DOCUMENT RESUME

ED 072 059 TM 002 255

TITLE	Assembler, Medical and Surgical Supplies (inst. & app.) 719.885-014; Medical and Surgical Supplies Assembler (inst. & app.) 719.885-022--Technical Report on Development of USES Aptitude Test Battery.
INSTITUTION	Manpower Administration (DOL), Washington, D.C. U.S. Training and Employment Service.
REPORT NO	S-359
PUB DATE	Oct 67
NOTE	18p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aptitude Tests; Assembly (Manufacturing); *Cutting Scores; Evaluation Criteria; Industrial Training; Job Applicants; *Job Skills; Norms; Occupational Guidance; *Personnel Evaluation; Test Reliability; Test Validity
IDENTIFIERS	GATB; *General Aptitude Test Battery; Medical Supplies (Assembler); Surgical Supplies (Assembler)

ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample and a personnel evaluation form are also included. (AG)

October 1967 United States Employment Service Test Research Report S-359

S-359

Development of USES Aptitude Test Battery

for

Assembler, Medical and Surgical

(inst. & app.) 719.885

Medical and Surgical Supplies Assembler

(inst. & app.) 719.885

U.S. DEPARTMENT OF LABOR

MANPOWER ADMINISTRATION

Technical Report on Development of USES Aptitude Test Batteries

For . . .

Assembler, Medical and Surgical Supplies (inst. & app.) 719.885-014

Medical and Surgical Supplies Assembler (inst. & app.) 719.885-022

S-359

(Developed in Cooperation with the
California State Employment Service)

U$S. DEPARTMENT OF LABOR
Willard Wirtz, Secretary

BUREAU OF EMPLOYMENT SECURITY
Robert C. Goodwin, Administrator

MANPOWER ADMINISTRATION
Stanley H. Ruttenberg,
Administrator

U.S. EMPLOYMENT SERVICE
Charles E. Odell, Director

October 1967

FOREWORD

The United States Employment Service General Aptitude Test Battery (GATB) was first published in 1947. Since that time the GATB has been included in a continuing program of research to validate the tests against success in many different occupations. Because of its extensive research base the GATB has come to be recognized as the best validated multiple aptitude test battery in existence for use in vocational guidance.

The GATB consists of 12 tests which measure 9 aptitudes: General Learning Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity, and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, with a standard deviation of 20.

Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, in combination, predict job performance. For any given occupation, cutting scores are set only for those aptitudes which contribute to the prediction of performance of the job duties of the experimental sample. It is important to recognize that another job might have the same job title but the job content might not be similar. The GATB norms described in this report are appropriate for use only for jobs with content similar to that shown in the job description included in this report.

Charles E. Odell

Charles E. Odell, Director
U. S. Employment Service

GATB Study #2588, 2507

DEVELOPMENT OF USES APTITUDE TEST BATTERY

For

Assembler, Medical and Surgical Supplies (inst. and app.) 719.885-014
S-359

This report describes research undertaken for the purpose of determining General Aptitude Test Battery (GATB) norms for the occupation of Assembler, Medical and Surgical Supplies (inst. and app.) 719.885-014. The following norms were established:

GATB Aptitudes	Minimum Acceptable GATB, B-1002 Scores
K - Motor Coordination	85
F - Finger Dexterity	90
M - Manual Dexterity	115

RESEARCH SUMMARY

Sample:
53 female workers employed as Assembler, Medical and Surgical Supplies at Pharmaseal Laboratories, Covina, California.

Criterion:
Supervisory ratings

Design:
Concurrent (test and criterion data were collected at approximately the same time).

Concurrent Validity:
Phi Coefficient = .37 ($P/2 < .005$)

Effectiveness of Norms:
Only 66% of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the S-359 norms, 81% would have been good workers. 34% of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the S-359 norms, only 19% would have been poor workers. The effectiveness of norms is shown graphically in Table 1:

TABLE 1

Effectiveness of Norms

	Without Tests	With Tests
Good Workers	66%	81%
Poor Workers	34%	19%

SAMPLE DESCRIPTION

Size: N = 53

Occupational Status: Employed Workers

Work Setting: Employed at Pharmaseal Laboratories, Covina, California

Employer Selection Requirements:

Education: No requirement

Previous Experience: No requirement

Tests: None

Principal Activities: The job duties for each worker are comparable to those shown in the job descr'ption in the Appendix.

