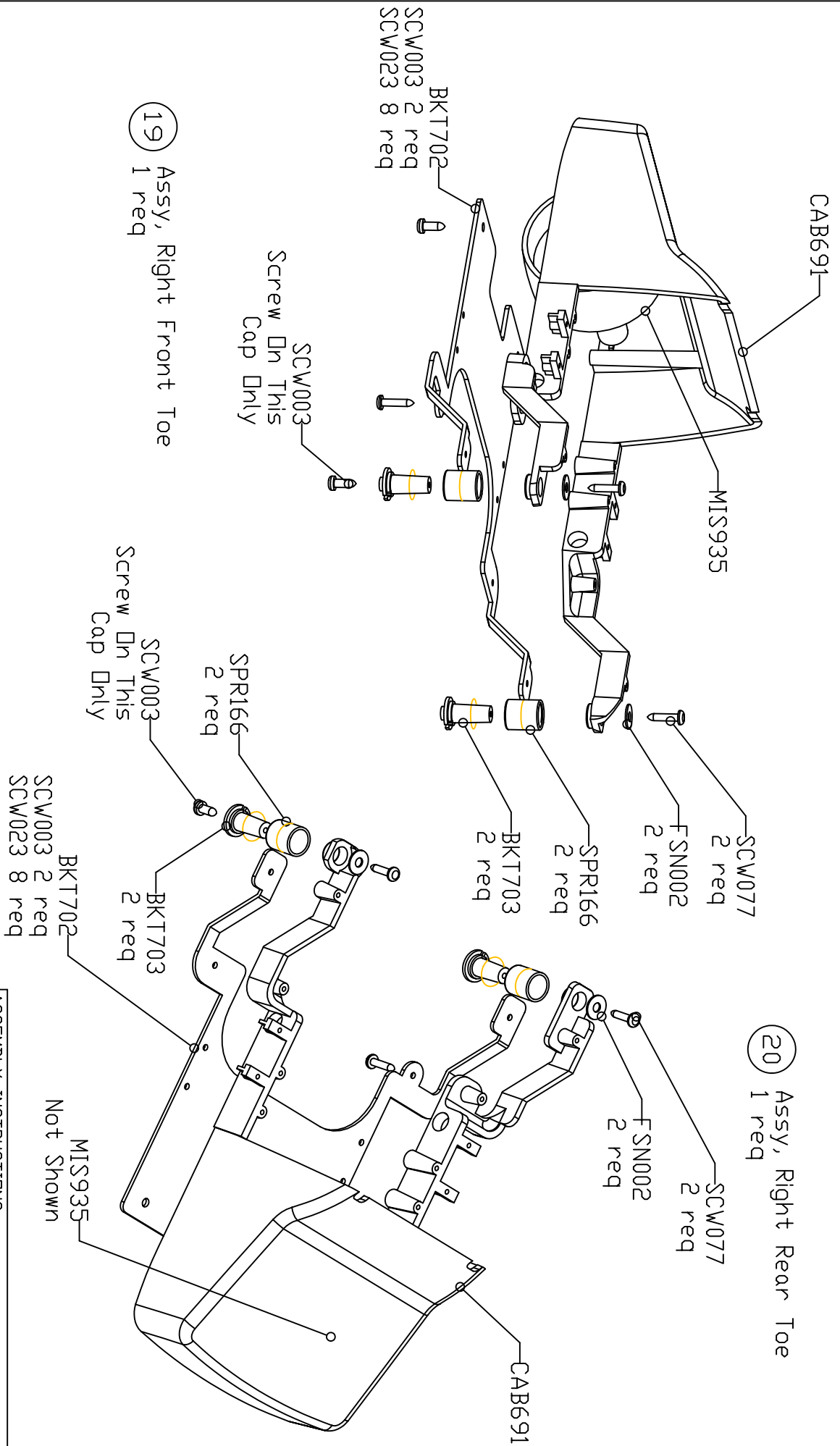


22 Assy, PCB Leg IR LED
2 req

Note: PCB must be installed in CAB688 first. Then adjusted and LED lock down with hot melt before start of assembly of the legs.

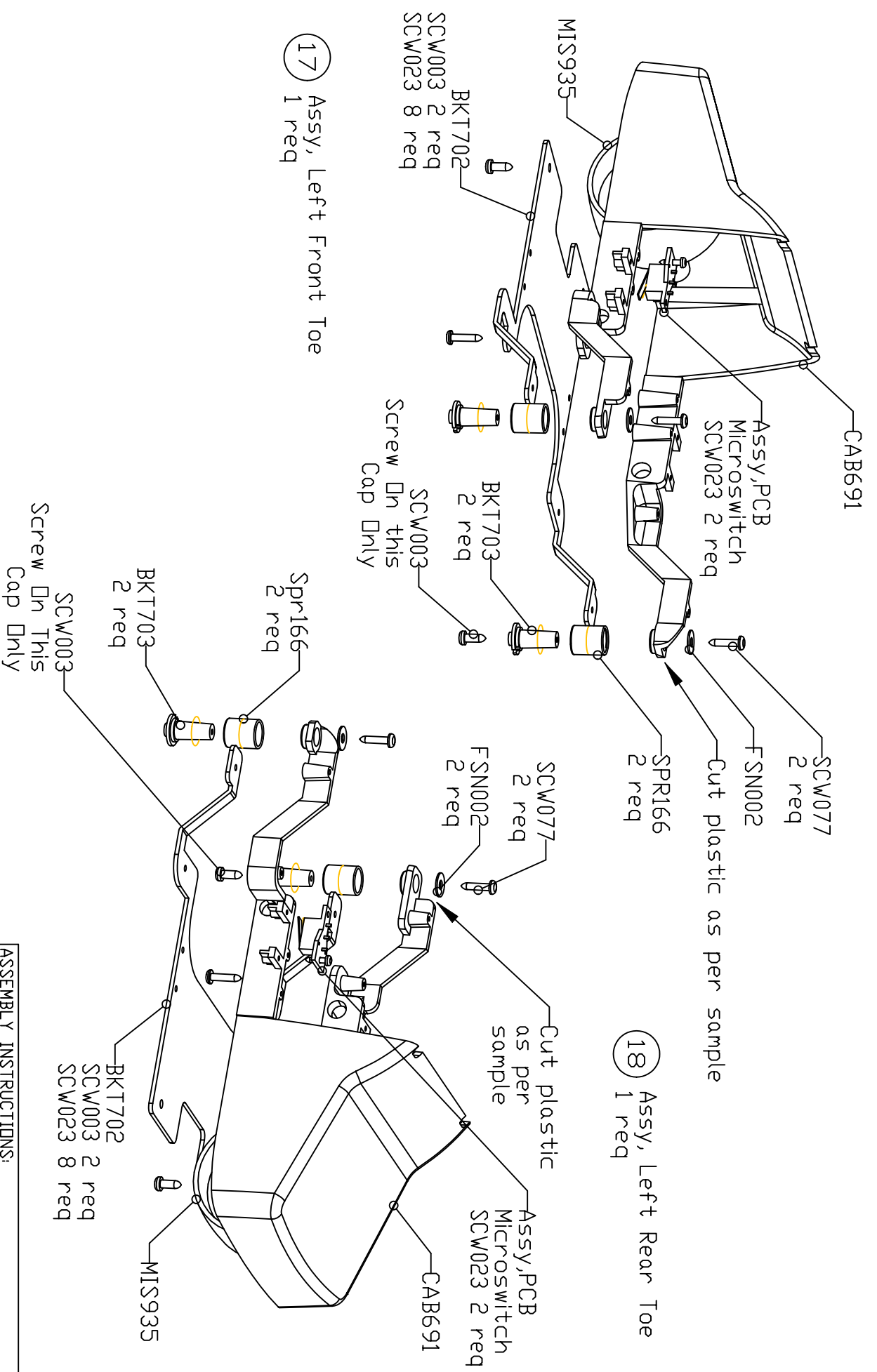
ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	ISSUE: 1
N/D. 0008	



ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	ISSUE: 1
N.D. 0007	

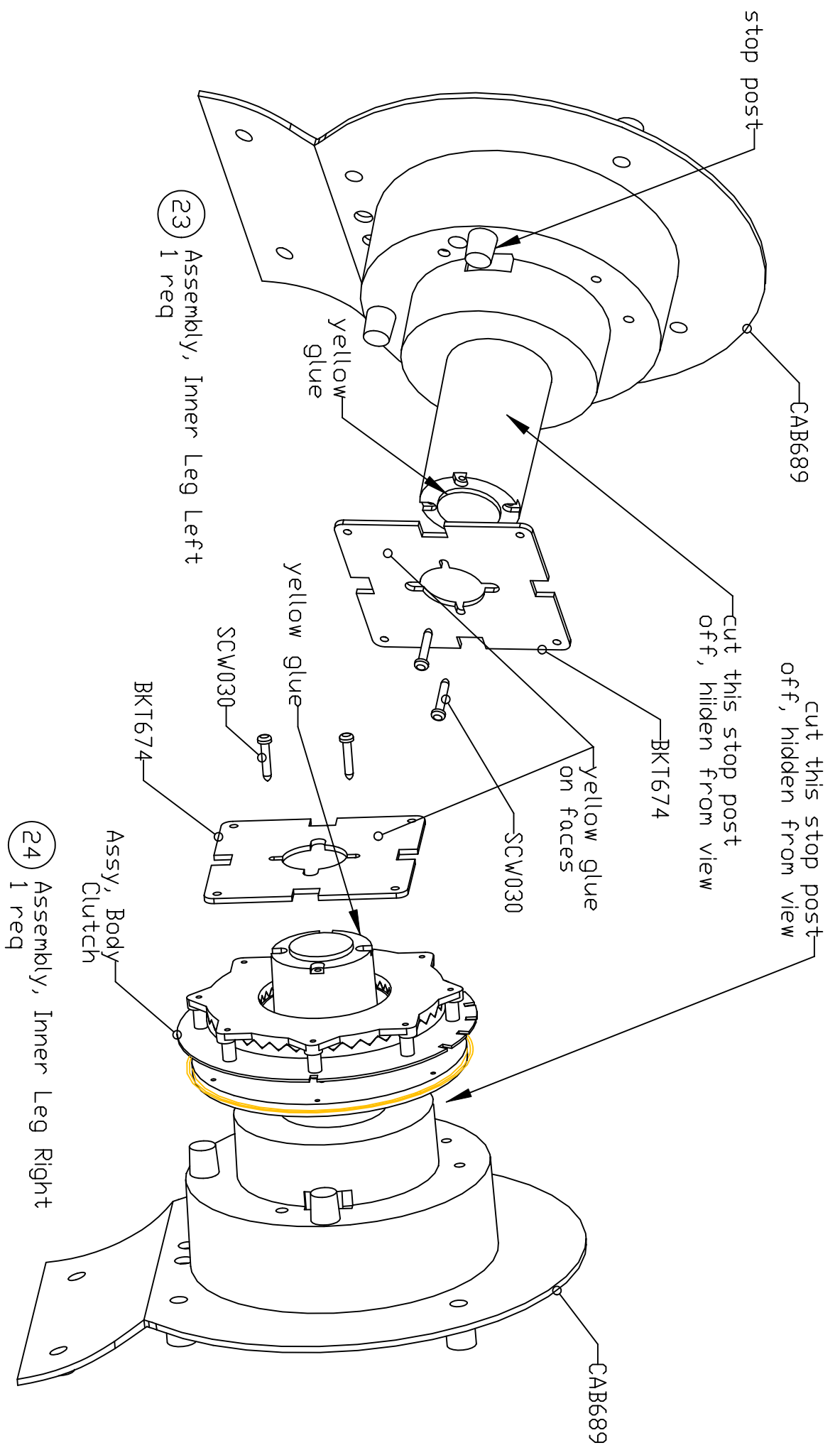


17 Assy, Left Front Toe
1 req

18 Assy, Left Rear Toe
1 req

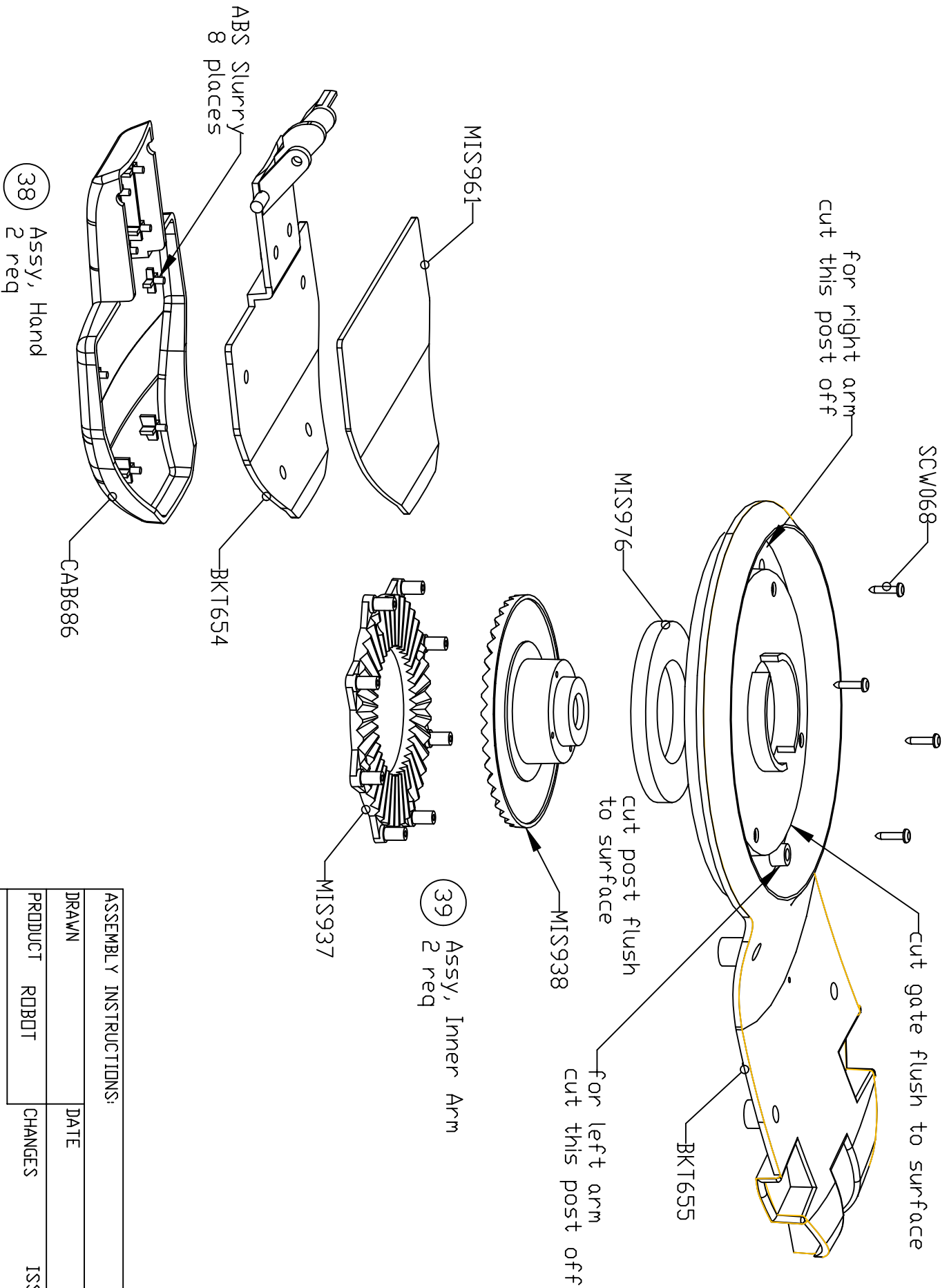
ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
ISSUE: 1	
1) RELEASE TO PRODUCTION	
N.D. 0006	