Minimum Experience: All workers had completed an on-the-job training period of 8 weeks.

TABLE 2

Means, Standard Deviations (SD), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

	Mean	SD	Range	r
Age (years)	27.8	8.8	20-53	.135
Education (years)	10.3	1.8	6-12	.209
Experience (years)	34.0	22.0	6-132	.305*

*Significant at the .05 level

EXPERIMENTAL TEST BATTERY

All 12 tests of the GATB, B-1002B were administered during the period May 1967 through June 1965.

CRITERION

The criterion data consisted of supervisory ratings of job proficiency. Ratings and reratings for each worker were made at approximately the same time as the tests were administered with a time interval of at least two weeks between the ratings.

Rating Scale: Form SP-21, "Descriptive Rating Scale," was used. The scale (See Appendix) consists of nine items with five alternatives for each item. The alternatives indicate the different degrees of job proficiency.

Reliability: The coefficient of reliability between the two ratings is .94 indicating a highly significant relationship. The final criterion score consisted of the combined scores of the two sets of ratings.

Criterion Score Distribution:

Possible Range:	18-90
Actual Range:	35-83
Mean:	53.6
Standard Deviation:	13.1

Criterion Dichotomy: The criterion distribution was dichotomized into high and low groups by placing 34% of the sample in the low group to correspond with the percentage of workers considered unsatisfactory or marginal. Workers in the high criterion group were designated as "good workers" and those in the low group as "poor workers." The criterion critical score is 51.

APTITUDES CONSIDERED FOR INCLUSION IN THE TEST NORMS

Aptitudes were selected for try out in the norms on the basis of a qualitative analysis of job duties involved and a statistical analysis of test and criterion data. Aptitudes K, F and M, which do not have a high correlation with the criterion were considered for inclusion in the norms because the qualitative analysis indicated that they were important for the job duties and the sample had a relatively high mean score on these aptitudes. With employed workers, a relatively high mean score may mean that some sample pre-selection has taken place. Tables 3, 4, and 5 show the results of the qualitative and statistical analyses.

TABLE 3

Qualitative Analysis
(Based on the job analysis, the aptitudes indicated appear to be important to the work performed)

Aptitude	Rationale
P - Form Perception	Necessary for visual inspection to discern detail in assembled article.

K - Motor Coordination	Necessary to coordinate eyes, hands and fingers in swift, precise movements, in order to complete one or a combination of assembly tasks according to production pace of assembly line.
F - Finger Dexterity	Necessary for grasping, inserting, positioning, and aligning small parts accurately and quickly.
M - Manual Dexterity	Necessary to move hands easily and skillfully in assembly of medical and surgical supplies.

TABLE 4

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB

Aptitudes	Mean	SD	Range	r
G - General Learning Ability	78.5	16.8	46-113	.233
V - Verbal Aptitude	86.1	14.4	65-127	.291*
N - Numerical Aptitude	75.0	19.5	36-107	.232
S - Spatial Aptitude	89.9	16.8	58-127	.249
P - Form Perception	94.9	20.0	59-134	.325*
Q - Clerical Perception	95.7	15.0	66-123	.325*
K - Motor Coordination	104.6	18.2	68-153	.242
F - Finger Dexterity	111.3	19.0	70-173	.176
M - Manual Dexterity	120.3	17.6	79-151	.460**

*Significant at the .05 level
**Significant at the .01 level

TABLE 5

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important					X		X	X	X
Irrelevant									
Relatively High Mean							X	X	X
Relatively Low Standard Dev.		X				X			
Significant Correlation with Criterion		X			X	X			X
Aptitudes to be Considered for Trial Norms		V			P	Q	K	F	M

DERIVATION AND VALIDITY OF NORMS

Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of V, P, Q, K, F and M at trial cutting scores were able to differentiate between the 66% of the sample considered good workers and the 34% of the sample considered poor workers. Trial cutting scores at five point intervals approximately one standard deviation below the mean are tried because this will eliminate about one-third of the sample with three-aptitude norms. For two-aptitude trial norms, minimum cutting scores of slightly more than one standard deviation below the mean will eliminate about 1/3 of the sample; for four-aptitude trial norms, cutting scores of slightly less than one standard deviation below the mean will eliminate about 1/3 of the sample. The Phi Coefficient was used as a basis for comparing trial norms. Norms of K-85, F-90, and M-115 provided optimum differentiation. The validity of these norms is shown in Table 6 and is indicated by a Phi Coefficient of .37 (statistically significant at the .005 level).

TABLE 6

Concurrent Validity of Test Norms K-85, F-90 and M-115

	Nonqualifying Test Scores	Qualifying Test Scores	Tota.
Good Workers	10	25	35
Poor Workers	12	6	18
Total	22	31	53

Phi Coefficient (ϕ) = .37 Chi Square (X^2) = 7.1
Significance Level = $P/2 < .005$

DETERMINATION OF OCCUPATIONAL APTITUDE PATTERN

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 36 OAP's included in Section II of the Manual for the General Aptitude Test Battery. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.

GATB Study 2507 S-359

Assembler, Medical and Surgical Supplies (inst. & app.) 719.885-022

Check Study #1 Research Summary

Sample:
60 female workers employed as Assembler, Medical and Surgical Supplies at Don Baxter, Inc., Glendale, California.

TABLE 7

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, Experience and the Aptitudes of the GATB

	Mean	SD	Range	r
Age (years)	35.8	9.9	18-52	.312*
Education (years)	11.2	1.4	6-14	.205
Experience (months)	58.2	56.2	2-215	.324*
G - General Learning Ability	89.4	16.2	60-139	.431**
V - Verbal Aptitude	95.0	15.1	76-151	.287*
N - Numerical Aptitude	85.8	17.5	44-136	.354**
S - Spatial Aptitude	95.2	15.3	71-124	.340**
P - Form Perception	104.5	19.0	50-154	.173
Q - Clerical Perception	110.0	12.7	77-138	.166
K - Motor Coordination	104.4	15.0	70-151	.129
F - Finger Dexterity	102.1	15.6	51-137	.320*
M - Manual Dexterity	119.1	16.9	76-148	.367**

*Significant at the .05 level
**Significant at the .01 level

Criterion:
Supervisory ratings obtained in 1966-67 (Reliability of .88)

Design:
Concurrent (test and criterion data were collected at approximately the same time).

Principal Activities:
The job duties for this sample differ somewhat from those of the validation sample and are shown in the Appendix.

Concurrent Validity:
Phi Coefficient (ϕ) = .50 (P/2 less than .0005)

Effectiveness of Norms:
Only 65% of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the S-359 norms, 84% would have been good workers. Thirty- five percent of

the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the S-359 norms, only 16% would have been poor workers. The effectiveness of the norms is shown graphically in Table 8:

TABLE 8

Effectiveness of S-359 Norms on Check Study #1 Sample

	Without Tests	With Tests
Good Workers	65%	84%
Poor Workers	35%	16%

TABLE 9

Concurrent Validity of S-359 Norms on Check Study #1 Sample

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	8	31	39
Poor Workers	15	6	21
Total	23	37	60

Phi Coefficient (ϕ) = .50 Chi Square (X^2) = 14.9
Significance Level = P/2 less than .0005

SP-21
Rev. 2/61

A-P-P-E-N-D-I-X

DESCRIPTIVE RATING SCALE
(For Aptitude Test Development Studies)

Score____

RATING SCALE FOR _____
D. O. T. Title and Code

Directions: Please read Form SP-20, "Suggestions to Raters", and then fill in the items listed below. In making your ratings, only one box should be checked for each question.

Name of Worker (print) _____
(Last) (First)

Sex: Male_____ Female_____

Company Job Title: _____

How often do you see this worker in a work situation?

☐ See him at work all the time.

☐ See him at work several times a day.

☐ See him at work several times a week.

☐ Seldom see him in work situation.

How long have you worked with him?

☐ Under one month.

☐ One to two months.

☐ Three to five months.

☐ Six months or more.

A. How much work can he get done? (Worker's ab[illegible] make efficient use of his time and to work at high speed.)

☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.

☐ 2. Capable of low work output. Can perform at a slow pace.

☐ 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.

☐ 4. Capable of high work output. Can perform at a fast pace.

☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of his work? (Worker's ability to do high-grade work which meets quality standards.)

☐ 1. Performance is inferior and almost never meets minimum quality standards.

☐ 2. The grade of his work could stand improvement. Performance is usually acceptable but somewhat inferior in quality.

☐ 3. Performance is acceptable but usually not superior in quality.