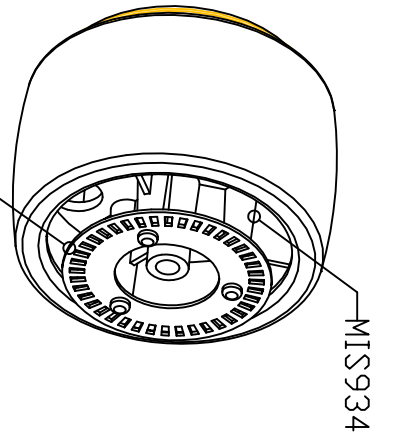
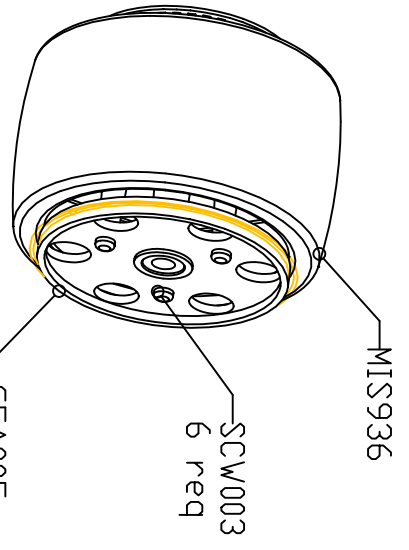
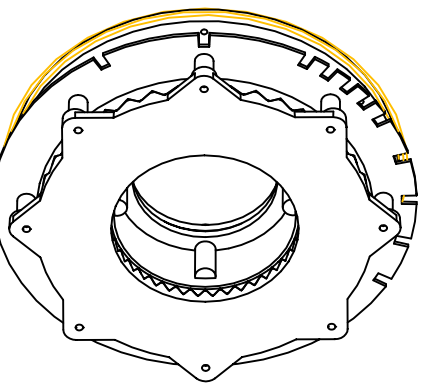
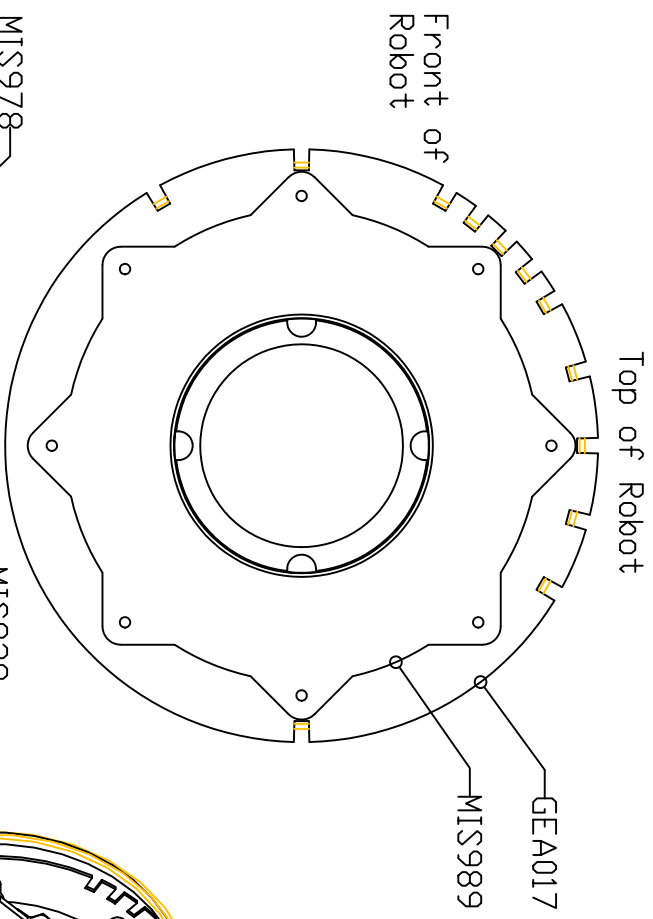
ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
ISSUE: 1	
1) RELEASE TO PRODUCTION	
NID, 0005	

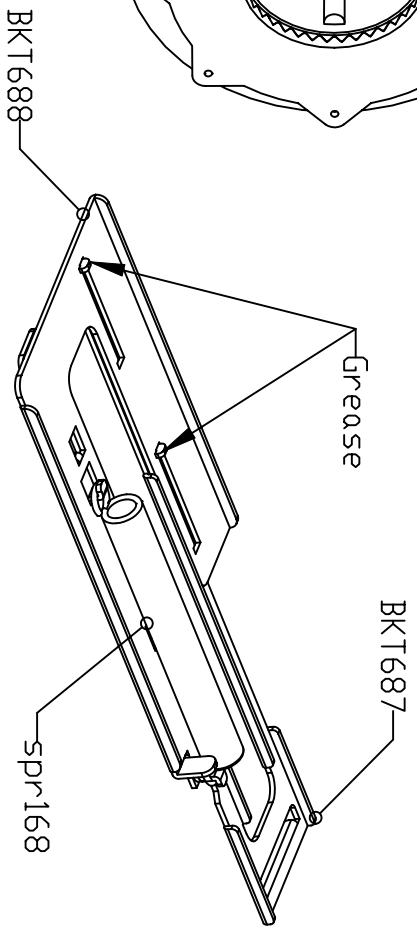
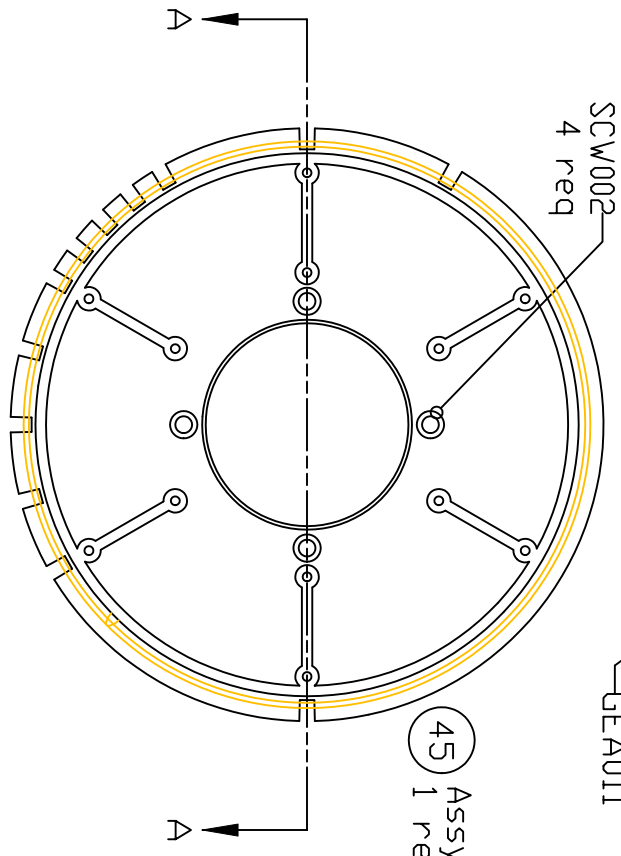


ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	
ND.	0004



16 Assy, Wheel
1 req

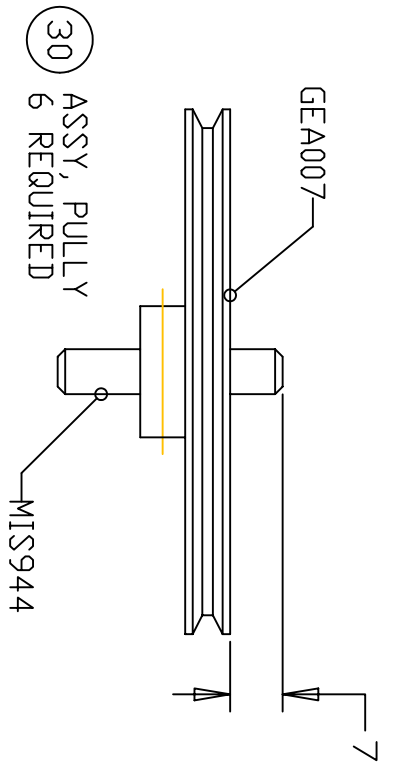


41 Assy, Extension Plate
2 req

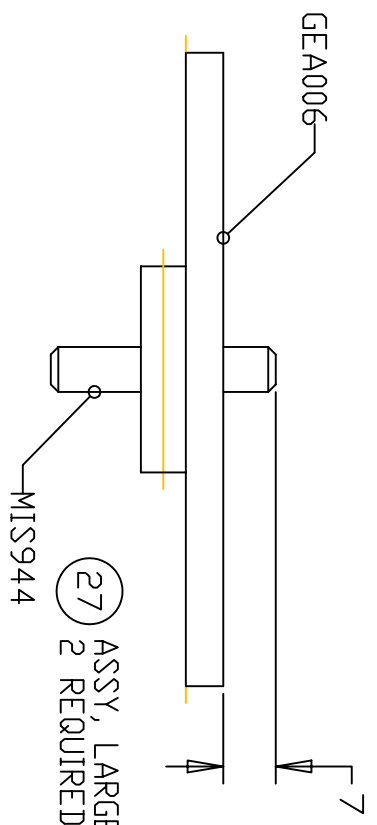
Note: Plates Should Move Without Binding

ASSEMBLY INSTRUCTIONS:

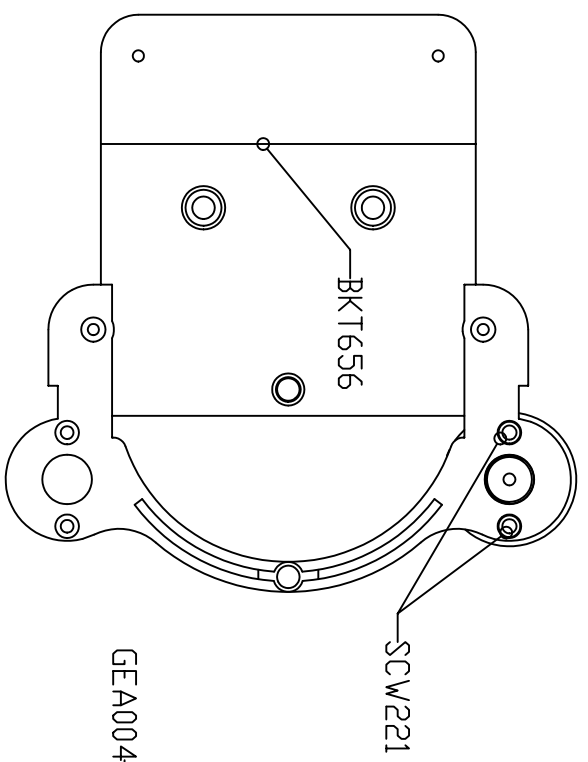
DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	ISSUE: 1
N/D. 0003	



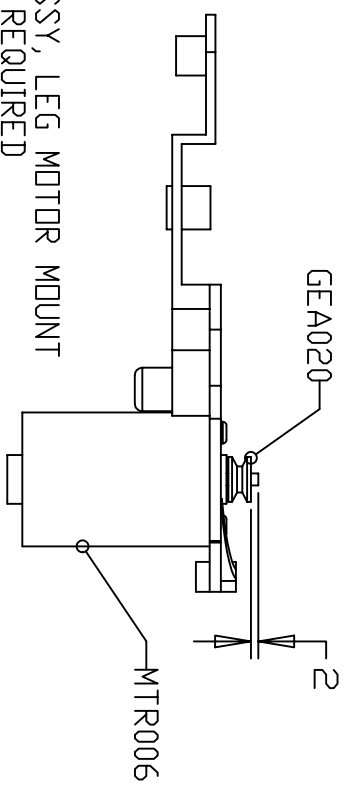
30 ASSY, PULLY
6 REQUIRED



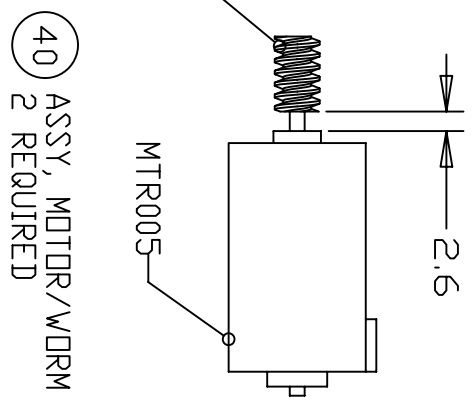
27 ASSY, LARGE GEAR REDUCE
2 REQUIRED



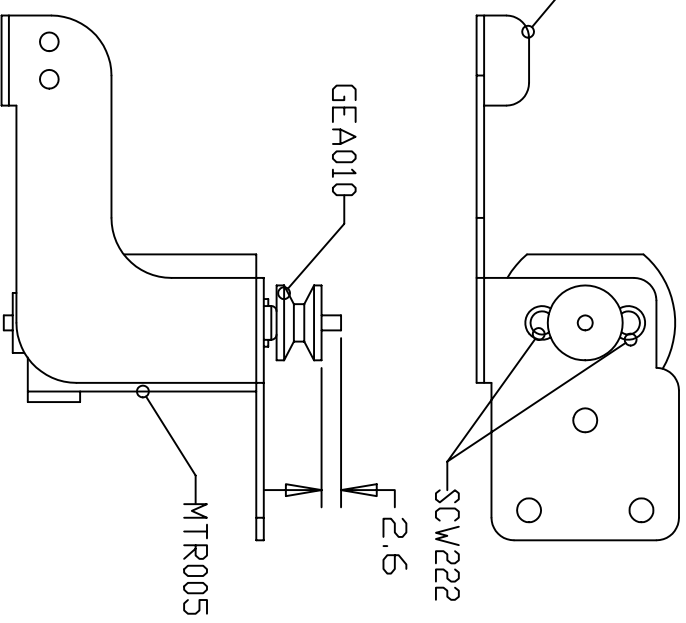
25 ASSY, LEG MOTOR MOUNT
2 REQUIRED



26 ASSY, ARM MOTOR MOUNT
2 REQUIRED



40 ASSY, MOTOR/WORM
2 REQUIRED

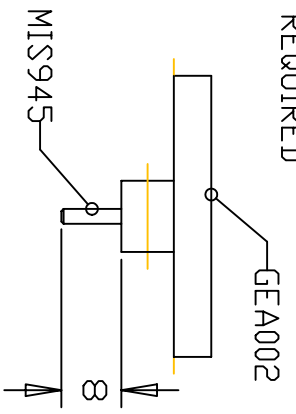


26 ASSY, ARM MOTOR MOUNT
2 REQUIRED

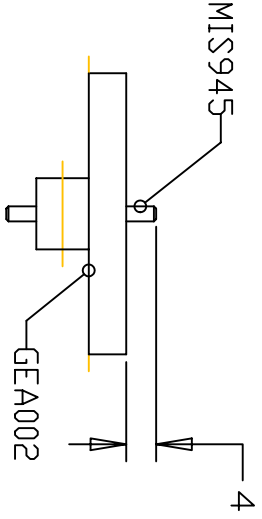
ASSEMBLY INSTRUCTIONS:

DRAWN	DATE
PRODUCT ROBOT	CHANGES
ISSUE: 1	
1) RELEASE TO PRODUCTION	
ND, 0002	

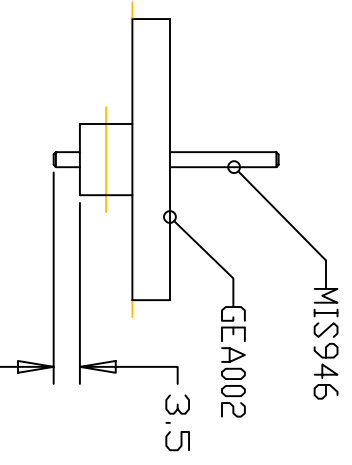
29 ASSY, SMALL GEAR REDUCED PIN TOP
3 REQUIRED



28 ASSY, SMALL GEAR REDUCE PIN MIDDLE
13 REQUIRED

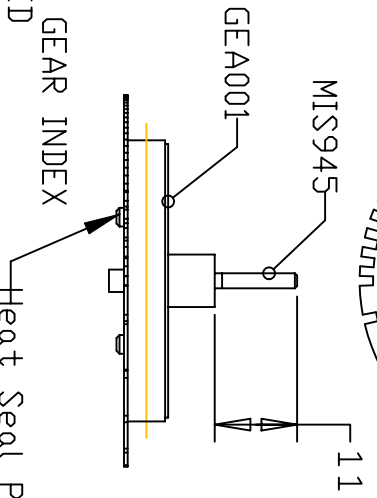


36 ASSY, SMALL GEAR REDUCED PIR CLUTCH
1 REQUIRED

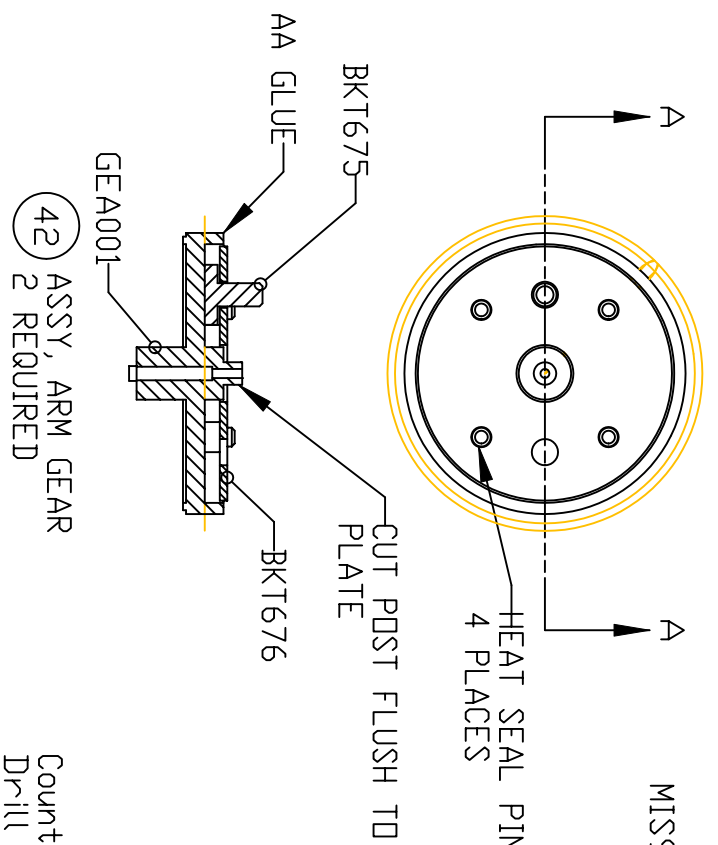


Note: DO NOT BEND PINS DURING INSTALLATION

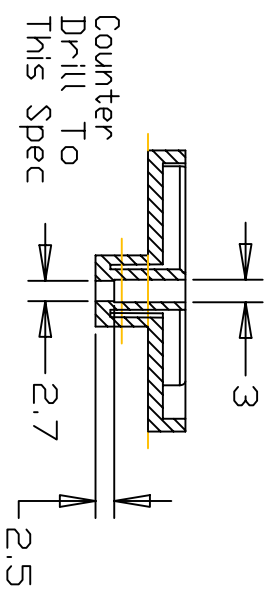
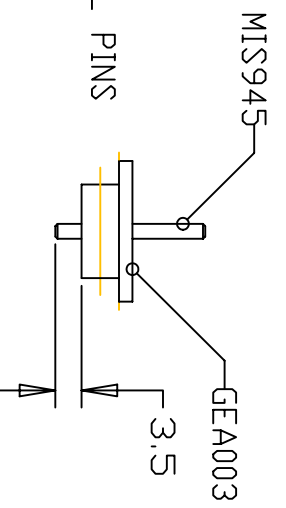
37 ASSY, PIR GEAR INDEX
1 REQUIRED



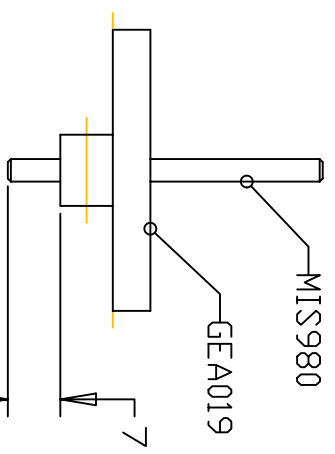
42 ASSY, ARM GEAR
2 REQUIRED



43 ASSY, WORM GEAR
2 REQUIRED

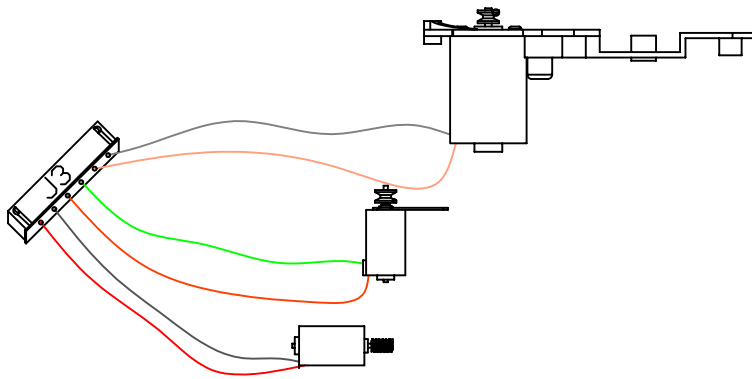


48 ASSY, BODY REDUCED
1 REQUIRED

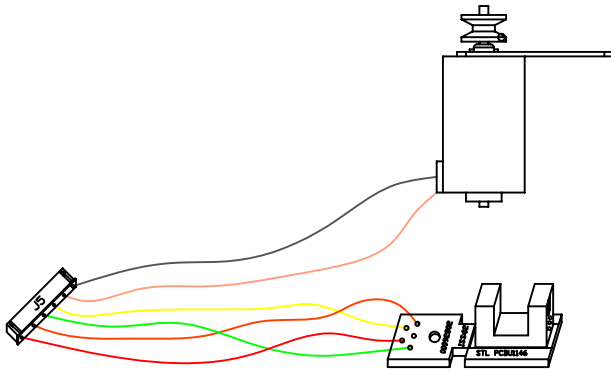


ASSEMBLY INSTRUCTIONS:

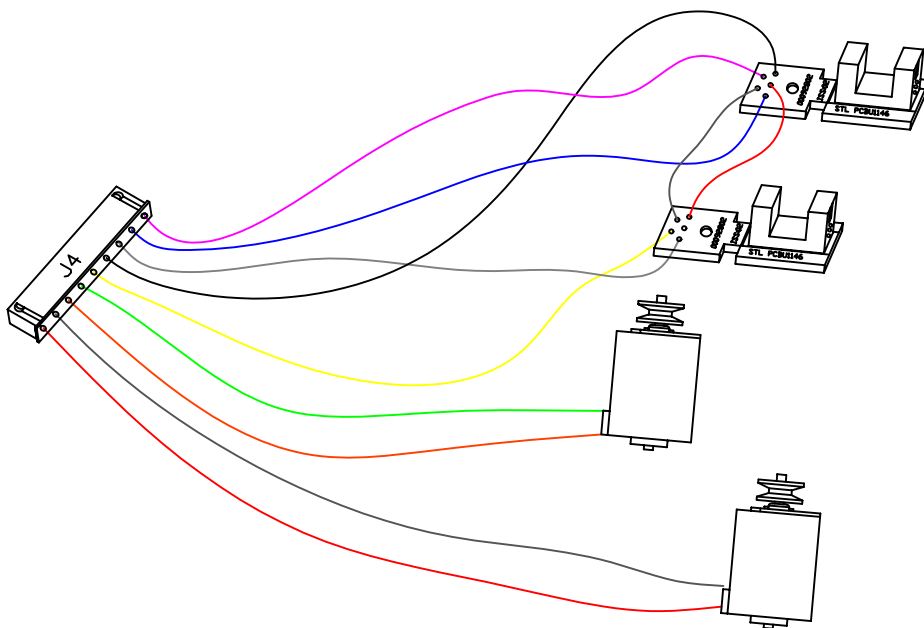
DRAWN	DATE
PRODUCT ROBOT	CHANGES
1) RELEASE TO PRODUCTION	ISSUE: 1
	NO. 0001



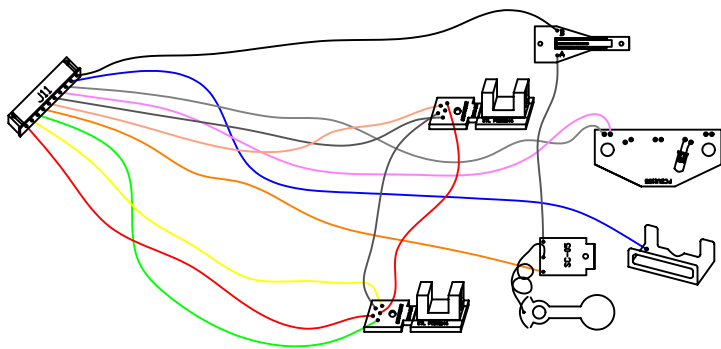
The wire connect drawing of motor of right & left arm & leg



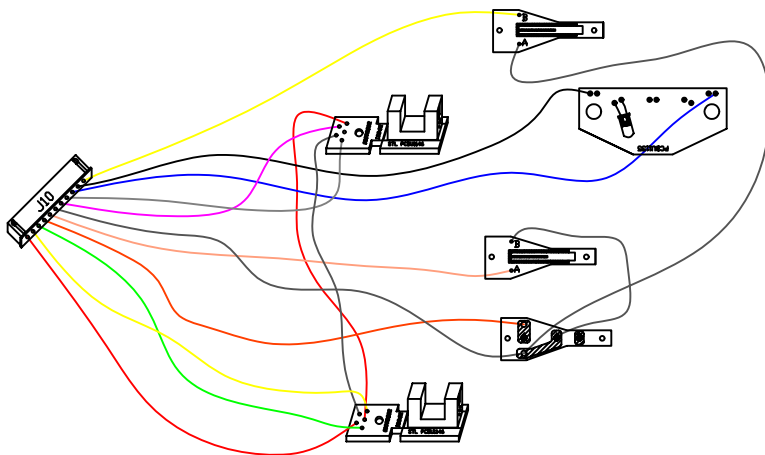
The wire connect drawing of motor & sensor of "PIR"