☐ 4. Performance is usually superior in quality.

☐ 5. Performance is almost always of the highest quality.

C. How accurate is he in his work? (Worker's ability to avoid making mistakes.)

☐ 1. Makes very many mistakes. Work needs constant checking.

☐ 2. Makes frequent mistakes. Work needs more checking than is desirable.

☐ 3. Makes mistakes occasionally. Work needs only normal checking.

☐ 4. Makes few mistakes. Work seldom needs checking.

☐ 5. Rarely makes a mistake. Work almost never needs checking.

D. How much does he know about his job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with his work.)

☐ 1. Has very limited knowledge. Does not know enough to do his job adequately.

☐ 2. Has little knowledge. Knows enough to "get by."

☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.

☐ 4. Has broad knowledge. Knows enough to do good work.

☐ 5. Has complete knowledge. Knows his job thoroughly.

E. How much aptitude or facility does he have for this kind of work? (Worker's adeptness or knack for performing his job easily and well.)

☐ 1. Has great difficulty doing his job. Not at all suited to this kind of work.

☐ 2. Usually has some difficulty doing his job. Not too well suited to this kind of work.

☐ 3. Does his job without too much difficulty. Fairly well suited to this kind of work.

☐ 4. Usually does his job without difficulty. Well suited to this kind of work.

☐ 5. Does his job with great ease. Exceptionally well suited for this kind of work.

F. How large a variety of job duties can he perform efficiently? (Worker's ability to handle several different operations in his work.)

☐ 1. Cannot perform different operations adequately.

☐ 2. Can perform a limited number of different operations efficiently.

☐ 3. Can perform several different operations with reasonable efficiency.

☐ 4. Can perform many different operations efficiently.

☐ 5. Can perform an unusually large variety of different operations efficiently.

G. How resourceful is he when something different comes up or something out of the ordinary occurs? (Worker's ability to apply what he already knows to a new situation.)

☐ 1. Almost never is able to figure out what to do. Needs help on even minor problems.

☐ 2. Often has difficulty handling new situations. Needs help on all but simple problems.

☐ 3. Sometimes knows what to do, sometimes doesn't. Can deal with problems that are not too complex.

☐ 4. Usually able to handle new situations. Needs help on only complex problems.

☐ 5. Practically always figures out what to do himself. Rarely needs help, even on complex problems.

H. How many practical suggestions does he make for doing things in better ways? (Worker's ability to improve work methods.)

☐ 1. Sticks strictly with the routine. Contributes nothing in the way of practical suggestions.

☐ 2. Slow to see new ways to improve methods. Contributes few practical suggestions.

☐ 3. Neither quick nor slow to see new ways to improve methods. Contributes some practical suggestions.

☐ 4. Quick to see new ways to improve methods. Contributes more than his share of practical suggestions.

☐ 5. Extremely alert to see new ways to improve methods. Contributes an unusually large number of practical suggestions.

I. Considering all the factors already rated, and only these factors, how acceptable is his work? (Worker's "all-around" ability to do his job.)

☐ 1. Would be better off without him. Performance usually not acceptable.

☐ 2. Of limited value to the organization. Performance somewhat inferior.

☐ 3. A fairly proficient worker. Performance generally acceptable.

☐ 4. A valuable worker. Performance usually superior.

☐ 5. An unusually competent worker. Performance almost always top notch.

Job Description for Check Study Sample

Job Title: Assembler, Medical and Surgical Supplies (inst. & app.) 719.885-022

Job Summary: Assembles medical and surgical supplies by hand and by operating machine according to oral instructions.

Work Performed: Assembles peritoneal dialysis sets: Positions two pre-formed surgical stylets into retaining grooves on bed of staking machine. Positions two pre-molded plastic caps into sliding receptacles located on edge of machine bed. Depresses right air actuating level knob with right hand to close machine and hold stylets in place. Depresses left air actuating level knob with left hand to slide cap receptacles into machine and force caps down over ends of stylets. Releases lever knobs to open machine and removes capped stylets from machine bed. Pulls on caps with fingers to ascertain that caps are securely fastened to stylets. Visually inspects stylets for dents, blunted points, or other machine damage. Places assembled stylets into carton alongside work station for packing.