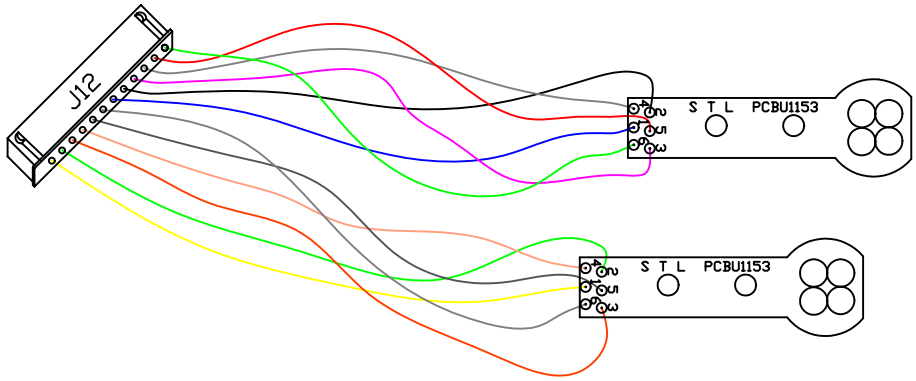
The wire connect drawing of the head & body's sensor & motor



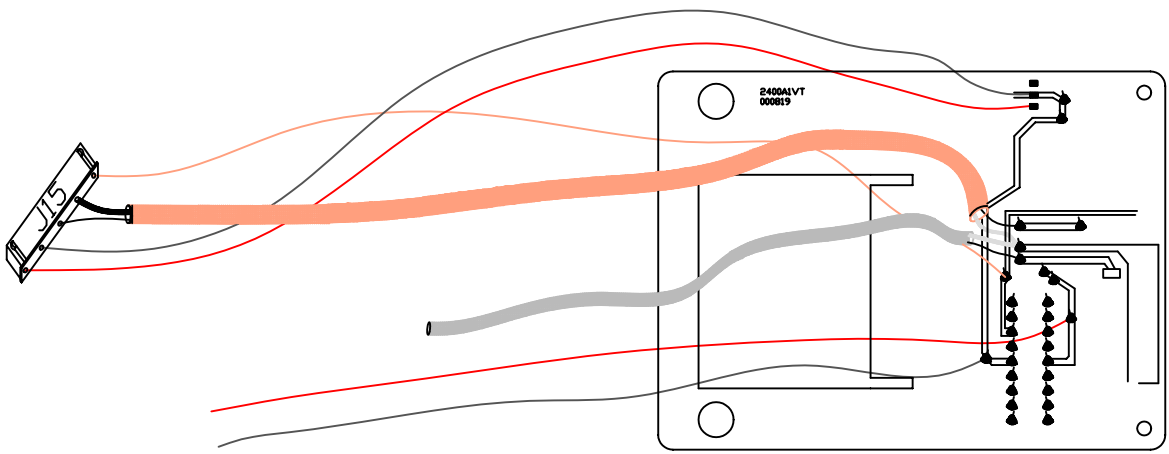
The wire connect drawing of right arm & leg



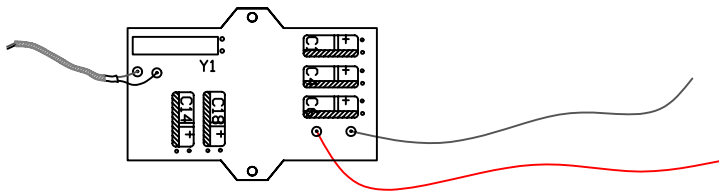
The wire connect drawing of left arm & leg



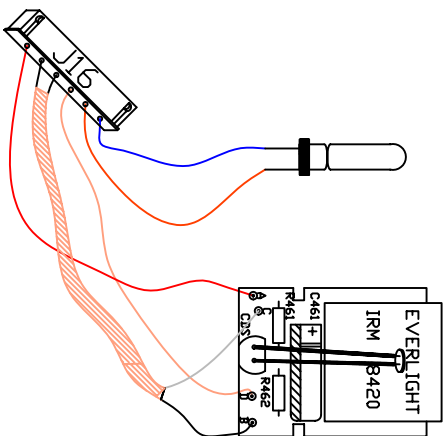
The wire connect drawing of eyes



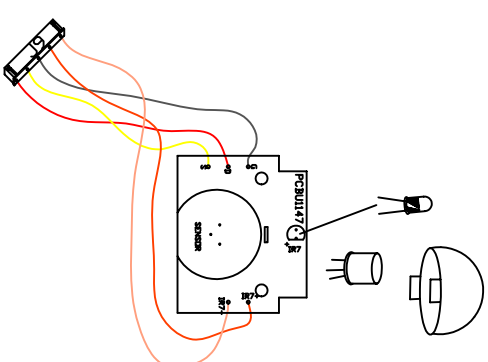
The wire connect drawing of the RF board



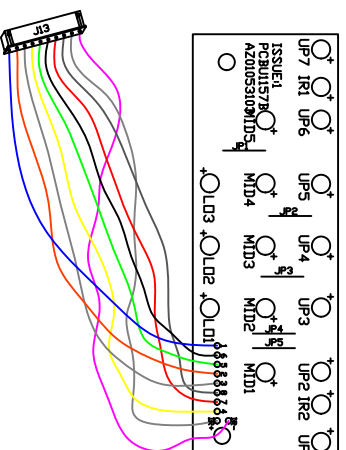
The wire connect drawing of camera board



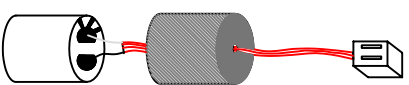
The wire connect drawing of IR receiver & LED



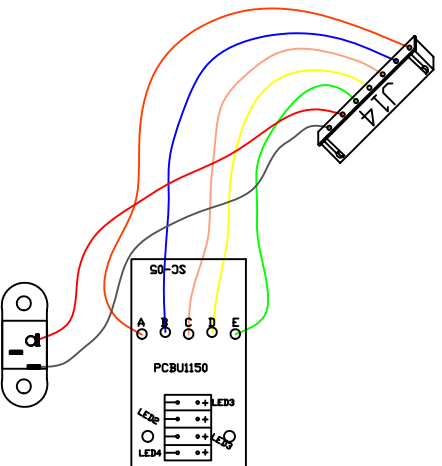
The wire connect drawing of "PIR" board



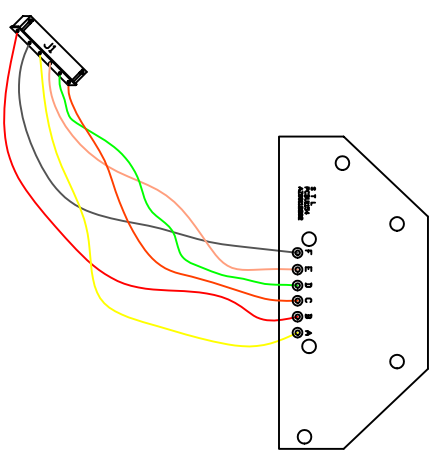
The wire connect drawing of the LED of the mouth board



The wire connect drawing of microphone



The wire connect drawing of board of charge LED & jack



The wire connect drawing of the board of keypad

Robot Assembly Structure

<u>1</u>	Final Assembly	<u>0025</u>	
	Assembly, Body	1	
	Assembly, Front Panel	1	
	Assembly, Back Panel	1	
	Washer, Decorative	8	FSN078
	Screw, Decorative	8	SCW223
	Helmet	1	CRY159
<u>1.6</u>	Assembly, Body	<u>0024</u>	
	Assembly, Skeleton	1	
	Assembly, Chest	1	
	Assembly, Back	1	
	Speaker	1	SPK009A
	Foam, Speaker	0.5	MIS978
	Panel, Mic	2	BKT666
	Mic	2	MIC053
	Boot, Mic	2	MIS486A
	Screw, 3.0 by 16	8	SCW030
<u>1.8</u>	Assembly, Skeleton	<u>0023</u>	
	Assembly, Leg Frame	1	
	Assembly, Gear Box	1	
	Assembly, PCB Main	1	
	Bracket, Leg Frame	1	BKT737
	Bracket, Leg Frame Right	1	BKT749
	Bracket, Leg Frame Left	1	BKT748
	Screw M3.0 by 8	4	SCW003
	Screw, 3.0 by 16	6	SCW030
<u>2</u>	Assembly, Leg Frame	<u>0022</u>	
	Assembly, Left Leg	1	
	Assembly, Right Leg	1	
	Screw M2.6 by 12	4	SCW068
	Grease		GRE002
<u>3</u>	Assembly, Chest	<u>0019</u>	
	Assembly, PCB Mouth LED	1	
	Bellyback	1	CAB701
	Grill, Light	1	CRY160
	Screw M3.0 by 8	3	SCW003
<u>4</u>	Assembly, Back	<u>0019</u>	
	Assembly, Bezel	1	
	Back Pack	1	CAB707