Assembles peritoneal dialysis extension sets: Picks up pre-cut length of plastic tubing and L shaped plastic connector. Visually ascertains that tubing is free from holes or tears and that penetration marks, engraved on connector, are sharply outlined. Dips one end of tubing into vynal cement and inserts cemented end into connector. Twists connector with finger until specified alignment between axis of tubing and inner curve of connector is obtained. Dips free end of tubing into cement and inserts cemented end into bottom aperture of pre-molded injection site. Picks up second length of tubing and visually inspects tubing for imperfections. Dips one end of tubing into cement and inserts cemented end into top aperture of injection site. Slides metal roller clamp down over free end on to tubing and sets clamp on tubing at specified distance from injection site. Dips free end of tubing into cement and inserts cemented end into straight plastic connector. Pulls on assembled parts to verify that parts are securely cemented together. Visually inspects completed assembly to verify that parts are assembled in accordance with specifications, and places assembly into carton for packing.

Assembles blood administration sets: Slides metal clamp down specified distance on pre-cut lenght of tubing. Dips lower shank of molded plastic bottle stopper spike into cement and inserts cemented shank into tubing end located above clamp. Picks up cylindrical plastic drip chamber and visually inspects plastic net filter, suspended inside, for tears, enlarged holes, or separation from wall of drip chamber. Places each end of drip chamber down over vacuum tube to remove foreign particles. Rolls outside bottom surface of plastic single hole stopper, pre-fitted with plastic conduit, over sponge saturated with cement. Visually ascertains that cement has not entered conduit opening. Inserts cemented stopper into top of drip chamber and wipes off excess cement. Repeats process to cement plastic stopper into bottom of drip chamber. Dips end of tubing, located below clamp, into cement and pushes cemented end down over exposed conduit shank of stopper, previously inserted into top of drip chamber. Slides metal clamp down specified distance on second pre-cut length of tubing. Dips end of tubing into cement, pushes cemented end up over exposed conduit shank of stopper, previously inserted into bottom of drip chamber, and wipes off excess cement. Dips free end of tubing into cement and inserts end into top aperture of injection site. Picks up pre-cut lengths of rubber and plastic tubing. Dips one end of plastic tubing into cement and inserts

cemented end into one end of rubber tubing. Dips free end of plastic tubing into cement and inserts cemented end into bottom aperture of injection site. Dips blunt end of pre-formed plastic needle adapter into solution of alcohol and water and inserts dipped end into free end of rubber tubing. Visually inspects completed assembly and places assembly into carton for packing.

Assembles intravenous infusion sets: Removes protective cap from needle of pre-assembled intravenous needle and needle extension tube. Positions assembly in holding fixture on bed of pull test machine. Depresses level of machine with one hand to actuate machine and visually ascertains that machine pulling device does not separate needle and needle extension tube. Removes assembly from holding fixture, discarding those not firmly held together, and places extension tube down on air hose to test for blockage. Replaces needle protective cap and sets assembly to one side. Picks up plastic drip chamber, containing pre-attached net filter, and visually inspects filter for imperfections. Places each end of drip chamber down over vacuum tube to remove foreign particles. Rolls outside bottom edges of two plastic single hole stoppers, pre-fitted with plastic conduits, over sponge saturated with cement. Visually ascertains that cement has not entered openings of conduits. Inserts cemented stoppers into top and bottom of drip chamber and wipes off excess cement. Places drip chamber to one side and picks up pre-cut length of plastic tubing and roller clamp. Slides clamp down on tubing to specified location and sets clamp in place. Dips lower shank of plastic bottle stopper spike in cement and inserts cemented shank into tubing end located above clamp. Dips end of tubing, located below clamp, into cement and pushes cemented end down over exposed conduit shank of top drip chamber stopper. Picks up second pre-cut length of tubing and roller clamp. Slides clamp down on tubing to specified location and sets clamp in place. Dips end of tubing above clamp in cement and pushes cemented end up over exposed conduit shank of bottom drip chamber stopper. Dips free end of tubing below clamp into cement and inserts cemented end into top aperture of injection site. Dips both ends of pre-cut length of plastic tubing into cement. Inserts one cemented end into bottom aperture of injection site and inserts other end into pre-cut length of rubber tubing. Picks up tested needle and needle extension assembly. Dips end of needle extension tube in cement and inserts cemented end into free end of rubber tubing. Visually inspects completed assembly and places assembly in carton for packing.