Robot Assembly Structure

Bellyback	1	CAB701
Screw M2.0 by 8	1	SCW023
<u>5</u> Assembly, Front Panel	<u>0018</u>	
Assembly, PIR drive	1	
Assembly, PCB IR Receiver	1	
Panel, Front	1	CAB704
Mic	1	MIC053
Boot, Mic	1	MIS486A
Lense, IR Receiver	1	CRY157
Lense, Lamp	1	CRY161
Ring, Lamp	1	BKT668
Bracket, Lamp	1	BKT663
Socket, Lamp	1	CNT197
Reflector, Lamp	1	CRY162
Lamp, Bulb	1	MIS954
Screw M3.0 by 8	10	SCW003
Washer,	2	FSN002
Glue, AA		GLU036
Hot Melt		
<u>6</u> Assembly, Back Panel	<u>0018</u>	
Assembly, PCB Charge LED	1	
Panel, Back	1	CAB705
Jack, DC	1	JAK043
Screw, 2.0 by 8	4	SCW023
<u>7</u> Assembly, Left Leg	<u>0020</u>	
Assembly, Arm	1	
Assembly, Wheel	1	
Assembly, Left Front Toe	1	
Assembly, Left Rear Toe	1	
Assembly, PCB Interruptor	2	
Assembly, PCB Leg IR LED	1	
Assembly, Left Inner Leg	1	
Assembly, Leg Motor Mount	1	
Assembly, Arm Motor Mount	1	
Assembly, Large Gear Reduce	1	
Assembly, Small Gear Reduce Pin Mid	2	
Assembly, Small Gear Reduce Pin End	1	
Assembly, Pully	2	
Leg	1	CAB688
Brace, Toe	2	BKT707
Axle, Wheel	1	MIS943
Leg, Inner Bottom	1	CAB690

Robot Assembly Structure

Lense, Leg IR	2	CRY158
Belt, Leg	1	MIS948
Belt, Arm	1	MIS949
Gear, Arm	1	GEA009
Wheel, Arm Index	1	GEA014
Plate, PCB Arm Interuptor	1	MIS991
Plate, PCB Leg Interuptor	1	MIS990
Screw, 3.0 by 16	2	SCW030
Screw, 3.0 by 8	25	SCW003
Screw, 2.0 by 8	2	SCW023
Glue, Yellow		GLU010
Grease		GRE002

<u>8</u> Assembly, Right Leg	<u>0021</u>	
Assembly, Arm	1	
Assembly, Wheel	1	
Assembly, Right Front Toe	1	
Assembly, Right Rear Toe	1	
Assembly, PCB Interuptor	2	
Assembly, PCB Leg IR LED	1	
Assembly, Right Inner Leg	1	
Assembly, Leg Motor Mount	1	
Assembly, Arm Motor Mount	1	
Assembly, Large Gear Reduce	1	
Assembly, Small Gear Reduce Pin Mid	2	
Assembly, Small Gear Reduce Pin End	1	
Assembly, Pully	2	
Assembly, PCB Tilt Mechanism	1	
Leg	1	CAB688
Brace, Toe	2	BKT707
Axle, Wheel	1	MIS943
Leg, Inner Bottom	1	CAB690
Lense, Leg IR	2	CRY158
Belt, Leg	1	MIS948
Belt, Arm	1	MIS949
Gear, Arm	1	GEA009
Wheel, Arm Index	1	GEA014
Plate, PCB Arm Interuptor	1	MIS991
Plate, PCB Leg Interuptor	1	MIS990
Stop, Pendulum	1	BKT713
Screw, 3.0 by 16	2	SCW030
Screw, 3.0 by 8	28	SCW003
Screw, 2.0 by 8	2	SCW023
Glue, Yellow		GLU010
Grease		GRE002

Robot Assembly Structure

<u>9</u> Assembly, PCB Mouth LED	<u>0010</u>	
LED, Red	15	LED341
LED, IR	2	LEDxxx
PCB, Mouth	1	PCBU1157
<u>10</u> Assembly, Gear Box	<u>0017</u>	
Assembly, Head	1	
Assembly, Body Drive	1	
Assembly, Battery	1	
Assembly, RF module	1	
Assembly, PCB Interruptor	2	
Assembly, Small Gear Reduce Pin Mid	3	
Box, Gear	1	BKT665
Gear, Leg Pully	1	GEA007
Pully, Arm Motor	1	GEA010
Motor, Arm	1	MTR005
Belt, Arm	1	MIS949
Gear, Drive Wheel	1	GEA005
Clip, Head Drive	1	BKT673
Plate, Motor	2	BKT672
Plate, PCB Head Gear	1	MIS992
Foam Pad	0.5	MIS967
Washer Big	4	FSN077
Screw, Arm Motor	2	SCW222
Screw, 3.0 by 16	4	SCW030
Screw, 2.0 by 8	2	SCW023
Screw, 3.0 by 8	12	SCW003
Washer	5	FSN002
Grease		GRE002
<u>11</u> Assembly, Bezel	<u>0011</u>	
Bezel, Button	1	BKT667
Keypad	1	CNT195
PCB, Keypad	1	PCBU1154
Screw, 2.0 by 6	6	SCW018
<u>12</u> Assembly, PIR drive	<u>0016</u>	
Assembly, PIR Cabinet	1	
Assembly, PCB Interruptor	1	
Assembly, Pully	1	
Assembly, Small Gear Reduce Pin Mid	1	
Assembly, Small Gear Reduce Pin End	1	
Assembly, Small Gear Reduce PIR Cltch	1	
Assembly, Pir Gear Index	1	

Robot Assembly Structure

Bracket, PIR Drive 1	1	BKT659
Bracket, PIR Drive 2	1	BKT660
Motor, Arm	1	MTR005
Belt, Arm	1	MIS949
Pully, Arm Motor	1	GEA010
Gear, Clutch	1	GEA012
Spring, PIR Clutch	1	SPR169
Plate, PCB Interruptor Leg	1	MIS990
Screw, 2.0 by 8	1	SCW023
Screw, Arm Motor	2	SCW222
Screw, 3.0 by 8	5	SCW003
Grease		GRE002
<u>13</u> Assembly, PCB IR receiver	<u>0009</u>	
PCB, IR Receiver	1	PCBU1151
IR Receiver	1	SIC731
<u>14</u> Assembly, PCB Charge LED	<u>0009</u>	
PCB, Charge LED	1	PCBU1150
LED, Green Rectangular	3	LED379A
LED, Red Rectangular	1	LED381A
<u>15</u> Assembly, Arm	<u>0013</u>	
Assembly, Hand	1	
Assembly, Inner Arm	1	
Assembly, Motor/Worm	1	
Assembly, Extension Plate	1	
Assembly, Arm Gear		1
Assembly, Small Gear Reduce Pin Mid	1	
Assembly, Worm Gear	1	
Assembly, PCB Microswitch	1	
Arm	1	CAB687
Spring, Arm Extention	1	SPR167
Washer, Big	3	FSN077
Washer, Small	3	FSN002
Screw, 2.0 by 8	4	SCW023
Screw, 3.0 by 8	11	SCW003
Grip. Arm	1	MIS962
Grease		GRE002
<u>16</u> Assembly, Wheel	<u>0003</u>	
Wheel, Drive	1	MIS934
Tire	1	MIS936
Gear, Drive Wheel	1	GEA005
Index, Drive Wheel	1	GEA016