October 1967 S-359

FACT SHEET

Job Title: Assembler, Medical and Surgical Supplies (inst. & app.) 719.885-014

Job Summary: Assembles and packages medical and surgical supplies by hand and by tending automatic assembling and packaging machines on assembly line basis according to written or oral instructions.

Work Performed: Performs one or more of the following tasks in the assembling and packaging of medical and surgical supplies in accordance with written or oral instructions:

Works as member of assembly line team to assemble hypodermic syringes: Picks up two hypodermic syringe barrels from bin positioned alongside, positions one barrel in each hand, and simultaneously places barrels down over vacuum tubes to remove foreign particles. Removes barrels from vacuum tubes, holds barrels in hands with Luer taper at top, and places barrels down over vertical pins of conveyor. Picks up two hypodermic syringe needles from tray, positions one needle in fingers of each hand and simultaneously pushes needles down in place over Luer tapers of barrels. Picks up plastic needle protectors from bin and pushes protectors down over needles. Picks up plastic hypodermic syringe plunger from tray, inserts plunger into vacuum tube of vacuum horn to remove foreign particles. Withdraws plunger from vacuum tube and picks up hypodermic syringe barrel from conveyor belt. Inserts plunger into barrel and lays assembled piece down on control card of compartmented conveyor belt.

Assembles medical and surgical supplies on assembly line: Picks up pre-cut length of plastic tubing from rack, coils tubing with hands and places coil in cardboard holding device. Reaches for and picks up such medical and surgical supplies as hypodermic syringes, gauze, ampules of medication, cotton balls, disposable rubber gloves from bins, and places supplies in boxed medical or surgical tray receptacles. Places sterilization indicator in tray to signify to user that tray is sterile. Folds paper towels and disposable rubber gloves in accordance with sterile medical techniques and places then on top of assembled tray. Closes cover of medical or surgical tray and either wraps boxed tray in cellophane paper or places boxed tray on conveyor belt going to automatic wrapping and sealing machine. Seals retained cellophane wrapped tray with hand sealing iron and stacks tray on table.

Alternately tends automatic hypodermic syringe assembling machine and automatic control card positioning machine: Obtains supply of control cards and positions cards in feeding mechanism of card positioning machine which operates in coordination with conveyor line. Replenishes supply of cards as required. Obtains supplies of hypodermic syringe plungers, barrels, rubber plunger tips, and hypodermic needle covers from supply boxes and places them in feeding hoppers of syringe assembling machine. Picks up specially designed holding rack containing pre-positioned hypodermic needles from rack box. Places rack of needles on runners of silicone applicator and pushes rack along runners through applicator to lubricate needles for hypodermic injection purposes. Removes rack of lubricated needles from silicone applicator. Positions rack on feeder mechanism of syringe assembling machine and pushes rack into feeder which engages and holds needles. Lowers needle rack to withdraw needles from rack and places empty rack in box. Picks up and

holds in one hand several assembled syringes. Observes automatic feeding devices of machine and releases jammed parts by hand. Watches compartmented conveyor belt to ascertain that assembling machine is ejecting syringe on control card in each conveyor compartment. Places syringe on control card, from number held in hand, then observes card without syringe. Depresses stop and start buttons to stop and start conveyor belt to place syringes on control cards if necessary.

Takes off packaged medical and surgical supplies from automatic packing machine: Removes packaged medical and surgical supplies from conveyor belt at discharge end of packaging machine. Inspects package to insure it is completely sealed and that medical and surgical supplies, which are visible, are correctly assembled. Places packages on conveyor belt or work table. Places packages not passing inspection to one side.

Packs assembled medical and surgical supplies in cardboard cartons: Picks up collapsed cardboard box from bin and pushes sides to form box shape. Folds end flaps of box and places box on work table. Picks up assembled medical and surgical supplies from conveyor belt, or table, counts them, and places them in cardboard box. Weighs box on balanced scale to insure correct count.

Effectiveness of Norms:

Only 66% of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the S-359 norms, 81% would have been good workers. 34% of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the S-359 norms, only 19% would have been poor workers.

Applicability of S-359 Norms:

The aptitude test battery is applicable to jobs which include a majority of the duties described above. Research has also established the applicability of these norms to the occupation of Medical and Surgical Supplies Assembler (inst. & app.) 719.885-022. The duties for this occupation are described in the S-359 technical report.