Robot Assembly Structure

Screw, 3.0 by 8	6	SCW003
<u>17 Assembly, Left Front Toe</u>	<u>0006</u>	
Assembly, PCB Microswitch	1	
Toe	1	CAB691
Plate, Toe	1	BKT702
Wheel, Toe	1	MIS935
Spring, Toe	2	SPR166
Cap, Toe Spring	2	BKT703
Washer	2	FSN002
Screw, 2.0 by 8	10	SCW023
Screw, 3.0 by 8	3	SCW003
Screw, 2.6 by 8	2	SCW077
<u>18 Assembly, Left Rear Toe</u>	<u>0006</u>	
Assembly, PCB Microswitch	1	
Toe	1	CAB691
Plate, Toe	1	BKT702
Wheel, Toe	1	MIS935
Spring, Toe	2	SPR166
Cap, Toe Spring	2	BKT703
Washer	2	FSN002
Screw, 2.0 by 8	10	SCW023
Screw, 3.0 by 8	3	SCW003
Screw, 2.6 by 8	2	SCW077
<u>19 Assembly, Right Front Toe</u>	<u>0007</u>	
Toe	1	CAB691
Plate, Toe	1	BKT702
Wheel, Toe	1	MIS935
Spring, Toe	2	SPR166
Cap, Toe Spring	2	BKT703
Washer	2	FSN002
Screw, 2.0 by 8	8	SCW023
Screw, 3.0 by 8	3	SCW003
Screw, 2.6 by 8	2	SCW077
<u>20 Assembly, Right Rear Toe</u>	<u>0007</u>	
Toe	1	CAB691
Plate, Toe	1	BKT702
Wheel, Toe	1	MIS935
Spring, Toe	2	SPR166
Cap, Toe Spring	2	BKT703
Washer	2	FSN002
Screw, 2.0 by 8	8	SCW023

Robot Assembly Structure

Screw, 3.0 by 8	3	SCW003
Screw, 2.6 by 8	2	SCW077
<u>21</u> Assembly, PCB Interruptor	<u>0009</u>	
PCB, Interruptor	1	PCBU1146
IC, IR Interruptor	1	SIC721
<u>22</u> Assembly, PCB Leg IR LED	<u>0008</u>	
PCB, Leg IR LED	1	PCBU1155
LED, IR	3	LED404
<u>23</u> Assembly, Left Inner Leg	<u>0005</u>	
Leg, Inner Top	1	CAB689
Plate, Coupler	1	BKT674
Screw, 3.0 by 16	2	SCW030
Glue, Yellow		GLU010
<u>24</u> Assembly, Right Inner Leg	<u>0005</u>	
Assembly, Body Clutch	1	
Leg, Inner Top	1	CAB689
Plate, Coupler	1	BKT674
Screw, 3.0 by 16	2	SCW030
Glue, Yellow		GLU010
<u>25</u> Assembly, Leg Motor Mount	<u>0002</u>	
Motor Mount	1	BKT656
Motor, Leg	1	MTR006
Pulley, Leg Motor	1	GEA022
Screw, Leg Motor	2	SCW221
<u>26</u> Assembly, Arm Motor Mount	<u>0002</u>	
Plate, Motor	1	BKT736
Motor, Arm	1	MTR005
Pulley, Arm Motor	1	GEA010
Screw, Arm Machine	2	SCW222
<u>27</u> Assembly, Large Gear Reduce	<u>0002</u>	
Gear, Leg Reduction	1	GEA006
Axle, Gear	1	MIS944
<u>28</u> Assembly, Small Gear Reduce Pin Middle	<u>0001</u>	
Gear, Arm Reduction	1	GEA002
Axle, Pin 2	1	MIS945
<u>29</u> Assembly, Small Gear Reduce Pin Top	<u>0001</u>	

Robot Assembly Structure

Gear, Arm Reduction	1	GEA002
Axle, Pin 2	1	MIS945
<u>30 Assembly, Pully</u>	<u>0002</u>	
Gear, Leg Pully	1	GEA007
Axle, Gear	1	MIS944
<u>31 Assembly, PCB Tilt Mechanism</u>	<u>0009</u>	
PCB, Tilt	1	PCBU1173
Wire, Thin	1	WDB017
Pendulum	1	BKT712
<u>32 Assembly, Head</u>	<u>0012</u>	
Assembly, Eye	2	
Assembly, Camera	1	
Head	1	CAB702
Clamp, Head Wire	1	BKT681
Clamp, Head Wire Harness	1	BKT729
Clutch Pad	1	MIS937
Rotor, Arm	1	MIS938
Foam, Head Clutch	1	MIS977
Gear, Arm	1	GEA009
Index, Head	1	GEA018
Screw, 3.0 by 8	12	SCW003
Screw, 2.6 by 10	4	SCW068
Fiber Washer 1.00 mm thick	4	
<u>33 Assembly, Body Drive</u>	<u>0014</u>	
Assembly, Small Gear Body Reduce	1	
Assembly, Small Gear Reduce Pin Mid	4	
Assembly, Pully	1	
Bracket, Body Drive 1	1	BKT661
Bracket, Body Drive 2	1	BKT662
Gear, Drive Wheel	1	GEA005
Pulley, Arm Motor	1	GEA010
Motor, Arm	1	MTR005
Belt, Arm	1	MIS949
Brace, Body Drive 1	1	BKT708
Brace, Body Drive 2	1	BKT709
Screw, 3.0 by 8	8	SCW003
Screw, Arm Motor	2	SCW222
Washer	2	FSN079
Grease		GRE002
<u>34 Assembly, Battery</u>	<u>0015</u>	

Robot Assembly Structure

Battery	1	BAY029
Wire Harness	1	ASSM289A
Bag	1	BAG129
Tape	1	ADH005-1
<u>35 Assembly, PIR Cabinet</u>	<u>0011</u>	
Assembly, PCB PIR	1	
Cabinet, Pir	2	CAB706
Gear, Claw	1	GEA001
Screw, 3.0 by 8	2	SCW003
Screw, 2.0 by 8	1	SCW023
Washer	1	FSN002
<u>36 Assembly, Small Gear Reduce PIR Clutch</u>	<u>0001</u>	
Gear, Arm Reduction	1	GEA002
Axle, Clutch Pin	1	MIS946
<u>37 Assembly, PIR Gear Index</u>	<u>0001</u>	
Gear, Claw	1	GEA001
Index Wheel, PIR	1	GEA015
Axle, Pin 2	1	MIS945
<u>38 Assembly, Hand</u>	<u>0004</u>	
Claw	1	CAB686
Claw, Inner	1	BKT654
Grip, Claw	1	MIS961
ABS Slurry		
<u>39 Assembly, Inner Arm</u>	<u>0004</u>	
Arm, Inner	1	BKT655
Pad, Clutch	1	MIS937
Foam, Arm Clutch	1	MIS976
Rotor, Arm	1	MIS938
Screw, 2,6 by 10	4	SCW068
<u>40 Assembly, Motor/Worm</u>	<u>0002</u>	
Motor, Arm	1	MTR005
Worm	1	GEA004
<u>41 Assembly, Extention Plate</u>	<u>0003</u>	
Plate, Grip 1	1	BKT687
Plate, Grip 2	1	BKT688
Spring, Arm Extention	1	SPR168
Grease		GRE002

Robot Assembly Structure

<u>42</u>	Assembly, Arm Gear	<u>0001</u>	
	Gear, Claw	1	GEA001
	Plate, Claw Gear	1	BKT676
	Pin, Pivot Claw	1	BKT675
	AA Glue		GLU036
<u>43</u>	Assembly, Worm Gear	<u>0001</u>	
	Gear, Reduction Worm	1	GEA003
	Axle, Pin 2	1	MIS945
<u>44</u>	Assembly, PCB Microswitch	<u>0008</u>	
	PCB Microswitch	1	PCBU1148
	Microswitch	1	SWP034
<u>45</u>	Assembly, Body Clutch	<u>0003</u>	
	Pad, Clutch	1	MIS989
	Rotor Body	1	MIS939
	Foam Body Clutch	1	MIS978
	Index Wheel, Body	1	GEA017
	Gear, Body	1	GEA011
	Screw, 2.6 by 10	4	SCW068
	Screw, 3.0 by 10	4	SCW002
<u>46</u>	Assembly, Eye	<u>0011</u>	
	Assembly, PCB Eye LED	1	
	Eye, Front	1	CRY155
	Eye, Back	1	CAB703
	Eye, Ring	1	BKT664
	Reflector	1	BKT714
	Screw, 3.0 by 8	2	SCW003
	AA Glue		GLU036
<u>47</u>	Assembly, Camera	<u>0009</u>	
	Assembly, Camera PCB	1	
	Camera Body With Lense	1	LENS001
<u>48</u>	Assembly, Gear Body Reduce	<u>0001</u>	
	Gear, Body Reduction	1	GEA019
	Axle, Body Drive	1	MIS980
<u>49</u>	Assembly, PCB PIR	<u>0008</u>	
	PCB PIR	1	PCBU1147
	IC, PIR	1	SIC732
	LED, IR	1	LED404
	Lense, PIR	1	CRY167

Robot Assembly Structure

<u>50</u> Assembly, PCB Eye	<u>0008</u>	
PCB, Eye	1	PCBU1153
LED, Red	2	LED405
LED, Yellow	2	LED384
LED, Blue	1	LED407